

The role of using AI techniques in enhancing e-learning in the military education process

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Abstract

The education sector has played a pivotal role in achieving the progressive development goals of the UAE and has turned into a pivotal focus for reform and strengthening. Although educational attainment levels have achieved a large margin since the country's inception, there are still great difficulties in the education sector in the UAE. The primary concerns facing management in the educational sector include preparing students and educators to collaborate in a global context in light of the financial implications of a smaller and larger scale. In light of modern technological and technological developments, the UAE focused on integrating modern technological technologies with the educational process in order to improve the educational process outcomes. Artificial intelligence is considered one of the most prominent modern technologies that have witnessed great interest from the present time, especially in the field of education.

The field of military education is one of the most prominent fields of education, which suffers from many challenges and risks, which can be overcome by using artificial intelligence techniques. In light of this, the current research presents a literary review of the concept of e-learning and Intelligent Tutoring Systems, the importance of artificial intelligence techniques in education, in addition to discussing the interest of the UAE. The results of the research confirmed the widespread use of modern learning technologies in the UAE, as there has recently been great reliance on e-learning in the educational sector and its support with artificial

intelligence, which is efficient in compensating for any shortage of teaching and educational staff using classrooms. Virtualization, especially for people who face difficulties such as geographical distance or their commitment to work that cannot dedicate themselves to traditional learning as is the case for officers in military colleges. The results of the research also indicated that there is great interest from the UAE government in adopting fourth-generation technologies such as artificial intelligence and e-learning in its civil and military institutions by allocating large strategies and budgets for their implementation. The UAE allocates part of its budget to the technology and digitization sector. Likewise, its military universities and colleges allocate part of their budget to support e-learning and introduce assistive mechanisms to apply artificial intelligence.

Keywords: military, Artificial Intelligence, E-Learning, education, technologies.

ملخص البحث :

لعب قطاع التعليم دورًا محوريًا في تحقيق أهداف التنمية التقدمية لدولة الإمارات العربية المتحدة ، وتحول إلى محور محوري للإصلاح والتعزيز. على الرغم من أن مستويات التحصيل العلمي قد حققت هامشًا كبيرًا منذ إنشاء الدولة ، إلا أنه لا تزال هناك صعوبات كبيرة في قطاع التعليم في الإمارات العربية المتحدة. تشمل الاهتمامات الأساسية التي تواجه الإدارة في القطاع التعليمي إعداد الطلاب والمعلمين للتعاون في سياق عالمي في ضوء الآثار المالية على نطاق أصغر وأكبر. في ظل التطورات التكنولوجية والتكنولوجية الحديثة ، ركزت دولة الإمارات على دمج التقنيات التكنولوجية الحديثة مع العملية التعليمية من أجل تحسين مخرجات العملية التعليمية. يعتبر الذكاء الاصطناعي من أبرز التقنيات الحديثة التي حظيت باهتمام كبير من الوقت الحاضر ، خاصة في مجال التعليم.

يعد مجال التعليم العسكري من أبرز مجالات التعليم ، والذي يعاني من العديد من التحديات والمخاطر ، والتي يمكن التغلب عليها باستخدام تقنيات الذكاء الاصطناعي. في ضوء ذلك ، يقدم البحث الحالي مراجعة أدبية لمفهوم التعلم الإلكتروني وأنظمة التدريس الذكية ، وأهمية تقنيات الذكاء الاصطناعي في التعليم ، بالإضافة إلى مناقشة مصلحة الإمارات. وأكدت نتائج البحث الانتشار الواسع لتقنيات التعلم الحديثة في دولة الإمارات ، حيث كان هناك اعتماد كبير في الأونة الأخيرة على التعلم الإلكتروني في القطاع التعليمي ودعمه بالذكاء الاصطناعي ، وهو أمر فعال في تعويض أي نقص في التدريس والتعليم. الكادر التعليمي باستخدام الفصول الدراسية. الافتراضية ، خاصة للأشخاص الذين يواجهون صعوبات مثل المسافة الجغرافية أو التزامهم بالعمل الذي لا يستطيع تكريس أنفسهم للتعلم التقليدي كما هو الحال بالنسبة للضباط في الكليات العسكرية. كما أشارت نتائج البحث إلى وجود اهتمام كبير من حكومة الإمارات بتبني تقنيات الجيل الرابع مثل الذكاء الاصطناعي والتعليم الإلكتروني في مؤسساتها المدنية والعسكرية من خلال تخصيص استراتيجيات وميزانيات كبيرة لتنفيذها. تخصص دولة الإمارات جزءًا من ميزانيتها لقطاع التكنولوجيا والرقمنة. وبالمثل ، تخصص جامعاتها وكلياتها العسكرية جزءًا من ميزانيتها لدعم التعلم الإلكتروني وإدخال آليات مساعدة لتطبيق الذكاء الاصطناعي.

الكلمات المفتاحية: عسكري ، ذكاء اصطناعي ، تعلم إلكتروني ، تعليم ، تقنيات.

Introduction

In today's context, humans are immersed in a society increasingly moving towards an inclusive technology process. Technology has led to a change in many of the world's population habits. People have modified how they interact, read, communicate, write, and become informed using new technologies. In this scenario, the need for education to adapt to the Fourth Industrial Revolution's current era and social customs arises. Therefore, the application of Information and Communication Technology (ICT), as well as Artificial Intelligence (AI) technology in the classrooms, has become a must-have reality (Hinojo-Lucena et al., 2019).

Today's revolution is based on new knowledge and innovation. It includes the era of AI, which provides information on how to improve and fill some of the gaps in learning and teaching and allow colleges and teachers to practice the educational process better than ever before. (Almohammadi et al., 2017).

The education zone (which is subject to changes in society because both are advancing simultaneously) is also passing through this inevitable adaptation to new technological interaction communities. This process is geared towards recent trends and features regarding new proposals in the educational sector. Therefore, by relying on AI techniques, students can access many learning tools to create new methods and means to implement the collected knowledge or create new ones (Ocaña-Fernández, Valenzuela-Fernández & Garro-Aburto, 2019).

The flexibility and ease provided by AI and e-learning are among the most prominent drivers that will make countries adopt them in their educational systems. For example, reports of global importance, such as the Horizon Report (a reference in educational technology), predict that will implement AI in higher education within a period of four to five years (Becker et al., 2017). Regarding the study of Leon Rodriguez and Vigna Brito (2017), they mentioned that AI contributes to changing education by automating teaching tasks. Programs specialize in personalized education, discover topics that need reinforcement in the classroom, guide and support students outside of the classroom, and intelligently use data to teach and assist students. For the personal education process, AI applications can be considered in a certain way, a viable solution because it includes assistance to students that provides a new and attractive perspective related to dynamic learning and virtual interaction, which in turn facilitates the learning process. The support mechanism will also be available for the student when necessary (Miall & Lannquist, 2018).

Likewise, AI has vast potential in the military sector beyond weapons systems, as it is often referred to as a tool for “boring, dirty, and dangerous” jobs. It also provides AI applications to avoid endangering human lives or assigning humans tasks that do not require the human mind’s creativity. AI systems can also reduce military logistics and sensing costs, enhance connectivity and transparency in complex systems, and advance the peacekeeping agenda by communicating military actors’ capabilities and motivations more effectively (Özdemir, 2019; Kania, 2019). This indicates the importance of including education in military colleges with this type of AI education, which the UAE seeks through launching the National Innovation and AI Strategy.

Problem

Regarding previous studies including (Fletcher, 2009; Seow et al., 2005), it can be noticed that there is a shortage of research that has investigated the effectiveness of e-learning and the use of AI in military education in various countries of the world. Within the limits of the researcher’s knowledge, there is no study investigating the acceptability of using e-learning and AI in military education. However, it is the first country in the Arab world to pay attention to AI and has established a Ministry of Technology Leadership and Artificial Intelligence.

Despite the significant benefits expected from AI technology, the education system is not widely accepted among students and military instructors. Such technology includes the specialization process in learning, constructive evaluation of students, the ability to learn in global classrooms, obtain more exciting learning, the ability to monitor and improve performance in line with the tasks of military cadets, save time and effort and take into account individual differences between them. Thus, it can be said that not using this technology in education represents a large study gap and puts tremendous pressure on students to study and prepare to complete the required subjects in a short time, in addition to continuing to perform their military training. Consequently, the researcher feels an urgent need to use new strategies (such as AI technology) to solve the problems faced by military cadets that may positively affect their achievement, save time, and ensure their education (Ramachandran, 2003). In light of this, the researcher conducted this research to investigate the role and importance of using artificial intelligence techniques in e-learning in the military sector.

Questions

The current research problem can be represented by the following main question:

- ❖ What is the role of using AI techniques in enhancing e-learning in the military education process?

From the main question, a number of sub-questions emerge, the most important of which are the following:

- What are the challenges facing the effective application of AI in military colleges?
- What are the best ways to overcome the challenges of effectively applying AI in military colleges?
- What are the critical success factors in applying the AI and e-learning system in military colleges?

Aim and objectives

Current research seeks to investigate the role of the use of AI techniques in enhancing e-learning in the military education process. In addition, the current research seeks to achieve the following objectives:

- To investigate the challenges facing the effective application of AI in military colleges.
- To shed light on the best ways to overcome the challenges of effective application of AI in military colleges.
- To discuss the critical success factors in applying AI and the e-learning system in military colleges.

Significance

The importance of current research lies in the novelty of the discussed topic. As far as the researcher knows, no study has been conducted on the AI education sector in the armed forces. The researcher believes that this research is especially important due to the application of AI to the educational process. In addition, the importance of research lies in shedding light on new technology in the educational process. Introducing AI applications may encourage students to improve access to new resources and learning methods. The researcher also hopes that this research will stimulate decision-makers to apply AI applications in the educational process in the armed forces.

The Education Process in the UAE

The school education system officially began in the Emirate of Abu Dhabi in the 1960s. Still, a strong and decisive step came in 1971 when the UAE's federation was announced, and the Ministry of Education was formed. The system consists of the public and private sectors. Public education is fully funded by the government and provided free of charge to all UAE citizens from primary to university level. The government directs nearly 20% of its expenditures to education (Gaad, Arif & Scott, 2006).

Interest in education has developed with the establishment of the federation based on the UAE government's explicit constitutional commitment to provide education. This commitment has been realized, as evidenced by the development of the education sector. The number of students in the 2013/2014 academic year increased more than 19 times, and nine times in terms of the number of schools, since the country (Ridge, Kippels & ElAsad, 2015). The UAE's interest in education is in line with the principles of the "Education for All" policy adopted by the Dakar Conference in Senegal in 2000 (Godwin, 2006).

In July 2012, the UAE Cabinet approved a new law-making education compulsory and a fundamental right for every UAE citizen. According to this law, the government must provide free education to every citizen from six years of age until reaching 18 or until completion of grade 12, whichever is earlier, through public schools and educational institutions. The law also requires children's parents to follow up on their children's commitment and continuity in education, together with the Ministry of Education's academic evaluation principles. Exempted from this is for students who suffer from some chronic diseases or disability and cannot continue their education in schools or special education centers, according to a decision issued by the Minister of Education (Ridge, Kippels & ElAsad, 2015).

In this regard, the Minister of Education has devoted significant attention to developing education at all levels, from kindergarten to secondary school. The UAE has also paid attention to technical and vocational education by expanding institutes of applied technology and sought equality in educational opportunities between the genders, which resulted in similar numbers of male and female students at all levels of education. The UAE has also enacted relevant legislation to integrate students with disabilities into the school community through appropriate educational programs that allow progression in the academic ladder according to their potential permits (AL-AMIRI, 2017).

Education challenges in the UAE

The curriculum and teaching methods represent one of the standard educational challenges in the UAE and worldwide. The public school curriculum in the United Arab Emirates (UAE) has undergone numerous developments over the past 30 years. Recent changes to the curriculum focused on moving the country towards a knowledge-based economy. However, as mentioned earlier, teaching and learning, for the most part, remain teacher-centered, and assessment based on memorization of facts rather than the application of skills.

As a country striving towards becoming a knowledge-based economy, the UAE aims to increase its competitiveness by reforming its curriculum in terms of educating and how it educates, and how it is assessed. The current curriculum reforms focus predominantly on strengthening the core subjects such as mathematics, science, English, Arabic and shifting the curriculum from a focus on content to outcomes providing a more inclusive and student-focused educational and environment (Ridge, 2011).

The educational sector played a focal role in the UAE's progressing development aims and had transformed into a focal concentration for reform and enhancement. Although educational attainment levels have made huge a wide margin since the nation's initiation, there are still significant difficulties in the UAE's public education sector. The primary concerns facing administration in the educational sector include preparing students and teachers to collaborate within a global context in light of the smaller scale and large-scale financial impacts.

The visionary expressions of H.H. Sheik Nahyan, Minister of Higher Education and Scientific Research in UAE when he expressed, "*The government has allocated more than a third of its budget to education, which is an obvious indication that the UAE government is determined to invest in its human capital*" (Zahran et al., 2016). The UAE's Ministry of Education (MOE) has built up an ambitious five-year plans education strategy 2020, designed to bring significant qualitative enhancement in the education system, particularly in the way teachers teach and students learn. Smart learning programs, new educators' codes, licensing, assessment techniques, and curriculum revision. Plus teaching mathematics and science in English (Gokulan, 2018). On March 04, 2020, Gulf News announced that during Coronavirus periodic, the UAE became number one in the region that all schools and universities across the UAE using e-learning classes and online lectures.

An Overview of E-learning

E-learning is a modern way of learning that has turned into a vital piece of the Emirati educational system and has changed how they see educating as a whole (Ischebeck, 2017). E-learning refers to data and communication technologies to enable access to online learning or teaching resources. E-learning has the advantage of meaning any knowledge that is electronically enabled. Individual researchers additionally define this term as any learning that is web-enabled or web-based (Abaidoo, 2015).

E-learning can be teacher-driven, facilitated, or student-led, or it can be synchronous or nonconcurrent, and class size can span from a single student to thousands. The mix can blend classroom learning, books, online archives, and a wide range of sorts of e-learning. E-learning can remain solitary or embedded into an online record, user interfaces for a PC program, or a business procedure (Horton, 2018).

However, like the newest electronic revolution, e-learning represents one of this revolution and has several pros and cons to be considered before adopting it in any educational system. The following points summarize some of the pros and cons of adopting e-learning in education (Abaidoo, 2015) :

(i) Pros of E-learning:

Implementing e-learning in education, particularly for higher educational institutions, has some advantages and benefits; e-learning is considered among the best strategies for education. A few examinations and authors have given advantages and benefits gotten from the adoption of e-learning into schools. These are a few points of advantages of implementing e-learning in education acquired from a review of the literature (Abaidoo, 2015; Hošková-Mayerová & Rosická, 2015; Baleni, 2015; Arkorful & Abaidoo, 2015; Goyal, 2012):

- (a) It is adaptable when issues of time and place are taken into consideration.
- (b) E-learning enhances the viability of information and capabilities through a straightforward entry to a vast amount of data.
- (c) It can give chances to relations between students through the utilization of dialog discussions.
- (d) E-learning is cost-effective; there is no requirement for the students to travel.
- (e) E-learning takes into consideration individual student's differences.
- (f) E-learning makes up for academic staff shortcomings, including teachers or instructors, just as facilitators, lab professionals, etc.
- (g) The utilization of e-Learning permits self-pacing.

(ii) Cons of e-learning:

On the other hand, e-learning has some disadvantages listed in various studies (Hošková-Mayerová & Rosická, 2015; Baleni, 2015; Arkorful & Abaidoo, 2015; Goyal, 2012), which include:

- (a) E-learning as a technique for education influences the students to undergo contemplation, remoteness, just as the absence of communication or connection.
- (b) As for explanations, clarifications, and understandings, the e-learning technique might be less compelling than conventional learning strategies.
- (c) Concerning the progress of student's communication skills, e-learning may have a negative impact. Even though students may have excellent academic information, they may not have the required abilities to convey their acquired knowledge to other people.
- (d) Frequently tests and assessments are supervised by proxy in the e-learning system; it might be difficult, if certainly feasible, to control or manage activities such as cheating.
- (e) E-learning may likewise be liable to plagiarism, insufficient determination aptitudes, cheating, and inappropriate use of copy and paste.
- (f) Not all specializations can successfully utilize e-learning in education.

Felea, et al. (2018) aimed to explain E-learning's role in Romanian higher education, and the analytical approach was adopted by employing the questionnaire in their study. After analyzing the data, the results have been reached, the most important of which is that e-learning has a positive role in the educational process. It enhances the understanding of the educational material's content, cooperation, and interaction between students' teachers. The results recommended the need to follow E-learning and its application to higher education in Romania.

Wani (2013) aimed to build the e-learning system and demonstrate E-learning's role in enhancing the learning procedure. The researcher concludes that colleges must provide the essential technical infrastructure and support to create an effective E-learning system and the need to implement clear rules for the development of E-learning as another type of education. Moreover, high results cannot be achieved in the educational process without integrating new information and communication technologies into the education system. To enable the use of an extensive and integrated set of tools and resources of the computer and the Internet and the possibility of achieving more effective and efficient training.

E-Learning Issues in UAE

Many factors affect the determination of the success or failure of e-learning and such smart environments in education. These factors should be taken into care to create a successful and effective e-learning system. Initial experiences have shown that most learners do not continue their e-learning courses. Many learners have a “negative experience” with e-learning, which leads to their acquiring superficial learning (Alkandari 2015).

Besides, these factors may impact learners’ acceptance, willingness, and decision-making regarding the adoption of e-learning in the long term. Hence, when a new e-learning environment or an ICT tool is introduced in the learning process, enterprises and educators need to demonstrate their willingness to use these systems to encourage students to accept and use them fully (Kanwal and Rehman 2017).

Salloum’s et al. (2019) study in the Emirati context of the factors affecting the acceptance of e-learning by the Emiratis showed that the success of e-learning systems, in the end, depends on the degree of acceptance of the learner and his ability to apply these systems, and indicated that the obstacles that stand in front of students in their e-learning experiences in the UAE in particular and around the world, in general, include the four main areas: environmental issues in ICT, student characteristics, student support, and provision of real activities.

Artificial Intelligence

AI is expanding in daily life areas through various electronic devices and software to facilitate tasks and serve people in multiple fields. It aims to enhance human capabilities and contributions, making it of significant business value. Briefly, AI is a program in a logical programming language to simulate human intelligence to perform tasks based on previous data. AI technologies offer the ability to see (computer vision), to hear (speech recognition), and understanding (natural language processing) more than ever before (Rouhiainen, 2018).

Nowadays, AI, includes Machine Learning (ML) and Deep Learning (DL), are being adopted in various industries for precise business analysis and optimizing operations. The code is used by AI systems designed to produce and process massive amounts of data to make logical decisions, allowing devices to learn and complete the task without explicit programming automatically. It includes many industries such as Transportation, Agriculture, Education, Finance, Legal, Manufacturing, Advertising Technology, Medical, Oil/Gas, Media/Content, Automotive, Diagnostics, Retail, etc. Due to this, AI technology has the potential to revolutionize various industries.

AI has jumped to the bleeding edge of everyday talk, earning expanded consideration from specialists, industry pioneers, policymakers, and the general public. The assorted variety of assessments and discussions assembled from articles show how comprehensively it is being investigated, studied, and applied. However, AI's field is developing quickly, and even specialists experience serious difficulties comprehension and tracking progress over this domain (Yoav et al., 2017). According to research firm Gartner Inc. AI augmentation will create a business value of \$2.9 trillion and 6.2 billion hours of worker output globally in 2021 (Gartner, 2019).

At present, almost every educational institution often prefers designing AI supported by e-learning scenarios and applying them in several courses or educational activities to enhance learning and teaching experiences by both teachers and learners. Day by day, the full focus is given on the student's and teachers' role regarding educational activities and their circumstances changing vigorously along a typical process (Rawal, 2018). The following are four examples of how AI will change the future of education (Rouhiainen, 2018):

- (i) **Personalized education Platforms:** Imagine a course could be personalized in 30 different ways for 30 different students, customized to the previous knowledge and skills of each student, making it a more enjoyable and successful learning experience for all. Not only could each student study at their own pace, but instructors could also provide each student with personalized feedback, support, and motivation. As a result, AI can tutor students individually by selecting what areas they need more help in and providing them with the easiest ways to explain.
- (ii) **Individualized AI Tutors:** One utilization of this coach would be a customized AI instructing associate made for a specific course. This application is to perform tasks, such as responding to students' fundamental inquiries regarding a given subject (for example, due dates or task designs), keeping students on track with coursework as required, or providing information about the college or foundation. In most cases, such AI training colleagues could run through voice recognition programming, which would enable the students to talk directly to them. Likewise, these AI tutors could join extra data, such as identity test results, to empower them to customize individual students' reactions.
- (iii) **Personalized Games:** A few ongoing studies have uncovered that playing games can stand out amongst the perfect approaches to earn some new useful knowledge. However, making helpful games for each subject requires a lot of time and innovativeness, which can be a burden and a challenge. As we utilize AI tools, the generation of these kinds of games will become more comfortable, enabling educators to customize games to their students' identities and adapting needs. With these profound

games, students will profit by expanded inspiration and happiness, promoting better learning.

(iv) **Making a More Enjoyable Learning Experience:** Another potential advantage of an AI in education is its capacity to keep students occupied with the coursework by making the experience progressively fun. It is easy to explore why students who have a great time while they learn will, in general, remember the material better, making the learning experience progressively powerful.

Like other learning technologies, AI has a set of positive and negative impacts on the educational process. Advantages and disadvantages of AI in education summarized in Table 1:

TABLE 1: AI IN EDUCATION (ADVANTAGES AND DISADVANTAGES)

Advantages:

Enhance individual learning	Using ITSs to enhance a student's learning experience and provide one-to-one interaction with a professional educator, and observe the areas in which they need more help, and finding an excellent way to explain the concept to them (Yeaton, 2016)
A better understanding	Understanding and improving students' learning experience of materials taught with the Visual implementation Reality (VR), Augmented Reality (AR), and Mixed Reality (MR). It will give a new way to display and interact with information (Mercer, 2018).
Organized and manages records	The machine can Organized and maintains records and predict what a user will type, ask, search, and do (smartphone as a good example) (Paterson, 2017)
Identifying the Concepts Students are Not Comprehending	The system determines what concepts students are not grasping collectively and individually using AI in homework, quiz, and test software. So, the instructor will be able to make adjustments to the lesson plan to assist students' learning (Yeaton, 2016)
Always run	Machines do not require frequent breaks and refreshments, unlike humans. Also, it can continuously perform without getting bored or distracted, or even tired (Reddy, 2017)

Disadvantages:

Costly	Need a budget to buy an AI System and time to build, rebuild, and repair this system.
Limited Tasks	They cannot work out what they programmed for

Cannot Inspire before
transferring knowledge

AI technology has its limitations; it cannot inspire us as a human teacher can. (Brigette, 2107)

Intelligent Tutoring Systems (ITSs)

Intelligent Tutoring Systems (ITSs) has grown out of artificial intelligence, cognitive psychology, and education and has typically focused on creating expert research systems that are domain-dependent and mostly aimed at school education. This system attempts to imitate the behavior of an intelligent human tutor and a domain expert.

Hafner (2000) defined ITS as an “*educational software containing an AI component. The software tracks student's work, tailoring feedback, and hints along the way. By collecting information on a particular performance, the software can make inferences about strengths and weaknesses and can suggest additional work*”.

The objective of ITSs is to empower students to acquire in-depth knowledge, gain skills of critical thinking, and work freely and independently (Algahtani, 2011). ITSs are computer systems designed to support and improve learning and teaching processes in domain knowledge. They aim at adding computer-aided instruction to traditional classroom teaching: one-to-one tutoring and individual learning. Computers have been utilized in instruction since the sixties (Martin, 2001).

MURRAY (1998) describes the ITSs such that “*ITSs are computer-based instructional systems. That have separated database, or knowledge bases, for instructional content (specifying what to teach) and teaching strategies (specifying how to teach) and attempt to use inferences about student's mastery of topics to adapt instruction.*”

Computer and data technologies, ITSs are ending up more prominently globally; it impacts the scene to show that anybody could learn anyplace whenever he likes. In any case, without the assistance of an ITSs, the students' questions responses cannot be understood in time. Thus, it is essential to create ITSs, keeping in mind the end goal of giving students learning support services (Jihan & Sami, 2018).

When students learn in groups, they can encourage each other to make inquiries, explain/justify their opinions and think, and adequately consider their insight. Research has demonstrated such situations to build aggregate execution and individual learning results. In any case, these benefits can be accomplished in well-working, effectively learning groups. While a few groups may have

strong interaction and correspondence, others might usually be unequipped of developing an equalization of cooperation, leadership, leadership, and encouragement. This brokenness can quickly corrupt gathering and individual performance, inspiration, and commitment (Gillies, 2016).

Dašić, et al. (2016) pointed out that the ITS is a complex and integrated software system that applies AI standards and techniques. The aim of this study to recognize the role of ITS in the process of education. ITSs help improve educating and adapting toward individuals' individual needs. It works to develop collaborative programs among them, and it supports and enhances the way toward educating and learning.

Ayturk (2017) presented a general architecture of ITS and information about ITS improvements and mentioned best ITS practices. A “ZOSMAT” application was explained as a demonstration of how an Intelligent Tutoring System was designed. It is used for either individual learning or classroom environment with a person's tutor's guidance throughout a proper education process. The study concluded that the ITSs application is a powerful tool for improving students' learning performance.

Using ITSs in Education

Intelligent Tutoring Systems (ITSs) have a multidisciplinary architecture and provide the utility of one-on-one instruction automatically and cost-effectively. The challenge remains on transferring to computers the expertise, skills, and mode of action of the human tutor, overcoming space, time, socioeconomic, and environmental limits. ITSs appear as a form of deployment of this issue and have been the object of increasing research.

To learn and evaluate in multi-disciplinary fields, disrupted ITSs can support online tutoring functionalities. Intelligent Tutoring Systems must be proficient inaccurately diagnose students' knowledge bases, ability, and styles; analyze using principle, rather than pre-programmed responses; determining what to do next; adapt instruction; accordingly, provide feedback. The improvements in computer technologies have assisted the use and design of ITSs (Keles & Ali, 2011).

Intelligence Tutoring System can help the educator to achieve partial tutoring tasks and pass tutoring data. In addition to imparting knowledge, prepare expertise, and service students straightforwardly. Its principle highlights are Supporting the instructor, students, training staff, and administrators to complete a variety of teaching, management, and assessment on the Web (Jing, 2016; Jing Huang, 2016)

- (i) **Student-oriented functions:** Analyze learning and weakness of student; Give focused on proposal dependent on the result of the examination; Choosing content dependent on learning substance and student model; Analyze and correct students' answers.
- (ii) **Teachers-oriented function:** Check students' learning and progress. Based on students' actual situation, the system can change teaching strategy and targeted manner; Updating the test bank, adjusting teaching content, and providing teaching focus.
- (iii) **Education staff-oriented functions:** Supervise educators' instructing and students' learning; Evaluate the adequacy of instructor; Master the general circumstance everything being an equal and individual circumstance of each class and calling; Provide reference as indicated by educating assessment.
- (iv) **Administrator-oriented functions:** Undertake the administration and support of instructing platform, to guarantee the ordinary activity of teaching platform; Build, gathering, broadened and revised exam resources; Modify user and set the password and other administrative benefits.

Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality (MR) in Education

Many studies are conducting Virtual Reality (VR) and Augmented Reality (AR) education and training. It is one of the regular advancements of computer-assisted instruction (CAI) or computer-based training (CBT). Computers' utilization as instructional guides has a long history returning to the mid-1950s (Lange & Lodewijk, 2017). They are no longer limited to just sci-fi movies, but they are slowly changing many sectors like education, entertainment, communication, and various other industries and applications.

- (i) **Virtual Reality (VR):** The "Virtual Reality Society" defines the terms VR as "A term used to describe a three-dimensional, computer-generated environment which can be explored and interacted with by a human. That human becomes part of this virtual world or is immersed within this environment and while there, can work with objects or perform a series of actions" (VReality, 2019). At each level of education, Virtual Reality can make a difference, lead students to discoveries, motivate and encourage, and energize. The student can participate in the learning condition with a feeling of presence, of being a part of the environment. The motivations to use virtual reality in education and training related, especially to its capacities (Pantelidis, 2007).
- (ii) **Augmented Reality (AR):** is an advancing type of information in which computer-generated content attached to specific locations upgraded the Real World (RW) and activities. Since the last several years, AR applications have become portable and widely available on cell phones. Empowering pervasive learning, AR would give

students instant access to the area detailed data accumulated and presented by several sources (2009) (Ludwig & Reimann, 2005).

(iii) **Mixed reality (MR) is a hybrid of Virtual Reality and Augmented Reality and means to offer both worlds' best.** For example, while it utilizes a headset like VR, seeing through a translucent viewport or glass, it likewise projects visuals on top of our environment (Tall, 2018).

Today, animation has supplanted the traditional PowerPoint presentation. Many eLearning stages offer classes where an instructor educates with live activity assistance and not a static PowerPoint. The idea of intelligent adapting instead of single direction learning is prevailing. Schools and universities are changing their traditional procedures of educating. VR, AR, and MR in Student Learning and Development will alter how educators teach and students learn. We have seen much advancement in the education industry throughout the years. However, the pattern has not changed for a long time. Still, the stapling apparatus utilized in the education industry is PowerPoint. With the assistance of AR, VR, and MR, students will adapt intuitively more than ever (Mateu, Lasala, & Alaman, 2015).

These new advanced technologies are not restricted to a particular age group of students. Today, it probably will not be available in each school or college, but in the up and coming years, it will be there. A *“picture is worth a thousand words,”* an AR technology helps you in accomplishing this. Instead of reading a chapter, it will be progressively powerful to visualize the subject. It enables students to improve their comprehension and insights about the topic. Likewise, offering interactive experiences, the AR keeps students energized and interested in new learning. The important benefit of AR in Learning and development is that it does not require any investment concerning equipment (Mateu, Lasala, & Alaman, 2015; Rawal, 2018).

AR can be encountered using our cell phones or tablets. For instance, AR application improvement permits to put the cell phone camera in front of a textbook and see a 2D picture turning into a 3D animation. Then again, VR exists in an artificial environment. To build up a VR application, we first need to set up a domain and afterward assemble movement around it. Opposite to its name, VR appears to be significantly more real compared to AR. However, the disadvantage of it is that it needs a dedicated VR headset to run any application. Virtual Reality gives students a complete sensory experience through which they can practically contact, see, and hear the content simultaneously with assistance sensors (Rawal, 2018).

Impacts of AI in Education

Education is a field with a long and distinctive history, and it is faced with grand challenges and opportunities with the advances of AI (Baker et al., 2017). AI can allow new learning, instruction, and education and change society to require new challenges for educational institutions. It may magnify skill differences and polarize business or equalize the chance for learning (Tuomi & Ilkka, 2018).

AI is not the future; it is the present. Individuals have woken up to the numerous advantages that AI brings to the table, particularly in education. We have just seen the ascent of training innovation in modern classrooms mainly through a large group of versatile learning stages. With virtual reality (VR) making advances quickly and coding being instructed to youngsters, instructors hold onto technological advancements as a fundamental teaching system only like chalk and blackboards. It is not the essential matter of whiteboards instead of chalkboards or the obsolescence of textbooks. From kindergarten to graduate school, extraordinary compared to other ways AI will affect education is to utilize higher individualized learning levels. AI studies its environment to adjust to it faster than humans; this could make learning more individualized. Students in each class have distinctive IQs but, at the same time, need to learn with the pace of the class. AI enables us to make customized digital learning systems, allowing students to learn at their own pace. It will allow students to investigate, understand, or be associated with a subject as if they are present in that place or environment, which is such a remarkable learning experience (Schmelzer, 2019).

AI systems have begun to change how we find and utilize data in schools and academia. Brilliant information gathered by educational institutions is a standard idea with teachers using information mining to determine how and why a course is decided to a student's pattern of decisions during the course. AI steps in to give a more real-time response to feedback, a part of the student's collaboration with the system. Artificial Intelligence's virtual presence will be different from the present digitized textbooks and online tests, making a simulated learning condition where virtual tutors will conduct classes (Ramesh, 2018). Forbes stated that by 2024 AI capabilities will be included with 47% of learning management tools (Schmelzer, 2019).

However, no machine can replace human teachers. It can save them from collapsing under pressure. Teachers' role under AI would experience an enormous change, with many recommending that teachers help AI tutors in lessons later on. However, certain viewpoints like problem-solving, creative thinking will, at present, be the specialty of teachers. AI has officially demonstrated giving a more efficient and effective grading system and will soon provide lessons whenever, anywhere (Ramesh, 2018).

Popenici & Kerr, (2017) mentioned the development of the use of AI in teaching and learning in advanced education. It researches the educational implications of emerging technologies on the way students learn and how institutions educate and evolve. The researcher pinpoints some challenges of higher education and student learning within adopting those technologies for student support, learning, teaching, and administration and exploring more directions for analysis. The study concluded with the following recommendations: It is necessary to focus any analysis on academics' new roles on new learning pathways for higher degree students, with a replacement set of graduate attributes. With a spotlight on imagination, creativity, and innovation, machines can hardly ever replicate the set of skills.

Harris (2018) Mentioned the need to strengthen traditional teaching methods and introduce AI to the learning process to perform tasks quickly. However, researchers have not yet reached a consensus on the effectiveness of AI-based education. This research aimed to demonstrate the positives and challenges of artificial intelligence. It concluded that AI techniques might help facilitate "personal learning," improve academic performance, reduce achievement gaps among student groups, increase student engagement and motivation. Despite the positives of AI in education, it faces challenges. Including that it facilitates the school's social learning, that students become less disciplined in classrooms because they receive educational support at home as recommended by the study of the integration of AI education, but not entirely because the budget of AI is not yet clear.

Siau & Ma (2018) Noted that AI would change the world and education, this research aims to show the effect of AI on higher education and the proactive and interactive changes in higher education. This study applied to Amnesty International. The researcher concluded that AI plays a vital role in the speed and accuracy of the curriculums. Through AI in the teaching process, there is a challenge level for preparing students in Amnesty International. Students must provide the necessary skills in education.

However, Hamada & Amal (2015), It differed somewhat as it revealed participation patterns in education and the best AI The researcher adopted the analytical method by dividing the students into three groups and conducting the AI test. They concluded that the three participative (Synergistic-parallel-serial) techniques used are useful in developing achievement and AI skills. Synergistic participation is also superior to the two types of parallel and continued involvement in developing social intelligence skills. The most important recommendations are the need to increase the effectiveness of participatory patterns of AI skills development.

UAE AI Strategy in Education

UAE Strategy for AI was launched in October 2017 by UAE Government (UAE Government, 2018). UAE AI Strategy is the first to promote government performance and create an innovative and highly productive environment using AI and its applications over different domains. The strategy is premised to guarantee the most straightforward use of resources and support in all obtainable potential in creative manners that speed up developmental projects (AlkhaleejTimes, 2017). Other developed nations such as Europe and North America might create regulatory frameworks related to Artificial Intelligence. Still, they have not yet formulated a national AI strategy that would prioritize future development. However, appointed a minister for AI sends a clear message that the future of services is to be empowered through AI applications and systems. In this way, AI is a basis and a core field for any technological solutions that will be utilized for almost all sectors and services.

The strategy covers many sectors, and education is one of them, which aims to cut costs and enhance the desire for education. Competence in this sector requires in-depth knowledge and advanced skills obtained through dedicated academic programs. UAE universities will need to integrate new courses or offer new programs related to AI and its different subfields. Future generations probably will not fill traditional roles in government anymore. They might still have jobs; however, many of these jobs are expected to be related to AI professions, including a wide range of multidisciplinary areas. The colleges' need for academic staff and researchers specializing in AI will increase due to offering specialized programs and courses. In the UAE, the AI field has not received focused attention from colleges and computing curriculum designers, where most students need to take just a single course in AI introduction. Previously, the focus was on different computing areas, such as computer networks, security, mobile application development, information systems, and IT in general. In this manner, a positive effect on the worldwide external AI profession and market will also occur (Halaweh, 2018).

Military Education

Today the Military offers the best educational opportunities for students who intend to seek a college degree. Like service academies, senior military colleges, and maritime academies, these choices provide world-class training and a more profound military culture comprehension. Furthermore, these institutes grant scholarship money in exchange for a period of service (Todaymilitary, 2018).

Military Education entails officers' professional training to prepare them to lead the military force under their command optimally to discharge their duties in peace and war effectively. It starts with recruit training, proceeds to education and training specific to military tasks, and might include extra training during a military career (Sen, 2013).

Military academies and institutes play pivotal strategic roles at several levels. Some related to the technical and technological development of the armies, both in the training and qualification of the national workforce or in the use of advanced combat weapons, imply qualitative mutations in the armies' operational and combat performance.

These academies and institutes represent the scientific and research laboratories to crystallize the prevailing theories of warfare worldwide, analyze them, and study the possibilities and opportunities of benefiting from their elements in the national armies. And then build and develop the combat theories of these armies according to modern developments and developments in this regard, on other levels, such as its role in creating national identities of the commands and melting them to contribute effectively to support and strengthen the components of national unity (EditorialBoard, 2013).

Joint Command & Staff College (JCSC) represents university-level institutions awarding bachelor's and master's degree-level qualifications. It is one of the UAE armed forces colleges that concentrate on teaching based on the art of war in general and the art of operation in precise. The college is associated with the theory and practice by the instructional methodology. The college also aims at developing the students based on leadership qualities. This college is in line with the military doctrine at the same time. Its location in Abu Dhabi, capital of UAE (Revolv, 2018).

Among the majority of the world, the armed forces consider the importance of military training and education is necessary, especially for the officers with the help of staff courses and joint command seized annually at the Command and Staff Colleges (Edarabia, 2016). In general, the (General headquarters of the armed forces-GHQ) pays excellent attention to military education, e-learning, and training (Hernandez & Gaudioso, 2013). Furthermore, officers in JCSC rarely have time to leave their training to receive an education on a traditional campus due to officers and military personnel's job responsibilities. How to solve this dilemma? Distance learning and e-learning systems are now being introduced in recent years due to the increasing need to train non-commissioned officers in rapidly changing international conflict scenarios. Combining e-learning with computer-based training has proven effective in improving officers' combat educational skills (TRADOC, 2001).

Therefore, there is a necessity for implementing such knowledge in these colleges and institutes as it provides the basic needs required by the students. AI solutions have an advantage in increasing the level of education. In this way, it will further solve the teachers' problems in correcting the learners' papers and providing a maximum amount of time towards the students through communication.

Conclusion and Recommendations

Education is a field with a long and distinctive history, and it is faced with grand challenges and opportunities with the advances of AI. AI can allow new learning, instruction, and education and change society to require new challenges for educational institutions. It may magnify skill differences and polarize business or equalize the chance for learning. The field of military education is one of the most prominent educational fields that can benefit from artificial intelligence techniques.

Military Education entails officers' professional training to prepare them to lead the military force under their command optimally to discharge their duties in peace and war effectively. It starts with recruit training, proceeds to education and training specific to military tasks, and might include extra training during a military career. Today the Military offers the best educational opportunities for students who intend to seek a college degree. Like service academies, senior military colleges, and maritime academies, these choices provide world-class training and a more profound military culture comprehension. Furthermore, these institutes grant scholarship money in exchange for a period of service. Military academies and institutes play pivotal strategic roles at several levels. Some related to the technical and technological development of the armies, both in the training and qualification of the national workforce or in the use of advanced combat weapons, imply qualitative mutations in the armies' operational and combat performance. In addition, the research results can be summarized as follows:

1. there is a widespread in use of modern learning technologies in the UAE, as there has recently been a heavy reliance on distance e-learning in the educational sector and support of it with AI, which is characterized by the efficiency in making compensation for any shortage of training and teaching staff by using virtual classes, especially for people who face difficulties such as geographical distance or their commitment to work that cannot enable them to devote themselves to traditional learning, as is the case for officers in military colleges.
2. There is a great interest from the UAE government in adopting fourth-generation technologies such as AI and e-learning in its civil and military institutions through allocating large strategies and budgets for their implementation. The UAE state allocates

part of its budget to the technology and digitization sector. Its universities and military colleges similarly allocate part of their budget to support e-learning and bring in assistive mechanisms for the application of AI.

3. Despite the importance of e-learning and the benefits of integrating AI in military education at the Emirati JCSC, this type of education, like other methods of education, faces some obstacles and challenges that may limit its use, where solutions must be sought to overcome them and maximize the use of these technologies.

4. The availability of critical success factors for the application of AI and e-learning in the military colleges in the UAE, in terms of the fact that these technologies personalize the teaching method to suit individual learning requirements, as well as the provision of high-quality educational courses, as AI systems can examine curricula and identify gaps in the course content, in addition to being adaptive educational systems which contribute to providing the most relevant content to enhance the learning process. In addition, these systems provide the factor of providing skilled teachers and providing online classroom systems, which provide the factor of attractiveness and pleasure in providing content as well as the efficiency of these systems in monitoring performance.

In light of the previous discussions and conclusions, the researcher presents several recommendations, the most important of which are the following:

- The Education Military Command should embrace the creation and development of an intelligent educational system based on AI and e-learning systems suitable for the military learning environment.
- They should add courses in the fields of AI to the curriculum to enhance teacher's and students' knowledge of the applications of Artificial Intelligence.
- Conduct a study on the requirements for designing and developing an AI system in the military educational environment.
- Conduct a study to reveal the nature of the challenges facing students and teachers regarding AI and e-learning systems in the educational environment.

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