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Attitudes of Faculty Members of Hail University Towards Using Artificial Intelligence Technology in Teaching in Light of Some Variables

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Abstract

The research goal is to explore the attitudes of faculty members of Hail University towards using Artificial Intelligence technology (AIT) in teaching and to know the factors affecting their attitudes like: Scientific specialization, experience in university teaching, the Gender "Male/Female". In order to achieve the research objectives, the researcher used descriptive method using a questionnaire tool. The research community consisted of all faculty members at the University of Hail:(Professor, Associate Professor, and Assistant Professor) in all university faculties of both gender (males and females) (1031). A representative sample of the research community was taken using a stratified random sampling method, where the sample size was (340) faculty members, with a percentage of (33%) of the size of the original research community. Data were analyzed using Statistical Package for the Social Sciences software (SPSS). The research revealed the following results: attitudes of faculty members of Hail University towards using AIT in teaching were positive and high with statistical significance above the probability mean. There are no statistically significant differences between attitudes of faculty members of Hail University towards using AIT in teaching due to the scientific specialization variable, or due to the gender variable (male/female). On the other hand, there were statistically significant differences among faculty members in their attitudes towards using AIT in teaching due to the variable of experience in the field of university teaching, in favor of the group (5 - 10) years. Also, the results revealed a discrepancy contrast between faculty members' attitudes toward using AIT in the three teaching steps (planning/implementation/evaluation), as the arithmetic mean of their attitudes toward using AIT in teaching increased in the teaching implementation step followed by the teaching planning step and then the teaching evaluation step. In response, the researcher presented a number of recommendations and suggestions for future research.

Key words: Artificial Intelligence - Hail University Professors - Attitudes - Teaching

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Introduction

Before the end of the first quarter of the third millennium, all indications and expectations indicate that the world is moving steadily towards modern technology in its various forms,

patterns and goals, as its signs have begun to appear in our present era through accelerated technological development in all fields, and through the emergence of the fourth generation of the industrial revolution which presented the world with the greatest human invention in the technical field, which is artificial intelligence (AI). AI brought good news to all sectors that serve countries and peoples, such as health, education, and the economy in its various forms, in addition to its uses in the military and technical fields.

To enhance the development and accelerate the activation of AI applications at all governmental and private levels, the Kingdom of Saudi Arabia has adopted several mechanisms, including developing specialized scientific competencies and local capabilities in the field of (AI), training government employees by involving them in specialized courses in data science, and creating a culture of artificial intelligence among segments of society to facilitate the spread of the use of applications that rely on these technologies. Also, by creating digital citizens capable of dealing with AI applications, and enhancing the concerted efforts of governmental, educational and media institutions to raise awareness of the basics of the field of (AI). Moreover, the Kingdom of Saudi Arabia, represented by the Saudi Data and (AI) Authority (SDAIA), launched the National Strategy for Data and Artificial Intelligence. (NSDI), through which it aspires to play a pivotal role in shaping the future of data and (AI) in the Kingdom of Saudi Arabia and the world (Abhacci,2023).

In the same way, this research proceeds by examining one of the most important computer technologies, which is Artificial Intelligence technology (AIT), which has become a heavy presence in various aspects of life at the present time. In education, signs of the use of AI have begun to appear, especially in university education, where there is still a state of hesitation and many questions about the feasibility of using this technology in the educational process. This research was preceded by a number of studies that examined the topic of using AIT in university education in the Kingdom of Saudi Arabia. For example, Al-Subhi (2020) explored the reality of the use of AI applications by faculty members at Najran University in the educational process and the challenges facing their use in light of some variables such as gender and academic degree. Al-Subhi's study concluded that use of AI applications by faculty members at Najran University in education was very low, and there is significant agreement on the existence of many obstacles and challenges that prevent the use of AI applications. Also, the study concluded that there is no impact on the reality of faculty members' use of AI applications due to the gender variable or Academic degree, and there was no effect on the challenges facing their use of AI due to these two variables.

However, this research came under this title to reveal the attitudes of faculty members of Hail University towards using AIT in teaching, and the factors influencing their attitudes. The importance of studying the attitudes lies in that knowing people attitudes may help in predicting how they will behave in relevant situations. Therefore, if we can change people's attitudes, perhaps we can change their behavior, as the assumption that behavior is related to attitudes seems very reasonable. (Al Nuaimi, 2016). Hence, knowing these attitudes and the factors that affect them represents the first step in developing a strategy for employing AIT in the educational process at the university level to achieve the goals of the Kingdom of Saudi Arabia in this field. The term attitude is part of our common everyday language, and it is surrounded by a long history of debate. As long ago as 1935, Allport considered the concept of attitude extremely important to social psychology, where he defined attitudes as "the mental and nervous state of readiness that... It is organized throughout experience and exerts a dynamic influence on individuals' reactions to all related issues and situations." (Al-Naimi: 2016), and the researcher defines attitudes procedurally as (a concept that expresses an individual's experiences and beliefs that appear in his responses to a specific topic, either negatively or positively, and which were formed by cognitive, emotional, skillful, and environmental factors).

The importance of this research also lies in addressing an important issue that has strongly imposed itself on all aspects of our daily lives, which is the most widespread "artificial intelligence technology (AIT)". AIT also raises many questions about its use in terms of feasibility and risks, which has led to some variation in people attitudes towards its use. Moreover, the importance of this research lies in addressing the attitudes of the use of AIT in one of the most important areas of life, which is the field of university education. Furthermore, the results and recommendations summarized by this research can contribute greatly to developing a strategy for dealing with AIT in teaching at universities.

Literature Review

The concept of artificial intelligence

Margaret A. Boden (2022) defined artificial intelligence as a technology that essentially aims to enable computers to carry out tasks that the mind can perform. AI uses many different technologies that carry out many tasks. Baraida and Al-Sanea (2022) defined it as "a group of new approaches and methods in programming computer systems that are used to develop systems that simulate some elements of the human brain and perform some of its complex functions such as learning, planning to solve problems, and mental and logical thinking". Al-Dahshan, et al. (2022) also defined artificial intelligence as "the set of capabilities and capabilities that are transferred to computers so that they can make decisions in an intelligent manner that mimics human intelligence in employing information, knowledge, and big data and establishing relationships between them". However, the researcher procedurally defines artificial intelligence as: one of the computer technologies that mimics human intelligence.

The history of AI dates to the classical Greek philosophers, where the study of the subject of AI began in the year 1940 by a school of thought known as (the communication school). In 1950, Alan Turing conducted a study aimed to find a thinking machine that imitates humans. Later, Hodgkin Huxley presented a model that simulates the work of the human brain in the form of an electrical network that represents neurons, and a current that imitates the impulses that turn the cells off or on. These attempts helped in the emergence of the concept of AI in the year 1956 at a scientific conference organized by Dartmouth College. However, due to the lack of high speeds and storage capacities, AI research has stopped (Muhareb, 2023).

In the years 1956-1974, practical applications began to appear, and a kind of harmony occurred between the reality of intelligence and its application and scientific research. This began to knock on the door of precise worlds, and interest in language engineering, programming language and algorithms also appeared. Hence, a kind of human optimism regarding applications for building robots (Javier, 2018). The period from (1993-2011) is considered the period in which the rules, characteristics, and features of the field of AI were established, and the movie Hal 9000 was an expression of the specialized agencies, the victory of AI organizations, and the creativity of its scientific and applied image (Wikipedia, 2023a). Later the period of deep learning came and extends from 2011 until the present, where new concepts emerged such as deep learning, which means creating theories and algorithms that allow the machine to learn on its own by simulating the neurons in the human body, and the huge amount of information in the field, as well as intelligence. General Artificial (Wikipedia, 2023b). However, the basic principle upon which the science of AI is based does not lie in solving problems more quickly, or in processing more data, or even preserving the largest number of information derived from the human mind, but rather the principle on which this field is built is in fact the principle of information processing (regardless of its nature and size) in an automated or semi-automatic manner, and in a manner compatible with a specific goal. (Abdul Wahab, 2020).

Artificial Intelligence Types

AI can be divided into three main types according to its capabilities: starting from simple reaction to perception and self-interaction (Shams: 2020), as follows: Narrow or weak AI is the simplest form of AI, which is programmed to perform specific functions within a specific environment, and its behavior is considered a reaction to a specific situation, and it can only work in the conditions of its environment, such as the "Deep Blue Robot" created by (IBM), who played chess with world champion Garry Kasparov and defeated him. Secondly, strong or general artificial intelligence, which is characterized by the ability to collect and analyze information, and to accumulate experiences from the situations it acquires, which make it able to make decisions independently and intelligently such as self-driving cars and instant chat robots. finally, superhuman artificial intelligence. These three types are still under experimentation and seek to simulate humans, and it is possible to distinguish between two basic types: the first tries to understand human thoughts and emotions that affect human behavior, and has a limited ability to social interaction, while the second represent the next generation of super-intelligent machine, it is a model of the theory of mind, as these models can express their inner state, predict and react to other people's feelings and situations.

The use of artificial intelligence in education

The areas of use of artificial intelligence have expanded and include all aspects of economic, social, military, medical, and other fields of life. Education was not immune from these areas. The Director-General of UNESCO, Audrey Azoulay, noted until AI will bring about change! Radically! In the field of education where educational tools, methods of learning, use of knowledge, and the process of preparing teachers will be affected by AI. As a result, the process of achieving global education goals will be accelerated by reducing barriers to learning, automating administrative procedures, and providing better ways to improve learning outcomes (Azoulay, 2019).

The areas of use of AI have expanded and include all aspects of life, economic, social, military, medical, and other fields, and education has not been immune to these areas. The Director-General of UNESCO, Audrey Azoulay, has indicated, "Artificial intelligence will bring about a radical change in the field of education, and we will witness a revolution affecting educational tools, learning methods, access to knowledge, and the teacher preparation process, as artificial intelligence can help accelerate the process of achieving global education goals by reducing barriers to learning, automating administrative procedures, and providing the best ways to improve learning outcomes" (Azoulay, 2019).

Artificial intelligence applications are collaborative educational systems that rely on cooperative teaching and learning through the use of computers and multimedia, in addition to the participation of others in the process of communication, discussion, dialogue, criticism, and exchange of opinions on all points of view and issues (Al-Yagzi, 2019). The development of computer systems, which led to a qualitative shift in the field of communications, has brought the educational process out of the narrowness of traditional classrooms and into vast virtual reality spaces that can involve the largest number of learners, facilitate the communication process among them and with their teachers, and benefit from specialists in all fields to enrich educational situations.

The relationship between education and AI is strong, as education is used as a means to develop minds capable of expanding and benefiting from various fields of knowledge, while AI provides the necessary tools to develop a more accurate and detailed picture of how the human mind works. Also, the digital and dynamic nature of AI provides engagement opportunities for students that are rare in traditional textbooks, or within the walls of a classroom (Abdel Salam, 2021). Therefore, AI can be used in education in five areas: AI for education management and delivery; AI to empower teaching and teachers; AI to evaluate teaching and learning; AI to develop the values and skills necessary for life and work; and AI to provide lifelong learning opportunities for all. On the other hand, AI systems benefit from multiple disciplines, including education and learning sciences, psychology, neuroscience, linguistics, sociology, and anthropology, in order to enhance and develop adaptive learning environments and other AI tools that are flexible and comprehensive, where the main goal is to develop intelligent computer programs that can themselves make decisions on a specific topic (Darwish & Al-Laithi, 2020). However, there are many examples of applications of AI such as expert systems, speech recognition, applied language processing, speech making, gaming, letter reading and recognition, robots, pattern and shape recognition, comparison and recognition, decision support systems, learning, summarization and consideration (Bakr & Taha, 2019).

The use of AI applications in education has brought about a major revolution at the theoretical and applied levels in higher education, as many educational concepts and practices have changed regarding educational programs, methods of implementing and evaluating them, the learning environment, and the student-teacher relationship, and have become a condition for scientific excellence. Experts unanimously agreed on the importance of artificial intelligence technologies (AIT) in education in the twenty-first century, as they are characterized by their ability to learn, organize and understand science, explain academic subjects, provide immediate feedback to students, provide huge data to develop educational programs and improve student experiences, provide academic advice and guidance, predictive ability through data analysis, and assistance in early intervention to solve student problems. Moreover, AIT contributes to holding broad and open-source courses (MOOCs), which enable the largest number of students in higher education to study these courses online from any country in the world, in addition to the many advantages provided by AIT in education. (Rizk: 2021).

Tawfiq and Mohamed (2023) conducted a study that aimed to present a set of future scenarios as potential alternatives for employing AI applications to enhance academic excellence in Egyptian universities, by clarifying the philosophical framework of artificial intelligence, and identifying the intellectual foundations of academic excellence in Egyptian universities, as well as the most important applications of AI in education. The study relied on a descriptive approach, and its results revealed that AI is a basic condition for keeping pace with scientific and technological changes as it contributes to enhancing and improving education and is an important factor in improving performance and achieving sustainable development, and thus achieving academic excellence. Hence, some opinions have recently emerged calling for converting some public universities into smart universities, in order to face the challenges that have arisen in this era, and to fulfill this role, they need to correct their educational path, so that they are transformed into more interactive and vibrant universities according to the needs of the times. Therefore, one of the latest transformations that universities are seeking to transform towards is the smart university. (Al-Dahshan & Al-Sayed, 2020).

Al-Mutairi (2022) conducted a study aimed at measuring the impact of an electronic learning environment based on AI in developing e-learning skills among female students of the Education College at Umm Al-Qura University in the Kingdom of Saudi Arabia. The researcher used the quasi-experimental approach with a two-group system: the experimental group consists of (30) female students and the control group consist of (30) female students. The researcher applied a cognitive test to measure the cognitive aspects related to e-learning skills, and a note card to measure the performance aspect. The results showed that there were statistically significant differences between the average scores of the female students of the experimental group in developing the cognitive aspects and the performance aspects of e-learning skills in both the pre-application and the post-application in favor of the post-application. The researcher recommended the necessity of employing AI skills in the academic curricula of female students at the university.

The Corona pandemic (COVID 19) has demonstrated the need to use AI applications in education, in light of the lockdown measures that were implemented in the Kingdom of Saudi Arabia, where all educational institutions at different levels of study, including universities, were closed and switched to distance learning. According to Hariri's study (2021), which aimed to present a proposed vision for using AI to support education in universities in Saudi Arabia to confront the Corona pandemic (COVID 19) by benefiting from China's experience. By adopting the descriptive approach, the study revealed that AI applications and e-learning systems were used as an assistant to enhance the education process in Saudi universities during the lockdown period. The study also revealed that Saudi universities employed modern AI applications by creating a number of educational electronic platforms to cover the content of academic courses for all students, in addition to e-learning initiatives, including "establishing the National Center for E-learning before the Corona pandemic crisis." The study also found that the application of AI education techniques in Chinese universities is a top priority for the Chinese government through the practices it has undertaken that draw attention to those technologies. Overall, the study recommended that challenges and problems facing the application of AI in higher education institutions should be investigated by future research, and the educational environment in Saudi Arabia should be developed to interact with AI applications that support education in Saudi universities.

Al-Astal, Aql, and Al-Agha (2021) conducted a study aimed at developing a proposed model based on AI as well as revealing its effectiveness in developing programming skills among students of the University College of Science and Technology in Khan Yunis, where the quasi-experimental approach was used on a sample of (33) students. The results showed that there were statistically significant differences at the significance level (0.05) between the average scores of students in the pre- and post-measurements of the programming skills observation card in favor of the post-measurement. Also, O'Connor's (2023) study aims to expand our understanding of the role of AI in higher education classrooms, including students' acceptance of technology. As higher education considers AI as key to increasing productivity and efficiency. Hence, colleges are racing to remain relevant and competitive in a rapidly evolving industry with an increasing number of students taking online classes as solutions are sought to help maintain integrity in remote examinations. Thus, AI has been touted as a potential solution to this problem with new online proctoring systems. However, incorporating AI into the classroom has fundamentally changed the testing experience, which has been met with mixed reviews from students so far. Some studies examine

perceptions of students about AI-controlled online proctoring services used in their classrooms using the General Extensible Technology Acceptance Model for E-Learning (GETAMEL) as a basis, it is revealed how student satisfaction is affected by AI-controlled online proctoring systems in the classroom. Similarly, Graf's (2024) qualitative study discussed how digital college students perceive plagiarism and cheating. Today's students have grown up with high-speed internet, smartphones, and instant access to information, and their learning environment has changed dramatically during the COVID-19 pandemic. 19), leading many to shift from in-person to online learning. Additionally, the expansion of AI language models such as Chat GPT has raised questions about how students' use of this technology impacts the value and effectiveness of higher education. This interpretive study used in-depth interviews with 14 digital undergraduate students at a private Catholic liberal arts university. The Theory of Reasoned Action was used as a theoretical framework to interpret the themes emerging from the ongoing comparative analysis of these interviews. The results showed that these students can define and identify cheating and plagiarism, want transparency, care and trust from their teachers, and do not view plagiarism and cheating as ethical issues.

Despite the importance of using AI applications in the educational process, which appeared clear and obvious, it was met with some hesitation, fear, rejection, and other reservations from university faculty members. Some studies have addressed faculty members' attitudes toward using AI applications in the educational process, including this study. Among these studies is the study of Wang et al. (2020), which explored the desire of faculty members at Anhui University in the Republic of China to use AI applications in education in light of the theory of the spread of innovations and the relationship of some variables (such as relative advantage, compatibility, trust, experience, and complexity). The study used the descriptive (survey) method and relied on a questionnaire that was applied randomly to a sample of (178) faculty members at universities in Anhui Province. Study's results revealed that faculty members' use of AI applications in education was at a low degree, and showed that the variables "relative advantage, compatibility, perceived trust, and experience" are the factors contributing to determining faculty members' desire to use intelligent teaching systems. However, the complexity variable does not have a significant impact on faculty members' willingness to use smart teaching systems. The study recommended the need to encourage faculty members to use AI applications.

Younis's (2022) study also attempted to identify the attitudes of faculty members at Egyptian universities towards the use of Internet of Things applications in university education in light of the Unified Theory of Acceptance and Use of Technology (UTAUT). The study used the descriptive approach, using one of its tools, which is the questionnaire, which was applied to (282) faculty members in Egyptian universities in the sectors of Cairo, northern Egypt, the Delta, and Upper Egypt. The study found that there were statistically significant differences according to the variables of performance expectancy, effort expectancy, and social influence on faculty members' attitudes toward using Internet of Things applications in university education, as well as the presence of statistically significant differences according to the variables gender, age, number of years of work, scientific specialization, and nature of Mandatory and optional smart digital applications in faculty members' attitudes towards using Internet of Things applications in university education. Similarly, Shaarawy's (2023) study examined the perspectives of faculty members from five different institutions: the American University in Cairo (AUC), the German University in Cairo (GUC), the Arab Academy for Science and Technology (AAST), Ain Shams University, and Cairo University, on the use of AI in Higher Education in Teaching and Learning in Egypt, with all its challenges, the resources available to support it, and how it can be used to achieve equity and accessibility. This study was conducted through a qualitative study using individual semi-structured interviews with open-ended questions. Purposive sampling, specifically snowball sampling strategies, was used to select the 15 participants in this study, and interviews were conducted at the colleges themselves or on Zoom. The Unified Theory of Acceptance and Use of Technology (UTAUT) model of performance expectancy, effort expectancy, social influence, and facilitating conditions was used as a lens to guide the research. a qualitative method was used in this study by individual semi-structured interviews with open-ended questions. Purposive sampling, specifically snowball sampling strategies, was used to select the 15 participants in this study, and interviews were conducted at the colleges themselves or on Zoom. The Unified Theory of Acceptance and Use of Technology (UTAUT) model of performance expectancy, effort expectancy, social influence, and facilitating conditions was used as a lens to guide the research. The study highlights different perspectives of faculty from the five institutions

on how AI can be used in teaching and learning with all its benefits and challenges and to achieve equity and accessibility, the support systems available to support AI adoption. Data were presented according to the UTAUT form. The results showed that there is a willing among faculty to adopt AI in their institutions based on their responses to performance expectancy, effort expectancy, and social influence, Also, the result revealed that AI can be viewed as a tool for equity and accessibility, but only after facing the challenges. Moreover, the results showed that more work regarding facilitating conditions and perceived risks needs to be done, However, while the application of AI is still in its early stages in Egyptian higher education institutions, it is still impossible to ignore the potential advantages of AI in higher education.

here are some concerns about the use of AI technologies in education for reasons related to ethical aspects, as Dirar's (2019) study addressed the concept of the ethics of artificial intelligence, the ethical aspects and issues associated with it, and the concerns that may emerge from the self-awareness of robots, to come up with proposed local policies for the ethics of artificial intelligence, and it included five global policies. It concluded that the Arab world is devoid of ethical policies for AI and robots. In 2019, UNESCO issued the Charter of Ethics in Science and Technology in the Arab Region with the aim of establishing an Arab ethical framework that directs modern technology in the right direction in response to the growing Arab awareness that the harms that occur as a result of not following ethical controls do not affect a specific society, but rather are transmitted to other societies, and this is one of the justifications for drafting the Arabic ethics Charter. By developing the Arab Charter, UNESCO does not aim to achieve it to ensure the self-commitment of those concerned with it, but rather to achieve societal and political acceptance and support for it, which means supporting decision-makers on ways to adopt it and implement it in the relevant bodies in the various Arab countries, especially since it has obtained the approval of the Council of the League of Arab States. It must be a moral and philosophical basis from which it can be transformed into a legally binding charter (UNESCO, 2019). In order to find out the extent to which female graduate students at Imam Muhammad bin Saud Islamic University are familiar with the ethics of dealing with AI in light of the Charter of Ethics in Science and Technology issued by UNESCO, and to identify the impact of some variables in determining the extent of female students' familiarity with those ethics, Al-Khalifa (2021) conducted her study in which she used the descriptive approach. Survey. The research community consisted of all female graduate students in the Department of Fundamentals of Education, numbering (83) students. The most prominent results of the research were that the female graduate students in the Department of Fundamentals of Education at Imam Muhammad bin Saud Islamic University strongly agreed on the extent of their familiarity with the ethics of dealing with AI in light of the law. UNESCO Ethics in Science and Technology. Perhaps the greatest challenge facing all those working in the field of machine ethics is not designing the smart machine itself, but rather determining what we can consider as ethical behavior that everyone agrees upon, and that is a difficult task given the multiplicity of ethical visions and theories (Othman: 2022).

The responsibility for creating and establishing educational systems for artificial intelligence, whether at the college or university level, falls on the shoulders of scientific research centers, colleges, and universities, so that it includes multiple fields such as visual perception, robot learning capabilities, mathematics games, and simulation programs and applications, all of which require teaching, learning, and experiences in order to acquire many skills. The way we work, the way we learn, and the way we live are largely influenced by AI mechanisms (Kjensmo, 2017).

Materials and Methods

The research problem can be summarized in the following main question: What are the attitudes of faculty members at the University of Hail towards using artificial intelligence technology in teaching? The following questions arise from it:

- What is the relationship between scientific specialization (applied/theoretical), years of experience in university teaching, and gender (male/female) of faculty members at the University of Hail and their attitudes toward using AIT in teaching?
- Do the faculty members at Hail University agree towards using AIT in all steps of teaching (planning/implementation/evaluation)?

In light of the research questions, the research hypotheses were formulated as follows:

- The first hypothesis: The attitudes of faculty members at the University of Hail towards using AIT in teaching are high with statistical significance above the probability mean.
- The second hypothesis: There are no statistically significant differences between the attitudes of faculty members at the University of Hail towards using AIT in teaching due to the specialization variable (theoretical/ applied).
- The third hypothesis: There are no statistically significant differences between the attitudes of faculty members at the University of Hail towards using AIT in teaching due to the variable years of experience in university teaching.
- Fourth hypothesis: There are no statistically significant differences between the attitudes of faculty members at the University of Hail towards using AIT in teaching due to the gender variable (male/female).
- Fifth hypothesis: The attitudes of faculty members at Hail University agree towards using AIT in all steps of teaching (planning/implementation/evaluation).

This research aimed to know the attitudes of faculty members at the University of Hail towards using artificial intelligence technology in teaching and to know the factors influencing their attitudes such as (scientific specialization, experience in university teaching, gender “male/female”). To achieve the objectives of this research, the researcher used the descriptive method, which describes the phenomenon and analyzes it to reach the results. (The descriptive method is one of the most appropriate research methods in the educational, psychological, and social sciences for the educational and social reality. It is the first step towards achieving the correct understanding of this reality, as we are able to take into account all the dimensions of this reality and thus, we have laid a solid foundation for any attempt aimed at developing or changing this reality in order to achieve desirable and desired goals. (Suleiman, 2014). This research was conducted during the first semester of the current academic year 2023.

Population and sample:

The research community consists of all faculty members at the University of Hail, which is (located in the city of Hail in the Hail region of the Kingdom of Saudi Arabia and is under the supervision of the Saudi Ministry of Education. The university was established by royal decree on Tuesday, June 7, 2005, and includes 20 theoretical and applied colleges) (Wikipedia,2023c) at the rank of (professor, associate professor, and assistant professor) in all the university’s theoretical and applied colleges, where the number of faculty members is (1031) of both gender (male and female). Since the research population is not homogeneous, a representative sample was taken using a stratified random sampling method, where the sample size was (340) faculty members, a percentage of (33%) of the size of the original research population. (If the society is not homogeneous in its characteristics, then the sample must represent the levels, each according to its presence in the society, and from each of these levels a group that represents it must be chosen randomly) (Al-Munizel and Gharabieh: 2007).

Therefore, the sample was distributed as follows:

1/ Distribution of the sample according to gender (males/females):

Table No. (1): Shows the distribution of sample members according to: the Gender (male/female)

Gender	The Number	Percentage
Males	225	66.2%
Females	115	33.8%
The Total	340	100%

2/ Distribution of the sample according to Specialty College (theory/ Applied):

Table No. (2): Shows the distribution of sample members according to: Faculty (theoretical/practical):

Type of the college	The number	Percentage
Theoretical college	174	51.2%

Applied college	166	48.8%
the total	340	100%

3/ Distribution of the sample according to years of experience in university teaching:

Table No. (3): Shows the distribution of sample members according to: years of experience in university teaching

Categories of years of experience	The number	Percentage
(0 - 5)	32	9.4%
(5 - 10)	88	25.9%
(more than 10)	220	64.7%
the total	340	100%

The researcher used the questionnaire tool to collect data due to its suitability to the nature of the research problem and the sample size. (Measuring trends is not an easy task, as trends cannot be observed directly, and the question is how to measure something in someone's mind? The traditional solution is to ask people, and researchers widely believe this, and they often use questionnaires or scales) (Al-Naimi, 2016). The content of the questionnaire was limited to the areas of use of artificial intelligence in teaching. The questionnaire axes included the three main teaching steps, namely (planning, implementation, and evaluation). The questionnaire phrases included the teaching skills specific to each axis. The number of questionnaire phrases in its initial form reached (36) phrases distributed over three axes. However, to ensure the validity of the questionnaire statements, it was presented to a group of arbitrators with experience and specialization in the field of curricula, teaching methods, and educational techniques. The questionnaire statements were reduced to (30) statements according to the opinions of the arbitrators. To measure the attitudes of the sample members, a five-point Likert scale was chosen (Strongly agree, agree, neutral, disagree, strongly disagree). The upper limit of the responses was set at (5) points for the response (Strongly Agree) and the minimum was set at (1) score for the response (Strongly Disagree). Then, the internal consistency of the questionnaire items was measured using the Pearson correlation coefficient, and the results were shown in Table No. (4) below:

Table No. (4): shows the internal consistency of the questionnaire statements.

Link	clause	Link	clause	Link	clause	Link	clause	Link	clause
0.793	5.	0.790	4.	0.727	3.	0.754	2.	0.738	1.
0.743	10.	0.785	9.	0.804	8.	0.794	7.	0.697	6.
0.776	15.	0.630	14.	0.697	13.	0.733	12.	0.771	11.
0.795	20.	0.696	19.	0.780	18.	0.746	17.	0.772	16.
0.715	25.	0.673	24.	0.775	23.	0.808	22.	0.772	21.
0.702	30.	0.784	29.	0.794	28.	0.702	27.	0.757	26.

To measure reliability, the researcher used the method of dividing the questionnaire items in half, and the results were as shown in the following table:

Table No. (5): shows the reliability coefficient of the questionnaire:

The equation	Omega	Alpha Cronbach	Guttman
Stability coefficient	0.973	0.973	0.925

It is clear from Table (5) above that the reliability coefficient of the questionnaire reached (0.925) according to the Guttman equation, (0.973) according to the Cronbach's Alpha equation, and reached (0.925) according to the Omega equation. These values indicate a high reliability coefficient for the questionnaire items. Overall, the researcher adopted the questionnaire in its final form after verifying its validity and high reliability coefficient, as it consisted of (30) statements distributed over three axes that covered all teaching skills with (10) statements in each axis. The questionnaire was sent electronically to the targets, which reduced the percentage of unapproved responses. The researcher used a number of statistical methods to present and analyze the data, such as (percentages, Pearson correlation coefficient, Guttman equations,

Cronbach’s alpha, and Omega to calculate the reliability coefficient of the questionnaire, in addition to the arithmetic mean and standard deviation, the t-test for one sample, the t-test for independent samples, and analysis of One-way variance (ANOVA) (Sabry, 2015).

Results and Discussion

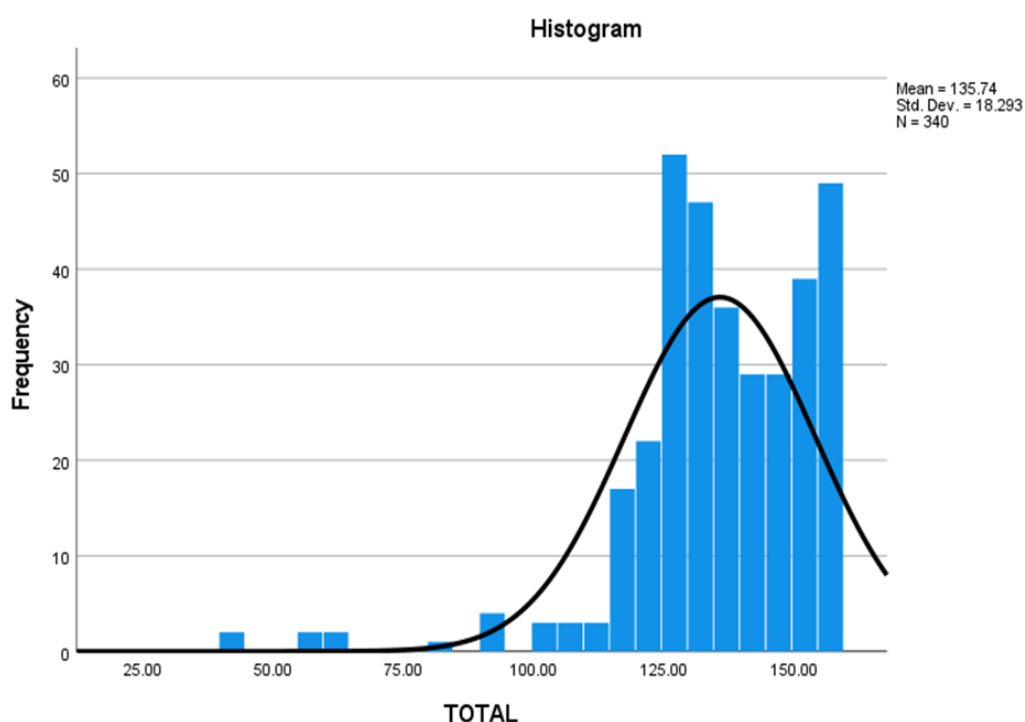
First, the result of the first hypothesis: To verify the validity of the first hypothesis, which states that (the attitudes of faculty members at the University of Hail towards using AIT in teaching are high with statistical significance above the probability mean). The researcher used a single-sample t-test with a probability value of (3) and the results are shown in Table No. (6) below:

Table No. (6): Shows the arithmetic mean and standard deviation for one sample to measure the attitudes of sample members

Study topics	The number	Standard error of the difference	standard deviation	Arithmetic mean
Teaching planning	340	.355050	6.54671	43.0882
Teaching implementation	340	.333670	6.15264	50.9412
Teaching evaluation	340	.372890	6.87576	41.7059
Total marks		.992090	18.29327	135.7353

From Table (6) above, it is clear that the responses of the sample members to the questionnaire statements in its first axis regarding their attitudes towards using artificial intelligence technology in teaching planning were all positive.

Figure: shows the trends of the sample members towards the use of artificial intelligence technologye in teaching



It is clear from Tables 6 and the graph that the attitudes of faculty members at the University of Hail towards using artificial intelligence technology in teaching are positive. However, to verify the statistical significance of the sample members’ trends with respect to the probability mean, the researcher used a single-sample t-test with a probability value of (3). The result was as shown in Table No. (7) below:

Table No. (7): Shows the results of the t-test. For one sample, the probability value (3) to measure the attitudes of sample members.

Average difference	Significance level		Degree freedom	of	Calculated T	Total attitude scores
	Two directions	One-way				
40.08824	<.001	<.001	339		112.910	Teaching planning

47.94118	<.001	<.001	339	143.677	Teaching implementation
38.70588	<.001	<.001	339	103.800	Teaching evaluation
132.73529	<.001	<.001	339	133.793	Total marks

Table (7) above shows that the attitudes of the sample members in the axes of teaching planning, teaching implementation, and teaching evaluation, and in all axes, were positive and statistically significant above the probability mean.

Second, the result of the second hypothesis: To verify the validity of the second hypothesis, which states (there are no statistically significant differences between the attitudes of faculty members at the University of Hail towards using AIT in teaching due to the specialization variable (theoretical/applied). The researcher used the t-test for independent samples and it was the results are as follows: -

Table No. (8): Shows the results of the t-test. For independent samples

standard deviation	Arithmetic mean	the number	specialty the college
16.98561	136.0229	166	Applied college
20.48725	135.2213	174	Theoretical college

From Table (8) above it is clear that the value of the arithmetic mean for the applied colleges was (136.0229) and the standard deviation was (16.98561), and the value of the arithmetic mean for the theoretical colleges was (135.2213) and the standard deviation was (20.48725). To determine the significance of the differences between the two groups, the researcher used the t-test for independent samples, and the results were as shown in Table No. (9) below:

Table No. (9): Shows the results of the t-test for independent samples to measure the significance of differences for a variable specialization (theoretical/ applied)

Standard error of the difference	Average difference	Significance level		Degree of freedom	Calculated T value	Significance level	value (q)
		Two directions	One-way				
2.07094	.80162	.699	.349	338	.387	.994	.000
2.18262	.80162	.714	.357	214.314	.367		

Table No. (9) shows that the T-value calculated for the responses of the sample members in the applied colleges was (.387), while the T-value calculated for the responses of the sample members in the theoretical colleges was (.367). This shows that there are no statistically significant differences between the attitudes of faculty members in theoretical colleges and applied colleges towards using artificial intelligence technology in teaching.

Third, the result of the third hypothesis: To verify the validity of the third hypothesis, which states that (there are no statistically significant differences between the attitudes of faculty members at the University of Hail towards using AIT in teaching due to the variable years of experience in university teaching). The arithmetic mean and standard deviation were calculated for the three categories and the result was as shown in Table No. (10) below:

Table No. (10): Shows the arithmetic mean and standard deviation for the variable of experience in university teaching

standard deviation	Arithmetic mean	the number	Years of experience in university teaching
11.63278	135.0313	32	(0-5)
11.31269	140.5114	88	(5-10)
20.86845	133.9273	220	(More than10)

From the above table it is clear that the arithmetic mean for the category (0-5) was (135.0313), the arithmetic mean for the category (5-10) was (140.5114), and the arithmetic mean for the category (more than 10) was (133.9273). To determine the statistical significance of the differences between the three groups, the researcher used one-way analysis of variance (ANOVA), and the results were shown in Table No. (11) below: -

Table No. (11): Shows the result of one-way analysis of variance ANOVA for the sample depending on the years of experience in university teaching.

Significance level	value (q)	Sum of squares	Degree of freedom	Sum of squares
0.016	4.174	1371.191	2	2742.383
		328.492	337	110701.794
			339	113444.176

Looking at Table No. (10) and Table No. (11) above, it is clear that there are statistically significant differences among faculty members in their attitudes towards using artificial intelligence technology in teaching due to the variable of experience in the field of university teaching, in favor of the group (5 - 10) years, as the value (F) reached (4.174) with a significance level of (0.016).

Fourth, the result of the fourth hypothesis: To verify the validity of the fourth hypothesis, which states (there are no statistically significant differences between the attitudes of faculty members at the University of Hail towards using AIT in teaching due to the gender variable "male/female"). To verify the validity of the hypothesis, a t-test was used for independent samples, and the results were as follows:

Table (12): Shows the arithmetic mean and standard deviation of a variable the Gender (male/female)

Type	the number	Arithmetic mean	Standard deviation
male	225	135.3289	19.83837
feminine	115	137.4870	14.50067

From Table No. (12) above, we find that the arithmetic mean for the male category of sample members was (135.3289), while the arithmetic mean for the female category was (137.4870). To determine the significance of the differences between the two categories, the researcher used the T-test for independent samples, and the result was as shown in the table. No. (13) follows:

Table No. (13): Shows the results of the t-test for independent samples to measure the significance of differences for a variable the Gender (male/female)

Standard error of the difference	Average difference	Statistical significance level		Degree of freedom	Calculated T value	Significance level	value (q)
		Two directions	One-way				
2.08785	4.15807	0.067	0.024	338	-1.992	0.183	1.782
1.89145	4.15807	0.09	0.014	297.761	-2.198		

Looking at Table No. (13), we find that the value of (t) calculated for the male category was (-1.992), while the value of (t) calculated for the category of females was (-2.198). The average difference was (4.15807) and by calculating the value of (q), which was (1.782), and the level Statistical significance (0.183) It is clear that there are no statistically significant differences between the attitudes of faculty members at the University of Hail towards using artificial intelligence technology in teaching due to the gender variable (male/female).

Finally, the result of the fifth hypothesis: To verify the validity of the fifth hypothesis, which states (the attitudes of the faculty members at the University of Hail towards using AIT agree in all teaching steps (planning/implementation/evaluation).) The arithmetic mean, standard deviation, and variance were calculated between the sample members' responses to measure their attitudes toward using artificial intelligence technology in all teaching steps (planning/implementation/evaluation), and the result was shown in Table No. (14) below:

Table (14) shows the arithmetic mean, standard deviation, and variance for the teaching steps variable

variance	standard deviation	Arithmetic mean	Highest response	Lowest response	Term	the number	Teaching steps
42.859	6.54671	43.0882	50.00	10.00	40.00	340	Planning
37.855	6.15264	50.9412	58.00	22.00	36.00	340	to implement
47.276	6.87576	41.7059	50.00	10.00	40.00	340	calendar

It is clear from Table No. (14) Above that the arithmetic mean of the sample members' attitudes toward using artificial intelligence technology in teaching in the teaching planning step reached (43.0882), while the arithmetic means of the sample members' attitudes in the teaching implementation step reached (50.9412). As for the sample members' attitudes toward the use of artificial intelligence technology in teaching in the teaching evaluation step resulted in a mean of (41.7059).

Discussion:

Result of the first hypothesis: The result indicates that the attitudes of the sample members towards using AIT in teaching were positive and high with statistical significance above the probability mean, which confirms the validity of the first hypothesis, which states that (the attitudes of faculty members at the University of Hail towards using AIT in Teaching is high with statistical significance above the probability mean), and the researcher believes that this result is due to the high level of awareness of faculty members at the University of Hail of the importance of using AIT in university teaching to keep pace with changes in the present era. This result is consistent with the result of the following studies: Al-Astal, Aql and Al-Agha (2021), Hariri (2021), Rizk (2021), Shaarawi (2023), and Tawfiq and Muhammad (2023). While this result differed from the study of Wang et al. (2020), and Al-Sobhi (2020) which concluded that the use of AI applications by Najran University faculty members in education was to a very low degree. The researcher believes that this difference is due to the time difference between the two studies, which amounts to more than three years in light of the rapid development of faculty members' skills to keep pace with developments occurring in the field of university teaching. Modern trends and research in the field of education with AI indicate that the more education space is equipped with modern applications, the more opportunities are available to improve the education system and keep pace with development, as AI has multiple important roles in educational institutions, and the elements it can perform. (Mahmoud, 2020). The Director-General of the Islamic World Educational, Scientific and Cultural Organization (ISESCO) adds that integrating AI applications into education is an opportunity to overcome many educational challenges, and that AI should not raise fears as much as it helps facilitate the teaching function and increase the efficiency of delivering information in modern and easy ways. (Al-Malik, 2020). The use of AI applications depends on the educational interaction of the learner on the one hand and learning resources on the other hand, including books, tools, teachers, and educational media, and thus it overcomes the passivity of the learner, as is the case in current education systems (Al-Yagzi, 2019).

Result of the second hypothesis: The result demonstrated the validity of the second hypothesis of the study, which states (there are no statistically significant differences between the attitudes of faculty members at the University of Hail towards using AIT in teaching due to the specialization variable (theoretical/ applied). This result is interpreted in light of the result of the first hypothesis. The study confirmed that the attitudes of Hail University professors towards using AIT in teaching are positive, both in applied colleges and theoretical colleges, as proven by this result, which indicates the awareness of Hail University faculty members about the importance of using AIT in teaching. This result is consistent with the result of the study of Yunus (2022). New horizons of knowledge in curricula, teaching strategies, and educational technologies can be opened by AI, and this is a reason for educators to seize these unique services and advantages that AI applications provide for educational purposes, and to ensure that they are built well. So that it is used successfully in educational programs (Al Saud, 2017).

Result of the third hypothesis: This result indicates that the third hypothesis is incorrect, which states (there are no statistically significant differences between the attitudes of Hail University professors towards using AIT in teaching due to the variable years of experience in university teaching). The researcher attributes this result to the fact that the category (5 - 10) of the faculty members who are most open to technology and use it the most, the majority of this category are young people whose experience in the field of university teaching exceeds five years. They are not

afraid to use AIT in teaching, but rather show a passion for using it compared to the first two categories (less From 5 years), which is the category that is dominated by those who have recent experience and experience in university teaching and are wary of using AIT in teaching, as well as the third category (more than 10 years), which is the category that includes faculty members whose experience in the field of university teaching exceeds ten years and who are accustomed to... The use of traditional methods in teaching despite the positive trends of both groups (less than 5 years) and the group (more than 10 years) towards the use of AIT in teaching. This result is consistent with the result of the study of Al-Gharib (2022), and this result is consistent with the study of Wang et al. (2020).

Result of the fourth hypothesis: This result indicates the validity of the fourth hypothesis, which states (there are no statistically significant differences between the attitudes of faculty members at the University of Hail towards using AIT in teaching due to the gender variable "male/female"). The researcher attributes this result to the fact that gender (male/female) does not affect the attitudes of faculty members at the University of Hail towards using AIT in teaching. This result was consistent with the result of the study by Al-Subhi (2020), while different with the result of the study of Younis (2022).

Result of the fifth hypothesis: This result indicates that there is a discrepancy between the sample members' attitudes toward using AIT in the three teaching steps (planning/implementation/evaluation), as the arithmetic mean of their attitudes toward using AIT in teaching increased in the teaching implementation step followed by the teaching planning step. Then the teaching evaluation step. This result proves the invalidity of the fifth hypothesis, which states (the attitudes of Hail University professors agree towards using AIT in all steps of teaching "planning/implementation/evaluation"). The researcher attributes this result to the presence of concerns among faculty members regarding student evaluation as AIT can carry out the student's academic duties and make him a transmitter of knowledge and not a critic of it or a participant in obtaining it. This result is consistent with the result of O'Connor's study (2023), Graf's study (2024), and Dirar's study (2019). This result is consistent with the result of the first hypothesis of the study, which confirmed that the attitudes of faculty members at the University of Hail towards using AIT in teaching are positive, indicating their firm desire to use this technology in the teaching implementation step as well as in the teaching planning step, with some fears regarding its use in teaching. Teaching evaluation, which did not affect their positive attitudes towards using AIT in university teaching.

By using AI applications, scientific material can be presented flexibly and the ability to respond to the needs of the student can be improved greatly. These systems gain the characteristic of intelligence through their ability to present educational decisions about how the learning process takes place, as well as acquire information about the learner's personality. This allows for the provision of a great deal of diversity by Changing the system's interactions with the student. Hence, field studies have shown that intelligent learning systems are highly effective. (Al-Yagzi: 2019).

Conclusion

This research aimed to know the attitudes of faculty members at the University of Hail towards using artificial intelligence technology (AIT) in teaching and to know the factors influencing those trends such as (scientific specialization, experience in university teaching, gender "male/female"). In summary, this research concluded with the following results: The attitudes of faculty members at the University of Hail towards the use of AIT in teaching are positive and statistically significant above the probability mean. There are no statistically significant differences between the attitudes of faculty members at the University of Hail towards using AIT in teaching due to the variables of specialization (theoretical/applied) and gender (male/female). On the other hand, there are statistically significant differences among faculty members in their attitudes towards using AIT in teaching due to the variable of experience in the field of university teaching in favor of the group (5 - 10) years: Moreover, the research reveals a discrepancy between the attitudes of the sample members towards using AIT in the three steps of teaching (planning/implementation/ evaluation), where the arithmetic mean increased in the teaching implementation step, followed by the teaching planning step, then the teaching evaluation step.

In response, the researcher recommends the following: Designing training courses to develop cognitive and performance educational competencies in the field of using AI in teaching targeting new faculty members and members whose experience in university teaching exceeds ten years. Preparing the educational environment to use AIT in teaching. Encouraging faculty members to use AIT in teaching. In the conclusion of this research, the researcher suggests conducting further studies on the topic of using AI in teaching, such as: studying the reality of faculty members' use of AIT in teaching. Designing a training program to develop the competencies of university faculty

members to use AIT in teaching. Measuring the effectiveness of using AIT in students' scientific research.

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