Artificial Intelligence in Educational Institutions With Some Cases from Libya

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ABSTRACT

Artificial Intelligence, AI, is a new wave of advanced technological applications. It is expected to play great roles in all fields of Life, especially in education and research. Some countries are working hard in this field. Most of the countries are staying back doing nothing. Some universities as MIT in USA has made a range of AI courses available at its Open Learning platform. Countries with no real digital background can do nothing. AI can save time and effort for learning, teaching and training. Some of Libyan universities tried to start using this new trend of technology. This needs a great effort for training on how to deal with AI so that they can compete with other universities in the world. Being away from using AI makes our universites far away from other nations. Following up new technologies is vital for academic institution, Libyan universities are also meant by this. Now, some universities in the world launched departments for AI. Libyan universities have to work hard for emerging AI in their programs, with alot of financial costs and intensive training programs.

Keywords: AI, digital background, learning and teaching, modern research, academic departments for AI, Libyan universities

الملخص

الذكاء الاصطناعي، موجة جديدة من التطبيقات التكنولوجية المتقدمة. ومن المتوقع أن يلعب أدوارا كبيرة في جميع مجالات الحياة، وخاصة في التعليم والبحث العلمي. وتعمل بعض البلدان بجد في هذا المجال، بينما معظم البلدان تبقى في الخلف دون القيام بأي شيء. أتاحت بعض الجامعات مثل معهد ماساتشوستس للتكنولوجيا في الولايات المتحدة الأمريكية مجموعة من الدورات التدريبية في الذكاء الاصطناعي على منصة التعلم المفتوح الخاصة بها. لا يمكن للبلدان التي ليس لديها بنية رقمية حقيقية أن تفعل شيئا. يمكن أن يوفر الذكاء الاصطناعي الوقت والجهد للتعلم والتعليم والتدريب. وقد حاولت بعض الجامعات الليبية البدء في استخدام هذا الاتجاه الجديد للتكنولوجيا. وهذا يحتاج إلى جهد كبير للتدريب على كيفية التعامل مع الذكاء الاصطناعي حتى تتمكن هذه الجامعات أن تنافس الجامعات الأخرى في العالم. إن الابتعاد عن استخدام الذكاء الاصطناعي يجعل جامعاتنا بعيدة ومتخلفة عن جامعات الدول الأخرى. تعد متابعة التقنيات الجديدة

أمرا حيويا للمؤسسات الأكاديمية، كما أن الجامعات الليبية معنية هنا. الآن، أطلقت بعض الجامعات في العالم أقساما للذكاء الاصطناعي. على الجامعات الليبية أن تسعى جاهدة لأجل الذكاء الاصطناعي في برامجها مقابل تكاليف مالية عالية وبرامج تدريبية مكثفة.

الكلمات المفتاحية: الذكاء الاصطناعي، البنية الرقمية، التعلم والتعليم، البحث الحديث، أقسام جامعية للذكاء الاصطناعي

Introduction

No need to say what artificial intelligence, AI, is, however, it can be stated that AI is a modern trend in 21st century. It is a result of technological advancements made by human along the last centuries. The world is currently paying a lot of attention for this new digital technology to get the expected benefits in different fields.

Definitions of AI

Artificial intelligence has been defined in different ways. A definition given by The Encyclopedia Britannica (Copeland, 2024) defines Artificial intelligence (AI) as "the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings", for it is computer is the only way of using this new wave of technology. So that it can perform different tasks which are generally related to human intelligence, but now they can be performed during very short periods of time. Another definition of AI is "that it is a technology that enables machines to imitate various complex human skills" (Sheikh, Haroon; Prins, Corien & Schrijvers, Erik; 2023). The National Artificial Intelligence Act of 2020 defined it as: "The term *artificial intelligence* means a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments." (The Department of State, 2020). These definitions discuss artificial intelligence as the power of machine tasks at a level which is comparatively higher than human intelligence within a very short time depending on different logic operations.

What AI can do

In general, according to the definition given above by Encyclopedia Britannica (Copeland, 2024), AI can contribute in developing and digitalizing courses at educational institutions at a large degree which can provide good services for education, research and innovation as well as in other fields.

AI can make computers solve problems in the same way a person does. It can also train systems to deal with large amounts of information for achieving tasks. It can also make conversations and it can do a lot of things at a higher quality than a human can do online (BBC, 2024). AI can be helpful in different fields as engineering design, computer operations, industry, agricultual projects, business management, learning and teaching, etc. (Sharma, 2024). It can also contribute in many tasks that includes the fields of teaching, learning and research (Ashammari, 2024).

AI is helpful in many fields, such as healthcare, finance, transportation, manufacturing, entertainment, agriculture, energy and education. In the field of education; 'AI can be used in education to personalize learning and provide students with personalized feedback. AI algorithms can also be used to analyze student data and identify areas where students need additional support' (Bousmaha, 2023). This study is concerned with the use of AI in education in general and in universities in particular. AI can perform a great number of jobs. However, there can be many tasks to do ; research, communication, and education.

Different studies found that there are "significant positive relationships between AI literacy, AI usage, AI learning outcomes and academic performance." This needs a lot of training on using AI and how to benefit from it. Recognizing the different uses of AI as well as its technologies and tools for learning purposes leads to better learning results and great academic performance. It also helps in analysing and solving problems (Singh et al., 2024).

Enhanced Research Capabilities

Artificial Intelligence can help in doing research; suggesting ideas and topics that the researcher may not know. It can also increase his knowledge about through articles. It is also well-known that AI can create contents of different types with different sizes. That depends on just pushing one key of the keyboard. Teachers can have lectures and even tests created by AI. It can also suggest topics for research papers and articles depending on the needs of either the student or the teacher (Padakanti, Srikanth; Kalva, Phanindra & Kommidi, Venkatarama Reddy, 2024).

Different applications powered by AI can do a lot of work like answering questions, managing schedules, and can communications between them easier. AI can perform processes that a human needs a great effort and longer times to perform, but AI can do with no real effort and with no need to spend longer times for that. It can also analyze very large data very quickly with no comparison to human. This is also a great achievement. Human intelligence may be able to

do things at a limited rate. This includes predicting some results for the hypotheses of studies and can do that effectively. "There is renewed interest in the role of AI in research and research policy as an enabler of new methods, processes, management and evaluation which is still relatively under-explored." (Chubb, Cowling & Reed., 2022.).

AI is helpful for information gathering and other. There are some fears of using AI in research and generating fake knowledge and « proliferat[ing] negative aspects of academic culture in that the expansion of AI in research should assist and not replace human creativity" (Ibid). There are some challenges about the great progress of AI in the near future. However, it can help universities and institutions having more thoughts for research. In general, AI can help students all over the world have a virtual meeting in their platforms and cooperate for achieving a task regardless of their location, they do not have the same physical location.

AI in Education

AI can help humans in learning and achieving their goals in a good manner. AI help finding many applications that can support the teaching and learning process to be more more effective.

AI can help draw good agendas for the activities of teachers such as scheduling classes, grading, writing quizzes and test. This can help them save time and effort for more efficient activities. It can also let teachers avoid having stress all the time and therefore they can have time
for research. AI can help tabulating the time for using resources and laboratories either at school or university efficiently. In short, AI can do every thing at school, at university or at work (Fitria, 2023). It can make things better.

Different technologies can shape applying AI educational contexts in the coming years. AI tools is a growing wave in teaching and learning. These tools can be helpful in overcoming the challenges in the field of learning and teaching. These tools can help students perform more better through relevant feedback and increasing their ability to learn more effectively (Ibid).

Administering Education : Examples of AI Educations in the World

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Examples of AI Educations in the World

AI can produce material for self-study learning. This can be according to individual needs of persons which can adopt their skills for learning and performance. It can also help for making systems for teaching that can make a good service for learners and letting them have their feedback and so they can receive support. It can make the process of understanding easier and effective (Fitria, 2021).

There is a number of universities in the world that provide educational programs on AI, such as MIT and Stanford University. MIT has made a range of AI courses available at its Open Learning platform. These courses cover topics from machine learning to computational thinking. While Stanford provides a program on Ai for comprehensive AI courses that focus on research and innovation. AI can help in the field of personal learning as it makes the necessary materials such as lectures available on the Internet so that everyone can have access to (Zhai et al., 2021).

Many researches have been conducted on artificial intelleigence concerning its applications in different firelds, which also cover the domain of education in all its stages. This covers students, teachers and the relations between them. It also covers the activities that can be practiced in classes. AI can help in learning and deep learning. It also includes some ethical issues in applying AI in education. Researches on AI in education can also be helpful for the engineers of AI, so that they can take any critical issues in consideration (Zhai et al., 2021.).

Innovation in Teaching

AI can do a lot for education, it can also gamify learning activities so that it helps the learners or students to have good learning experience. They can be engaged in different types of language activities. Students can interactive more and more.

Teaching about AI and Developing Infrastructure

Since the beginning of 2023, many training courses and lectures in AI were programmed for public. Another type of experts has come to the surface, they claim they are AI experts. Recently, AI can help in finding the fields of scientific research that a person can enjoy for study or just to know about and they can have data set in different fields.

Infrastructure Development

In this part, we need to have enough number of computers as well as we need all educational data for supporting digital learning; for example, in university we need to have lists of courses and of the name of teachers available for teaching. For physical attendance, we need to have a list of the halls available on site for lectures and training.

Technical Support and Training

It is a necessary component in every institution. It must be available for helping students and faculty for overcoming any kind of troubles and problмmes that may happen on the campus.

Buildings are necessary for training, as training programs cannot be performed unless the necessary facilituies are available. Training is necessary to develop the abilities of the students who have no real practical skills. Training and developing skills can prepare students to be able to respond to the market needs. Training is needed for both teachers and students in order to train and to develop their skills for using new technologies and applications in the market.

Curricula can be said not updated if it has been made some years ago. It must be updated every 3 or 4 years. So, the students can follow recent updates in the world. Therefore, these updates can follow the rapid advancements in the world. Updating curricula is very important so that students can follow technical updating. When the universities can provide electronic services to their students and staffs, their rank among universities in the world will be better because of that service and other similar services.

Funding for Digitizing Universities

The operation of digitizing universities requires funding. This funding can vary from one university to another. It depends on several factors: “the size of the institution, the scope of the digital transformation, and the specific technologies being implemented.”

There are also "some key components that typically require funding" for building an infrastructure for internet and all computer equipment, and Software and Platforms for educational activities containing lecturing/teaching, administration. Of course, it covers training and development for the students and staff of the faculty. This also covers other activities and tasks such cybersecurity for protecting the system and the data. Creating digital content; i.e. digital learning material.

Funding must also go for research so that universities expand their activities to cover research and contribute to making knowledge in the world.

Artificial Intelligence in Libya

Among more than 20 universities in Libya, only four have made a mark-stone in this field. They have worked hard in the last years so that they could have entered the field of digitalization of their academic activities (Educrank, 2024).

Artificial Intelligence and Libyan Universities

University	Local Rank	African Rank	World Rank
University of Benghazi	1	105	3294
University of Tripoli	2	111	3437
University of Misurata	3	167	4409
University of Omar Al-Mukhtar	4	169	4442
University of Sebha	5	192	4734
University of Sirt	6	253	5526

Future of AI in Libya

For the future of Libya and how much it can benefit from AI, the response was that AI can "foster a culture of innovation and research excellence". "Digitalizing universities in Libya involves several key steps and considerations to ensure a smooth transition and effective implementation" (Educrank, 2024). For benefiting from AI, some conditions must be there, high Internet connectivity for the purpose of digital learning.

Artificial Intelligence Projects in Libya

The field of Artificial intelligence is growing very fast. It is one of the fields of InfoTech (IT). It is applied in different areas as health, education, and even in smart cities. The issue is not only related to apply this technology in the fields mentioned above but also it extends to cover teaching AI as a major for undergraduate studies (Libyan International Medical University, 2024).

These programs aim at enabling the students to "understand and apply artificial intelligence and data science tools and algorithms in order to devise smart and intelligent systems" (Ibid).

These programs aim at enabling the students to "understand and apply artificial intelligence and data science tools and algorithms in order to devise smart and intelligent systems" (Ibid). According to a study conducted by Singh and Bhathal (2025) and covered 314 faculty members from various Libyan universities, there are some significant obstacles that impede the effective use of AI in ducation in Libyan universities. These obstacles include « weak ducational policies, inadequate digital infrastructure, and high implementation costs ». For improving the Libyan educational outcomes, there are many crucial problems and challenges that have to be overcome. ''The most significant challenges in employing artificial intelligence in the Libyan higher education are the high financial costs of implementing AI programs in these institutions.'' (Singh, Sahibdeep & Bhathal, Gurjit Singh, 2025).

Conclusion

Emerging Artificial Intelligence, AI, in different activities has already started a new race in using technology. For getting the ultimate benefits of AI, societies needs to have condensed programs for training all targeted institutions and people as they all need to know about and how to benefit from AI in their specializations. In order to prepare for the new era of using this technology in Libya in general and in the Libyan higher educational system, there are many significant problems and obstacles that impede implementing the programs of AI. This mainly includes the absence of the necessary infrastructure in the universities as well as the high financial cost for applying these programs.

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