مجلة ساحل المعرفة للعلوم الإنسانية والتطبيقية
Sahel Almarifah Journal of Humanities and Applied Sciences
تصدر عن الاكاديمية الليبية فرع الساحل الغربي
المجلد الأول - العدد الثاني – 2025 – الصفحات(101-112)

دور الذكاء الاصطناعي في التعليم العالي: التحديات والفرص المتاحة لأعضاء هيئة التدريس

جلال محمد الجديع[1،*] أسماء مصباح سعيد[2]

[1,2] قسم الطاقات المتجددة، كلية الموارد الطبيعية، الزاوية، العجيلات، ليبيا.

الإيميل الأكاديمي: jalal.jadea@academy.edu.ly

The Role of Artificial Intelligence in Higher Education: Faculty Opportunities and Challenges

Jalal M Aljidaya[1,*], Assma Musbah Said [2]

[1,2] College of Natural Resources Engineering Faculty, University of Zawia, Al- Ajilat , Libya.

Received: 01-10- 2025 Accepted: 01-11- 2025 Published: 30-12- 2025

ABSTRACT

This study explores the educational benefits of artificial intelligence (AI) and its applications in teaching. It reviews basic AI concepts and types, aiming to enhance understanding and promote effective use in educational environments. A survey conducted at selected universities achieved an 82.7% participation rate, indicating reliable results. It found that 94.1% of teachers had a good understanding of AI, while only 37 had participated in training courses. Approximately 60 teachers expressed interest in such training. Additionally, 86.5% felt confident using AI tools, though 23.1% faced technical challenges. Overall, 94.3% viewed AI as an effective tool for improving education quality, and 98.1% advocated for including AI courses in academic training.

Keywords: Artificial, Computer, Educational, Intelligence, Websites.

ملخـــــــص البحـــــــث

تستعرض هذه الورقة اهمية الذكاء الاصطناعي في التعليم، من خلال تطبيقاته ودوره. يبدأ البحث بمراجعة مفاهيم الذكاء الاصطناعي وأنواعه، مع التركيز على تعزيز فهم الاستخدام الفعال للأدوات في بيئات التعليم. أُجري مسح اجتماعي في جامعات مختارة، حيث بلغت نسبة المشاركة 82.7%، مما يبرز موثوقية النتائج. أظهر المسح أن 94.1% من المعلمين لديهم فهم جيد للذكاء الاصطناعي. ومع ذلك، فقط 37 معلمًا شاركوا في دورات تدريبية، بينما أبدى حوالي 60 معلمًا اهتمامهم بالمشاركة في مثل هذه الدورات. أظهر 86.5% من المعلمين معرفتهم باستخدام أدوات الذكاء الاصطناعي، بينما واجه 23.1% تحديات تتعلق بالمهارات التقنية. قرابة 94.3% من المعلمين يعتبرون الذكاء الاصطناعي أداة فعالة لتحسين جودة التعليم، و98.1% طالبوا بإدراج دورات تدريبية فيه.

الكلمات الدالة: الذكاء الاصطناعي، الحاسوب، التعليم، المواقع الإلكترونية، التطبيقات التعليمية.

Introduction:

Artificial Intelligence (AI) is a branch of computer science that focuses on developing intelligent computer systems capable of understanding, analysing, and responding to inputs. It plays a vital role in reducing human workload and solving complex mathematical and logical problems [1].

Many fields contribute to artificial intelligence, including psychology, biology, mathematics, philosophy, statistics, and last but not least, computer science. The main goal of AI is to develop clearer, explainable, and interpretable systems that can help create the most capable intelligent agents [1].

Definition of artificial intelligence

In fact, there is no universally accepted definition of the concept. Several different definitions are used, which can lead to confusion. The variety of definitions is not due to indifference but is inherent to AI itself. Defining AI is challenging; indeed, there is no widely agreed-upon definition. In its most stringent form, AI refers to the imitation of human intelligence by computers. Purists argue that many current applications are still relatively simple and therefore not true AI. This makes that definition unsuitable for our report; using it would imply that AI does not currently exist. We would then treat the phenomenon as nonexistent.

Research Methodology:

A descriptive-analytical approach was used to achieve good results. A descriptive-analytical approach was employed to generate positive results.

Research Problem:

The research problem focused on a key and vital main question:

- What role does artificial intelligence have in enhancing the quality of higher education?

Importance of the research:

1- Highlighting the key applications of artificial intelligence in education.

2- Inform faculty members about the main applications of artificial intelligence and focus their attention on how they are used.

Research objectives:

The research aims to promote the use of artificial intelligence applications in education among university faculty members and to identify the challenges related to their implementation.

The Value and Significance of Artificial Intelligence

Artificial Intelligence (AI) is very important to human life and impacts many areas, including technology, the economy, healthcare, education, and society as a whole.

AI has become an essential part of our society, with significant potential for societal, technological, and cultural evolution in the years ahead [3,4].

AI improves efficiency across many areas of our lives, including production, logistics, resource management, and public services. Automation and optimisation powered by AI save time and resources. AI technologies also enable simple, global communication and teamwork. From social media to online collaboration tools, AI helps connect people worldwide.

AI technology is poised for rapid growth, fueled by advanced algorithms and models, leading to enhanced learning abilities in AI systems. Its expansion into diverse fields such as agriculture, energy, environmental conservation, and fashion will aid in developing smart, connected cities and improving urban infrastructure while creating new work and communication paradigms. Furthermore, AI will facilitate flexible and personalized education tailored to individual student needs 5. As AI continues to evolve, ethical debates and regulations regarding its use, particularly concerning data protection, will become more prevalent. This evolution is also expected to

generate new job opportunities in AI system development and management, promising a significant impact on human life.

In the future, AI will become more common. It is expected to greatly influence scientific research, healthcare, mobility, security, automated learning, and much more [3].

Its ongoing development will yield more advanced, adaptable AI systems that can learn and adapt to our needs.

However, it is essential to manage the development and implementation of AI ethically and responsibly to maximise benefits and minimise potential risks [3].

Types of Artificial Intelligence

Artificial intelligence has usually been categorised in various ways.

Some indicate that there are three types of knowledge in AI [6]:

1- Narrow Artificial Intelligence (ANI):
Also known as weak artificial intelligence, it is a type of AI with a limited range of capabilities, focusing on a single task. It is the only artificial intelligence.

Narrow artificial intelligence is one of the most common types of electronic services, such as Google Translate, Cortana, or Alexa. They are all examples of machine intelligence that use Natural Language Processing (NLP) [7].

2- Artificial General Intelligence (AGI)
This type of artificial intelligence is roughly equivalent to human capabilities.

3- Artificial Super Intelligence (ASI):
Artificial Super Intelligence (ASI) has a bright and promising future. To reach this position, an AI will need to outperform humans in every aspect. This type of AI will perform smoothly. This type of AI will perform well in tasks such as decision-making, the arts, and emotional relationships [7].

The role of artificial intelligence applications in higher education:

Artificial intelligence encompasses all forms of electronically enhanced learning, processing and

teaching. The simple, AI-influenced approach allows learners to adapt their learning to their personal needs.

Therefore, we can say that artificial intelligence is a well-designed tool that provides flexible organisation, collaboration opportunities, and management of the teaching process, allowing students and teachers to continue learning effectively. Doctors are also responsible for artificial intelligence in colleges. AI teachers can create a learning environment that helps students better understand the content and build connections with teachers and peers.

The entire world is entirely digitised, clearly influenced by the digital age. The digital world has definitely impacted education. High-speed technology provides unlimited opportunities for practice and learning in this field of research.

With worldwide interest in computers, artificial intelligence is focusing on the learning environment. This AI introduces various activities in an academic setting. Computers can be beneficial to both teachers and students. With the advent of the computer, artificial intelligence plays an essential role in colleges. There have been many programs in different fields and professional categories. Conventional methods of teaching and learning often lack effective ways to present intuitive, explicit material, whereas AI can compensate with the latest software and hardware [8]. From the perspective of an Artificial Intelligence Program, classroom teaching offers more opportunities than other teaching methods. Thus, the focus is on the adoption of artificial intelligence both in and out of the classroom [8].

Requirements for employing artificial intelligence in higher education:

The essential elements required for higher education to be based on artificial intelligence applications and capable of meeting future challenges are as follows**:**

1- Technical and engineering requirements:

- Introducing artificial intelligence applications and creating a receptive learning environment for them**.**
- Safety and security of transfer, translation, and localisation of artificial intelligence applications**.**
- Educational institutions and ministries contract directly with programming companies and officially use applications and programs.

- Training and qualification to use artificial intelligence applications**.**
- Verify the accuracy of the information provided about the applications used.

2- Human requirements:

- An administration capable of providing trainers to qualify educational staff**.**
- An administration provides experts capable of designing and developing artificial intelligence applications.
- An administration that is familiar with the regulations and systems that govern the application of artificial intelligence in the teaching process.
- Having qualified scientific staff and trained students capable of interacting and engaging with artificial intelligence applications [7]**.**
- There are technicians available for computer maintenance and troubleshooting, as well as network repair [7].

Examples of the most essential platforms available to support teachers in higher education:

First: Educational platforms:

- **Magic School**:

Magic School AI is an integrated platform that combines artificial intelligence with the needs of modern education, providing innovative solutions to facilitate lesson planning, assessment preparation, and the creation of individualised learning plans. The platform stands out for its ability to save teachers time, enhance communication among all stakeholders in the educational process, and ensure the highest standards of privacy and security. With over 60 specialised educational tools and comprehensive training resources, it is an ideal choice for teachers, administrators, and students seeking to develop an effective and sustainable learning environment. Its integration with learning management systems and easy export support make it a powerful tool for any educator striving for innovation [8], see Figures 1-3.

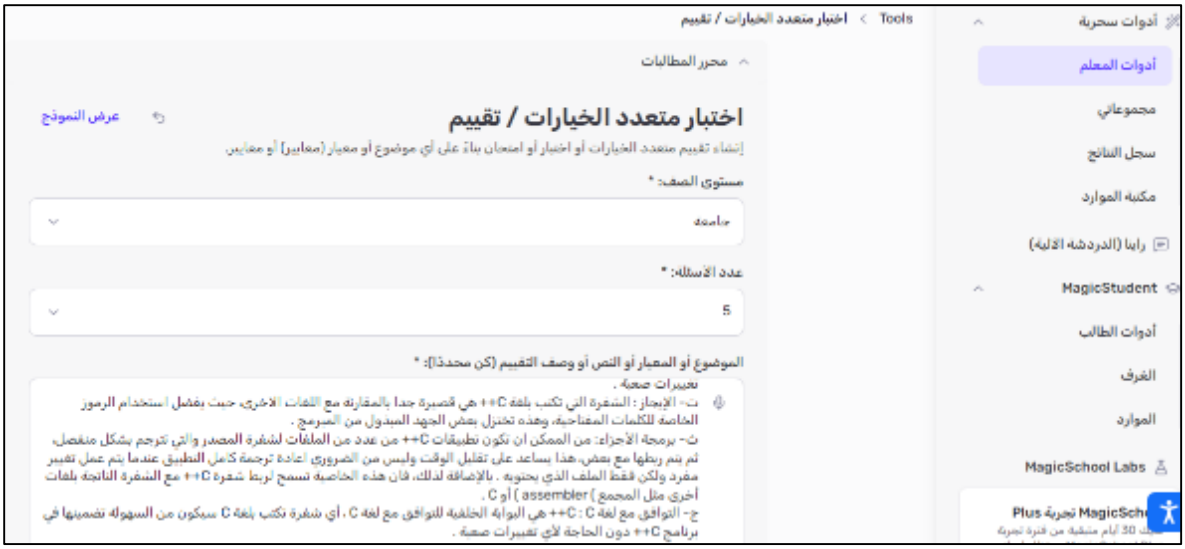
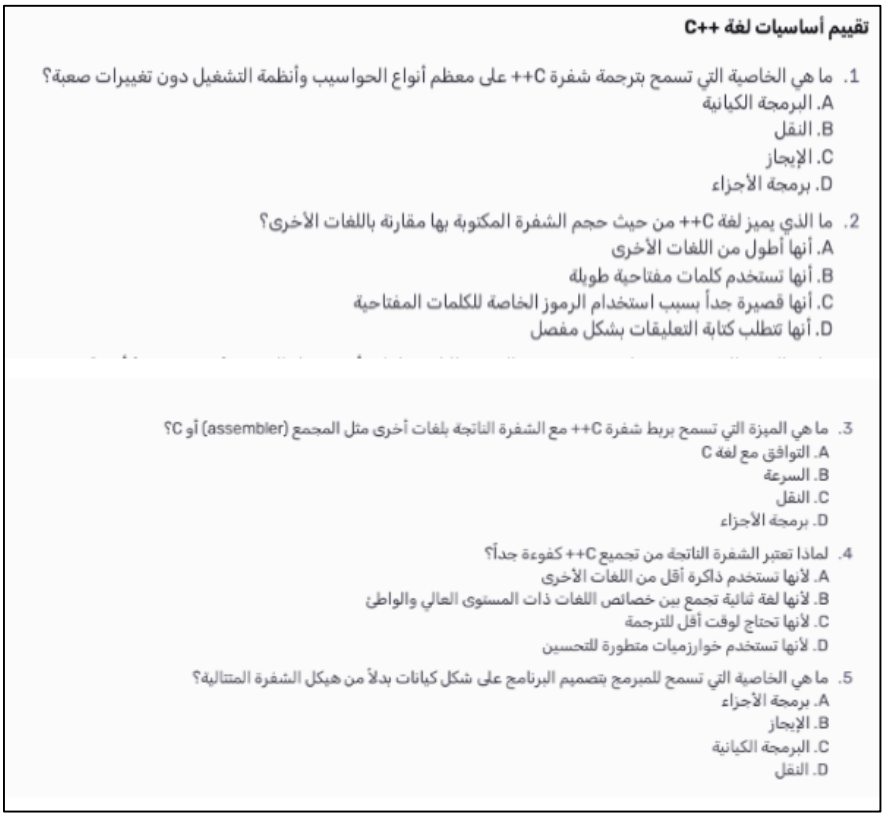


Figure 1: illustrates the lesson evaluation process.



تقييم أساسيات لغة C++

1. ما هي الخاصية التي تسمح بترجمة شفرة C++ على معظم أنواع الحواسيب وأنظمة التشغيل دون تغييرات صعبة؟
   A. البرمجة الكيانية
   B. النقل
   C. الإيجاز
   D. برمجة الأجزاء
2. ما الذي يميز لغة C++ من حيث حجم الشفرة المكتوبة بها مقارنة باللغات الأخرى؟
   A. أنها أطول من اللغات الأخرى
   B. أنها تستخدم كلمات مفتاحية طويلة
   C. أنها قصيرة جداً بسبب استخدام الرموز الخاصة للكلمات المفتاحية
   D. أنها تتطلب كتابة التعليقات بشكل مفصل
3. ما هي الميزة التي تسمح بربط شفرة C++ مع الشفرة الناتجة بلغات أخرى مثل المجمع (assembler) أو C؟
   A. التوافق مع لغة C
   B. السرعة
   C. النقل
   D. برمجة الأجزاء
4. لماذا تعتبر الشفرة الناتجة من تجميع C++ كفوءة جداً؟
   A. لأنها تستخدم ذاكرة أقل من اللغات الأخرى
   B. لأنها لغة ثنائية تجمع بين خصائص اللغات ذات المستوى العالي والواطئ
   C. لأنها تحتاج لوقت أقل للترجمة
   D. لأنها تستخدم خوارزميات متطورة للتحسين
5. ما هي الخاصية التي تسمح للمبرمج بتصميم البرنامج على شكل كيانات بدلاً من هيكل الشفرة المتتالية؟
   A. برمجة الأجزاء
   B. الإيجاز
   C. البرمجة الكيانية
   D. النقل

Figure 2: illustrates the process of generating questions from the lesson evaluation process.

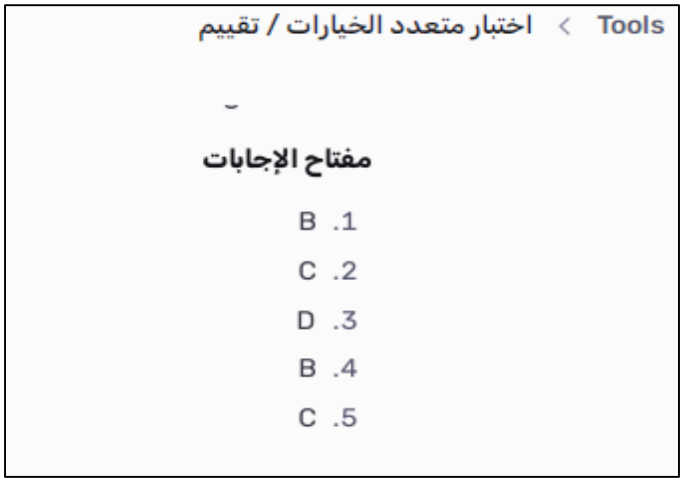


Figure 3: Illustrates the process of generating questions from the lesson evaluation process.

- **Gradesco:**

Gradescope is an online grading tool that allows paper-based assignments to be scanned, submitted, graded, and analysed quickly and efficiently [9].

Second: Assistive artificial intelligence platforms:

- **Simplified**:

Answering questions, writing suggested topics, correcting previous texts, writing and drafting reports and emails, advanced conversation, translation, spelling and grammar correction.[7]

- **ChatGPT:**

It is the world's most famous intelligent assistant and provides many services that benefit teachers and learners in higher education. Among the most important of these possible tasks are: generating texts, correcting them, searching for sources, translation, converting written texts into spoken words, and vice versa, and so on [7].

- **Copilot:**

It is the famous graphics. Microsoft Assistant has advanced capabilities for editorial creation, answering questions, creating graphics, and intelligently converting between audio and written formats.

- **Lionardo AI:**

This assistant provides the teacher and learner with any image they want to extract or any educational situation they want to visualise, imagine, or explain, thus serving as an educational tool or a self-learning experience in just a few minutes [7].

Methods

Our approach in this study is based on an analysis of previous research in this field.

For the teacher, a questionnaire was prepared to assess the feasibility of his use of artificial intelligence applications, as well as the difficulties and problems he encountered when using this technique.

Key Findings and Data Analysts

All findings are based on a teacher feedback survey (a non- compulsory, end-of-semester teacher survey, available to all teachers, online)

To better understand and characterise artificial intelligence applications, teachers' opinions on their applicability in higher education institutions are presented in online survey instruments, also to ensure the utmost success in this system.

Based on the survey data, the primary focus was on qualitative data collection through general exploratory questions. The survey was not compulsory and links were provided for many teachers, Table 1.

The results show that there is massive negativity centred on the lack of technical support or training in this area.

Table1: Teachers' survey results**.**

The Question	Percentage
Number of experienced teachers with more than five years of experience	**82.7%**
The number of teachers who have a general understanding of the concept of artificial intelligence	**94.1%**
Number of teachers who participated in a training course or workshop specializing in artificial intelligence fields	**37.3%**

How capable is the teacher of understanding how to use artificial intelligence tools in higher education?	**86.5%**
The number of teachers who have previously used artificial intelligence tools in preparing lessons and tests	**82.5%**
The most prominent challenges facing teachers when using artificial intelligence tools	**86.5%**
The number of teachers who believe that current university policies support the use of artificial intelligence tools in the educational process	**53.9%**
Number of teachers who need technical support or training in this area	**84.6%**
The number of teachers who believe that artificial intelligence is an effective tool for improving the quality of education in higher education institutions	**94.3%**
The number of teachers who demanded the inclusion of courses or workshops on artificial intelligence within academic training programs	**98.1%**

In this survey, we made sure to include as many teachers as possible, with different ages, qualifications, academic degrees, and years of experience.

The participation rates were similar, and a positive aspect is the involvement of many experienced teachers with over 5 years of experience, as indicated by their survey participation rate of 82.7%, which highlights the importance of trusting the survey results.

Additionally, the positive signs reflected the number of teachers who have a general understanding of the concept of artificial intelligence. The survey indicated that the percentage was excellent, reaching 94.1%.

Only 37 teachers participated in a training course or workshop on artificial intelligence, a low figure that warrants attention. On a positive note, about 60 teachers expressed interest in participating in such a training.

About 86.5% of teachers understood how to use artificial intelligence tools in higher education, which is considered excellent, while approximately 13.5% had limited skills and need to improve their understanding.

The results showed that 82.5% of respondents had ever used artificial intelligence tools in creating lessons and tests.

Table 1 also highlights the main challenges teachers encounter when using AI tools; about 8 teachers faced some issues. This is seen as a negative outcome. The most common challenges were:

- Lack of technical skills (23.1%)

- Weak technological infrastructure (28.8%)

- Lack of institutional training (34.6%)

Furthermore, the response to whether current university policies support the use of artificial intelligence tools in education was 53.9%, which is considered unfavourable. This is because we cannot overlook the 46.2% of teachers whose universities do not support the use of these tools. Regarding the reactions to the question about how much teachers need technical or training support in this area, 84.6% said they do need such support, and this percentage is viewed negatively.

As for the number of teachers who believe that artificial intelligence is an effective tool for improving the quality of education in higher education institutions, the survey results were positive, with 94.3% in favour.

Also among the positive indicators was the number of teachers who demanded the inclusion of courses or workshops on artificial intelligence within academic training programs, reaching 98.1%.

Conclusion

From the above, we concluded that artificial intelligence applications offer an advantage in decision-making at our universities and colleges, and that faculty members should undertake training courses to qualify them to use these applications.

To effectively integrate artificial intelligence (AI) in universities, several actionable steps can be implemented. Firstly, universities should develop specialized training programs for faculty and staff to enhance their skills in AI applications through workshops and courses. Additionally, AI concepts should be incorporated into curricula across various disciplines to improve students' foundational understanding. Investing in upgrading technological infrastructure is crucial for enabling effective use of AI tools. Establishing research centers focused on AI can foster innovation and collaboration among different departments. Furthermore, partnerships with

industry can provide students with practical training and exposure to AI technologies. Clear ethical policies must be established regarding AI use, emphasizing data protection and privacy. Lastly, mechanisms for evaluating the effectiveness of AI programs should be implemented, including regular feedback from students and faculty to refine practices and enhance educational outcomes.

References

1. Moumita Ghosh and Thirugnanam Arunachalam,"Introduction to Artificial Intelligence" In book: Artificial Intelligence for Information Management: A Healthcare Perspective (pp.23-44), May 2021.

2. H. Sheikh et al., Mission AI.Research for Policy, 2023, page 15

3.Mircea-Andrei, the importance of artificial intelligence in human life. Role and perspectives, Constantin Brâncuși" University of Târgu-Jiu, Issue no.3/2023.

4.Yogesh K. Dwivedi a b, Anuj Sharma c, Nripendra P. Rana d, Mihalis Giannakis e, Pooja Goel f, Vincent Dutot g Evolution of artificial intelligence research in Technological Forecasting and Social Change: Research topics, trends, and future directions,2023, vo192

5. Veda C. Storey · Wei Thoo Yue · J. Leon Zhao · Roman Lukyanenko, Generative Artificial Intelligence: Evolving Technology, Growing, Societal Impact, and Opportunities for Information Systems Research,2025,27,2081

6. Hanif Khan, Types of AI | Different Types of Artificial Intelligence Systems, University of Science and Technology of Ha Noi, Issue 2021.

7.Susan Fourtané, The Three Types of Artificial Intelligence: Understanding AI, 2019.

8. Iffath Unnisa Begum, Role of Artificial Intelligence in Higher Education - An Empirical Investigation, Government City College (A), India, 2024.