



The Reality of the Use of Artificial Intelligence Applications in Education by Faculty Members of Scientific and Humanities Colleges at the University of Baghdad

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Abstract

Artificial intelligence (AI) aims to develop systems that achieve a level of intelligence similar to or surpassing human intelligence. AI applications are designed to mimic human cognitive behaviors, with the goal of embedding human knowledge into computers through what is known as knowledge bases. Computers can then use software tools to search these bases, perform comparisons, and conduct analyses to derive and infer the best solutions to various problems. This process resembles how humans solve new problems in their daily lives by relying on past experiences, predicting potential outcomes, and using reasoning skills to evaluate the best available solutions. This study investigates the current use of AI applications in education by faculty members in scientific and humanities colleges at the University of Baghdad, as well as the challenges they face. It also aims to identify differences in the use of AI and the associated challenges based on variables such as academic degree (Master's, PhD), gender (male, female), academic specialization (scientific, humanities), and years of service (1–10 years, 11 years or more). The research sample included 279 faculty members from the College of Physical Education and Sports Sciences for Women and the College of Education for Women at the University of

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Baghdad for the academic year 2020 2021. The study utilized a scale developed by Sabah Eid Al-Subhi (2020) to measure the reality of faculty members' use of AI applications. The scale consisted of 23 items divided into two axes: the reality of AI use in education (11 items) and the challenges faced by faculty members (12 items). Responses ranged from "very high degree" to "very low degree." The scale's validity was confirmed by a panel of experts, and its reliability, calculated using Cronbach's alpha, was 0.88. The results revealed that the use of AI applications by faculty members in scientific and humanities colleges at the University of Baghdad was very low, while the challenges they faced were very high. Based on these findings, the researchers recommended providing intensive lectures to raise awareness among faculty and students about the importance of using AI in education to save time, effort, and costs. They also suggested organizing discussion sessions and workshops on AI and its applications.

Keywords: Artificial Intelligence, Faculty Members in Scientific and Humanities Colleges, University of Baghdad.



Introduction

There have been tremendous developments in the field of learning and education ever since technology has witnessed fast growth. Influence of the Internet in Higher Education Internet-based research has become an essential aspect of academic studying, and laptop computers have replaced supplementary or full textbooks at universities. But all these now around the world standing out may be behind in just a few years as artificial intelligence (AI) integration to education, which has already started up and is likely going to be an unprecedented revolution. The goal of artificial intelligence is to create systems that can demonstrate intelligent behavior equivalent or superior to human-level intelligence, whereas AI applications focus on replicating human intellectual function. The main focus is on how human knowledge could be embedded into the computer system that can use such a form of family. Software tools can then search these bases and compare, analyze, and generate optimal answers/solutions to problems. This process is similar to how humans solve novel problems in everyday life by drawing from our past experiences, predicting likely outcomes, and applying reasoning and comparative decision-making skills across available alternatives.

The scientific problem also lies in determining the current reality of using applications of artificial intelligence in teaching at scientific and humanities colleges at the University of Baghdad. The study also aims to find out the difficulties that face faculty in using AI applications in education. In addition, the study seeks to find out differences in using AI applications among faculty members according to the following variables: academic qualification (Master's, PhD), gender (male, female), academic specialization (scientific, humanities) and years of service (1–10 years, 11 years and above). The study also explores the differences in challenges faced by faculty members in adopting AI applications in education with respect to the same variables. The research problem is further translated into the following sub-questions:

1. What are the barriers facing scientific and humanities colleges faculty members at the University of Baghdad in using AI applications in education?
2. What is the impact of academic qualification (Master's, PhD) on faculty use of AI applications in education?
3. Does gender (male, female) affect the use of AI applications in education by faculty?
4. Does academic specialization (scientific, humanities) have any effect on the faculty members using AI applications in education?
5. Does faculty members with years of service (1–10 years, 11 years and above) have an impact on the use of AI applications in education?
6. What is the impact of academic qualification (Master, PhD) on the constraints of faculty to utilize AI apps in education?
7. How does gender (male, female) influence the problems encountered by educators using AI applications in education?
8. As a domain what are the challenges of higher education faculty using AI applications; does this differ from scientific to humanities faculties?



9. Does years of service (1–10 years, 11 years and above) have an impact on the challenges encountered by faculty in using AI applications in education?

The study aims to

1. Identify the reality of using artificial intelligence applications in teaching within scientific and humanities colleges at the University of Baghdad.
2. Determine the challenges faced by faculty members in using artificial intelligence applications in education.
3. Identify differences in the reality of AI application usage in education according to the variables of academic qualification (Master’s, PhD), gender (male, female), academic specialization (scientific, humanities), and years of service (1–10 years, 11 years and above).
4. Identify differences in the challenges faced by faculty members in using AI applications in education according to the same variables.

The current study was restricted to faculty members from the College of Physical Education and Sports Sciences for Women and the College of Education for Women at the University of Baghdad, during a time frame extending from 12 February 2020 –23 June 2021. The research community consisted of (279) teachers, including (113) teachers from the College of Physical Education and Sports Sciences for Women and (166) from the College of Education for Women for the academic year 2020–2021. The characteristics of research sample are presented in Table (1).

Table 1. Characteristics of the Research Sample

Category	Frequency	Percentage
Academic Specialization		
Scientific	113	40.5%
Humanities	166	59.5%
Gender		
Male	74	26.52%
Female	205	73.48%
Years of Service		
1–10 Years	145	51.9%
11 Years and Above	134	48.1%
Academic Qualification		
Master’s Degree	89	31.9%
PhD	190	68.1%



Methodology

In this study, researchers used a descriptive–analytical approach. Statistical analyses were performed on data collected using the research scale including assessment of mean, standard deviation, t-test and one-way analysis of variance (ANOVA), respectively.

The extent of use of actual applications of artificial intelligence among faculty members was measured using a scale developed by Sabah Eid Al-Sabahi (2020). The reason is that the scale was considered most appropriate tool to measure actual use of AI applications as it was designed specifically for faculty members. The scale includes 23 items grouped in two dimensions: actual use of artificial intelligence applications in education by faculty members (11 items) & challenges faced by faculty members when it comes to using artificial intelligence applications (12 items).

A five-point response scale was used for each item: very high degree, high degree, moderate degree, low degree and very low degree with the scores of 1, 2, 3, 4 and 5 respectively. Its content validity was pre-tested by experts in the field.

Table 2. *Experts' Opinions on the Validity of the Scale Items*

No.	Item Sequence	Number of Items	Agreeing Experts	Disagreeing Experts	Calculated Chi-Square	Tabulated Chi-Square	Significance Level
1	10, 5, 19, 21, 18, 22	6	13	2	8.06	3.84	0.05
2	15, 16, 4, 14, 7, 3, 17, 23	8	14	1	11.26	3.84	0.05
3	6, 1, 12, 8, 2, 13, 11, 9, 20	9	15	0	15.00	3.84	0.05

The researchers also relied on self-validity, which was calculated as the square root of the reliability coefficient of the scale, reaching a value of 0.93.

Results

The study finds that the current using level of artificial intelligence (AI) applications in teaching was moderate based on faculty members at scientific and humanities colleges from University of Baghdad. The prevalent applications were computer-based education, instructional software and virtual reality technologies. Conversely, the use of sophisticated applications like intelligent tutoring systems and adaptive learning technologies showed relatively lower numbers.

When it comes to the challenges faced by the faculty members in implementing AI applications at the higher education level, this study identified several barriers which include ineffective technological infrastructure, restraining training opportunities, resistance to change as well as concerns regarding job security. Statistical findings also revealed significant differences between the use of AI applications as well as obstacles faced by faculty members based on variables academic qualification, gender, academic specialization and years of service.

After statistically processing the data, the results are presented in Tables (3) and (4).

Table 3. Mean, Standard Deviation, and Ranking of Items Related to the Reality of AI Application Use by Faculty Members in Scientific and Humanities Colleges at the University of Baghdad

Scale Order	Item Description	Mean	Std. Deviation	Rank	Level of Use
4	Converting written course texts into immersive virtual environments using virtual reality technologies	1.12	0.292	1	Very Low
8	Using intelligent educational games to meet students' learning needs	1.09	0.287	2	Very Low
11	Accurately summarizing long texts using AI-based text summarization applications	1.07	0.263	3	Very Low
1	Responding to students' inquiries using intelligent chat applications	1.06	0.281	4	Very Low
2	Enhancing subject explanation through augmented reality applications	1.05	0.220	5	Very Low
3	Providing audio learning interaction using voice-generation applications	1.04	0.189	6	Very Low
9	Identifying students' strengths and weaknesses using intelligent assessment applications	1.03	0.198	7	Very Low
10	Converting printed or handwritten images into editable text using OCR applications	1.02	0.292	8	Very Low
5	Providing suitable solutions for students with limited experience using expert systems	1.01	0.195	9	Very Low
6	Using intelligent educational games based on motivation, challenge, imagination, and competition	1.01	0.159	10	Very Low
7	Providing adaptive intelligent learning to meet individual student needs	1.01	0.152	11	Very Low

Table 4. Mean, Standard Deviation, and Ranking of Challenges Facing Faculty Members in Using AI Applications in Education

Scale Order	Challenges	Mean	Std. Deviation	Rank	Challenge Level
15	High financial cost of equipping classrooms for AI applications	4.99	0.238	1	Very High
16	Belief that using AI applications requires more effort than traditional teaching	4.97	0.249	2	Very High
20	Heavy workload of faculty members limiting AI use	4.95	0.267	3	Very High
21	Insufficient lecture time to use AI applications	4.94	0.291	4	Very High
22	Lack of moral incentives for faculty using modern technologies	4.91	0.376	5	Very High
12	Limited awareness of the importance of AI applications in education	4.90	0.394	6	Very High
13	Students' limited ability to solve problems while using AI applications	4.88	0.415	7	Very High
14	Lack of adequate technical support	4.86	0.398	8	Very High
17	Lack of sufficient time for training on AI applications	4.84	0.421	9	Very High



10	Weak student response to the new learning pattern	4.71	0.347	10	Very High
19	Large class size limiting control of AI application use	4.04	0.322	11	High
23	Insufficient training programs on AI applications	4.01	0.504	12	High

Table 5. Analysis of Differences in Artificial Intelligence Applications and Their Challenges According to Demographic and Academic Variables

Variable	Category	N	AI Applications Mean	Std. Dev.	t-value (Calc.)	t-value (Tab.)	Sig.	AI Challenges Mean	Std. Dev.	t-value (Calc.)	t-value (Tab.)	Sig.
Academic Qualification	Master's	89	1.32	0.125	3.88	1.96	Significant	1.39	0.189	2.08	1.96	Significant
	PhD	190	1.39	0.154				1.13	0.177			
Gender	Female	205	1.025	0.134	2.80	1.96	Significant	4.79	0.109	10.00	1.96	Significant
	Male	74	1.084	0.175				4.67	0.112			
Academic Specialization	Scientific	113	1.24	0.181	1.87	1.96	Not Significant	4.76	0.106	0.05	1.96	Not Significant
	Humanities	166	1.12	0.163				4.78	0.109			
Years of Service	1–10 Years	145	1.39	0.189	2.08	1.96	Significant	4.48	0.129	8.20	1.96	Significant
	11 Years and Above	134	1.13	0.177				4.59	0.114			

Discussion

As illustrated in table (3), it can be concluded that there is a weak dependence on artificial intelligence, which suggests that incorporating AI applications into the educational process prevails during developing stages and faculty members do not heavily rely upon these technologies at least within their teaching practices. This could be due to lack of awareness about the possible AI use cases, limited tech ecosystem, or not enough training on how to implement it effectively.

faculty members' challenge in adopting the use of AI applications in education for scientific and humanities colleges is very high as it has been shown in Table (4). Indeed, the main causes for these challenges are financial costs, increased workload, lack of time and insufficient incentivizing system. So suitable actions must be taken to cope up with these challenges and help the faculty members incorporate AI technologies with more effectiveness in the teaching functionality.

The data covered in table (5): descriptive statistics show the differences in means and standard deviations across groups for each variable of the study (namely: academic qualification, gender, academic specialization and years of service). Independent samples t-test were conducted to examine whether these differences are statistically significant. Data (up to October 2023) revealed that even the academic qualification (Master's or PhD) had a significant positive impact on both AI applications use and challenges faced, with Master's degree holders using more AI applications as well as facing more issues associated with their use compared to their PhD counterparts. The fact that female faculty members presented more involvement and difficulties with AI applications than their male colleagues also outlines the gender differences in our dataset. On the other hand, there was no statistically significant effect of academic specialization on either AI application use or challenges associated with doing so; that is, these technologies are ubiquitous across all academic settings. In terms of years of experience, faculty who had less experience (1–



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10 years) were more engaged with AI applications but also faced more difficulties than faculty members with longer professional experience.

Conclusions

The study aims to know the reality of artificial intelligence (Ai) applications used in teaching in scientific and humanities colleges at the University of Baghdad. It also highlights the barriers encountered by faculty and validates the need to address these obstacles for successful implementation of AI-based technologies in academia.

The results highlight the need for improving the higher education utilization of artificial intelligence, as it is critical to establish tools directed towards boosting faculty adoption of these technologies because some subgroups showed lower levels of usage (e.g. female faculty and Master's degree). Most importantly, existing challenges should be reduced given the high rate of obstacles faced by faculty members; hence, intensive training programs and continuous technical support are needed to cope with this (particularly among female staff and Master degree holders).

The findings also highlight the need to promote gender equity because, although there are no statistically significant differences in terms of level and challenges between male and female faculty members, a gap seems to exist (with females being underutilized) that impacts equal opportunities for their access and use of AI technologies.

In line with the above, the study suggests providing adequate technology infrastructure and expanding professional training opportunities; fostering a culture of innovation and organizational change; and consideration of job security concerns of faculty members for facilitating at successful adoption of AI within higher education institutions.



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