Teachers' Perceptions towards Using Artificial Intelligence Applications in Algerian Higher Education

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Abstract

This study aimed to reveal the perceptions of teachers towards the uses of artificial intelligence applications in Algerian universities, based on the ongoing controversy over the integration of these applications into university education. In contrast to the gains achieved in raising the level of higher education, there are many challenges and material, technical, financial and human requirements that may not be available at the level of infrastructure in Algerian universities, which created an incentive to identify different solutions and proposals for the optimal exploitation of this field in university education as it is the latest result of digital development in various fields. The study used the descriptive survey method for a sample of teachers in Algerian universities, through an electronic questionnaire. The study reached a set of results, the most important of which is the emphasis on the necessity of using artificial intelligence applications in the educational process by university teachers, and in return providing the necessary capabilities to activate their use by opening formative training courses, including academic courses in this field, and following a governmental approach that includes supporting artificial intelligence policies across Algerian university institutions.

Keywords: Algerian higher education, Applications of artificial intelligence, educational process, perceptions, university teachers

ملخص

هدفت هذه الدراسة للكشف عن تصورات الأساتذة نحو استخدامات تطبيقات الذكاء الاصطناعي في العملية التعليمية بالجامعات الجزائرية، انطلاقا من الجدل الحاصل بشأن دمج هذه التطبيقات في التعليم الجامعي، ففي مقابل المكاسب المحققة للرفع من مستوى التعليم العالي، هناك العديد من التحديات والمتطلبات المادية والتقنية والمالية والبشرية التي قد لا تتوفر على مستوى البنية التحتية في الجامعات الجزائرية، مما خلق حافزاً لتحديد حلول ومقترحات مختلفة للاستغلال الأمثل لهذا المجال في التعليم الجامعي باعتباره أحدث ما أفرزه التطور الرقمي في مختلف المجالات، وقد استعانت الدراسة بالمنهج المسحي الوصفي لعينة من الأساتذة بالجامعات الجزائرية، ومن خلال استبيان إلكتروني توصلت الدراسة إلى مجموعة من النتائج، أهمها التأكيد على ضرورة استخدام تطبيقات الذكاء الاصطناعي في العملية التعليمية من طرف الأساتذة الجامعيين وفي المقابل توفير الإمكانات اللازمة لتفعيل استخدامها عبر فتح دورات تدريبية تكوينية وتضمين مقررات دراسية في هذا المجال واتباع نهج حكومي يتضمن دعم سياسات الذكاء الاصطناعي عبر المؤسسات الجامعية الجزائرية.

الكلمات المفتاحية: الأستاذ الجامعي، التصورات، الجامعة، العملية التعليمية، تطبيقات الذكاء الاصطناعي.

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Introduction

The university is considered an important institution for the production of knowledge in light of a rapidly changing informational knowledge world. It has been able to create new educational patterns within the framework of what is called e-learning, which relies on hard and compact disks, electronic applications and websites of various types, education based on live broadcasting, and others in designing courses and educational materials. Many researches and studies have confirmed that keeping pace of universities with technological developments, including digital means and computer programs, has become something that cannot be dispensed with, thanks to their many services that have achieved permanent and continuous communication between teachers and learners, and learners among themselves from different regions of the world and with data banks and information sources, which has made them more capable than before to expand research operations, keep pace with scientific developments, and scientific communication at the local and global levels. Changing learners' orientations in dealing with educational materials, from recipients to interacting with multiple information sources, and strongly participating in presenting, exchanging and discussing topics and ideas with colleagues, teachers specialized in various fields and is what helps to gain experiences and develop cooperative education skills in knowledge societies, which depend mainly on information and how to benefit from it with the least possible effort and cost.

One of the most important and most recent of these technological developments is the advanced technology produced by the Fourth Industrial Revolution, which mimics human intelligence, making it receive great attention in the higher education sector. It has provided multiple opportunities and gains that are linked to the efficiency and effectiveness of the jobs it performs, as university institutions have been able, through automation of their work, to achieve the quality of their outputs by enhancing interaction and communication between parties of the educational process and developing methods for searching for and retrieving information, especially in dealing with big data, and creating digital contents in line with the renewed needs of learners and with the variables of the new digital environment, by saving a lot of time and human efforts, "through a set of algorithms that work on several tasks such as content classification, modeling, contextual extraction, sentiment analysis, machine translation, summarization, text-to-speech and speech-to-text" (Chili, 2023, p. 90).

However, the issue of Artificial Intelligence (AI), despite its positive impact on the educational learning process, as indicated by a number of scientific researches, is still characterized by belief in its inevitability at times and hesitation at other times due to many factors, the most important of which is the fear of its abolition of the role of teachers and traditional teaching methods, which are characterized by their unique ability to achieve guidance and supervision in a way that cannot be dispensed with on the one hand, and on the other hand, its connection with many requirements that may not be available at the level of the infrastructure of Algerian universities, such as the high financial cost of providing Intelligent systems and qualified and specialized human elements and others.

The importance of the subject of the study stems from the fact that it deals with the most important changes in the field of technology and the implications of the Fourth Industrial Revolution in the educational field in the higher education sector, which produced a new concept not in terms of the date of emergence, but in terms of the qualitative leaps and speed of development that we witness every day, in what is called artificial intelligence technology,

which is still a matter of debate among researchers,in addition to that we noticed that studies dealing with artificial intelligence and its applications in education in universities in general and in Algeria in particular have been characterized by scarcity, as most of the interests of researchers in this field have been limited to theoretical research that reflects readings and forward-looking visions of the importance of using these applications in achieving the quality of higher education and its requirements, and the challenges that it may pose, trying to present some proposals and visions based on that to enhance the concept of the smart university.

From this standpoint, this study seeks to shed light on teachers' perceptions toward using AI in Algerian Higher education. By achieving the following objectives:

- Identifying the extent of teachers' awareness of the importance of using artificial intelligence applications in the educational process in Algerian universities.

- Identifying the nature of teachers' uses of artificial intelligence applications in the educational process in Algerian universities.

- Revealing the requirements for employing artificial intelligence applications in the educational process in Algerian universities from the teachers ' point of view.

- Identifying the effectiveness of artificial intelligence applications in the teaching-learning process in Algerian universities from the teachers ' point of view.

- Knowing the challenges of employing artificial intelligence applications in the educational process in Algerian universities from the teachers ' point of view.

- Identifying professors' proposals for activating the use of artificial intelligence applications in university education. And answering the following questions:

-What are the teachers' perceptions toward the use of AI apps in Algerian Higher education?

- What is the nature of teachers' use of AI apps in the educational process in Algerian university institutions?

- What are the requirements for employing AI apps in the educational process in Algerian university institutions from the point of view of teachers?

- What is the effectiveness of AI apps in the educational learning process in Algerian university institutions from the point of view of teachers?

- What are the challenges of employing AI apps in the educational process in Algerian university institutions from the point of view of teachers?

Literature Review

The topic of artificial intelligence has become an intellectual debate in the university educational community, especially among the educated class, as its features have created a digital revolution that has moved the educational level to advanced levels compared to what it was with traditional methods, as the opinions of researchers in this regard were divided between those who call for the necessity of integrating this technology into university education, because of its important capabilities in achieving the quality of the educational process, in addition to its ability to improve the performance of administrative and research tasks in university institutions, it can also provide quality self-education, in which the teacher is identified as a guide and supervisor of educational content appropriate to the needs of his students, based on the immediate assessment and difficulties that exist at the level of each learner, which AI helps determine, using algorithms, machine learning, and expert systems that answer inquiries, provide guidance, and work to find solutions to the learner's educational problems,where the study of Kebdani and Badene (2021) confirmed that the use of these

applications in the Algerian educational institutions is a priority at 81 percent in all scientific disciplines (Kebdani & Badene, 2021), while we find in contrast in Bakhtouti's study (2022) concluded that there is no interest on the part of the university of Adrar in Algeria in modern technologies to improve the quality of higher education. Algerian applied studies on AI apps and their role in university education are very few. In exchange for these opportunities, some fear adopting AI technology in the educational environment due to the physical, financial, organizational, technical and human threats and challenges that stand in the way of moving towards the transformation of the smart university, and this is was confirmed in the study of Abdelaal and Al Sawi (2024) which revealed teachers' fears and scepticism about artificial intelligence in higher education in Sweden, concerns about fairness and responsibility, and lack of knowledge about artificial intelligence and resources to engage with artificial intelligence in teaching practices.

Therefore, this research approach was intended to present a proposed vision for the development of the Algerian university in light of the requirements of the knowledge economy.

Educational Process

It is linked to a group of activities and practices in various university departments, which aim to develop the skills and experiences of learners, whether in the theoretical or practical aspects of a specific field of knowledge, through the use of a group of traditional and modern methods in presenting courses and academic contents with specific and clear objectives, which require a set of tests and evaluations to determine the effectiveness of the educational activity and the quality of its outcomes.

For this reason, education takes into account what is called the educational triangle, by which we mean the teacher, the learner, and the content. The educational process is essentially linked to these three parties, and some add another part, which is the method, on this basis, we must take into account all parts of the didactic relationship, as it is a qualitative relationship established between the teacher, the learner, knowledge, and the method in a specific educational setting and at a specific time. These parties interact together positively to achieve the goals of education, and any defect in these pillars will inevitably lead to a defect in the level of the results of the educational process (Habbar, 2020, p. 4).

Artificial Intelligence

Artificial Intelligence (AI) is a science-based on making electronic computers capable of simulating human intelligence, and sometimes even exceeding human capabilities when it comes to comprehending huge data and speeding performance in the least time and effort.

It can be defined as a branch of computer science that deals with understanding and applying technology based on computer simulation of the characteristics of human intelligence (Zein, 2000, p. 20). It is a scientific development according to which it has become possible to make machines perform tasks that fall within the scope of human intelligence, such as learning machines, logic, self-correction, and self-programming, which is interested in designing systems capable of solving problems, logical interpretation, and learning. Hence, AI can be defined procedurally in this study as a set of techniques, programs, and methods based on intelligent computer programs, and associated technology capable of simulating human intelligence, and used in creating educational content in terms of designing its presentations and enhancing them with appropriate pictures, videos, illustrations, purposeful summaries, and detailed explanations to suit the needs and inquiries of students, and in conducting tests and continuous evaluation of students, which makes the teacher closely monitor the difficulties experienced by each student in the academic courses, and other uses in the educational field achieved by artificial neural networks, machine learning, and automated chatbots. In this context, Salih and Mohammed's

study (2024) showed the widespread adoption of AI in higher education in Arab Universities using AI tools by faculty and students to improve learning efficiency, support multimedia generation, and create student learning experience types for individuals but challenges to its successful implementation such as AI errors, biases and lack of AI experts lead to significant limitations, and some solutions were proposed to include courses and AI teams, creating AI-integrated courses, and providing training programs for the teachers(Salih & Mohammed, 2024).

Artificial Intelligence and Education

The Fourth Industrial Revolution has cast its shadow on various sectors, especially the higher education sector, where the shift towards the "Smart University" has become one of its modern trends and primary concerns in the most important universities in the world, which has made many researchers look into the ways and requirements of integrating AI technology into university education and arriving at a comprehensive strategy that makes the university, with its organizational, administrative, and educational research levels, a smart system that works to provide high-quality educational and research programs that contribute to raising the level of its outputs that carry out the functions and tasks in various political, economic, cultural and educational institutions of society.

Many scientific research works have indicated the efficiency and effectiveness of using AI apps in the educational field due to their important role in enhancing human capabilities, developing expertise and skills, and improving the level of elements of the educational environment in the current digital age, by providing an interactive, participatory educational environment that provides many opportunities for both the teacher and the learner to benefit from electronic technologies and means in developing specialized scientific knowledge and creativity in it and renewing educational systems following digital developments, like Abdel Hamid et al. 's study (2023) which revealed that academic leaders in Jordanian universities use AI to a high degree, and the Faculty members' teaching competency was high (Abdel Hamid et al., 2023), and among the most important AI apps and services programs that are used to activate educational strategies in modern smart-university institutions, we mention :

Chatbots

It is a programmed application that stimulates learning, includes digital assistants based on AI technology, and allows providing support and assistance to the learner automatically responding to his inquiries in natural language, and interacting as if he were communicating with real individuals, and chatbots can be used as a digital educational tool in asking questions, providing answers, retrieving information, exploring online content, providing useful information, proposing logical solutions to learners and facilitating the learning process, chatbots can also link to social networks such as Facebook and other websites (Shihatah, 2022, pp. 210-211).

Chat GPT

It is a trained generation model for chat, in what is called conversational artificial intelligence, which has contributed to the reshaping of information institutions in the field of text generation and chat, which has recently been able, through some extensions, to go beyond the simple AI function of text generation to become a multi-tasking assistant to save time for its users. In its fourth version, "ChatGPT-4," it was able to summarize long video clips using the "YouTube Summary" extension and write e-mail messages. The (ChatGPT Writer) extension allows automatic response to e-mail messages in professional formats, as needed, with the ability to leave empty areas to be filled with information that cannot be created, it also provides automatic and personal responses to WhatsApp and Telegram messages through similar

extensions (Deliou, 2023, p. 213). In this context, there are many studies interested in applying Chat GPT in the field of education, we mention as an example a study by Khoso (2023) that explored the realm of Chat-GPT and AI Tools, investigating university-level students' and faculties' perspectives and utilization of these technologies, which shows a detrimental influence on education quality, student interest, and contextual information awareness, and excessive Chat-GPT and AI Tool use distracts students and lowers academic performance. (Khoso,2023). Ouis' study (2023) provided insights into the role of Chat GPT in enhancing ESP (English for specific purposes) students' writing proficiency and language learning outcomes. The high level of exposure to Chat GPT content among participants indicates an important tool for engaging with diverse content narratives and perspectives, and they reported improvements in vocabulary, writing, and communication skills, suggesting that this AI tool could be valuable for ESP learning in a variety of domains (Ouis, 2023).

Microsoft 365 Copilot Programs

It relies on AI programs, specifically the ChatGPT program, and this new update adds new writing methods, analysing, summarizing texts and assisting users in Microsoft programs such as:

- "Word" program: Users can teach the Word program a set of points and brief ideas so that the program can convert these ideas and points into complete texts, it can also convert large texts into summaries that enable users to understand the texts faster.

- "Excel" program: Instead of entering arithmetic, mathematical, and analytical equations, users can now, through Microsoft Copilot, request from the program through clear texts the result they want to obtain, such as determining the mean rate, the deviation rate...etc.

- "PowerPoint" program: Copilot can be used as a tool for organizing and improving the presentation on PowerPoint, and users can use Microsoft Copilot to ensure the accuracy of the data and add appropriate references to it.

- "Microsoft Outlook": It is an e-mail management program for users, where Microsoft added the Copilot tool with the ability to summarize messages in e-mail and understand the content of these messages, in addition to writing e-mail messages completely based on entering some recommendations and suggestions shortly and simply (Al-Shaarani, 2023).

- "Microsoft Teams": Olkkonen and Iivari (2020) refer to it as a program or application used by organizations formally or informally through which synchronous or asynchronous meetings are held while giving space for collaboration, chatting, providing notes, and sharing files, applications, and emojis (Al-Sharqaoui, 2022, p. 205).

IBM Watson AI services on IBM Cloud

According to Sedqi (2023, pp. 110-111), these include:

• "Watson Assistant" service: allows the creation of natural language conversational interfaces.

• "Watson Discovery" service: It is a content search and analysis service that can be added to applications, such as answers to frequently asked questions and "FAQs", and it acts as a cognitive search engine.

• "Natural Language Understanding" service: A service that allows text analysis and helps in classifying content, such as: classifying and arranging articles.

• "Natural Language Classifier" service: used, for example, to classify emails (Inbox, spam…).

• "Speech of text" service: A service that converts the human voice into written text using natural language, such as "Automated home control system," and records meeting minutes.

• "Text of speech" service: A service that allows the conversion of written text into a voice that

resembles a human voice, such as: "Reading-based educational tools" and aid tools for the visually impaired.

• "Language Translation" service: A service that allows texts to be translated from one language to another, such as chat programs to help international customers.

• "Tone Analyzer" service: A service that analyzes the tone of voice to identify a person's inner feelings, such as joy, sadness, fear, and others.

• "Watson Studio" service: allows the creation of a collaborative work environment, including services (Data Refinery, Jupyter Notebook editor, SPSS Modeler, Decision Optimization model builder).

Methods and Materials

This study came within the descriptive studies, which seek to describe the trends, uses, and interests associated with a particular phenomenon in its current state, and to describe the correlational relationships between its elements, to reach generalizations and draw scientific results. The study used the descriptive survey method to reveal the perceptions of teachers regarding the uses of artificial intelligence applications in the educational process in Algerian university institutions, for its ability to accurately describe and analyze the studied phenomenon and its variables, to find practical solutions that contribute to improving the current situation at the Algerian university.

Participants

The research community in this study is represented by teachers at various Algerian universities in this academic year 2023-2024, who have sufficient experience and knowledge about the subject of the study, and given the difficulty of enumerating the members of the research community numerically, and reaching all of its members due to the large size, the sample survey method was relied upon, by selecting a cross-sectional sample (chance sample) of permanent Algerian teachers of those who cooperated and volunteered to answer the questionnaire via various websites (Facebook groups, scientific forum websites, and university websites), which carry their e-mail, through which communication was conducted, the number reached 200 member of the sample, within the limits of what we were able to access during the study period. The diversity in Algerian universities (East, West, North, South) was taken into account during correspondence with teachers, and this diversity of non-random samples is distinguished by the fact that it is not subject to any criterion in selecting its individuals other than the choice of place or transient exposure - through various websites - without regard to other targeted characteristics. The personal data of the study sample is represented in the following tables:

Table 1. *The age of the sample*

Age	Frequency	Percentage %
30 to 35	8	4
36 to 40	71	35.5
41 to 45	110	55
46 and above	11	5.5
Total	200	100

Table 2. *Academic degrees for teachers*

Academic degree	Frequency	Percentage %
Assistant Professor B	32	16
Assistant Professor A	40	20
Professor Lecturer B	37	18.5
Professor Lecturer A	61	30.5

Professor of higher education	30	15
Total	200	100

Table 3. *Specialization of the sample of the study*

Specialization	Frequency	Percentage %
Media and Communication Sciences	52	26
Psychology	25	12.5
History	17	8.5
Sociology	32	16
Law and political sciences	24	12
Foreign languages	17	8.5
Islamic sciences	2	1
Philosophy	8	4
Biological sciences	6	3
Economics and Management Sciences	3	1.5
Civil Engineering	14	7
Total	200	100

Table 4. *University affiliation*

University	Frequency	Percentage %
Setif -2-	65	32.5
Mostaganem	4	2
Bouira	32	16
Oum El Bouagui	29	14.5
Algiers 3	19	9.5
Laghouat	20	10
Constantine 3	5	2.5
Tébessa	10	5
Setif -1-	11	5.5
Annaba	5	2.5
Total	200	100

Research Instruments

The study used the questionnaire tool in its electronic form, and the questions included in it were formulated in closed and open forms in addition to multiple choice and were arranged according to the data and objectives of the study which enabled us to collect data about the attitudes, trends, beliefs and perceptions of teachers towards applications of artificial intelligence in the educational field at the Algerian university. It was distributed to the researched sample via email and Facebook during June and July 2024.

Research Procedures

The questionnaire form consisted of four main axes, the first titled The degree of awareness of the importance of using artificial intelligence applications in the educational process, the second titled The nature of university teachers' uses of artificial intelligence applications in the educational process, the third "the requirements for employing artificial intelligence applications in the educational process at the university", and the fourth under the title "The effectiveness of artificial intelligence applications in the teaching-learning process at the university from the point of view of teachers".

It was distributed electronically, as we explained previously, and quantitative data was obtained based on the outputs of the SPSS v23 program.

Results

The quantitative data obtained is presented, analyzed and interpreted through the following tables:

Table 5. *The necessity of using AI applications in university education*

	Answer	Frequency	Percentage %
Yes	Keeping pace with technological development and catching up with developed countries	37	22.3
	Facilitating, organizing and expanding the scope of the university educational process for professors and students	34	20.5
	Improving the quality of education and establishing a university digital culture	25	15.1
	Facilitating, organizational and coordination benefits between various parties in the university educational process	23	13.9
	Raising the quality of the university and improving its performance	20	12
	Developing and advancing the university level in its various structures	6	3.6
	A technological necessity imposed at various levels	21	12.7
	Total	166	83
No	Inhibiting the acquisition of skills and knowledge	9	26.5
	Inhibiting the personal creativity of the professor and student	7	20.6
	Creating an element of dependency in the educational process at the university	5	14.7
	Lack of mental and technical preparation for its use and application	5	14.7
	Distortion of the educational path into non-purposeful paths	5	14.7
	Creating a passive audience without making a research effort	3	8.8
	Total	34	17
	Totality	200	100

Table Five shows the opinion of the sample members about the necessity of using artificial intelligence applications in university education in light of digital transformation. The quantitative results of the table showed that the group that answered "yes" was 83% of the total number, as they justified this by keeping pace with technological development and catching up with Developed countries by 22.3%, facilitating, organizing and expanding the scope of the university educational process for professors and students by 20.5%, then improving the quality of education and establishing a university digital culture by 15.1%, having facilitating organizational and coordination benefits between the various parties in the university educational process by 13.9%, and being a technological necessity imposed on various levels by 12.7%, raising the university's quality level and improving its performance by 12%, and developing and advancing the university level in its various structures by 3.6%. As for the category that answered "no," its percentage reached 17% of the total number, as they justified this as inhibiting the acquisition of skills and knowledge by 26.5% and inhibiting the personal creativity of the professor and student by 20.6%, and all of creating an element of dependency in the educational process at the university, lack of mental and technical readiness to use and apply it, and distortion of the educational path into non-purposeful paths by 14.7%, and creating a passive audience without making a research effort by 8.8%.

This can be explained due to the importance of artificial intelligence applications and the advantages they provide in the university educational field, especially with the continuous development of the digital aspect and the necessity of keeping pace with it in various fields. The category of university professors is considered one of the most aware groups of the need to

improve the educational sector, because they are part of it, in addition to the desire to obtain the facilities and additions that these applications can achieve and reach beyond that, which is improving the quality of university education in Algerian universities and keeping pace with the international level. It is noted that a small portion of the sample believes that it is not necessary to use it. This is due to the backgrounds that it has developed on this subject through the reality of its use in Algeria in various sectors and the problems facing its application or its vision of the necessity of controlling it first to apply it correctly.

Table 6. *Sources for gaining experience in dealing with artificial intelligence applications*

Answer	Frequency	Percentage %
Self-education	172	61
Scientific seminars and forums	64	22.7
Formative courses	46	16.3
Total	282	100

Table Six indicates that the sources of the respondents' acquisition of their experience in dealing with artificial intelligence techniques, where self-learning topped these sources with a rate of 61%, then it was followed by seminars and scientific forums with a rate of 22.7%, and finally training courses with a rate of 16.3%.

This is due to the levels of logical thinking of the study sample, as it is a conscious and cultured group that has permanent inclinations for self-learning to gain self-experience that enables it to integrate more in collective experiences and valuing their interaction in this field through a set of self-acquired skills, and thus their ability to benefit more in forums, seminars and training courses, which are the next step to consolidating their gains and developing them in more than several aspects that they overlooked through self-learning, and the quantitative results obtained confirm on that.

Table 7. *The most used applications by the sample*

Answer	Frequency	Percentage %
Chat GPT	134	35.1
Google bard	50	13.1
Consensus	12	3.1
Deepl ai	18	4.7
Chatbots	18	4.7
Adobe photoshop	22	5.8
" Microsoft Teams "	36	9.4
Duolingo	92	24.1
Total	382	100

Table Seven demonstrates the most common artificial intelligence applications used by the respondents. An initial reading showed that the Chat GPT application came in first place with a rate of 35.1%, followed in second place by the Duolingo application with a rate of 24.1%, and then in third place was the Google Bard application with a rate of 13.1%, followed by The "Microsoft Teams" application ranked fourth with a rate of 9.4%, followed by the Adobe Photoshop application in fifth place with a rate of 5.8%, then the Deepl AI and Chatbots application' ranked sixth with a rate of 4.7%, and finally in last place was the Consensus application with a rate of 3.1%.

This can be explained by the fact that the Chat GPT application is one of the most famous applications in Algeria in the field of conversations and exchange of ideas. It is an

easy-to-use application, although it has recently become outdated after the continuous release of other applications around the world in the field of artificial intelligence, such as the Gemini application, which is considered the latest version of chat robots from Google.

There is also a program that combines Chat GPT and Excel, which is the Numerous.ai program, and the Poe website, which combines chat robots, where any robot can be adopted for the desired purpose, there is also auto GPT for generating texts and dividing basic and sub-tasks related to it, In addition to the ClipDrop tool, which combines Photoshop + Canva + Midjourney and is one of the most powerful programs in the field of graphics, in addition to the language learning application Duolingo, which is used by various groups due to its ease of downloading and its programmed ability to teach languages by following a daily program to consolidate the lessons received through it, there is also other applications used by the sample in varying and simple proportions, depending on the desired benefit and the specialization they provide to parties in the educational process.

There are also other effective applications in the field of university education, such as Coursera and EdX, which are educational platforms that use machine learning algorithms to provide customized courses based on the student's level and interests, we can mention too, the Gradescope application, which uses artificial intelligence to correct assignments and exams quickly and accurately, which saves professors a great deal of time and effort, in addition to the Squirrel AI application, which provides personalized lessons based on an analysis of students' performance, and helps in enhancing strengths and addressing weaknesses, there is also a technology known as "Smart Content", which is specialized in creating smart content that generates study materials such as e-books and interactive educational videos, and the virtual teaching assistant Jill Watson, which relies on artificial intelligence to provide support to students and answer their questions. In addition to artificial intelligence Beta Tome website creates presentations for students and displays scientific research in an attractive and sophisticated way.

Table 8. *Motivations for using artificial intelligence applications by the sample*

Answer	Frequency	Percentage %
Search for sources and references and obtain them	45	13.80
Automatic translation of texts	15	4.60
Linguistic and spelling check	30	9.20
Mind maps, drawings and presentations	10	3.06
Statistical analysis of data	41	12.57
Summarize texts faster	10	3.06
Preparing educational content and modules programs (Chat GPT)	45	13.80
Translating references for use in the teaching process (Chat GPT translator)	15	4.60
Providing synchronous virtual lectures	9	2.76
Providing mixed bilateral dialogue between the student and the professor and providing lessons remotely to gain time (Google Classroom-Google Meet)	25	7.66
Learning foreign languages to provide students with foreign terminology according to the requirements of each module	15	4.60
Preparing questionnaires for students to discuss some topics or polling their opinions about them and directing them to use them in their research (Question Pro)	10	3.06
Get suggestions for topics related to school modules	92	8.89
Student evaluation	10	3.06

Providing online lessons and then performing interactive applied activities in the classroom	9	2.76
Developing some skills in producing digital images and educational drawings (digital image processing)	8	2.45
Total	326	100

Table Eight shows that the motivations behind the respondents' use of artificial intelligence applications, where search for sources and references and obtaining them, preparing educational contents and modules programs (Chat GPT) were at the forefront at a rate of 13.80%, followed by statistical analysis of data at a rate of 12.57%, then linguistic and spelling check at a rate of 9.20%, then obtaining suggestions for topics related to school modules by 8.89%, followed by enabling mixed two-way dialogue between the student and professor and providing remote lessons to gain time (Google Classroom-Google Meet) by 7.66%, then both automatic translation of texts, translating references for use in the teaching process (Chat GPT translator) and learning foreign languages to provide students with foreign terminology according to the requirements of each module by a percentage of 4.60%, then each of mind maps, drawings, and presentations, summarizing texts quickly, preparing questionnaires for students to discuss some topics or poll their opinions about them and directing them to use them in their research (Question Pro), and evaluating students at a rate of 3.06%, followed by both providing synchronous virtual lectures and presenting Online lessons, then completing interactive applied activities in the classroom at a rate of 2.76%, and the last percentage goes back to developing some skills in producing digital images and educational drawings (digital image processing) at a rate of 2.45%.

This diversity in the motivations for using these applications is due to the diversity and richness of these applications, the effective features they have, and the customization of their areas of use, as we find that they are programmed to contribute to the management of the educational process in its various stages and across the various stages of cognitive, emotional, and behavioral thinking, in addition to saving the routine effort that it may inhibit the university professor's desire to present something new and reach the stage of creativity and exploit it to innovate new ways of presenting information, activating the participatory process of university education, and developing skills for various parties in the university educational process.

Table 9. *Requirements for employing artificial intelligence applications at university*

	Answer	Frequency	Percentage %
Material and technical aspects	halls equipped with smart devices	138	69
	Providing artificial intelligence technologies	62	31
	Total	200	100
Human aspect	Management and smart governance at the university	80	40
	Formation and training of professors in the use of artificial intelligence	120	60
	Total	200	100
Organizational aspect	Adopting a governmental approach to planning artificial intelligence policies	122	61
	Organizing open-source AI tools and platforms for public use	78	39
	Total	200	100
Moral aspect	Formulate ethical frameworks that protect privacy	162	81
	Protection of educational data	38	19
	Total	200	100

Table Nine indicates the most important requirements for employing artificial intelligence applications in preparing educational content for students at the university level from the point of view of the respondents. These requirements varied from several aspects, including material and technical aspects in halls equipped with smart devices, which was 69%, and the provision of artificial intelligence technologies, which was 31%. As for the human aspect, it was represented by smart management and governance at the university by 40%, and the formation and training of professors in the use of artificial intelligence by 60%. The organizational aspect was represented by adopting a governmental approach to planning artificial intelligence policies by 61% and organizing open-source artificial intelligence tools and platforms for the public benefit by 39%, and finally from the ethical aspect, represented the formulation of ethical frameworks that protect privacy by 81% and the protection of educational data by 19%.

It is observed from this quantitative reading of the table that the requirements included several basic aspects, and they are all requirements at the core, as the sample saw that the most important element that should be focused on from the material and technical aspects is the provision of halls equipped with smart means to provide possible opportunities to receive information in an easy, flexible and rich way. As for the human side, the sample focused on the necessity of forming professors and training them in the use of artificial intelligence, which is a step that requires pre- and post-planning, which includes preparing the necessary capabilities and budget within courses organized according to a specific schedule. As for the organizational side, the respondents see the necessity of adopting a governmental approach that plans artificial intelligence policies, i.e. Adopting it as a basic axis in government policy, which we observe in the reality of Algerian institutions in general, is the beginning of a project to generalize the application of digitization in various sectors, which may pave the way for the application of artificial intelligence, especially in the university educational field. As for the ethical aspect, the sample members found that ethical frameworks must be formulated to protect privacy, as it is sensitive requirements that ensure the safe application of such applications for various parties in the educational process at the university institution.

Table 10. *Evaluating the effectiveness of using some artificial intelligence applications in the educational process*

	Answer	Frequency	Percentage %
Very effective	Developing understanding, the spirit of interaction, improving performance, and enjoyment in learning	27	33.8
	Save effort and time and provide very valuable suggestions	23	28.8
	Contributing to the communication process between professor and student	16	20.0
	Facilitating, enriching, and knowledgeable features in various educational fields	14	17.5
	Total	80	100.0
Moderately effective	Effectiveness depends on how it is used and the honesty of the information source	22	25.6
	Real application is difficult on the ground.	15	17.4
	The need for personal analysis and evaluation of the professor (human fingerprint)	33	38.4
	Limited programming and lack of updating, especially in fields that require digital analysis, such as statistics	16	18.6
	Total	86	100
Weak effectiveness	Lack of interaction from all parties in the educational process	5	41.7
	Translation flaws and being out of context	3	25

	Answer	Frequency	Percentage
	Lack of awareness of its importance, lack of experience and skills in use and application.	2	16.7
	Weak technical capabilities and training courses in this field	2	16.7
	Total	12	100
Ineffective		22	11
Totality		200	100

Table 10 shows the respondent's assessment of the effectiveness of some artificial intelligence applications through their use in the educational process. A quantitative reading of the table showed that the largest percentage attributed to the answer "that it is moderately effective" at 86%, as the respondents justified this by the need for personal analysis and evaluation of the professor (the human fingerprint) at a rate of 38.4%, and effectiveness depends on how it is used and the honesty of the source of information at a rate of 25.6%, real application is difficult on the ground at a rate of 17.4%, and limited programming and lack of updating, especially in areas that require digital analysis such as statistics, at a rate of 18.6%. As for the next percentage, it goes back to the answer "with great effectiveness," which came at a rate of 80%, as the sample justified this by developing understanding and the spirit of interaction, improving performance and enjoyment in learning by 33.8%, saving effort and time, and providing very valuable suggestions by 28.8%, contributing to the communication process between the professor and student by 20%, and that it has facilitating features, enriched, knowledgeable features in various educational fields by 17.5%. As for the answer of "weakly effective," it came by 12% and was justified by not getting interaction from all parties of the educational process 41.7%, translation flaws and being taken out of context 25%, and both lack of awareness of its importance and lack of experience and skills of use and application and weak technical capabilities and training courses in this field amounted to 16.7%, while the smallest percentage was the answer "ineffective" at 11%.

This can be explained by the relatively simple use of such applications in Algerian university institutions, and measuring effectiveness first requires the presence of actual use in the educational field according to various standards and the availability of material, technical, organizational, ethical and human capabilities, in addition to a significant time for this use to be able to judge whether it is truly effective. Also, diversification in the use of the various applications available with artificial intelligence, as they are rich and diverse applications in fields and specializations that meet the needs of the various stages of the educational process, such as language teaching, translation, summarization, auditing, statistics, remote interaction, and other fields that it provides to facilitate the process.

Table 11. *Challenges and difficulties facing the use of artificial intelligence applications*

Table eleven shows the most important challenges and difficulties facing the use of artificial intelligence applications in university education from the point of view of the respondents. The answer "lack of interest in using artificial intelligence applications in Algerian universities"

Answer	Frequency	Percentage %
Neglecting formation and training in the field of artificial intelligence for professors	45	22.5
Lack of financial capabilities to provide artificial intelligence technologies in higher education institutions	60	30
Lack of interest in using artificial intelligence applications in Algerian universities	65	32.5
Having negative views towards artificial intelligence applications	30	15
Total	200	100

topped these difficulties and challenges at a rate of 32.5%, then the lack of financial capabilities to provide artificial intelligence technologies in higher education institutions by 30%, followed by neglecting formation and training in the field of artificial intelligence for professors by 22.5%, and finally having negative views towards artificial intelligence applications by 15%.

The application of artificial intelligence in Algerian universities is considered the biggest challenge in addition to the challenges seen by the sample members, which focused on the lack of interest in using it and this is considered an inhibitor to catching up with global development, in addition to the lack of financial capabilities to provide artificial intelligence technologies in institutions of higher education and Which greatly hinders the possibility of using them in the educational process, in addition to neglecting formation and training in the field for the category of professors within the universities in which they exercise their duties, and this in turn is considered one of the difficulties that limit the actual and correct application of such applications in the university institution.

Discussion

The perceptions of teachers towards the uses of AI apps in the educational process in Algerian university institutions appeared through the answers to the study's questions. Results showed an awareness among teachers of the importance of using these applications in the university educational process by emphasizing the necessity of using them. Their motivations for using some applications in the educational process were searching for sources, preparing educational content, and linguistic proofreading. Their perceptions also emerged about the most important requirements for employing these applications, which revolved around providing technical capabilities, material equipment, and human resources, and following a governmental approach supported by AI policies within Ethical frameworks. All of this would achieve the effectiveness of these applications in the university educational field, and confront the challenges of employing them in Algerian university institutions, by emphasizing the opening of formative training courses for the benefit of university professors in this field, including the curricula with artificial intelligence modules, and increasing the university community's awareness of the importance of using it, where the study of Salih and Mohammed (2024) agreed with it in terms of including courses and AI teams, creating AI-integrated courses, and providing training programs for the teachers.

Most of the sample members believe in the necessity of using AI apps in university education in light of digital transformation, due to their importance and advantages in the university educational field, especially with the continuous development of the digital aspect and the necessity of keeping pace with it in various fields, and this is consistent with the study of Kebdani and Badene (2021)

Most of the respondents gained their experience in dealing with AI apps through self-learning to gain personal experience and then to enable it to be integrated into group experiences such as forums and training courses. The most common AI apps used by the study sample are Chat GPT, the Duolingo application, and Google Bard.

One of the most important motivations for respondents' use of AI apps is searching for and obtaining sources and references, preparing educational content, module programs, and linguistic and spelling checking.

One of the most important requirements for employing AI apps in preparing educational content for students at the university level from the point of view of the respondents, from the technical and material standpoint, is the provision of halls equipped with smart means. As for

the human aspect, it is the formation and training of professors in the use of AI. As for the organizational aspect, it is through adopting a government approach that plans for artificial intelligence policies, as for ethics, it is necessary to formulate ethical frameworks that protect privacy.

Most of the sample members believe that the use of some AI apps in the educational process is moderately effective. This is through the relatively simple use of such applications in Algerian university institutions, and measuring effectiveness requires that there be actual use in the educational field according to various standards and the availability of the necessary capabilities for that, While we found in previous studies that the study Abdel Hamid et al. (2023) confirmed its effectiveness, which appeared in raising the level of education.

Among the most important challenges facing the use of AI apps in university education among the respondents are the lack of interest in using them, the lack of financial capabilities to provide these technologies, and the neglect of formation and training for teachers in this field.

Conclusion

Our study attempted to combine the various aspects addressed by most previous studies in terms of the perceptions of the parties to the educational process in the university sector to stand at the most important stations that reveal to us the importance of artificial intelligence applications in higher education institutions, whether Algerian, Arab or foreign, by revealing the most important challenges facing the effective application of these applications and their most important requirements, and focused on knowing the perceptions of teachers in Algerian institutions, considering that they are the group most closely linked to this process and because the reality experienced by Algerian universities suffers from several gaps in benefiting from these applications to raise the level of higher education in Algeria and keep pace with global development.

Recommendations

The study concluded with a set of proposals to activate the use of artificial intelligence applications in university education, the most important of which are:

-Creating AI tools to detect scientific plagiarism.

-Providing formation and training courses in the use of AI apps for university teachers.

-Include courses with modules on artificial intelligence applications.

-Institutional support for artificial intelligence research in university education.

-Building educational robots and including them in the curriculum as enrichment materials.

-Seeking expertise from outside the university to ensure effective AI apps.

-Providing human resources and basic equipment for artificial intelligence.

-Educating the university community about the feasibility of artificial intelligence applications.

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Declaration of Non-Use of Artificial Intelligence

This research paper has not been proofread using artificial intelligence tools but rather relies on the researcher's own translation and review with the help of dictionaries.

Statement of Absence of Conflict of Interest

The authors mentioned above hereby solemnly declare that they are not and shall not be in any situation that could give rise to a conflict of interest in what concerns the findings and recommendations contained in this academic article.

References

Al-Shaarani, H. (2023). *Microsoft uses artificial intelligence... Here are the 5 most important new uses*. Available at: https://fifreedomtoday.com/microsoft

Al-Sharqawi, F. F. (2022). The effectiveness of using the Microsoft Teams platform in developing the skills of designing and producing electronic tests among students studying at the College of Education, Business Education Division, and the extent of their satisfaction with them. *College of Education Journal*, 2(46), 193-250.

Bakhtouti, B. (2022). The reality of AI apps and its impact on improving the quality of higher education: University of Adrar as a model, *Journal of Economic Integration*, *10*(1), 241-254.

Chili, I. (2023). Managing human resources in light of the challenges of applying artificial intelligence. *Arsad Journal for Economic and Administrative Studies*, *6*(1), 79-94.

Deliou, F. (2023). *Contemporary issues (from intellectual property to artificial intelligence)*. Algeria: Houma Printing House.

Habbar, A. (2020). The reality of the educational learning process in the Algerian school (between the old educational system and the new educational system). *The Cradle of Languages Review*, *2*(3), 1-10.

Kebdani, S ., & Badene, A . (2021) The importance of using artificial intelligence applications in Algerian higher education institutions to ensure the quality of education - a field study, *Review Poidex Journal*, *10*(1), 153-176.

Khoso, F. J. (2023). *Use of Chat-GPT and AI Tools by Undergraduates: Students and Teachers'
Perspective*.:https://www.researchgate.net/publication/376716356_Use_of_Chat-GPT_and_AI_Tools_by_Undergraduates_Students_and_Teachers'_Perspective#:~:text=Results%20show%20a%20detrimental%20influence,reckless%2C%20which%20hurt%20their%20grades.

Darawsheh, N. et al. (2023).*The Degree Of Using Artificial Intelligence Among Academic Leaders In Jordanian Universities And Its Relationship To Teaching Competencies Of Faculty
Members*.:https://www.researchgate.net/publication/372528938_The_Degree_Of_Using_Artificial_Intelligence_Among_Academic_Leaders_In_Jordanian_Universities_And_Its_Relationship_To_Teaching_Competencies_Of_Faculty_Members

Ouis, H. (2023). The Effects of Chat GPT Technology Use on Enhancing ESP Students' Writing Proficiency. The Case of Master One Students at the Faculty of Economic, Commercial, and Management Sciences at Chadli Bendjedid University, ELTARF. *Afak for Sciences Journal*, *8*(5) special issue, 74-82

Salih, G., & Mohammed, F. K . (2024) *The reality of using AI to enhance University Education An applied study on a Sample of Media Professors in Arab Universities*. https://link.springer.com/chapter/10.1007/978-3-031-65996-6_6#citeas

Sedqi, K. B. (2023). Investing in artificial intelligence techniques in developing search and information retrieval methods (an applied study on building a search engine using "IBM Watson Discovery"). *Scientific Journal of Libraries, Documents and Information*, *5*(16), 99-122.

Shihatah, N. R. M. (2022). Employing artificial intelligence applications in the educational process, *Journal of the Egyptian Educational Computer Society*, *10*(20), 205-214.

Zein, A. (2000). *Artificial intelligence and expert systems in libraries - an experimental introduction to expert systems in the field of references*. Cairo: Academic Library.

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