



Akademik Eğitim ve Sosyal Bilimler Dergisi (AJESS Journal)

Advantages of using artificial intelligence applications in teaching English for the primary stage

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Article History

Received: 01/08/2026; Accepted: 28/09/2026; Published: 07/10/2026

Abstract:

The current era is an era of challenges, and keeping pace with developments at their rapid pace, and there is no difference in that technology is the decisive criterion to which visions - no matter how different - are judged in the balance of civilizational hegemony, and there is no escape from going through it, and catching up with those seeking to possess it, to protect our existence and impose our logic. Teaching English is imposed by the data of the times, being the programming language first, and the global language of circulation, and our intervention entitled "The Importance of Artificial Intelligence Applications in English Language Teaching" comes to discuss mechanisms to overcome the difficulties of language teaching English for pupils, especially in light of recent decisions to include it as a second foreign language. We chose AI applications because it is a growing field that aims to use technology to improve the learning process, and a means to bridge the gap in the communication process between teachers and students, increasing their effectiveness and willingness to learn.

Keys words: Artificial Intelligence – AI Applications – English Language Teaching – Educational Technology – Foreign Language Learning.

The importance of artificial intelligence applications in English language education Boot:

It is no longer hidden the impact of technology on our world, nor its dominance over all aspects of our lives, and it is indisputable that artificial intelligence is the most prominent feature of the Fourth Industrial Revolution, and it is a standard that is governed in imposing the logic of power and control, and whoever controls this, it protects its existence and logic, by extending its roots by extending the algorithms and software arrays that it may create, each society has its own specificities and originality that must not be compromised, and to pour what is new in its mold, and to send a new civilization that satisfies the aspirations of Its members, and keep pace with what is new without compromising the heritage of its identity.

There is no doubt that the rapid dynamics of civilization lead us to a completely different era, an era whose features are defined by smart machines and prudent applications, an era in which we are coming, whether we are active or satisfied with looking, and in order not to remain on the sidelines, we must cling to knowledge, and seek it to own this technology, and to find in its development, a service and protection.

What we are about to do can only come with knowledge, which is the orbit of the mill in that, and the science of artificial intelligence with its applications is growing tremendously, if we do not learn how to keep pace with it and contribute to it, we drown in it or we are swept away by its torrents. It is known that the education sector in general is the basis, as it is an affected and influential field in the fields of artificial intelligence, "as it provides the needs of the labor market from the owners of different disciplines and skills closely related to development policies and programs; and there is no room for any development of education unless it is rooted within it for everything new that is adopted, and what is new here is the applications of artificial intelligence so that its members are aware of the different implications of these applications." [1]

The science of artificial intelligence with its applications requires knowledge of programming languages, and perhaps English is a reference in that, because it is a dominant language in the specialty, and the abbreviations of keywords in the chain of code commands from English, and it is also considered a global language traded by developers of programs

and applications, and keeps its learners at the forefront of developments that affect the field, and therefore from the above and its universality, the decision to include it as a second foreign language - from the primary education stage - was very correct, if not to say that it has become important and obligatory.

Problematic:

Learning English is a necessity imposed by the data of the times, but the enforcement of the decision to teach it puts us in front of a set of methods, methods that must bear fruit, and keep pace with modern approaches that make the learner an effective and active element in the educational process, and one of the most effective ways is to employ artificial intelligence applications, which leads us to several problems, the most important of which can be identified as follows:

- What are the most important applications of artificial intelligence in English language education?
- What role can AI applications play in English language education?
- What are the challenges of including AI applications in English language teaching?

1- Definition of artificial intelligence:

The definitions of artificial intelligence varied according to the historical phases it went through and the areas it addressed, including the following:

- "It is one of the fields of science and technology that has developed during the last thirty years. It has relied in its development on many areas of knowledge, the most important of which are electronic engineering, automated calculations, cybernetics, psychology, especially with regard to the perception and mental operation of information, in addition to specialized knowledge related to the fields of application." [2]
- Another defined it as "programming a computer to do tasks that are currently performed well only by humans because they require their intelligence and skills, i.e. artificial intelligence can be considered simulating human intelligence to some extent with a computer. In general, artificial intelligence techniques have been used to equip computer systems with some decision-making, problem-solving and deduction skills, and these are related to or accompany the intelligent behavior of humans." [3]

Through the previously mentioned concepts: Artificial intelligence is a complex field that combines at the same time art and science, and interest in it is no longer limited to computers only, but includes several fields such as linguistics, engineering, psychology, mathematics, and brain surgeons for the purpose of studying the way of human thinking and representing it in the computer. **Among its terms:** non-biological intelligence, machine intelligence, or artificial intelligence. [4]

2- Fields of artificial intelligence: There are many applications that we summarize in the following points:

Expert Systems: It is (an information system based on automated calculation that develops solutions to problems related to a specific system) and it is called a system and not a program because it should include problem-solving components and others supported for work, and these components form the support environment that helps the user to interact with the system and can include highly complex auxiliary media to detect malfunctions, Or predict future events based on scientific foundations, and also includes the possibilities of facilitating the user with him during the operation of the system [5].

- **Natural Language Processing:** These are the systems that make the computer able to understand the normal human language without converting it into computer-specific languages or putting it in a specific form. In other words, the dialogue between the computer and the user, whether when entering, operating or retrieving data, takes place in the normal language spoken and written by humans."

Among its most important applications:

- Machine translation
- Smart Educational Software Development
- In the field of medicine, especially in the diagnosis of diseases and observation of patients in intensive care rooms. [6]
- In the field of exploration for mineral resources.
- In the field of new materials engineering for the analysis of organic and inorganic compounds.
- In the military field.
- In the field of computer itself to automate the process of writing programs (Automatic Programming) in light of the specifications set for it [7].
- **Genetic algorithms:** "They are part of evolutionary computing and a computational method of solving problems by reducing processes, natural use, selection, crossing, transformation, and acceptance to develop problem solving" [8].
- **Neural Networks Systems:** "They are very simplistic models of the human nervous system that display abilities such as learning, generalization, and abstraction. These abilities enable models to learn behavior that resembles human behavior" [9].
- **Automated Theorem Proving:** "It is the development of programs that rely on inference, which consists in deriving equations defined before that so that the new equations are true in all areas of the original equation" [10].
- **Decision support systems (Decision support sysestem):** "Decision support systems are systems that combine databases and mathematical and statistical models, and the essence of decision support systems is prediction and early warning, as decision support systems combine available data with the personal insights of the decision-maker, and all this is done within a mathematical model to predict what the situation will be like in the future" [11].

- **Robotics:** A robot is an automated system of public purpose or utility that resembles a human in carrying out many actions with conditions that may not have been previously defined,^[12] "and contains computer-guided units that mimic the activity of human movement."^[13] "There are three types of robots, each with different uses: **industrial robots**, which are programmed machines that can control or maneuver brilliantly to perform multiple tasks, **and mobile robots**. Machines that move or traverse obstacles to perform certain tasks, transport or carry parts to factory workplaces or deliver mail to offices, and robots, **known as flexible manufacturing systems**, are groups of robots and other machines that can be quickly reprogrammed to transform from performing a work routine to another work routine."^[14]
- **Multimedia:** It is the integration of a set of technologies that help increase and expand the process of dialogue between humans and computers, including input, processing and output techniques for text, graphics, animation, video, audio, and music. It can be said that the use of multimedia has added audio and video capabilities to the process of human-computer dialogue."^[15]
- **Intelligent Agents:** It is one of the applications of data mining from the Internet or from Internet databases, and the smart agent works through a software package that performs specific tasks or duties of a repetitive or predictive nature for the beneficiary, and to support a business activity or other software applications. Smart agent systems contribute to reducing the burden of electronic management, and ensure quick response to customer requests and receive their messages And their observations regarding the quality of products and services provided by the organization.^[16]
- **Machine Learning:** "It is a sub-field of artificial intelligence that is concerned with providing machines with the ability to learn. This is achieved using algorithms that detect patterns of data and data that the machine is exposed to for future application and make decisions and predictions, a process that allows programmers to avoid the need to program these machines for all possible possibilities."^[17]
- **Game playing:** Games are interactive computer programs, the promising field in which AI targets are tracked at the human-level level. Games are made by creating human-level AI entities, for example: enemies, partners, and supporting characters that act almost like humans.^[18]
- **Speech Recognition:** The process of converting speech signals into a series of words, and in the 1990s speech recognition scientists reached an applied level that achieves limited purposes. Although the use of speech recognition in computers has become somewhat acceptable, most users find that the mouse and keyboard remain more convenient, and the usual use is voice dialing, call routing, data entry, and speaker recognition.).^[19]

The importance of artificial intelligence applications in English language education:

The forced shift that we witnessed in light of the spread of the Corona pandemic (COVID-19), from traditional (in-person) education to education via the Internet, was an experience capable of opening our eyes to the need to keep pace with the outputs of the times, and push decision-makers to review education policies, and make them adapt to new technology in order to benefit from it in raising the quality of teaching materials, and standing in front of the challenges that may face the march of knowledge, which makes harnessing artificial intelligence applications in education in general and language teaching English in particular is inevitable.

Teaching English as a second language requires language skills training and practice, and since opportunities to practice these skills in real-life situations are often lacking, students' chances of mastering these skills diminish. Therefore, it was necessary to shift from traditional strategies to communicative strategies, and rely on digital tools to face difficulties in teaching/learning English^[20]

Dr. Zuhair Radwan points to the possibility of using artificial intelligence techniques to confront many difficulties in teaching and learning English, including^[21]:

- Employing machine translation to help students develop their translation abilities.
- The use of written speech techniques (Text to Speech) for the visually impaired and blind.
- Use open digital language dictionaries to enrich the student's vocabulary.
- Using smart programs to increase the speaking skills of English language learners.
- Using measurement and evaluation systems to evaluate and evaluate learners' language levels and skills of passive (listening and reading) and positive (speaking and writing) skills.

Magdy Salah Taha Al-Mahdi believes that artificial intelligence applications are nothing more than an important means of teaching in the future, but the achievement of the desired goals depends on the role of teachers in using them, however, he sees many advantages in carrying out the educational process, and what applies to the focus of the study is Najd^[22]:

- Facilitates the process of communication between learners.
- Gain effective flexibility and relevance to reality.
- Facilitates the learner to use simulation for some assignments that are difficult to actually practice in the classroom.

Technological means help in the wider distribution of audiovisual documents and help to display new knowledge.

- Teachers are assisted with learners in reaching levels of knowledge that they would not have reached without artificial intelligence technology.
- Promotes both independent learning and cooperative learning.

Applications of artificial intelligence in English language education:

The applications of artificial intelligence in teaching foreign languages in general are many and varied, but they hardly depart in their principles from the following:

Machine translation:

Machine translation using artificial intelligence is one of the most important contemporary applications of artificial intelligence in the field of natural language. This type of translation is based on the use of neural networks to analyze texts and translate them into another language automatically. These neural networks are based on the data they are trained on, and use a range of modern technologies such as deep learning and deep neural networks.). The use of artificial intelligence in machine translation is a vital and interesting technique because it can improve the quality and speed of translation^[23].

E-Dictionary:

AI can create and improve the e-lexicon, which is a database of words, vocabulary, phrases, and linguistic structures used in a particular language. The e-dictionary is used in many applications such as search engine optimization, machine translation development and learning human languages.

Automatic voice recognition^[24]:

It is a technique used to convert spoken speech into written text or to analyze sound to extract audio information from it

AI voice recognition technology is used in many applications such as voice control for smart devices, speech recognition in medical and legal applications, converting voice conversations to written text in translation and interpretation services, and verifying the identity of speakers in security, monitoring, monitoring and voice command recognition applications in robots and moving vehicles.

With all the advantages and benefits that voice recognition software provides, it is not possible to develop a 100% recognition system, there are important factors to consider:

- Similar words: They are different words with similar meaning, it is very difficult to distinguish between words by the computer.
- Speech interference: The software has to be clear and understandable, as any additional sound can cause interference, and the device must first be fine-tuned in a noisy environment and mix words.
- Voice fluctuations: Automatic recognition can have difficulty recognizing sounds in noisy atmospheres or in situations of noise, and this can affect recognition accuracy.
- Different dialects and pronunciations: Automatic voice recognition can negatively affect its exposure to different dialects or words different from the ones it is trained on, and this can lead to recognition errors.
- Blurred pronunciation: Automatic recognition can have difficulty recognizing sounds if the pronunciation is not clear or insufficiently understood, and this can lead to errors in recognition.
- Technical issues: Technical problems can reduce the accuracy of automatic voice recognition, and these can include problems such as the lack of quality of the microphone or the software used for recognition.

Obstacles to the use of artificial intelligence applications in the English language:

The uses of AI applications are not without points of criticism, including what was referred to in UNESCO's 2021 publication, entitled: "*Emerging ethical and legal issues related to educational data and algorithms*"^[25] where the multiple challenges and risks resulting from the widespread spread of artificial intelligence technologies in education were noted, including:

- Fear of exploiting data for commercial gain, especially since students are not authorized to give declarations that can be adopted.
 - Privacy concerns, and the use of systems to intrude on the lives of users.
 - Algorithmic biases that undermine fundamental human rights.
- Magdy Salah Taha points to a number of obstacles to exploiting artificial intelligence applications, including:^[26]
- The high cost of using, updating and maintaining artificial intelligence systems.
 - Fear of the behaviors and practices related to human ethics and values that may result from artificial intelligence applications.
 - Losing the ability of artificial intelligence systems and applications to change and develop their work system if they receive the same data every time, which may make them useless at a certain stage.
 - Artificial intelligence applications in education need a digital infrastructure that is not available in most educational institutions, at the level of cities and lack in villages.

How will public opinion within the community, including teachers and parents of learners, be persuaded to enthusiastically engage in the new AI revolution?

- Scarcity of specialists in the development of such artificial intelligence programs and applications within society.

Conclusion

With AI applications, learning English is easier and more effective than ever. It provides a different and enjoyable learning experience, helping students improve their language skills quickly and effectively.

AI applications in English language teaching have many advantages, such as adaptive learning, always-on availability, one-on-one guidance and instant feedback. It also relies on modern technologies such as machine learning and natural language processing techniques, allowing students to effectively improve their level of English.

But although AI applications offer a distinct learning experience, they cannot replace qualified professors and personal interaction with students. AI applications should be used as a learning aid, not as a substitute for traditional education.

In the end, it can be said that the use of artificial intelligence applications in English language teaching is an excellent option to improve the level of English, if used correctly and in conjunction with traditional education and the interaction of qualified teachers.

Recommendations

Through the use of artificial intelligence applications, we will reach future education in our educational institutions. We recommend that you consider the following:

Training teachers and those in charge of the educational process on the use of technology and smart systems.

- Establishing digital programs that ensure interaction and response on the part of learners, and these programs are supervised by qualified and technologically and educationally competent professors.
- Open a specialization in the field of artificial intelligence in universities.
- Raising awareness of the usefulness of artificial intelligence in educational institutions so that the learner can know how to exploit technologies effectively.
- Training professors specialized in artificial intelligence.
- Spreading awareness of the importance of applications.
- Not to neglect the role of educators and teachers in the educational process, believing that the real socially communicative aspect produces a mentally and psychologically healthy generation.

References:

1. Ahmed Shifa, and Naseeb Ragab, The role of expert systems in strategic decision-making in business organizations.
2. Ahmed Hani Beheiry Hammad, Artificial Intelligence Methods in Accounting: Using Expert Systems in Accounting Choices Decisions, Faculty of Commerce, Zagazig University, 245-280.
3. Engy Ashraf Mohamed Ali Al-Metwally, The effectiveness of using electronic educational games in teaching social studies to develop environmental culture among deaf students in the primary stage, Journal of the Faculty of Education - Mansoura University, Issue 116 (October 2021).
4. Artificial intelligence applications as a modern trend to enhance the competitiveness of business organizations, a group of researchers.
5. Muhammad Ali Alsharqawi Artificial intelligence and neural networks.
6. Fahad Al Qasim Artificial Intelligence.
7. Raad Fadel Onouan, Smart Learning with Computer Aid, National Center for Electronic Computers, Al-Iraqiya Magazine, Scientific Academic Journal, Volume 25, Volume 1, 30-06-1995, 27-36.
8. Zuhair Mohammed Rashid Radwan, Artificial Intelligence and its Impact on Development, Asbar Forum (December 2017), added on: 17/12/2017, accessed: 15/04/2023, Retrieved from: <https://multaqaasbar.com>
9. Samia Shahbi Qamoura, Artificial intelligence between reality and hope, a technical and field study, i.e. Muhammad, Haizia Krush.
10. Abbas Sabti, Electronic Games in the School Curriculum, added 17/04/2016, accessed 15/04/2023. alukah.net. Recovered from <https://goo.gl/hBvguU>
11. Magdy Salah Taha Al-Mahdi, Education and Future Challenges in the Light of the Philosophy of Artificial Intelligence, Journal of Educational Technology and Digital Learning, Faculty of Education - Mansoura University, Volume 2, Issue 5, November 2021.
12. UNESCO, Artificial Intelligence and Education Guidance for Policy Makers, (2021).
13. Mowaffaq Abdul Hussein Mohamed, Sami Anbar, The quality of audit by adopting artificial intelligence - applied research in a sample of regulatory bodies operating in the Federal Financial Audit Office.
14. Nabil Ali, Arabs and the Information Age.
15. Dzmitry Bahdanau, Neural Machine Translation By Jointly Learning To Align And Translate, Published as a conference paper at ICLR 2015, <https://arxiv.org/pdf/1409.0473.pdf>
16. Haupin, R. (2016). Improving receptive oral language skills of English language learners to enhance achievement in reading Recovery. Doctor of Education, Widener University. Retrieved from <https://search.proquest.com/docview/1803233737?accountid=178282> . P 04
17. Sunila Godara, Speech Recognition Using Machine Learning: A Review, International Journal of Electronics Engineering, Volume 11, Issue 1 Jan 2019-June 2019, p974.

- [1] مجدي صلاح طه المهدي، التعليم وتحديات المستقبل: في ضوء فلسفة الذكاء الاصطناعي، مجلة تكنولوجيا التعليم والتعليم الرقمي، مج 2، ع 5، نوفمبر 2021، ص 97-140.
- [2] أحمد هاني بحيري حماد، أساليب الذكاء الاصطناعي في المحاسبة: استخدام نظم الخبير في قرارات الاختيارات المحاسبية، كلية التجارة، جامعة الزقازيق، 245-280، ص 243.
- [3] رعد فاضل عنوان، التعلّم الذكي بمساعدة الحاسبة، المركز القومي للحاسبات الإلكترونية، مجلّة العراقية، المجلّة الأكاديمية العلميّة، مج 25، ع 1، 30-06-1995م، ص 27-36، ص 27.
- [4] سامية شهبي قمورة، الذكاء الاصطناعي بين الواقع والمأمول دراسة تقنية وميدانية، بأي محمد، حيزية كروش، ص 1.
- [5] موفق عبد الحسين محمد، سامي عنبر، جودة التدقيق باعتماد الذكاء الاصطناعي - بحث تطبيقي في عينة من الهيئات الرقابية العاملة في ديوان الرقابة المالية الاتحادية، ص 44، 45.
- [6] ينظر: نبيل علي، العرب وعصر المعلومات، ص 144.
- [7] ينظر: المرجع نفسه، ص 144.
- [8] الذكاء الاصطناعي، ترجمة وإعداد: فهد آل قاسم، ص 17.
- [9] دور الأنظمة الخبيرة في صناعة القرارات الاستراتيجية في منظمات الأعمال، أحمد شفاء، ونصيب رجب، ص 187.
- [10] الذكاء الاصطناعي والشبكات العصبية، محمد علي الشرفاوي، ص 41.
- [11] جودة التدقيق باعتماد الذكاء الاصطناعي - بحث تطبيقي في عينة من الهيئات الرقابية العاملة في ديوان الرقابة المالية الاتحادية، موفق عبد الحسين محمد، سامي عنبر، ص 45.
- [12] الذكاء الاصطناعي والشبكات العصبية، محمد علي الشرفاوي، ص 49.
- [13] دور الأنظمة الخبيرة في صناعة القرارات الاستراتيجية في منظمات الأعمال، أحمد شفاء، ونصيب رجب، ص 187.
- [14] أساليب الذكاء الاصطناعي في المحاسبة: استخدام نظم الخبير في قرارات الاختيارات المحاسبية، أحمد هاني بحيري حماد، ص 246.
- [15] الذكاء الاصطناعي والشبكات العصبية، محمد علي الشرفاوي، ص 59.
- [16] ينظر: تطبيقات الذكاء الاصطناعي كتوجه حديث لتعزيز تنافسية منظمات الأعمال، مجموعة من الباحثين، ص 20.
- [17] تطبيقات الذكاء الاصطناعي كتوجه حديث لتعزيز تنافسية منظمات الأعمال، مجموعة من الباحثين، ص 111.
- [18] الذكاء الاصطناعي، ترجمة وإعداد: فهد آل قاسم، ص 28.
- [19] الذكاء الاصطناعي، ترجمة وإعداد: فهد آل قاسم، ص 28.
- [20] زهير محمد رشيد رضوان، الذكاء الاصطناعي وأثره على التنمية، ملتقى أسبار (ديسمبر 2017)، تاريخ الإضافة: 17 / 12 / 2017، تاريخ الاطلاع: 2023/04/15، تم الاسترداد من <https://multaqaasbar.com>.
- [21] مجدي صلاح طه المهدي، التعليم وتحديات المستقبل في ضوء فلسفة الذكاء الاصطناعي، مجلة تكنولوجيا التعليم والتعليم الرقمي، كلية التربية - جامعة المنصورة، المجلد 2، العدد 5، نوفمبر 2021، ص 137-.
- [22] منظمة اليونسكو، الذكاء الاصطناعي والتعليم إرشادات لوضعي السياسات، (2021)، ص 25.
- [23] مجدي صلاح طه المهدي، المرجع السابق، ص 139-140.

1- Magdy Salah Taha Al-Mahdi, Education and Future Challenges: In Light of the Philosophy of Artificial Intelligence, Journal of Educational Technology and Digital Education, Volume 2, Volume 5, November 2021, pp. 97-140.

[2] Ahmed Hani Beheiry Hammad, Methods of Artificial Intelligence in Accounting: Using Expert Systems in Accounting Choices Decisions, Faculty of Commerce, Zagazig University, 245-280, pp. 243.

[3] Raad Fadel Title, Smart Learning with Computer Aid, National Center for Electronic Computers, Al-Iraqiya Magazine, Scientific Academic Journal, vol. 25, p. 1, 30-06-1995, 27-36, p. 27.

[4] Samia Shahbi Qamoura, Artificial Intelligence between Reality and Hope: A Technical and Field Study, Ay Muhammad, Hizia Krush, p. 1.

[5] Mowaffaq Abdul Hussein Mohamed, Sami Anbar, The Quality of Audit by Adopting Artificial Intelligence - An Applied Research in a Sample of Regulatory Bodies Working in the Federal Financial Audit Bureau -, pp. 44, 45.

[6] See: Nabil Ali, Arabs and the Information Age, p. 144.

[7] See: ibid., p. 144.

[8] Artificial Intelligence, translated and prepared by: Fahd Al Qasim, p. 17.

[9] The Role of Expert Systems in Strategic Decision-Making in Business Organizations, Ahmed Shifa, and Naseeb Rajab, p. 187. ...

Artificial Intelligence and Neural Networks, Muhammad Ali Al-Sharqawi, p. 41.

[11] The quality of audit by adopting artificial intelligence - applied research in a sample of regulatory bodies operating in the Federal Audit Office -, Muwaffaq Abdul Hussein Mohamed, Sami Anbar, p. 45.

[12] Artificial Intelligence and Neural Networks, Muhammad Ali Al-Sharqawi, p. 49.

[13] The Role of Expert Systems in Strategic Decision Making in Business Organizations, Ahmed Shifaa and Naseeb Rajab, p. 187.

[14] Artificial Intelligence Methods in Accounting: Using Expert Systems in Accounting Choices Decisions, Ahmed Hani Beheiry Hammad, p. 246.

[15] Artificial Intelligence and Neural Networks, Muhammad Ali Al-Sharqawi, p. 59.

[16] See: Artificial Intelligence Applications as a Modern Trend to Enhance the Competitiveness of Business Organizations, Group of Researchers, p. 20.

- [17] Applications of artificial intelligence as a modern trend to enhance the competitiveness of business organizations, a group of researchers, p. 111.
- [18] Artificial Intelligence, translated and prepared by: Fahd Al Qassim, p. 28.
- [19] Artificial Intelligence, translated and prepared by: Fahd Al Qasim, p. 28.
- [20] Haupin, R. (2016). Improving receptive oral language skills of English language learners to enhance achievement in reading Recovery. Doctor of Education, Widener University. Retrieved from <https://search.proquest.com/docview/1803233737?accountid=178282> . P 04
- Zuhair Mohamed Rashid Radwan, Artificial Intelligence and its Impact on Development, Asbar Forum (December 2017), added on: 17/12/2017, accessed: 15/04/2023, retrieved from: <https://multaqaasbar.com>
- [22] Magdy Salah Taha Al-Mahdi, Education and Future Challenges in the Light of the Philosophy of Artificial Intelligence, Journal of Educational Technology and Digital Learning, Faculty of Education - Mansoura University, Volume 2, Issue 5, November 2021, pp. 137-.
- [23] Dzmitry Bahdanau, Neural Machine Translation By Jointly Learning To Align And Translate, Published as a conference paper at ICLR 2015, <https://arxiv.org/pdf/1409.0473.pdf>
- [24] Sunila Godara, Speech Recognition Using Machine Learning: A Review, International Journal of Electronics Engineering, Volume 11, Issue 1 Jan 2019-June 2019, p974.
- [25] UNESCO, Artificial Intelligence and Education as Guidance for Policy Makers, (2021), p. 25.
- [26] Magdy Salah Taha Al-Mahdi, previous reference, pp. 139-140.