

The Position of Artificial Intelligence in the Future of Education: An Overview

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ABSTRACT— *In the modern era, artificial intelligence applications have become one of the most essential and prominent aspirations of countries in their various organisations and sectors, especially the education sector, due to the ability of these techniques to help this sector to develop rapidly and increase productivity by imparting scientific material in a beautiful way to the learners. This article provides an overview of the significance of artificial intelligence applications and their role in learning, and how they can be employed in the future. All information in this scenario is collected from a set of studies published in the time of COVID-19 pandemic between 2019 and 2021. This scenario concluded that artificial intelligence is the future that is constantly growing and can be benefited from in the field of education and must be properly exploited to build a new world that depends heavily on digital societies.*

Keywords— Artificial Intelligence, Education, Applications, COVID-19, Lectures, Google Applications.

1. INTRODUCTION

Today, all nations compete to develop and benefit from the accelerating technological revolutions and apply them in all their institutions to serve their citizens and complete all transactions to citizens' satisfaction. The most important technology is artificial intelligence [1][2], which develops at an incredible speed with many natural benefits for economies, societies and individuals [3]. In addition, this science can provide productivity, innovations, and new and advanced services that help to accomplish the needed tasks with accuracy and ease [4][5]. Also, it requires your attention and belief in its ability to achieve significant benefits in performing functions on a large scale with scalability and modernity [6-8]. Artificial intelligence [9][10] can be described as a technological science that studies and develops theories, methods and techniques and develops systems capable of simulating the human mind [11][12]. This science creates intelligent machines that work and provide reactions similar to the responses of the human intellect. The most vital branches of artificial intelligence are machine learning [13-15] and deep learning [16-19]. Moreover, the applications of artificial intelligence in education have received significant and widespread attention, especially during the period of the Coronavirus (COVID-19) pandemic [20-23], and that its investment and benefit from it in the educational process has become very necessary because it has a tremendous ability to deliver information nicely to learners [24][25]. Communities should also be encouraged to be ready to receive and accept these applications because they are in continuous growth and are of significant benefit. After the COVID-19 pandemic [26], governments began to encourage the education sector to turn towards e-learning, leave traditional education, leave classes, sit at home, and take lectures. This is the reason that encouraged governments to accept an essential idea about the existing technologies and how to utilise them to help lecturers give information to learners. Governments have grown to form digital societies and comprehensively benefit from artificial intelligence technology in all fields [27-29], including education, as some nations

have started building smart cities, for example, the city of NEOM in Saudi Arabia [30][31], which is considered the city of the future and the latest in history, which is expected to open in 2030. This city is characterised by It is a smart city that relies on artificial intelligence to provide all electronic services and contains intelligent schools [32][33]. In addition, governments have begun to develop the field of robots and intelligent systems because the future of these robots is in excellent development and guides and training young people to innovate and manufacture robots using easy-to-apply devices and software to give orders to these machines [34].

There are also many different viewpoints about which artificial intelligence technology is best suited to routine and especially complex tasks [35]. This query is the most frequently asked in any society, and humans are likely to remain more dominant in unpredictable environments. Over the past years, a set of expectations have occurred about a number of jobs that will turn from humans to robots in their implementation and that artificial intelligence technology will outperform the human mind in accomplishing the needed tasks [36][37]. In any case, artificial intelligence means focusing on the development movement and creating models similar to the human mind and the ability to accomplish tasks equal to or superior to humans by adopting algorithms that develop according to the conditions in which it exists [38]. Artificial intelligence has become overall in thousands of fields [39][40]. It will soon eliminate many jobs such as bank tellers, customer service representatives, stock and bond dealers, paralegals, radiologists who will gradually be replaced by these emerging technologies overtime to control semi-autonomous and autonomous devices as in the case of vehicles (cars, airliners) and many more [41-45].

The main contribution of this scenario is to provide an overview of what artificial intelligence can provide to the field of education, how it contributes to the development of this field, what applications can be benefited from, and how it serves lecturers in sharing information to learners.

The rest of this scenario covers the following sections: the role of artificial intelligence, which it gives in serving the education sector in Section 2. The most prominent artificial intelligence applications are applied in education in Section 3. finally, the conclusions are provided in Section 4.

2. THE ROLE OF ARTIFICIAL INTELLIGENCE IN EDUCATION

Today, artificial intelligence applications have started to spread in education and demonstrate themselves that they are worthy, strong, and able to accomplish the required assignments in the most difficult circumstances as we live today in the time of COVID-19 [46][47]. These applications forced governments to decide to execute them in their educational institutions, helped spread science in space faster, saved time, effort, and money, and won the satisfaction of many workers in the education sector. In short, artificial intelligence can be involved in many schools and universities [48][49], but on the condition that there should be full awareness of the importance of these applications and their significant role in serving lecturers and learners. Artificial intelligence provides many advantages in the service of education [50][51], including the ability to learn personally for teachers and educators and according to their special needs. Automatic correction of learners' answers, and this service saves time and effort by eliminating a large number of papers. Continuous evaluation of learners, which is done immediately or at regular times, according to the teacher's opinion, to assess the extent to which the learner has acquired skills. Providing the advantage of distance education [52], or the so-called virtual education [53], by providing platforms that help them create electronic classes, the most famous of which is Google Classroom. Providing modern and advanced methods that help communicate information better through the use of a range of applications offered by companies such as Google applications [54]. The ability to create and modify teaching content according to the characteristics of education. Expand opportunities for communication between lecturers and learners through applications that help communicate through teaching content. Increasing opportunities to acquire information and see the latest updates in scientific material through communication between lecturers from different nations worldwide. Create homework for learners in proportion to their study skills to identify and address learners' faults. Achieving good management in controlling the classroom on a regular basis can also be combined between e-learning and traditional education without affecting one of them on the other. Distinguishing artificial intelligence applications by protecting user data and not leaking it, and also alerting the user in the event of any vulnerability in his/her account [55], the ability to solve the problem very quickly with the appropriate support. Knowing the number of attendees (the learners) in the electronic class and interacting with them directly by conducting conversations in the form of audio and video or through chat programs. Collecting and storing study materials, questions, and answers, and all the data needed by the teacher and the learner through cloud computing programs that provide large storage spaces—providing the ability to record academic lectures and publish them faster on electronic classes. In addition, artificial intelligence applications are distinguished by giving benefits for learners with special needs [56]. Through all the advantages mentioned above, artificial intelligence is a science that can coexist with what the human mind wants to complete any process or task it wants. Also, developing and qualifying academic cadres that contribute to the application of artificial intelligence techniques in virtual education as well as in traditional education, as well as integrating them and communicating information to the learner.

3. THE APPLICATIONS OF AI IN THE EDUCATION SECTOR

A set of artificial intelligence applications have emerged that contribute significantly to the education sector and play a key role in transferring the scientific content to learners and have overcome all the challenges they faced and formed a new effect direction for education and changed the rules of playing and roles in the educational process [57-59]. The following are the top ten applications provided by artificial intelligence that can be utilised in education:

- Smart Content Creation [60]: enables machines to update their data and create digital content to archive and digitise books according to the user's desire.
- Profiling and Prediction [61]: Lecturers can schedule study materials and take tests to find out and measure learners' performance and what their weaknesses are.
- Intelligent Robots [62]: Take advantage of the activities of Intelligent robots to help lecturers manage teaching through robots that can add excellent content in sharing scientific material with learners.
- Intelligent Tutoring Systems [63]: through which the study material is given, strengths and weaknesses are diagnosed, feedback is provided to learners, and the most important matters that must be given in the semester.
- Assessment and Evaluation [64]: Here, learners are assessed and evaluated by conducting a series of quizzes and examinations and directly marking them to assess the extent of students' understanding and judge the level of absorption of the scientific material in the semester.
- E-Scheduling and Predictive Analysis [65]: By applying predictive computing, artificial intelligence can follow the lecturer's behaviour by tracking the lecturer's habits through the classroom and presenting appropriate study schedules for them in less time. The most significant thing that distinguishes intelligent robots from humans is that it does not get tiring and does not feel bored.
- Adaptive Education Environment [66]: It is a set of platforms that support scheduled teaching by creating an electronic environment similar to the traditional real-world environment so that both lecturers and learners can interact in an excellent manner without concerns.
- Virtual Reality Action Interactive Teaching [67]: Artificial intelligence helps all the contents of traditional reality into virtual reality and create an environment similar to real reality and can interact with it clearly, easily and without restrictions.
- Identify classroom weakness [68]: The learner's weaknesses can be identified, alerted, and their condition treated through a set of analyses of the test impacts carried out by lecturers to study the effect of the scientific material in the electronic classroom while the lesson is indeed understood.
- Tasks Oversight and 24/7 Assistance: Artificial intelligence applications and techniques can manage duties and execute them in a perfect manner and without any concern.

4. CONCLUSIONS

Artificial intelligence is the future that has all the capabilities that can be utilised and executed to achieve a modern educational environment through which scientific material is shared between lecturers and learners. Artificial intelligence assists lecturers develop their skills and acquiring new knowledge in spreading and delivering lessons to learners, communicating with them, and evaluating their performance by conducting a set of examinations and distinguishing between them. Moreover, it allows them to create content that best suits their students while ensuring learning, sharing opinions, asking questions and discussing answers. Lecturers must have full awareness of the significance of these applications and how to deal with them, and know their impact on students. Finally, governments should seek to arm Lecturers with productive technologies capable of completing their tasks while setting standards that serve the e-learning sector—also, conducting more training courses and workshops necessary to spread the culture of artificial intelligence and e-learning and how they contribute to the development of new generations that serve their nation in the present and the future. In fact, the COVID-19 pandemic has forced the world to change and make decisions that it could not have made before the pandemic. One of the most critical decisions that have been taken is the change in the learning process and the transition from traditional education to e-learning, despite the many criticisms about e-learning, not that it is the new future of the education sector. In the future, more studies will be conducted on the impact of artificial intelligence on the reality of education and to see the latest updates on the application of its technologies in the electronic classroom.

5. REFERENCES

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