Artificial Intelligence Versus Augmented Reality in Instruction

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Abstract: The English language is a tool for communicating ideas and information all over the world. Communication is the main function of language and essential for language learning especially in the age of information and communication technologies (ICTs). Today, individuals live in a generation of continual digital revolution. They use 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 the integration between Artificial Intelligence (AI) and Augmented Reality (AR) that can effectively respond to students' motivational and technological needs.

Introduction

The current era is characterized by rapid changes surrounded by many challenges. In order to cope with these rapid developments, it is important to pay attention to the development of creative minds capable of solving existing problems. Searching for new approaches provides teachers with deeper reflection of students' knowledge and improves the educational process through various approaches (Simonova, 2013, Malkawi & Smadi, 2018).

With the enhancement of the fifth generation of computers, artificial intelligence (AI) has been enhanced, especially with the wide spread of AI applications. AI is defined as the simulation of human intelligence

processed by machines, especially computer systems. These procedures incorporate learning, thinking and self-revision. Therefore, it can be defined as computers' ability to carry out higher cognitive tasks distinctive to human intelligence such as perception, generalizing, gaining experience, decision making, problem – solving and acting (Elghotmy & Ghoneim, 2021, Al-Safadi, Abu Shgair & Al Qatawnih, 2023).

AI is the imitation of human intelligence processes such as speech and visual recognition, translation of languages and virtual decision-making by machines and robots. The ability of machines to think and behave like human beings has given AI a special place in all fields. AI is present everywhere in various aspects of life. It provides a good learning environment for interactive English learning. Through the connection and logical analysis of information such as graphics, sound and text in intelligent system, English learning becomes more stereoscopic and visual. Students communicate with AI through man-machine interface, which not only increases the authenticity of the language environment, but also corrects the errors in the dialogue in time, so that students can learn English in a relaxed and pleasant atmosphere (Qoura & Elmansi, 2023).

AI is the use of technology, whether software or hardware, to execute tasks and assignments that are smart assimilating human intelligence. Its tools include hardware such as smart boards which are useful in spite of its costs. Software also includes many applications that are not easy to use and cheap. Moreover, AI- powered tools can be used in language learning and assessment as they have positive impacts for learners. These tools include Reader pro, Andy, Elsa speak, AI grammar, Google Documents, A-chat Bot, Google Lens, G-translate, Google Assistant. These tools can be used in word recognition, sentence and paragraph translation, grammar checking, style correction, plagiarism checking and text source findings. Therefore, it is more effective to integrate these tools in English language (Haggag, 2021).

Al-Safadi, Abu Shgair & Al Qatawnih (2023) clarified that AI has some benefits for teachers. Teachers can grade their students depending on the AI system to spend more time with students. It also saves teachers time by allowing them to simply gather and maintain student data. That is to say, AI will transform the instructor into a facilitator. More clearly, teachers will enhance AI teachings, aid-challenging students, and give students human

engagement and hands-on experiences. Moreover, it helps in personalizing education. The students can choose their learning locations that teach them, as well as the style of gaining basic skills. This is because, regardless of the users' time or location, the assistance systems will be available when needed. Teachers and students will benefit from the use of AI in classrooms and other educational institutions.

AI-powered language learning applications are considered machine learning instruments that have positive impacts on foreign language learning. These applications support foreign and second language learning and accuracy. It can be noted that using AI for instruction or developing teaching and learning English language requires class- based plans and design for the learning adaptation. AI systems may be used to track student growth and inform teachers when a problem with their performance arises. This helps students to obtain the help they need, and instructors to identify areas where they can enhance education for students who are having difficulty with the topic. Furthermore, with the help of artificial intelligence, students with learning disabilities or sluggish learners may be detected early on and tailored treatments created for them. To sum up, there will be no need for the instructor to go over a topic or a section of it again and spend extra time with pupils to ensure that they comprehend it. Students, on the other hand, may do so without wasting time using AI (Haggag, 2021).

Therefore, AI in education may be used in areas such as group and individual teaching, personalized teaching systems, interview systems, librarianship, data optimization and management, student affairs, learning through games, artificial intelligence supported individual teaching, exams and spelling analysis, and so on. AI is a very versatile topic that may be expanded; thus, these areas are always expanding. As a result, of these artificial intelligence's educational potentials, several governments have invested in artificial intelligence development and increased the number of research in recent years (Al-Safadi, Abu Shgair & Al Qatawnih, 2023).

There is no doubt that (AR) technology is considered the educational technology of the future. 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. 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.

The continuing development of technology makes changes in teaching and learning practices. In other words, 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. As a result, learners' profile may change, too. Modern classrooms are enhanced through the addition of new technologies such as multi-touch technologies. Consequently, by using AR technology in teaching and learning, learners are actively involved in an experience. They will obtain and remember most of the information that is presented to them. That is to say, they will be prepared for the educational technology of the future. AR is a tool that supports learning through various channels by means 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 (Kamnoetsin, 2014; Whithaus, 2005; Bensetti- Benbader, 2017).

The use of AR applications through tablets and mobile phones may permit a rapid evolution of AR technology. AR has the potential to move learning out of the classrooms and into the spaces where students live. These applications allow students to interact with the real world through virtual information. By combining technology familiar to students with locations where students see as their own, 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 (Muñoz, 2017).

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, Maclntyre, & Juler,2007, Vate-U-Lan, 2012).

AR is the combination of real and virtual imagery. It is a medium in which digital information covers the

physical world. It is a field with great potential in education; providing a very stimulating environment that not only helps to visualize 3D objects, but also enhances motivation among students. 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. It is commonly used as an entertainment, education, and research tool (Gancedo, 2012, Huisinga, 2017, Chandrasekera, & Yoon, 2018).

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 virtual images using real objects 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 applications are used to develop cognitive and affective skills. Using these applications can support learning through various channels of sound, picture, writing, video, and animation. These tools reduce the problems originating from individual differences and help to create an effective learning atmosphere by providing richer context, particularly for oral courses based on interaction. Additionally, it can be effective when used in parallel with traditional methods. It can be noted that AR application positively affects students' academic achievement, course materials with AR technology can be used in appropriate courses and units. To sum up, the use of AR applications has a significant positive effect on student motivation. Therefore, course materials enriched with AR technology should be designed to increase the motivation of students in different courses (JOAN, 2015;

Solak & Cakır, 2015; Özeren & Top, 2023).

Integration between Artificial Intelligence and Augmented Reality

Technological advances represent the main characteristic of society in the twenty-first century. One of these new technologies is AI, which is capable of making predictions and automated decisions based on the processing of large amounts of data. In addition, AR can create a new digital space that opens the way for three-dimensional interactions between the real and the virtual. Both AI and AR currently have global influence that leads to the emergence of a new educational paradigm that takes into account the demands of a global, interconnected and multicultural society. This situation implies the need for teachers to participate in continuous training in new technologies and adapt to a new model of communication with students. Current teaching approaches need to be transformed to take advantage of these new digital tools and new approaches to planning, organization and assessment need to be created to compensate for the possible limitations of these systems. AI has proven to be useful in all fields of knowledge (Rusillo-Magdaleno, Ruiz-Ariza, Suárez-Manzano and Martínez-Redecillas, 2023).

The integration of AI and AR in education as a means to address the new educational needs and to provide high quality education is gaining ground. AR provides engaging, interactive and motivating mixed reality environments, while AI offers personalized experiences. The combination of AR with AI can lead to the development of advanced Intelligent Tutoring Systems (ITS) which generate the conditions required for such environments to be created. Additionally, these ITS will be characterized by both interactivity and immersion due to the interactive AR objects and by personalization and ubiquity owing to their ability to provide one-to-one customized learning opportunities at any given time and place while taking learners' unique traits and abilities into account (Lampropoulos, 2023).

AR is closer to the real environment according to the reality-virtuality continuum and enables users to interact with virtual objects that co-exist with real-world objects. As it allows users to constantly see the real environment, it is differentiated from Virtual Reality (VR) which perceptually surrounds and immerses users in

a completely virtual environment.AR aims at enriching users' physical environment with virtual objects. Particularly, AR involves the use of computer units to create digital objects and information and embed them in the appropriate time and space so that users can perceive them through their senses and interact with them in real time. AR can be effectively used to enrich both learning and teaching activities at all educational levels. Due to its immersive and interactive nature, AR can create learning experiences that lead to increased learners' academic achievements, learning motivation, active involvement and knowledge gain. Additionally, it provides the required conditions in which inclusive education can flourish. When combined with artificial intelligence and learning analytics, AR has the potential to provide personalized, ubiquitous and adaptive learning experiences (Lampropoulos, 2023, Sulema, Pester, Laforge and Andres, 2023).

AI is associated with the capabilities of a system to interpret and learn from external data sources to achieve particular aims in a flexible and adaptable manner. AI refers to a system ability to mimic human actions and simulate human intelligence to gain enhanced perception, learning and reasoning capabilities, autonomy, rationality and adaptability. It can be categorized into artificial narrow intelligence, artificial general intelligence and artificial super-intelligence when taking into account the evolutionary stages of AI and classified into humanized, human-inspired and analytical AI when considering its intelligence types (Lampropoulos, 2023).

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