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***Using Mobile Augmented Reality (MAR) Applications
to Improve Students Teachers' EFL Descriptive
Writing Skills and Motivation Towards English
Language***

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Abstract

The purpose of this research is to investigate the effectiveness of using mobile augmented reality (MAR) applications in improving students teachers' EFL descriptive writing skills and motivation towards English language. The design of the research was a mixed research methodology. It combined both quantitative and qualitative methods of inquiry. The subjects of the research were thirty – five (N= 35) students enrolled in third year English section at Faculty of Education, Benha University, Egypt. They were tested before and after the intervention. They were taught through a mobile augmented reality (MAR) applications program. The instruments of the research included an EFL descriptive writing skills test, motivation towards English Language scale, and semi-structured interview. Results of the research revealed a statistically significant difference between the mean scores of the study participants in the pre and post administration of the EFL descriptive writing skills and motivation towards English Language in favor of the post administration. These results were ascribed to using mobile augmented reality (MAR) applications program.

**Keywords: Mobile Augmented Reality (MAR) - EFL
Descriptive Writing Skills - Motivation towards English
Language**

Introduction

Nowadays in order to face the most common challenges and opportunities, language skills become one of the most essential factors of success, especially when English is considered one of the most widely used common language in the world today. Through using Internet technology, English becomes the basic language for international communications in different fields such as politics, media, tourism, economic, and education (Li, Chen, Cheng & Tsai, 2016).

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Language skills are categorized into receptive skills of reading and listening and productive skills of speaking and writing. Writing skill helps in strengthening thinking skills such as communication, synthesis, analysis, ability to relate and associate ideas, including encoding and decoding. The role of teachers' guidance in developing writing skills is very important because students often have difficulty in learning how to write. It is important to develop the student's ability to write a text and use the text as the basic format for practice because the teachers can teach within its framework all the rhetorical devices such as; logical, grammatical ,and lexical which the learners need to master (Urrutia& Gutiérrez ,2011).

Myers (2002) & Salem (2017) clarify that writing is a skill that should be mastered by everyone especially students because it is a final product after learners have studied about listening, speaking and reading. In writing, students apply what they hear, speak and read. Writing is taught to give students discourse competencies to participate in creating text for accessing knowledge. Also, writing skills are taught to help students create texts by their own words. Students are expected to be able to make differences between different types of genre text, such as report text, narrative text and descriptive text.

Writing as a process consists of different stages; planning, writing drafts, responding, revising, editing, evaluating, and publishing. Stages of drafting can be affected by the planning and revision stages can be the formulation stage of writing or vice versa. Thus, the writing process is a series of work- related and affected each other. It begins with the planning stage that is carried out through various activities to arouse the interest of students to write. The second stage is drafting where students begin to focus on writing without seeing their grammatical errors. The next stage is revision and editing that is responded to students' writing and followed by assessment and publication (Saud, Jufri, Rahman & Salam, 2014).

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In addition, Urquhart & McIver (2005) cited in Urrutia & Gutiérrez (2011) indicate that teachers make writing activities meaningful for the students to enhance their motivation to write well. This can be higher if the writing task is related to a specific purpose and can also be more realistic. In addition, the teacher can integrate new and existing information in a way that is meaningful and accessible to students. Also, Urrutia & Gutiérrez (2011) clarifies that it is important that the teachers look for opportunities to integrate writing with other classroom activities. They have to encourage students to look critically at what they write and teach them to draft, correct and rewrite.

Similarly, Salem (2017) reports that the objective of writing is to produce a kind of writing text. Students should be able to not only understand the nature of writing but also produce certain various short functional texts, monologues and essays in the form of procedure, narrative, descriptive, recount and report text. Moreover, writing can facilitate students' learning English in a good way. The description is a way to describe something by giving details to visualize the object that will be described. Thus, Anisa (2018) clarifies that descriptive text is used to describe something such as person, place, etc.

One of the familiar genres in writing an essay is descriptive writing. Sumarsih & Sanjaya (2013) define descriptive writing as it is a paragraph describes a particular person, place or event in great detail. Also, descriptive writing portrays a thing (living and non-living) in such a way so that the reader can visualize it and go through to the author's experience or imagination. Thus, Ginting (2018) clarifies that descriptive writing describes a person, place, or thing to make the reader easily visualize the object and or can enter into the writer's experience. He also indicates that in composing descriptive writing, a writer should have a wide range of vocabulary, understand and fulfill the lexical category requirements to produce a descriptive text. In addition, Pardiyono (2007) cited in Ginting

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(2018) indicated that descriptive writing is one of the writing genres, which is visualizing the object (living and non-living thing) in order to give the description to the reader in a clear way.

Therefore, writing descriptive text is one of the genres in writing texts. It is taught by the teacher in order to make students know how to describe themselves and their surrounding in a simple way. On the other hand, students face difficulties in writing descriptive text because the teacher explains only what the generic structure and the method how to write the descriptive text, the teacher does not use any new method or ways to teach students. As a result, students will be unmotivated, bored and fearing from writing descriptive text. They cannot recall and describe the things in a systematic order and cannot describe the parts, qualities and the features of the things completely (Hami, 2011).

Hauck (1969) indicates that descriptive writing has different benefits. It is fun and enables the teachers to demonstrate that the first word that comes into the writer's mind is often not the best one. There is no easier way in which to teach grammar, especially parts of speech. Also, there is no better training in seeing the need for precise word selection and for developing this skill. It aids students in developing their competence in writing. Also, Carter (2015) clarifies that descriptive paragraph and subsequent essay are usually among the first assignments students must complete in composition classes. Typically, students are told to describe their childhood home, a person of importance, a special object, or a summer vacation. Most students especially learners of English as a foreign language (EFL) have difficulty beginning the assignment. Visualizing the pictures in their minds as they read, describing their personal experiences, and completing the chart gave students support to write. Jolly (1984) cited in Ginting (2018) clarified that there are five types of descriptive writing paragraphs, that are describing a process, describing an event, describing a personality, describing a place, and describing an object.

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Annisa & Marlina (2014) indicate that descriptive text is a type of text that clarifies the features of something to make a clear and accurate impression of a person, object or event. In addition , Droga & Humphrey (2005) cited in Annisa & Marlina (2014) reveal that there are certain generic structure and language features for descriptive text .The generic structure deals with identification and description , while the language features focus on three points; specific participant uses simple present tense and uses adjectives and adverbs.

Feez and Joyce (1998) cited in Sahardin, Hanum & Gani (2017: 57) indicate that the generic structures for a descriptive text are; a general statement: introducing the subject/topic, giving some general identifying information and showing what aspects of the thing, person or place will be described. A description: where information about the subject/topic is grouped into sections. While linguistic features of a descriptive text are as follows; specific nouns; simple present tense; detailed noun phrases to give information about the subject; various adjectives functioning to describe number or classify the subject; relating verbs to give information about the subject; thinking and feeling verbs to express personal opinions about the subject ;action verbs ;adverbials to give additional information about behavior of the subject and figurative language like similes and metaphors.

The components of descriptive writing according to Knapp & Watkins (2005) contain two components; the generic structure and significant lexicogrammatical features. Generic structure is divided into two aspects, identification and description. The first step in writing generic structure is the writer identifies which phenomenon should be described, and then the description of each part, qualities and the characteristics of the topic. The significant lexicogrammatical features refer to the sensory language which shares what the writer hears, sees, smells, tastes and touches. The descriptive writing also uses precise language, including verbs and

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noun. Then, a logical organization, including the order and chronological should be arranged correctly. The using of tense, relational verbs, action verbs, mental verbs, adjectives ,and adverbs, should be written according to its function. When someone focuses his or her mind on description writing, it would be as the recreation of the experiences then it is shared with others.

Paying attention to the role of motivation in the teaching process, developing, enforcing, and strengthening it can be some effective and helpful factor in the process of learning the language. Teacher's awareness about learner's attitude and its relation with the teaching process provides a framework that language teacher can use more useful and more effective methods. Thus, motivation can be defined as a physical, psychological or social need which motivates the individuals to reach or achieve their goal and fulfill their need and finally feel satisfied owing to achieve their aim. Also, the language teacher has a significant role in giving motivation to the learner for learning language (Mahadi & Jafari, 2012).

Motivation has been one of the essential issues in all human and social sciences for decades since heightened and sustained motivation may not be encountered particularly in educational contexts such as foreign language classrooms. It is responsible for why people decide to do something, how long they are willing to enhance the activity, and how hard they are going to follow it. It is related to one of the most basic aspects of the human mind, and most teachers and researchers would agree that it has a very important role in determining success or failure in any learning situation. They use the term motivation when they describe successful or unsuccessful learners. Therefore, motivation explains why people decide to do something, how hard they are going to pursue it and how long they are willing to sustain the activity (Dornyei, 2002, Dornyei & Ushioda, 2001, Ordem, 2017).

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In addition, motivation plays an important role in foreign language learning. Learning motivation is to promote, guide and maintain learning activities which have been conducted an internal strength or internal mechanism. Learning motivation once formed, the student will use an active learning attitude to learn and express a keen interest in learning, and can focus attention in class to master knowledge (Long, Ming & Chen, 2013).

Students' motivation towards English language learning might determine and influence their learning results. Learner's enthusiasm, commitment, and persistence are the key factors that decide the success or failure of language learning. Students with strong motivation often obtain excellent achievement, while students without motivation are those who always give up easily and this could be due to the factor that motivated students are more eager and willing to devote their time to language learning. Learners' motivation plays an essential part in learning English (Dornyei, 2002, Hong & Ganapathy, 2017, Long, Ming & Chen, 2013).

The learners' motivation affects their willingness to take part in the process of learning. Motivation is one of the most essential aspects of determining success in learning the English language that can affect proficiency in a particular language. It is an instrument for students to fulfill their need and teachers should motivate learners to become aware of and realize the value of learning. Thus, Mahadi & Jafari (2012) clarify two kinds of motivation: intrinsic motivation and extrinsic motivation. Intrinsic motivation is mental satisfaction which is achieved by others' praise, while, extrinsic motivation is an incentive activated by external factors such as good marks and getting a reward. In addition to intrinsic and extrinsic motivation, Hong & Ganapathy (2017) and Alizadeh (2016) added two other kinds; instrumental and integrative motivation. The instrumental motivation refers to acquiring a language as a means for obtaining instrumental objectives such as obtaining a career, reading technical materials, translation, etc. The integrative

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motivation describes learners who want to integrate themselves into the culture of the second language group and become involved in social interchange in that group.

Therefore, learners' motivation can go up and down depending on the context of language learning. Motivation has an essential role in developing language skills and teachers can play a significant role in motivating learners to the learning of foreign language. It is an important factor in learning a foreign language. The EFL teachers should teach learners to promote motivation. They also should help them to find motivation in the areas where they do not expect it and to research for their own motivational processes so they can take advantage of it (Alizadeh, 2016).

It can be concluded that writing is one of the most difficult skill for most students. Students often have difficulty in posting their ideas into the target language because they are not accustomed to express ideas based on their sensual experiences (sight, hearing, smell, taste, and touching) in writing. Although writing is an important skill that must be mastered in order to effectively transmit new ideas and concepts, the majority of foreign language students are not able to use this skill effectively. Fear of being corrected by the teacher always leads to students' tendency to use avoidance strategies and many other problems. Thus, they will be able to overcome their difficulties in writing when they learn to write through a process that involves all their senses. This may also increase their interest and motivation to develop their writing skills (Ellis, 2002, Rostami & Hoveidi, 2014, Saud, Jufri, Rahman & Salam, 2014).

As a result, Safar, Al-Jafar & Al-Yousefi (2017) indicate that there is a need for schools to keep up with accelerated progress in the field of ICT. The traditional methods used in schools are not keeping pace with modern ICT tools, apps, and services and they do not encourage learners or deliver information to them in a modern

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and efficient way. Therefore, it is necessary to develop educational tools that are matched with the technologically advanced society, especially because these techniques contribute to improving the productivity of the teacher and the learner alike. In addition, AR technology's rapid development and progress have made it suitable for many subjects. It also supports required educational goals and innovation in educational activities. There is no doubt that AR technology could be considered the educational technology of the future.

Today, people live in a generation of continual digital revolution. They use information and communication technologies (ICTs) and the Internet virtually every day. Technology plays an important role in people's lives especially college students. Thus, with technological advances, the language classroom has moved from the traditional language lab to incorporating digital tools and students are identifying as digital natives. One new technology used to bring language instruction into the 21st Century is Augmented Reality (AR) that can effectively respond to students motivational and technological needs. With an emphasis on the 21st skills, educators are always trying to provide their students with the best instructions, integrating new technologies in their lessons plans (Kamnoetsin, 2014, Whithaus, 2005, Bensetti- Benbader, 2017).

Thus, the continuous development of technology causes changes in teaching and learning practices. During this process, learners' profile may change, too. Modern classrooms are frequently enhanced through the addition of new technologies such as multi-touch technologies. By using AR technology in teaching and learning, users will actively involve in an experience. Therefore, they will retain and remember most of the information that is presented to them .In addition, AR is a tool which supports learning through various channels by mean of sound, picture, writing, video ,and animation. These facilitative tools reduce the problems originated from individual differences and help to create an effective learning

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atmosphere by providing richer context particularly for oral courses based on interaction (Rasalingam, Muniandy & Rasalingam, 2014, Solak & Cakır, 2015).

AR as a technological approach proposes applications that allow students to interact with the real world through virtual information. The use of the AR application on tablets and mobile phones may permit a rapid evolution of AR technology. By combining technology familiar to students with locations where students see as their own, AR has the potential to move learning out of the classrooms and into the spaces where students live. Encouraging informal learning may prove effective in engaging students, extending learning to spaces that might help them form connections with content, the locations that provide the context for it, and the peers that they share it with (Rasalingam, Muniandy & Rasalingam, 2014, Muñoz, 2017).

Santos et al. (2016) clarify that AR is the seamless integration of virtual objects and real environments where the computer-generated information is placed in the world as if they co-exist with real objects. It is an emerging technology that is finding applications in education because of its possible benefits in teaching and learning. Yuen, Yaoyuneyong & Johnson (2011) indicate that AR is used in learning to engage, motivate and stimulate students; teach subjects where it is not easy to gain real-world experience; enhance collaboration between students and instructors, and among students; foster students' creativity and imagination; help students take control of their learning and create an authentic learning environment suitable for various learning styles. Liu, Tan, & Chu (2017) clarify that in AR, digital objects are embedded in the real environment. In augmented virtuality, real objects are embedded into virtual ones. In virtual reality (VR), the surrounding environment is completely digital. Li (2014) clarifies that AR is an approach that combines real and computer-generated digital content into users' view of their physical environment. Although AR technology has already been studied for two decades, it was not until

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recently that it has been applied to day-to-day activities in human life and learning

AR is an active computer application that provides more options for students in terms of interaction with the curriculum material rather than a passive mode of study. The elements of AR technology in education which drives its usability and popularity are to increase students' interaction and decrease students' cognitive load inherent in foreign language learning .AR systems merge computer-generated graphics with a view of the physical world (Robertson, Coelho, MacIntyre, & Juler,2007 Vate-U-Lan, 2012). As a result, Bensetti-Benbader (2017) conducted a quasi-experiment study to evaluate and investigate the effectiveness of AR tools to promote motivation and increase language learning.

Huisinga (2017) defined AR as a medium in which digital information covers the physical world. Gancedo (2012) clarified that AR is a field with a great potential in education, providing a very stimulating environment that not only helps to visualize 3D objects but also enhances motivation among students. AR is the combination of real and virtual imagery.

Virtual reality (VR) has been extensively used in educational environments. As AR technology is becoming more accessible, it is being more often adapted for common use. While VR can generally be interpreted as an immersive three-dimensional computer-generated environment, AR can be thought of as overlaying the virtual over the physical environment. VR is a simulated three-dimensional environment which either emulates the real world or acts as an imaginary world. VR is commonly used as an entertainment, education, and research tool (Chandrasekera, & Yoon, 2018).

SIRAKAYA& ÇAKMAK (2018) clarify that it is important to clarify the concept of VR in order to understand AR. VR is a simulation model that provides a sense of reality by allowing

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interactive communication between the user and the dynamic environment generated by computers. Therefore, computer - generated 3D environments are found in VR and its most characteristic feature is the simulation of the user's physical presence in the environment. The user is in the virtual environment generated completely digitally and there is no interaction with the real world. On the other hand, AR enhances the reality with the help of virtual data. It does not create an alternative real time but it uses the real-time images as background and enhances it with the help of virtual images added on real-time images. AR should connect the real and the virtual, have simultaneous interaction and should be 3D.

AR is a technology that exactly overlays computer -generated virtual imagery on physical objects in real time. It is different from VR, where the user is completely immersed in a virtual environment. AR lets the user interact with the virtual images using real objects in a seamlessly. AR can be viewed as a computerized extension of reality. Thus, virtual information overlaid on the real content can help users of AR enhance their perception of the real world and support them in a better understanding of the real objects. VR runs over new environments completely computer generated. That entire user can take, touch, or interact with is virtual. AR uses virtual elements only to enhance the real world and the user's experience. VR replaces the physical world. However, AR does not do so. VR also offers significant opportunity in the area of simulation (Dutta, 2016, Fernandez ,2017,PILGRIM & PILGRIM, 2016).

AR has many different definitions, but the general concept is to enhance the real world vision with additional digital information or digital objects. To project these objects typically computer screens or projectors are used, with use of a camera the image of the real world is captured quickly and processed typically in real time and redisplayed on the digital screen with extra information or objects in it. The first AR with a head- mounted display which often is considered being the inventor of the AR . Lately with advancement

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in technology and processing power AR has wandered out of researchers' labs into commercial use in personal computers, also appearing on smaller devices. In recent years the new type of mobile phones namely smartphones provide all necessary components to produce AR. AR relies heavily on image processing and ideally should take place in real time, because of those constraints it requires a high amount of processing power. Until recent years it was impossible to achieve satisfying results on mobile devices, but nowadays the phones even have multiple processor cores which are up for the task (Beder (2012)).

Solak & Cakır (2015) clarified that AR is a tool that supports learning through various channels of sound, picture, writing, video ,and animation. These tools reduce the problems originated from individual differences and help to create an effective learning atmosphere by providing richer context particularly for oral courses based on interaction. Thus, JOAN (2015) concludes that AR technology is a promising and stimulating tool for learning and it can be effective when used in parallel with traditional methods. In the same context, Barreira , et.al. (2012) ,JOAN (2015) ,Li, Chen, Cheng & Tsai (2016) & Pérez-López & Contero (2013) clarify that AR is a direct or indirect view of a physical, real-world environment whose elements are augmented by computer-generated sensory inputs such as sound, video, or graphics. It improves students' motivation and interest, and supports the learning and teaching process in educational contexts. It can be used to bring virtual elements into the user space, providing a natural and pleasant experience with the new environment.

Li, Chen, Cheng & Tsai (2016) proposed a framework called AR classroom using AR technology. They indicated that AR classroom includes five areas in consideration of common language learning curricula as follows, tutor: the AR classroom augments the 3-D avatar onto the AR marker. The 3-D avatar plays the role of lecturer tutoring the students. The teacher can design the avatar tutor based

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on the corresponding content. Tutors who are the characters from the learning content can lead students to concentrate on tasks easily. Thus, through lecturing, the learning goal can be clearly delivered and guided step by step. Theme: it uses AR technology to embed the learning object to the learning scene. It can be small or large. The augmented learning environment creates the immersive environment to provide students with vivid experience regarding the learning content. Media: Multi-media is commonly used for language curriculum. The media area in AR classroom mounts the multi-media onto the media marker that allows the teacher to play multi-media like a screen on the classroom wall. agent: In addition to tutor, AR classroom facilitates agent area to augment agents to the learning scene. Different from lecturing, the agent avatar acts as a learning companion who could provide hints and emotional support for the learners. Operational area: Learning by doing is always an effective way of gaining the knowledge. AR classroom designs an operational area where the operational questions could be carried out. Students could interact with the AR objects to complete the assignment or the assessment.

It can be noted that mobile learning (m-Learning) offers a new way to involve learning into daily life. M-learning uses mobile computing technologies to enhance the learning experience. These technologies can be blended to engage and motivate learners, at any time and anywhere. The advantages of m-learning over e-learning include flexibility, low cost, small size and ease of use. M- Learning is a new form of learning and the learning content of it is fragmented, short and suitable for the mobile media. AR is authentic, interactive and can be applied in m- learning to provide better learning content, create a real learning environment and provide a high-quality learning experience that improves the effectiveness of learning (Liu, Tan, & Chu, 2017, Zheng, 2015).

Thus, over the last decade, the rapid evolution of technology has presented new ways to develop applications for learning. AR as an

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educational medium is becoming accessible to young students at elementary school and professional learners alike. It is a new medium, combining aspects from ubiquitous computing, tangible computing, and social computing. This medium offers unique affordances, combining physical and virtual worlds with continuous and implicit user control of the point of view and interactivity. Thus, in her study, Dutta (2016) provides short introductions to the technology of AR and E-Learning. She also discusses example applications, key technologies of AR. In addition, she analyses how AR can support the learning process.

Laine (2018) defines mobile AR as a type of AR where a mobile device (smartphone or tablet) is used to display and interact with virtual content, such as three-dimensional (3D) models, annotations, and videos, that are overlaid on top of a real-time camera feed of the real world. Thus, mobile AR leaves out applications that show virtual content on the mobile device screen without a real-time camera feed, applications where virtual content are projected through a camera other than that of a mobile device, or applications developed for devices other than mobile devices. Yuen, Yaoyuneyong & Johnson (2011) clarify that many MAR applications are location based. To utilize these AR applications on a mobile device or a smartphone, the phone must be equipped with several necessary tools such as GPS technology, an accelerometer, and a digital compass (magnetometer). Using M AR applications, users may view the world through smartphone cameras in order to see digital content mixed with the real environment.

In addition, Rattnarungrot, White, & Newbury (2014) stated that there are some tools that enable mobile users to create their own AR channels for indoor and outdoor environments such as Junaio (www.junaio.com), Layar (www.layar.com) and Aurasma (www.aurasma.com). These applications enable mobile users to create AR environments and save them into their channels on the cloud server. This technique is useful because it allows general

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mobile users who don't want to or who can't develop mobile AR applications to have their own AR environments. However, these AR applications still have some limitations because they are implemented on closed platforms such that a user's AR environment can only be retrieved via the commercial application, i.e. you cannot reuse a Junaio environment in an Aurasma environment. Moreover, most commercial mobile indoor AR applications provide users with limited amounts of data or contents for augmenting real world scenes..

Thus, MAR is part of AR with the superimposed virtual object being displayed on a mobile device instead of a personal computer. MAR could replace the HMD, binoculars, and helmets. AR environments on mobile devices are evolving and offer a great deal of potential in terms of learning and training. Therefore, in their research, Jamali, Shiratuddin & Wong (2014) present recent works and applications in several fields related to AR and MAR and a theoretical framework of motivation of student-centered learning using a MAR framework which directs the focal point into an educational environment. They indicate that by using MAR, students include learning activities into a motivated learning environment. MAR is a term used when equipment through which AR can be achieved as it is small in size and easy to carry e.g. a smartphone or a tablet (Beder, 2012, Karagozlu & Ozdamli, 2017).

Lee (2012) cited in Jamali, Shiratuddin & Wong (2014) clarify that MAR is technology that can mobilize the learning environment irrespective of location and time and offers flexibility based on students' needs. This facilitation can affect the motivation of learners, resulting in an improvement in learning outcomes for students. Therefore, MAR has become the fastest growing applied platforms in the AR field. Craig (2013) cited in Lie (2014) and Karagozlu & Ozdamli (2017) described MAR as an interface on smartphones or tablets mixing real and virtual world by enabling the original invisible information to be visible by digital contents. It

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has four main components: a camera which is used to capture the target information, marker which consists of the target information, a mobile device which will process and store the target information whenever it is read and digital content which will be shown by camera when it reads the target marker. Akçayır & Akçayır (2017) clarify that AR helps students to engage in authentic explorations in the real world. It increases students' motivation and helps them to acquire better investigation skills.

Context of the Problem

Writing skill is a specific ability that helps writers to put their thought into words in a meaningful form and express their feelings through a sentence. It is a process of organizing and formulating ideas into the right order to convey the aim and present it on a piece of paper. In addition, it is considered an important activity for students to express their ideas, thoughts, feelings, and judgments about everything they have read, seen or experienced. In writing activity, the writer should put and express their thought, feelings, ideas, and judgment about something he or she has seen or experienced through sentences and present it on a piece of paper. Moreover, it is considered a complicated activity for students, because study and practice are needed to develop this skill. Therefore, the appropriate text is needed to encourage students to write better (Oktaviani, 2017).

In addition, many students fail to be effective writers because they lack knowledge of vocabulary and appropriate writing strategy. The writer believes that teaching proper writing strategy can help learners overcome their writing problems. In his research, Salem (2017) found several empirical problems in teaching and learning process in writing class. Firstly, when the teacher asked the students to write descriptive texts for several meetings in the writing class, most of them did not understand the structures of descriptive texts (lexicon grammatical and generic structures). The students found

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problems in order to organize their ideas to describe person, thing, or place that is asked by the teacher as their writing task. Furthermore, students use the conventional strategy in prewriting activities; some of them spend a lot of time to look up words in the dictionary because they have lack of vocabulary in developing their idea. Also, they faced difficulties in developing and expressing their ideas. Then, the students also got problems in organizing their ideas, in terms of cohesion, coherence, and unity in writing because they do not use the prewriting techniques to express their ideas before the real writing takes place. It can be concluded that they do not know how to develop their idea to be a good text.

Kuncororini (2017) clarifies that in writing, students have no idea what they will write and they get wrong in grammar or they don't know how to write, or they have not enough time to write. Maybe in the school when the teacher gives students an assignment to write a descriptive text, they feel bored because they are lazy to think and write more sentences. Then the last way, they use the internet to do their homework. The teacher is often confused about how to make their students creative in writing not copied other creation. They can make a descriptive text by themselves. Also, Hami (2011) indicates that students have difficulties in writing descriptive text; they cannot describe things, places, and persons details because they do not have any idea when they are asked to describe things, persons or places. Therefore, they need some ways, methods or approaches to help them in writing descriptive text.

To document the problem, the researcher conducted a pilot study on thirty students (N=30) enrolled in third year English section at Faculty of Education, Benha University, Egypt. The pilot study consisted of an EFL descriptive writing skills test, and foreign language motivation scale. The results of the pilot study reveal that students are afraid of writing because they lose interest. They did not understand the structures of descriptive texts (lexicon grammatical and generic structures). The students found problems

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in organizing their ideas to describe person, thing, or place that is asked by the teacher as their writing task. Their motivation towards foreign language is low. This low hinders their ability to be flexible writers. Increasing motivation can help students to improve their language in general and their descriptive writing in particular.

Therefore, there is a need for keeping up with accelerated progress in the field of ICT as Safar, Al-Jafar & Al-Yousefi (2017) confirmed that the traditional methods used are not keeping pace with modern ICT tools, apps, and services and they do not encourage learners or deliver information to them in a modern and efficient way. Therefore, it is necessary to develop educational tools that are matched with the technologically advanced society, especially because these techniques contribute to improving the productivity of the teacher and the learner alike. In addition, AR technology's rapid development and progress have made it suitable for many subjects. It also supports required educational goals and innovation in educational activities. There is no doubt that AR technology could be considered the educational technology of the future.

Statement of the Problem

In spite the importance of EFL descriptive writing skills and foreign language motivation, third- year students enrolled in English department at Benha Faculty of Education have difficulties in descriptive writing skills and their foreign language motivation level is low. This is clarified through reviewing literature and the results of the pilot study conducted by the researcher. Therefore, the present research aims at examining the effectiveness of using mobile augmented reality (MAR) applications in improving students teachers' EFL descriptive writing skills and motivation towards English language among student teachers at faculty of Education.

Questions of the Study

- 1. What are the features of a program based on mobile augmented reality (MAR) applications for improving students teachers' EFL descriptive writing skills and motivation towards English language at Faculty of Education?**
- 2. How far is a program based on mobile augmented reality (MAR) applications effective for improving student teachers' EFL descriptive writing skills at Faculty of Education?**
- 3. How far is a program based on mobile augmented reality (MAR) applications effective for improving student teachers' motivation towards English language at Faculty of Education?**

Review of Related Studies

Writing is considered a complicated and difficult skill to be mastered by the students because it includes several components students should use while writing such as content, organization, vocabulary, language use, and punctuation. It is a difficult process as it requires mastering of grammatical, rhetorical devices, conceptual and judgmental elements. Therefore, students face difficulties in learning descriptive writing. In order to overcome these difficulties, Permatasari (2016) in his study uses (Put Yourself in the Picture) activity to help the students to express their imagination that they are involved in the picture indirectly. Then, the students think freely the vocabulary items around their positions by describing them into a short text. It means that the picture itself had a purpose for the students to help them develop their ideas in mind by reading it.

Students who want to study in a college or in a university or to get a certain job, need to learn how to write, because all other types of academic writing, such as reports, essays, compositions and research papers are based on writing a text. Descriptive writing is a written text in which the writer describes an object through the sensory experience how something looks, sounds and tastes. The text could be written as the result of experience by seeing, hearing, or touching.

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In descriptive writing, a writer may describe things, perceptions and feelings about something. Thus, it can be concluded that descriptive writing is a written text that gives a reader a mental picture of the subject that the writer is exploring. It can be a person, an object or it can be about any topics (Sinaga, 2017).

In addition, motivation is an important factor for explaining the success or failure of any complex task. Thus, the success in a task is due to the fact that someone is motivated. Motivation refers to the combination of attempt plus desire to obtain the objective of learning the language plus desirable attitudes towards learning the language. It provides learners with an aim and direction to follow. Due to the lack of enough motivation, some difficulties may happen for learners. Without desire to learn, it is very difficult for learners to gain effective learning (Alizadeh, 2016).

Because of the importance of developing descriptive writing skills and motivation towards English language, many researchers conducted several studies related to it such as the following:-

Rahimpour & Safarie (2011) investigate the effects of pre-task planning (PTP) and on-line planning (OLP) on descriptive writing of EFL learners. The participants were 37 learners of English as a foreign language and assigned into two groups with pre-task and on-line planning conditions. The results showed planning time had no effect on complexity and accuracy of participants' performance but it influenced positively the fluency of PTP group.

Abdul Rahman (2013) examines college-level Arabic L1 users' command of cohesive devices by exploring the extent to which Omani student-teachers of English and native English speakers differ in their use of cohesive devices in descriptive English writing. The researcher uses Halliday and Hasan's framework of cohesion to analyze the essays written by the two groups. A qualitative research methodology was used to analyze the writing of the two groups to reveal the points of strengths and weaknesses in their writing. The

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results of the study indicated that there was a difference between the natives' and the students' use of cohesive devices in terms of frequency, variety, and control.

Rostami & Hoveidi (2014) investigate the effects of blog based pair correction on students' descriptive writing. The participants were 30 intermediate English language students (including 10 boys and 20 girls) and divided into two groups, experimental and control. Students in both groups were asked to write six descriptive essays and post them on their blog. The results revealed that peer correction on the blog had positive impact on the grammar and word choice of students' descriptive writing. It was also found that students had a positive attitude toward writing on blog and peer correction. Based on the results, teachers can implement the blog based peer correction technique to motivate students and enhance their descriptive writing skills and provide an interactive environment to facilitate feedback.

In their study, Dincer & Yesilyurt (2017) investigated the relationships between English as a foreign language (EFL) learners' motivation to speak, autonomous regulation, autonomy support from teachers, and classroom engagement with both quantitative and qualitative approaches. The participants were EFL learners from a state university in Turkey. One hundred forty-two undergraduates responded to a questionnaire about the constructs and seven of them participated in oral interviews. The quantitative findings showed that students' intrinsic motivation rate is higher than their other orientations and that their orientations correlated with regulation, teacher autonomy support, and classroom engagement in line with the theory. Qualitative findings also clarified that, although students are mostly intrinsically orientated, other motivational factors also play roles in their ability to speak with the teacher seeming to be the key factor in the class as a motivation supporter.

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Hong & Ganapathy (2017) identify and analyze whether instrumental or integrative motivation plays a more important role in promoting ESL students' English language learning. They also examine the areas of problems that affect ESL students' motivation towards English language learning. The study was a qualitative case study that used focus group interviews to elicit data from twelve students in a secondary school in Penang. The findings indicate that students are more instrumentally motivated than integratively motivated in ESL learning. Instrumental motivation is found to have a greater impact on students' English language learning.

Salem (2017)'s research aims at improving students' writing descriptive text using mind mapping teaching strategy of the tenth grade students of SMA Negeri 4 Kupang. It was an action research and done in two cycles, each cycle was divided into two meetings .The participants were 43 students of the tenth grade students of science program. The instruments included an observation checklist. The results showed that the use of mind mapping effectively improved the students writing ability. They were able to generate their ideas to produce well-organized texts and use the appropriate vocabulary, correct grammar, punctuation, spelling, and capitalization in their writings.

Sahardin, Hanum & Gani (2017) conducted an experimental study to investigate the effectiveness of using think pair share (TPS) in improving students' writing of descriptive texts in English. The participants were tenth grade students at a senior high school in Banda Aceh. The instrument was writing test. The results showed that the TPS technique successfully improved the ability of students' in writing. The results also confirmed that TPS technique was effective for improving the students' mastery of organization, vocabulary and content, but less so for improving mechanics and grammar. In the same context, Listianti (2017) conducted an action research to develop students' writing skill in descriptive text. He uses qualitative and quantitative approach. The research is conducted in

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two cycles; each cycle consists of planning, action, observation and reflection. The result of the study shows that the use of Think-Pair-Share strategy can improve the students' writing skill in descriptive text.

In his study, Sinaga (2017) investigated the effect of Roundtable and Clustering teaching techniques and students' personal traits on students' achievement in descriptive writing. The participants were students in grade ix of SMP Negeri 2 Pancurbatu. The research design was an experimental research. The students were divided into two groups. The experimental group was taught by using Roundtable teaching technique and control group was treated by using Clustering teaching technique. The students are classified into the introvert and extrovert personal traits by conducting the questionnaire and the students' achievement in descriptive writing was measured by using writing test, namely Analytic Scoring by Weigle. The results of the study revealed that students' achievement in descriptive writing taught by using Roundtable teaching technique was higher than that taught by Clustering teaching technique, and students' achievement in descriptive writing with introvert personal trait was higher than that with extrovert personal traits .There is an interaction between teaching techniques and personal traits on students' achievement in descriptive writing.

Anisa (2018) investigates the effectiveness of clustering technique on students' writing ability of descriptive text for the seventh grade students of MTs Islamiya Ciputat. The quantitative method is used and the research design was a quasi- experimental .The participants were seventh grade students of MTs Islamiya Ciputat (N=42). They were divided into two groups an experimental group (N= 21) and the control group (N= 21). The instrument of the study was a writing test. The results revealed that clustering techniques was effective in improving students' writing ability of descriptive text.

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Cheung (2018) investigates the effect of writing instructors' motivational strategies on student motivation. Participants were 344 first-year undergraduate students taking a writing course at a university in Singapore. The instruments of the study were classroom observation schemes, student surveys, and surveys with writing instructors. Results show that the more the writing instructors reported using strategies in generating students' initial motivation in the classroom, the more the students reported having positive attitude and improved self confidence in the writing course. Eno , Kumar & Hamza (2018) investigated ESL/EFL learners' perceptions regarding what they consider would motivate them more among the four acquisition skills of reading, listening, speaking, and writing. In their study, they used mixed methods of data collection. The results revealed increasing in students' interests in the four skills.

AR is a concept used for displaying digital contents that can enhance student's learning experiences. AR uses advanced computer vision and tracking techniques to recognize markers, images or 3D objects in the real environment and uses this information to augment the physical space with computer generated media contents, such as 3D models, sound, images, videos, texts, etc. It is implemented through various different approaches and platforms such as location based AR systems, indoor applications and edutainment. The use of AR technologies enriches the environment of education and training and provide permanent learning, has been increasing day by day (Damiani et al., 2011 cited in Rattanarungrot, White, & Newbury, 2014 , Krevelen & Poelman, 2010, Özcan , Özkan , & Şahin , 2017,Rattanarungrot, White, & Newbury, 2014).

Yuen, Yaoyuneyong & Johnson (2011) clarify that while considering the array of developing technologies, all seeking to modify, augment, interface with, or even replace perceptions of reality, Milgram and Kishino (1994) cited in Yuen, Yaoyuneyong & Johnson (2011) defined four types of environments. First is the real

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world, which students are familiar with. Virtual worlds, or virtual environments, in which all information perceived by the user is computer-generated and completely unrelated to real world locations, objects, or activities. Between these two extremes exist, two types of augmented environments: AR which takes the real world and real environments as its backdrop and inserts computer-generated content, and augmented virtuality, in which a computer generated world serves as the backdrop while real-world data is blended in and superimposed.

AR is a new technology that develops on the basis of virtual reality. It can be applied in mobile learning to create a real learning environment, which will greatly improve the effectiveness of learning. It integrates computer-generated scenes into the real world, expands and complements the real world rather than completely replaces the real world, strengthening user's sensory and cognitive reality. Highly popular, portable and easy to use hand-held devices, such as smart phones, which achieve the miniaturization and portability of AR system and are one of the best platforms that embody the value of AR will greatly expand and deepen the scope and depth of the use of AR system (Zheng, 2015).

Gutiérrez& Fernández (2014) clarify that AR is a technology that encourages the perception that user has of reality introducing virtual elements in the same one. It's not limited just to implementation of virtual elements as it also may use objects that belong to the real world. It is an environment, which included element from virtual reality and elements of the real world at the same time. So, an AR system allows combination of real and virtual worlds, real time interactivity and 3D registry. It provides students with an interactive interface allowing learning and exploring in different environments in a more attractive and motivating way. The teachers are aware that use of 3D images and any viewing technique for introducing contents helps and reinforces learning.

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Zheng (2015) clarifies that the target of AR system is to integrate the interactive real world with interactive computer-generated world. It is mainly composed of display system that mainly provides the acquisition and display capability of intelligent terminal, including display screen, camera, is an important device for enhancing the applications of AR. Interactive system is the primary means to influence the experience of AR. Currently, smart phones use touch screen interaction, voice interaction and other interactions, to have a great change on human-machine relationship, the interactive reaction can be carried out via multi-channel with the virtual information generated by computer, allowing users go into the scene more naturally, with more fresh sense of the experience. Also, AR is composed of communication system where wireless communication technology and Internet technology are mobile services supporting technology.

Huisinga (2017) presented the uses for AR in the classroom as follows; adding audio and definitions to a word ; augmented posters with images, video, audio, 3D models, text, links to websites; quizzes to engage students; connecting videos of project presentations or lectures to an overview bulletin board/poster or summary hand out ; showing 3D visual representations of chemical reactions, where students get to push different elements together; showing interactive 3D models of items difficult to access ; gamifying learning and allowing everyday spaces to be transformed with overlay of information ; using AR to travel on class field trips not only too difficult to reach locations but different times as well ; allowing students to access digital resources while interacting outside; showing real-time translations of printed text to different languages ; and engaging students in mathematics by connecting real world experiences to mathematic equations .

Yuen, Yaoyuneyong & Johnson (2011) clarify that AR allows digital content to be seamlessly overlaid and mixed into perceptions of the real world. In addition to the 2D and 3D objects which many

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may expect, digital assets such as audio and video files, textual information, and tactile information can be incorporated into users' perceptions of the real world. Miller & Dousay (2015) indicate that AR is a tool that holds much promise in terms of its application for educational purposes. In their study, Li, Chen, Cheng & Tsai (2016) indicate that AR is used to integrate virtual objects into the real learning environment for language learning. The English AR classroom is constructed using the system prototyping method and evaluated by semi-structured in-depth interviews.

Therefore, Tan & Lui (2004) designed a Mobile-Based Interactive Learning Environment (MOBILE) to teach body parts and creation of species in and outside classroom through mobile learning tools to improve Japanese elementary school students' English proficiency. The results of their study revealed this technology helped to increase learners' performances in comparison with the traditional method.

GÜNDOĞMUS, ORHAN & SAHIN (2016) indicate that using AR application, English teaching enhances outcomes, motivation and interest of learners, and provides amusing and productive learning system by shifting concept of timing and location of language learning and improve the four skills; listening, speaking, reading and writing. Also, they reveal that students who use AR applications in English learning show positive attitude towards the mobile AR application in addition they had very comfortable and enjoy during the lessons. In their study, Dunleavy, Dede, & Mitchell (2009) identify how teachers and students describe and comprehend the ways in which participating in AR simulation aids or hinders teaching and learning. In AR students interact with a mixture of virtual and physical objects, people, and environments. They can communicate with teammates face-to-face, rather than the mediated interaction among avatars characteristic of multi-user virtual environment (MUVE) interface.

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AR helps students discover more information when using it and they can understand the course contents easily. It improves their imagination, provides reachable course materials and enjoyable education in the classroom. It also increases their course success and their motivation to learn. Thus, using AR in the classroom improves students' attention towards the course and helps them feel independent when using it in the classroom. In addition, the students could use AR through mobile applications easily .It is the technology that provides the right contents at the right place and the right time. MAR technique is able to cover virtual objects on the real work to present rich information to students and construct meaningful presentation by combining location-awareness and contextual learning .It can provide students with more interactive learning environment. It also increases language learning performance as it helps students to pay more attention, enhances their enthusiasm, and engages them in manipulating virtual materials from a variety of their perspective (Bicen & Bal, 2016, Lan, Chao, Kinshuk & Chao, 2013, LIMSUKHAWAT , KAEWYOUN, WONGWATKIT, & WONGTA, 2016).

The rapid development of the new technology has changed classroom teaching methods and tools in a positive way. Therefore, AR is one of the new technology tools with smartphones and tablets in the classroom. As a result, Bicen & Bal (2016) conducted a study to investigate the classroom learning with AR and its impact of student opinions. Beder (2012) clarifies that Mobile Augmented Reality (MAR) device allows users to learn new words in a foreign language by use of marker based AR techniques. It displays a 3D model object, its spelling and its pronunciation, therefore facilitating learning of new words.

Barreira, et.al. (2012) presented an AR game (MOW) to the learning of both Portuguese and English languages focused on specific words in a simple, interesting and interactive way. MOW involves a matching game and provides visual and auditory cues to

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help children learning how to pronounce and write animals names. The participants were 26 children from a Portuguese elementary school participated in an experimental test. The results indicate that children who used the AR game had a superior English learning progress than those who only used traditional methods. In addition, the children considered the AR games easy to use. Thus, the use of AR games has a positive pedagogical impact in the learning process.

In his research, Beder (2012) conducted an experiment on a group of twenty people to answer the question: is MAR language learning system a viable solution for language learning? For the purpose of the experiment an AR Language Learning Tool was designed for Android smartphones. This AR Language Learning Tool facilitated vocabulary learning by displaying 3D objects along with their spelling and providing audio of pronunciation. Participants were divided into an equal control group and test group. The control group learned new vocabulary through classic flashcards while the test group used the previously designed AR Language Learning Tool. The Vocabulary Knowledge Scale questionnaires were provided for both groups after learning. Results revealed that there is a positive improvement in long term recall rate in the AR Language Learning Tool group when compared with the flashcards learning group. Participants also provided feedback about their quality of experience and enthusiasm for new learning methods. Their answers were very positive and provided proof that mobile AR is a viable method of learning vocabulary.

Lobo, García, & Ruiz (2013) propose a research approach to integrate AR, which enables teachers to design and deliver AR learning activities on mobile devices into current learning management systems. Their study aims at complementing current e-learning systems, providing a wider and richer range of learning activities for teachers and students.

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Solak & Cakır (2015) conducted a study to determine the motivational level of the participants in a language classroom towards course materials designed in accordance with AR technology and identify the correlation between academic achievement and motivational level. The participants were 130 undergraduate students. The instruments included the Turkish version of Material Motivational Survey to determine the undergraduate students' motivational level about the materials which were designed with AR technology to teach English words at the elementary level. The results revealed that AR technology materials had positive impact on increasing students' motivation towards vocabulary learning in language classroom. In addition, there was a positive significant correlation between academic achievement and motivation in the use of AR technology in language classroom.

In order to clarify MAR, LIMSUKHAWAT , KAEWYOUN, WONGWATKIT & WONGTA(2016) conducted a study to investigate how AR can support mobile game application based on Jolly phonics approach to enhance students' phonics learning performance. AR was integrated into the application to make learning more engaging by enabling students to interact on the mobile, and bridging the virtual games and interactive media with phonics learning. Gutiérrez& Fernández (2014) indicate that AR experiences have become easy to use and especially mobile devices. Progress made in mobile devices such as smartphones with cameras and technologies that combine real world with virtual information provide the chance to enjoy the applications making AR accessible for consumer use through actual devices such as smartphones, game and computers with webcams. In their study, Saltan & Arslan(2017) clarify that as an emerging technology, AR is expected to achieve widespread adoption in teaching-learning processes. They provide a comprehensive overview of the current state of the art for the use of AR in formal education.

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Foreign language teaching activities should be designed to enhance students' interests, curiosity and include some diverse alternatives to use technological devices and other electronic appliances. The alternatives for educational purposes may multiply in results of innovations and individual's access to technologies in surrounding educational environment. Thus, the application of technological innovations and technological devices should bridge the gap between real world and virtual world. It generates in real time a composite view for the user. It is a combination of the real scene viewed by the user and a virtual scene generated by the computer (Freitas & Campos, 2008, GÜNDOĞMUS, ORHAN & SAHIN, 2016).

LIMSUKHAWAT , KAEWYOUN, WONGWATKIT & WONGTA(2016) conducted a study to investigate the effectiveness of AR supported mobile game application based on jolly phonics approach in enhancing English phonics learning performance of ESL learners. The participants were 36 students enrolled in grade one at a primary school in Thailand. The instruments of the study included pretest and posttest to evaluate students' phonics understanding and a questionnaire to investigate students' attitude towards the application. The results confirmed the effectiveness of AR supported mobile game application based on jolly phonics approach in improving students' English phonics learning performance and attitudes towards the application.

In their study, Bicen & Bal (2016) investigated the student opinions on AR. The participants were 97 volunteers from various departments taught by blended learning method .The instrument was a questionnaire survey to clarify student opinions on AR. The results clarified that students could easily discover more information when they use their smart phones. When they use AR in the classroom, they think that they improve their imagination. Also, they stated that they could understand the course contents easily and feel independent from classroom materials.

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GÜNDOĞMUS, ORHAN & SAHIN (2016) investigate the attitudes of learners towards AR Application which enables learners to improve their listening skills and promote the motivation towards listening activities by using smart phones and tablets. Their study focuses on AR assisted learning with listening activities in school textbooks. The subjects of the study were 60 students in a secondary school by using fifteen items of the (AR Applications Attitude Scale in Secondary Schools scale). The results revealed that the prototype of the AR educational system will enlarge students' motivation towards listening activities and listening competence and lead the way for a new teaching activity assisted with AR technology in foreign language teaching by shifting time and place of education and learning.

Li, Chen , Whittinghill & Vorvoreanu (2016) used a combination of convenience sampling and criterion sampling to select five Chinese college students to evaluate an English vocabulary learning application built upon AR technology. To assess student motivation, the ARCS motivational model was adopted. A semi-structured interview with open ended questions was used to collect data. The results confirmed the effectiveness of AR as a tool in increasing student motivation toward English vocabulary learning.

Solak & Cakir (2016) investigated the effectiveness of AR application in a language classroom at the elementary level in Turkey. The research design was quasi-experimental. The participants were 61 at 5th grade students from elementary school. They were divided into the experimental and control group, where new vocabulary items were introduced to the experimental group through AR technology. A post-test and a retention test were administered before and after the implementation of the program. The results revealed that participants from the experimental group achieved higher scores than participants in the control group and they also performed better in recalling the learnt information.

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Huisinga (2017) clarifies that technology is considered an effective way to aid struggling readers in higher education, particularly through new and emerging technologies. AR has been used successfully in the classroom to motivate and engage struggling learners. In her study, she explores how AR reading supports in higher education and its effect on motivation and confidence in comprehension for struggling readers. She employed an exploratory mixed methods design. The findings reveal that most students, including self-identified struggling and typical readers would use AR support for other text if provided. Results highlight the potential for using AR on text to provide reading support and the need for additional research on its implementation and impact.

Özcan, Özkan & Şahin (2017) determine students' academic success levels and their satisfactions through the use of AR applications in Ottoman Turkish reading which students have difficulties in learning. The participants were thirty students divided into two groups: an experimental group (N=30) and a control group (N= 30) at faculty of Education of Ağrı İbrahim Çeçen University. The instruments of the study included academic success test to assess students' academic success and semi structured interview. The results revealed that the use of AR in education and training environment has positive contributions to student success and satisfaction.

In their study, Safar, Al-Jafar & Al-Yousefi (2017) investigate the effectiveness of using AR applications (apps) as a teaching and learning tool when instructing kindergarten children in the English alphabet in the State of Kuwait. The participants were 42 preschoolers they were divided into an experimental group (N=21), taught using AR apps, and control group (N=21) taught by using traditional face-to-face methods. The results revealed that there was a statistically significant difference between the control group (traditional group) and the experimental group (AR group) in their degrees of interaction with the English alphabet lesson in favor of

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the experimental group; there was a statistically significant difference between the control group and the experimental group in their scores on the English alphabet test in favor of the experimental group and there was a very strong linear correlation between the children's interaction with the English alphabet lesson and their scores on the English alphabet test in the AR group.

In their study, Sirakaya & Cakmak (2018) investigate the impact of AR use on student achievement and self-efficacy in vocational education and training. The participants were 46 undergraduate students. The research design was quasi experimental with pre-test post-test that included a control group. The instruments of the study included Computer hardware course achievement test, motherboard assembly self-efficacy questionnaire and unstructured observation form. The results revealed that the use of AR had a positive impact on student achievement in motherboard assembly whereas it had no impact on students self-efficacy related to theoretical knowledge and assembly skills. On the other hand, use of AR helped learners to complete the assembly process in a shorter time with less support.

Also, SIRAKAYA & ÇAKMAK (2018) identified the attitudes of secondary school students toward AR applications and investigated the change in these attitudes according to different variables. They also determined the relationship between attitudes toward AR and achievement. They used the general survey model. The participants were 54 at 7th students. The results revealed that students have positive attitudes towards AR applications. Also, there is a meaningful relationship between AR attitudes and achievement.

It can be concluded that AR-based mobile learning material could be useful for EFL learners in writing descriptive essays since they are provided with detailed information as well as writing samples. Thus, Liu & Tsai (2013) attempted to further the understanding of whether AR-based mobile learning material assists EFL college students in the process of writing English compositions.

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They indicate that the AR-based mobile learning material provides linguistic and content knowledge in English composition for the participants. The AR-based mobile learning material assisted the participants with English vocabulary and expressions needed for descriptive writing. The participants read the descriptions (eg, vocabulary and sentences) that were provided in the AR-based mobile learning material and made use of the information in English writing. In addition to linguistic knowledge, the AR-based mobile learning material supported the participants in gaining content knowledge related to the composition subjects. The participants were able to refer to information provided in the mobile phones in their essays.

Mahadzir & Phung (2013) clarified the nature of promoting AR pop-up book to increase motivation in English language learning among Malaysian primary school students. They describe the use of AR as an emerging form of experience in which the real world is enhanced by computer-generated content. AR pop-up books for instance will help students bridge the gap between the digital and physical world. Students are able to use the AR pop-up book as the primary interface, changing perspective or direction by moving the book through their webcam where a marker detection which is a two-dimensional patterns to carry information that are attached to the book page. The results reveal that AR technology has the potential to motivate and support students in English language learning. Also, AR allows students to see the real world and have total immersion experience. In addition, the English language learning lessons embedded in the AR pop-up book are used where the theoretical framework is guided by Keller's ARCS model. The acronym ARCS is derived from four categories of motivational factors (Attention, Relevance, Confidence, and Satisfaction) that are based on an aggregation of motivational concepts and theories according to their shared and discriminative attributes

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In their study, Liu, Tan, & Chu (2017) construct a 2D barcode and handheld AR supported learning system called HELLO (Handheld English Language Learning Organization), to improve students' English level. The HELLO integrates the 2D barcodes, the Internet, AR, mobile computing and database technologies. The proposed system consists of two subsystems: an English learning management system and a mobile learning tools system. A four-week pilot study and questionnaire survey were conducted in college to evaluate effects of proposed learning system and student learning attitudes. The results indicate that 2D barcodes and AR technology are useful for English learning.

Hypotheses of the Study

Based on the related studies and research questions, the following hypotheses were formulated:

- 1. There is a statistically significant difference between the mean score of the study participants in overall EFL descriptive writing skills on the pre-and post- administration of the EFL descriptive writing skills test in favor of the post- administration.**
- 2. There is a statistically significant difference between the mean score of the study participants in EFL descriptive writing sub-skills on the pre-and post- administration of the EFL descriptive writing skills test in favor of the post- administration.**
- 3. There is a statistically significant difference between the mean score of the study participants in motivation towards English Language on the pre-and post- administration of motivation towards English Language scale in favor of the post-administration.**

Methodology

A. Participants

The participants of the research consisted of thirty-five students (N=35). They were chosen from third students enrolled in English

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section at Benha Faculty of Education, Egypt. The participants represented one group who taught through using mobile augmented reality (MAR) based E-learning applications program.

B. Design

The present research is a partially mixed research methodology. It combines both quantitative and qualitative methods of inquiry to help in bridging the gap between quantitative and qualitative research. To conduct the quantitative analysis the pre- post experimental group design was used. The study participants were tested before and after conducting the program. In addition a qualitative analysis of the students' performance is provided.

C. Instruments

In order to fulfill the purposes of the study, the following instruments were designed.

A.EFL Descriptive Writing Skills Test

The EFL descriptive writing skills test was prepared by the researcher to measure EFL descriptive writing skills among third year students enrolled in English section at Faculty of Education, Benha University, Egypt (*see appendix A*). It was used as a pre-posttest (applied before and after implementing the program). The test consisted of four questions (writing four essays) suitable for students' level and background knowledge (*see appendix B*). The students are required to write four descriptive essays. The time of the EFL descriptive writing skills test lasted two hours .It was counted through getting the mean between the fastest student and the lowest one in answering the test questions. The test was graded by the researcher through using a rubric prepared by her. The rubric consists of five parts; each part has three items ranging from "3" marks to "1" mark. The students were given "3" marks when their performance is high and "1" mark when their performance is low (*see appendix C*).

B. Motivation towards English Language Scale

The EFL motivation towards English language scale was prepared by the researcher to measure motivation towards English language among third year students enrolled in English section at Faculty of Education, Benha University, Egypt (*see appendix D*). The scale deals with two dimensions of motivation for language learning: intrinsic and extrinsic. The intrinsic dimension refers to doing something for its own sake, while the extrinsic one refers to doing something for the sake of achieving something else. It consists of (25) items and all answered on a four point Likert type scale ranging from 1 (strongly disagree) to 4 (strongly agree). It was applied before and after implementing the program).

C .Semi-Structured Interview

The interview was constructed to examine the importance of mobile augmented reality (MAR) based E-learning applications among third students enrolled in English section at Benha Faculty of Education, Egypt, and its effectiveness in developing EFL descriptive writing skills and motivation towards English language . The interview took the format of face to face semi-structured interview. The researcher interviewed students one time at the beginning of the study, a second time in the middle, and a third time at the end of the study, to gain greater insight on their EFL descriptive writing skills and motivation towards English language throughout ten weeks. The researcher generally asked the students about their participation in the program. She used open ended questions to avoid responding with yes-no (*See Appendix E*). Seven students participated in the interview and their responses were video recorded. The interview lasted for one hour. At the beginning of the interview, the researcher greeted the students and asked them to give brief self-introduction as a way to set the goal for the interview. Then, she told them the purpose of the interview and their own roles. If students did not understand any question, she could simplify it or

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change it .At the end of the interview, the researcher thanked the students for their participation.

Determining the Validity of the Research Instruments

The EFL descriptive writing skills test, motivation towards English language scale and the interview were submitted to a jury member (see appendix F), they were asked to determine the validity of the instruments in terms of clear instructions, items and its suitability for the students' level. They indicated that the test, the scale and the interview instructions were clear and suitable for students' levels and background knowledge. Therefore, the test, the scale and the interview were considered valid measures of EFL descriptive writing skills and motivation towards English language (Face Validity).To ensure the content validity of the test, scale and interview; they were developed in the light of a systematic and accurate review of literature and previous studies. This accurate and systematic review determined the general form of the test, the scale and the interview questions and methods of correction. Therefore, the content of the test, the scale and the interview was representative of the skills that were intended to be measured. Thus, the test, the scale and the interview were valid and having a content validity.

Determining the Reliability of the Research Instruments

The reliability of the instruments was measured by using the test-retest method. The instruments were administered to a group of third students enrolled in English section at Benha Faculty of Education, Egypt. Then, they were administered to the same group again after two weeks. The Pearson correlation between the two administrations was (0.88) at the 0.01 level. Therefore, the instruments were reliable.

Mobile Augmented Reality (MAR) Applications Program

For achieving the purpose of the research, the researcher designed a program based on Mobile Augmented Reality (MAR)

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Applications. After assessing third students' enrolled in English section at Benha Faculty of Education, Egypt descriptive writing skills and motivation towards English language , the study participants were required to attend Mobile Augmented Reality (MAR) Applications program(See appendix F).

Objectives of Mobile Augmented Reality (MAR) Applications Program

The program aimed at developing EFL descriptive writing skills and motivation towards English language among third students enrolled in English section at Benha Faculty of Education, Egypt.

Content of Mobile Augmented Reality (MAR) Applications Program

The topics chosen for the program were selected from books and studies enriched with topics that motivate students. The program contained variety of topics, situations and discussions designed for developing descriptive writing skills and motivation towards English language.They were suitable for the third students enrolled in English section at Benha Faculty of Education, Egypt such as; Knapp & Watkins (2005); Liu & Tsai (2013); Mahadzir & Phung (2013); Solak& Cakır (2015-2016); Zheng (2015); GÜNDOĞMUS, ORHAN & SAHIN, (2016) and Li, Chen, Cheng & Tsai (2016).

Mobile Augmented Reality (MAR) Applications Framework

The treatment began on Saturday 13th October 2018 and continued through Saturday 15th December 2018. The researcher met the students for three hours per week for ten weeks and also communicated with them via what's' app messages, e-mails or Facebook group. Week (1) was used for pre-testing and week (10) was used for post testing. Each session was devoted to the following: introduction, objectives, procedures, the role of the researcher and students and finally the performance. During the instructional

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procedures, different sessions had different learning goals and different methods were applied.

The program was taught to the study participants by the researcher herself. It lasted ten weeks with sixteen instructional sessions and each session lasted for 90 minutes. At the beginning of the program, the researcher introduced to the students what they are going to do. First, she told them about the objectives of the program and what they are supposed to gain as a result of their participation in the program (Goal Setting). After that she told them about the importance of descriptive writing skills and motivation towards foreign language. Then, she began to introduce the concept of Mobile Augmented Reality "MAR" based E-Learning Applications program and its importance for language learning and EFL descriptive writing skills and motivation towards foreign language.

Following the introduction of the program, the rest of the program were instructional sessions through which the EFL descriptive writing skills and motivation towards foreign language were introduced .At the beginning of each session the researcher told students the objectives of the session, the researcher's role, the student's role, the instructional materials that will be used, the activities they will perform and ways of evaluating their progress .At the end of the each session, the researcher gave students some activities related to what they had learned in order to be sure that they mastered the skills in each session (formative evaluation). At the end of the program, the researcher assessed the students' achievement after implementing the program using descriptive writing skills test and motivation towards English language scale (summative evaluation).

The procedures of the Program

The researcher adapted the procedures used by Liu & Tsai (2013)¹. In their study, they investigated the use of AR materials to develop writing skills in EFL classes. They used global positioning and AR techniques.

- The global positioning technique determined the current learner location. The AR technique enhanced the information representation. The AR technique combined the real scene viewed by the learner and a virtual scene generated by mobile devices to form semi-realistic information services.
- Through these services, learners can discover important information that they would otherwise not receive, and these learners are thus provided with schemata needed for composition.
- The researcher used HP Reveal app in her study. (HP reveal, formerly known as Aurasma, is a free app for iOS and Android devices. It uses advance image recognition to blend the real-world with rich interactive content, such as videos and animation²)
- She downloads the HP Reveal app and asked her students to download it from the App Store or Google Play .
- She creates an HP Reveal account and asked students to create accounts.
- She logs in and asked students to log in their account.
- She starts creating Auras (the experience that can be created within HP reveal) in Reveal Studio and delivers Auras to her students.

¹ Liu , P.E. & Tsai, M.K.(2013). Using augmented-reality-based mobile learning material in EFL English composition: An exploratory case study. *British Journal of Educational Technology*, 44(1), 1-4.

² <https://prezi.com/p6a9kwz9hfcc/hp-reveal-augmented-reality-for-the-classroom/>

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- In order to apply the HP Reveal, the researcher creates cards. When she gives the cards to contacts who also have installed HP Reveal (iPhone or android), pointing at cards will play a video.
- The researcher divided students into five groups (each group consists of seven students) in order to cooperate, communicate and learn with each other.
- The researcher used the AR-based mobile learning material that assisted the participants with English vocabulary and expressions needed for descriptive writing. The learning material installed in mobile phones enables participants to access information about scenic spots nearby so that they can learn about buildings/places/views of interest in English.
- For example, if students use the mobile phone to point in a specific direction, their location is rapidly identified, and the embedded camera automatically captures the peripheral images. Thus, the AR-based mobile learning material generates related information (eg, names and descriptions of the buildings). The captured images and generated information are shown in the screen of the mobile phone. If the students want to know more about a certain building or scenic spot, the students can click a piece of specific information on the screen, and the details will be displayed. The AR-based mobile learning material enhances information expression, provides visual descriptions and increases information accessibility.
- The students were asked to introduce their college. First, they performed a short trip on college using the AR-based mobile learning material.
- After the trip, the participants were asked to describe the observed scenery in their essays.
- The researcher created group on Facebook, what's app and Telegram in order to help students post their essays to their

colleagues. Thus, they can interact and communicate with each other.

- The participants read the descriptions that were provided in the AR-based mobile learning material and made use of the information in their compositions.

Findings of the Study

A . Quantitative Analysis of the Findings

The findings of the present research are presented in the light of the hypotheses of the research using the Statistical Package for Social Sciences (SPSS). The findings are stated as follows:

Findings of Hypothesis (1)

The first hypothesis states; there is a statistically significant difference between the mean score of the study participants in EFL descriptive writing skills on the pre-and post- administration of the EFL overall descriptive writing skills test in favor of the post-administration .Table (1) presents the students' mean scores, standard deviations, t -value and level of significance of the pre and post assessment of the study participants in EFL descriptive writing skills.

Table (1):"t" test between the mean scores of the study participants in the post assessment of the Overall EFL Descriptive Writing Skills

Skill	Assessmen t	N	Mean	S.D	T- Value	D. F	Sig.
EFL Descriptiv e writing Skills	Pre	35	29.228 6	7.69295	7.79 9	34	0.0 1
	Post	35	53.714 3	16.4094 2			

Table (1) showed that the study participants outperformed in the post administration of the overall descriptive writing skills, where "t-value" is (7.799) which is significant at the (0.01) level .Thus, the first hypothesis was supported.

Findings of Hypothesis (2)

The second hypothesis states ; there is a statistically significant difference between the mean score of the study participants in EFL descriptive writing sub-skills on the pre-and post- administration of the descriptive EFL writing skills test in favor of the post-administration ". Table (2) presents the students' mean scores, standard deviations, t -value and level of significance of the pre and post assessment of the study sample in EFL descriptive EFL writing sub-skills.

The second hypothesis has the following sub-hypotheses

- There is a statistically significant difference between the mean score of the study participants in EFL Grammatical Features of Describing skills on the pre-and post- administration of the EFL descriptive writing skills test in favor of the post- administration.
- There is a statistically significant difference between the mean score of the study participants in EFL Structural of Formal Description skills on the pre-and post- administration of the EFL descriptive writing skills test in favor of the post- administration.
- There is a statistically significant difference between the mean score of the study participants in EFL word choice skills on the pre-and post- administration of the EFL descriptive writing skills test in favor of the post- administration.
- There is a statistically significant difference between the mean score of the study participants in EFL mechanics skills on the pre-and post- administration of the EFL descriptive writing skills test in favor of the post- administration.
- There is a statistically significant difference between the mean score of the study participants in EFL organization skills on the pre-and post- administration of the EFL descriptive writing skills test in favor of the post- administration.

Table (2): "t" test between the mean scores of the study sample in the post assessment of the EFL descriptive writing Sub-Skills

Skills	Assessment	N	Mean	S.D	T-Value	D.F	Sig.
Grammatical Features of Describing skills	Pre	35	6.6000	6.79619	2.704	34	0.01
	Post	35	9.7714	1.30802			
Structural of Formal Description skills	Pre	35	5.6857	1.13167	2.573	34	
	Post	35	12.9714	16.92629			
Word Choice Skills	Pre	35	6.3143	0.71831	17.791	34	
	Post	35	10.8857	1.30094			
Mechanics Skills	Pre	35	5.3143	1.05081	20.990	34	
	Post	35	10.1429	1.35349			
Organization Skills	Pre	35	5.3143	1.23125	26.548	34	
	Post	35	9.9429	1.21129			

Thus, table (2) indicated that the study participants were much better in the post administration than the pre administration in EFL descriptive writing sub-skills where "t" value is (2.704) for EFL grammatical features of describing skills, (2.573) for structural of formal description skills, (17.791) for word choice skills, (20.990) for mechanics skills and (26.548) for organization skills which is significant at the (0.01) level. Therefore, the second hypothesis was confirmed.

Findings of Hypothesis (3)

The third hypothesis states that; there is a statistically significant difference between the mean score of the study participants in motivation towards English Language on the pre-and post-administration of the motivation towards English language scale in favor of the post-administration. Table (3) presents the students' mean scores, standard deviations, t-value and level of significance of the pre and post assessment of the study participants in motivation towards English language.

Table (3): "t" test between the mean scores of the study sample in the post application of the Foreign language motivation

Item	Assessment	N	Mean	S.D	T-Value	D.F	Sig.
motivation towards English language	Pre	35	58.8571	23.51738	11.945	34	0.01
	Post	35	114.5714	10.35910			

Table (3) indicated that the mean scores of the study participants on the pre administration are lower than that of the post administration, where "t-value" is (11.945) which is significant at the (0.01) level .Thus, the third hypothesis was supported. Before implementing the program most of the students were not motivated enough and avoided writing. They did not have enough vocabulary, grammar and organization. After the implementation, they became motivated, confident and enjoyed writing. Therefore, the third hypothesis was confirmed.

B . Qualitative Analysis of the Findings

At the beginning of the program, the students were afraid of writing in general and descriptive writing particularly. They have problems in presenting their ideas and their writing was full of grammar mistakes, and the ideas were disorganized. After participating in Mobile Augmented Reality (MAR) Based E-Learning Applications, students gained more confidence and began to write in a better way. They used suitable vocabulary and expressions while presenting their ideas. In the interview data, seven students had similar positive reaction towards using Mobile Augmented Reality (MAR) Based E-Learning Applications, They clarified that in Mobile Augmented Reality (MAR) Based E-Learning Applications, everyone is contributing to move forward in a clear direction. Everyone works to achieve common, shared goals. They also worked together, collaborating and co-operating to make progress.

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It can be noted that, writing is the most difficult skill for most students. Students often have difficulty in positing their ideas into the target language because they are not accustomed to express ideas based on their sensual experiences (sight, hearing, smell, taste, and touching) in writing. Students are afraid of being corrected by their teacher and this always leads to students to avoid writing .They became unmotivated to write and their self- confidence decreased.

Through implementing mobile augmented reality (MAR) program provided students teachers with English vocabulary and expressions needed for descriptive writing. They read the descriptions (eg, vocabulary and sentences) that were provided in MAR and made use of the information in English writing. Therefore, when the participants wrote their essays, they used the vocabulary and information provided by MAR. Also, some students thought this learning material provided something new and fun for them, these results are consistent with Liu & Tsai (2013).

To understand how students perceived the importance of Mobile Augmented Reality (MAR) Based E-Learning Applications in developing EFL descriptive writing skills and motivation towards foreign language, some interview questions were asked. Examples from the researcher's transcripts provided insight into the students' perception about the activities in Mobile Augmented Reality (MAR) Based E-Learning Applications. Students clarified that their descriptive writing skills were improved because of the various activities that increased their desire to write. Therefore, it can be suggested that the steps of the Mobile Augmented Reality (MAR) Based E-Learning Applications included activities and tasks that are effective in improving EFL descriptive writing skills and motivation towards English language. The students' views in this regard are as follows:

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Student (1): *using augmented reality through mobile phones helped me a lot in writing my essays and feeling more confident.*

Student (2): *mobile augmented reality material provided important information about the things that I wanted to write about.*

Student (3): *we engaged in learning scenarios through using MAR.*

Student (4): *I installed HP Reveal in my phone and enjoyed writing through it. It helped me to understand the task and learn by doing. Really it is a fabulous App.*

Student (5): *MAR increased our comprehension of the course and enhanced the four language skills not only descriptive writing skills. Also, HP Reveal helped me a lot to understand the task and write more and more.*

Student (6): *I am very happy to participate in this program as it provided me with fabulous information and affected my personality.*

Student (7): *MAR helped us to communicate and interact with our professor. Really it was a good chance for us.*

Discussion of the Results

The primary purpose of this study was to develop EFL descriptive writing skills and motivation towards foreign language among third year students enrolled in English section at Faculty of Education , Benha University Egypt through using Mobile Augmented Reality (MAR) Applications program. The program included variety of tasks and activities for helping students to enhance their EFL descriptive writing skills and motivation towards foreign language. The results of the study revealed that the program proved to be statistically and educationally significant in developing EFL descriptive writing skills and motivation towards English language among third year students enrolled in English section at Faculty of Education, Benha University Egypt.

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It can be clarified that using MAR in language teaching in general and descriptive writing skills and motivation towards English language in particular helped to increase students teachers' descriptive writing skills and motivation . In addition, MAR highlighted the role of various motivation levels in enhancing descriptive writing skills. The use of MAR technology particularly in language classroom will provide non-threatening and motivating learning environment which is one of the essentials of language learning. It offers various means such as sound, animation, pictures when presenting the information. This it will make learning more interactive, effective, interesting and fun. Therefore, these results are consistent with Solak & Cakır (2015).

In addition, MAR increases motivation (intrinsic and extrinsic) and engagement among students through presenting activities and tasks that help students to participate and interact with each other. Also, through MAR students can learn by experience and become more confident and autonomous. These results are consistent with Huisinga (2017).

During the study, the students asked to download and install HP Reveal App to assist them in writing their descriptive essays. It engaged students in learning by doing and encouraged them to collaborate with each other. Students become more attentive and happy with such experience (*using HP Reveal during writing*). They become more confident enough and began to apply the App more and more.

In addition, MAR helps EFL students' teachers at faculty of Education in the process of writing. It provides linguistic and content knowledge that help them to write freely and effectively. It also provides students with vocabulary and expressions needed for descriptive writing. Through participating in the MAR based E-Learning Applications program, students' descriptive writing skills are developed. Students become competent in applying the

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grammatical features of describing. For example, they used the *present tense* when describing things from a technical or factual point of view. They also used the relational verbs when classifying and describing appearance, qualities and parts or functions of phenomena and action verbs are used when describing behaviors or uses. They used adjectives to add extra information to nouns and may be technical, every day or literary, depending on the text. They also used adverbs to add extra information to verbs to provide more detailed description. They linked the sentences and paragraphs thematically to the topic of description.

Also, through participating in the program, structural of formal description is enhanced. Students' skill in classifying the topic into some sort of cultural taxonomy or framework, whether scientific/technical or commonsense/every day is increased. They introduced the topic in a good way and gave some general identifying information that clarified what aspects of the thing, person or place will be described. Students apply correct punctuation marks and capitalization rules. They apply paragraph indentation, leaving spaces between words, syllable division and use correct word spelling. In addition, they convey the meaning correctly and clearly, use precise, correct word forms and use correct and appropriate idioms and expressions. They also write suitable introduction and conclusion to the descriptive essays; develop a body that contains one central idea and enough supporting details; use transition words and phrases, lexical connectors and adequate coherence marks; set the beginning, middle and end of the descriptive essay definitely; use logical transitions for ensuring smooth of ideas and logical sequence of sentences or ideas and combine paragraphs of the to create an effective descriptive essay.

In addition, participating in MAR based E-Learning applications program had an effect on increasing students' motivation towards foreign language .The students' interest towards English language learning increased, so they become more motivated and learn the

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language more effectively with a proactive attitude. They also become more confident enough to learn language. They also become aware that English is very important for them in the future. Therefore, these results are consistent with Hong & Ganapathy (2017).

Conclusions

The results of the study revealed that the participants' EFL descriptive writing skills developed after the implementation of Mobile Augmented Reality (MAR) Applications. In addition, their motivation towards English language increased, they became much more motivated and encouraged to express their own confidently without fearing. The effectiveness of Mobile Augmented Reality (MAR) Based E-Learning Applications may be due to the various activities, tasks and strategies the researcher presented to the students. Through the implementation of Mobile Augmented Reality (MAR) Applications, major findings of the study were considered as the students' chances for learning by doing and experiences, their belief for better learning and development of learning skills with fun and enjoyment. Moreover, their emphasis on certain personal developments such as thinking, self-confidence, communication skills and team spirit and their consideration of instructor as a guide for learning .In spite of some limitations expressed by Safar , Al-Jafar& Al-Yousefi (2017) who clarify that the obstacles of AR technology can be classified into four groups: physical obstacles that are related to ICT tools, apps, and services, as well as the use and speed of the Internet; human obstacles that related to the specialized roles of teacher and student; appearance; and social obstacles that related to AR's acceptance by the community, teachers, students, and parents .When considering the advantages and positive outcomes of the program, it is clear that the program proved developing descriptive writing skills and motivation towards English Language among students' teachers. Thus, Mobile Augmented Reality (MAR) Based

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E-Learning Applications was more successful than the traditional teaching.

Therefore, the current developments in technology had a positive impact on the interaction of media content and the quality of learning. Thus, there has been an increase in using e-learning tools. The richness of the digital learning resources and communication tools in e-learning promotes engagement in the learning process. In recent years, mobile phones have developed into a platform for AR. Mobile devices have become a part of daily lives and their applications in education have been discovered by researchers. Mobile applications which can be used in education and mobile Augmented Reality (MAR) applications are all examples of these discoveries .Thus, MAR applications for education implement learning support and linking of the real world context of a user and the digital overlay according to different patterns (Henrysson, Ollila& Billinghurst, 2007,Ozdamli & Hursen, 2017 ,Ternier , et.al. 2012).

In conclusion, the evolution of cellular networks and related technologies has recently been very fast. The transfer rates and low latencies for packet data required by many AR applications are feasible using the upcoming generation cellular networks. Together with evolving transfer speeds, miniaturized displays and accurate positioning enable the building of a commercial mobile terminal with sufficient capabilities for MAR in education .MAR makes it possible to create new kind of services and applications. Some example applications of MAR include personal navigation, guidance systems, tele-operation, security, entertainment, e-commerce and personal services (JOAN, 2015).

Recommendations of the Study

In the light of previous results, the following recommendations could be presented:

- Teachers of English language should be trained on using Mobile Augmented Reality (MAR) Applications, while teaching English to their students in different educational stages.
- English language teacher should emphasize the development of the students' descriptive writing skills in the early educational stages to develop them in the following stages.
- Curriculum designers should make use of Mobile Augmented Reality (MAR) Applications when designing English language courses and overcoming any teaching or learning problems.

Suggestions for Further Research

Based on the findings of the present research, the following implications for further research are suggested:-

- Investigating the effectiveness of Mobile Augmented Reality (MAR) Applications in English language learning among students teachers at University level.
- Clarifying the influence of Mobile Augmented Reality (MAR) Applications on other language skills such as listening, speaking and reading.
- Investigating the effectiveness of Mobile Augmented Reality (MAR) Applications in enhancing students' communicative competence.
- Clarifying the effect of using other strategies on developing students' EFL descriptive writing skills and motivation towards foreign language.

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