

## PAPER

# Integrating Artificial Intelligence and Mobile Technologies in Iraqi Secondary Education

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## ABSTRACT

The objective of this investigation is to determine the opportunities and challenges that secondary schools in Babylon, Iraq, encounter when utilizing artificial intelligence (AI) technologies. The study adopted a qualitative and quantitative method and also explored the infrastructure and existing technological tools in schools using documents from education management. Thematic analysis is used to find, assess, and report recurring patterns and key themes in interview transcripts to gain a comprehensive understanding of participants' perspectives. Stakeholders are very excited about using AI in their schools and are in favor of the idea of switching to AI, even though there are some challenges that need to be processed, such as poor infrastructure, communication issues, and a lack of training programs on how to use AI technologies and applications. This paper establishes that the potential for the fundamental transformation of conventional teaching and learning methods exists through the integration of AI and mobile technologies into education. AI can provide customized educational experiences, optimize administrative functions, improve feedback systems, and facilitate comprehensive data analysis. Nevertheless, it is imperative to confront obstacles such as those related to guaranteeing equity, tackling ethical and safety issues, and fostering students' self-learning capabilities. This study suggests that educators need to attain a balance between technological progress and new political, moral, and other issues, as well as more support for the education sector to improve electronic infrastructure. Additionally, this study contributes to the emerging literature on the implementation of AI in Iraq's public education through a set of recommendations to offer valuable information for educational institutions, policymakers in strategies, researchers, and AI developers.

## KEYWORDS

artificial intelligence (AI), Iraqi schools, mobile technology, educational technology, thematic analysis, teachers, students

## 1 INTRODUCTION

Education is one of the many fields that has been impacted by the emergence of artificial intelligence (AI) as a transformational force. When it comes to education,

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Mobile technology can replace the large annual budget the Iraqi government allocates for purchasing supplies and printing textbooks. Students prefer less restrictive school settings by using mobile devices to enhance their understanding of class topics. Although there are some initiatives under development through the Iraq National Strategy Artificial Intelligence (INSAI), this initiative includes upskilling existing professionals as well as introducing AI concepts in primary and secondary schools [11]; some laws need to be changed to keep pace with modern developments because most teachers do not allow mobile devices as an educational tool at school under the pretext that the students are busy with it instead of studying [12].

This study presents a unique viewpoint by concentrating on the incorporation of AI technology in Iraqi secondary education. This study enhances the literature by offering a comprehensive understanding of instructors' and students' opinions, emphasizing both the possible advantages and obstacles of AI deployment. The research examines the prospects, obstacles, and ethical issues associated with the incorporation of AI in schools. By analyzing these factors, stakeholders may approach the intricacies of integrating AI with continuous monitoring and auditing. Furthermore, the study offers strategic recommendations tailored to Iraqi secondary schools, using AI to improve the fairness, ease, and efficiency of schooling. The subsequent sections of this study are structured as follows: Section 2 includes a literature overview for the associated investigations. Section 3 defines the research approach. The findings that were obtained are thereafter given and discussed in Section 4. Section 5: Investigate AI drawbacks and benefits in education as well as AI opportunities in education. Section 6 shows the recommendations, and the conclusion of the study is provided in Section 7.

## 2 RELATED WORKS

A fast expansion of AI has drawn a lot of interest from educators in its use in the classroom. Younas et al. (2023) investigated AI techniques, such as adaptive learning, virtual classes, and instruction evaluation that possess the capacity to transform the educational sector. The researchers think that students are provided with a contextual learning environment in virtual classrooms, which allows for the flexibility of course attendance and stimulates their senses. At the same time, they investigated the obstacles that must be overcome, including impartiality, the development of students' autonomous learning abilities, and the resolution of considerations relating to ethics and safety. In line with the ongoing advancement of AI technology, the future of education is bright, as it is anticipated that its implementation will be further enhanced and the education system will be revolutionized [13] [14].

Zaman (2023) thinks that AI can provide customized educational experiences, optimize administrative functions, improve feedback systems, and facilitate comprehensive data analysis. AI could make major advances in changing current teaching methods. Nevertheless, it is imperative to exercise prudence when integrating AI into the educational sector, as it may present ethical quandaries and potential dangers. Technological progress will not stop, and there will be more new innovative technologies. Education can invest in these technologies to enhance and assist teachers instead of thinking about replacing them. There is no doubt that AI has become an effective tool, and its integration into educational environments will be more comprehensive and take into account the different conditions of students [15].

The research by Nugroho et al. (2024) [16] used both quantitative and qualitative approaches to explore how teachers feel about using AI technology in science classes at vocational high schools (SMK). The findings suggest that the comprehension and application of AI in the classroom are still restricted. Despite the fact that some educators

recognize the significant ability of AI to enhance student engagement and learning outcomes, the optimal implementation is impeded by a variety of obstacles, encompassing insufficient training and inadequate technology infrastructure [17]. Although the integration of AI into education offers advantages to the educational environment, there are also substantial risks. Ethical considerations must be considered in order to completely leverage the technological innovation of AI for educational purposes.

Alenezi (2024) found that the potential of AI for education was met with a remarkable degree of agreement. The level of preparedness among educators to implement AI was minimal. Machine learning, data analysis, and natural language processing were the most critical components of the connection between education and AI. In order to empower students, the participants emphasized the importance of identifying the limitations of AI systems, evaluating the intelligence of AI systems, and establishing use cases for AI systems. The complexity of the subject, the absence of appropriate educational materials, and the unavailability of the necessary expertise in the field were the most significant challenges and difficulties in the use of AI [18].

Nadziri et al. (2025) [19] presented the AI technologies used in education, including mobile ones, that are radically transforming teaching methods. The study added that education will be more adaptable to these technologies, addressing personal aspects and providing easier and faster access. The study concluded that technologies and applications that use AI have tremendous potential to improve learning environments and provide innovative solutions that support teachers. Aldulaimi et al. (2021) [12] found that the use of technological tools, particularly mobile technology, in Iraqi schools can reduce spending on books and school supplies. Based on student and teacher feedback, the use of mobile devices in educational settings has the potential to bring about an increase in overall academic accomplishment, an improvement in student motivation, and the establishment of a constructive learning environment in educational schools.

Lampropoulos and Papadakis (2025) [20] investigated the educational benefits and advantages of social robots and AI in education. The results of this study underscored the significance and efficacy of intelligent social robots as educational instruments that can be implemented in educational environments, whether formal or informal, to assist both students and instructors. Their capacity to function as intelligent tutors that resemble humans and offer customized educational experiences that consider the unique characteristics, requirements, knowledge, and preferences of students was identified. Social robots have the potential to enhance students' academic performance, motivation, engagement, and learning outcomes, as well as to enhance their social abilities. However, the study also underscored the necessity of conducting additional experimental studies, establishing appropriate standards and guidelines, and conducting a more comprehensive analysis of the ethical, moral, and security challenges that are associated with the use of social robotics.

The research conducted by Aravantinos et al. (2024) [21] examined thirty-five publications that were included in the SCOPUS database. The research focused on the goals, learning material, outcomes, activities, and pedagogy associated with the activities or AI technologies. The research was suggested to concentrate on the professional development of educators and teacher training programs; additional research is required to primarily address the implementation of AI in preschool (ages 4 to 6). The study proposed the implementation of various AI courses and student ages, such as adult education, in accordance with the student's age, and evaluated the efficacy of the implementation of AI concerning instructional practices and educational results. Lavidas et al. (2024) [22] conducted an analysis of the factors that affect students' intention to use AI technology using the Unified Theory of Acceptance and Use of Technology (UTAUT2) model. A survey that was conducted with a sample of 197 Greek undergraduates at the University of Patras. The results

indicate that anticipated performance, habitual usage, and pleasure of these AI apps are critical factors affecting instructors’ intentions to use them.

Wangdi (2024) investigates the use of AI in education, highlighting its contributions to individualized learning experiences and enhanced productivity. Several obstacles, such as algorithmic bias, privacy of data, and the need of enhancing accountability and openness in AI applications, are addressed. In addition, the study highlights the necessity of continuing education for teachers and other educator-related professionals and provides strategic recommendations for incorporating ethical AI into curriculum design. For the safe and responsible use of AI, it requires the cooperation of officials, teaching staff, and all stakeholders. This review synthesizes recent literature to offer insights into the efficacy of AI tools, investigates the consequences for ethics of technology in classrooms, and proposes future directions for investigating and practicing in educational AI. Aiming to maximize the benefits that AI may bring to the field of education, it is important for educators to have access to this analysis, as well as policymakers and technologists [23].

### 3 METHODOLOGY

This study uses both quantitative and qualitative methods. The quantitative method involves the use of a questionnaire and database of the GDE in Babylon, Iraq, to collect data. The study employed qualitative research methodologies, including interviews and thematic analysis, corroborated by existing literature and interviews with important stakeholders of the AI in the GDE schools. The data are subsequently subjected to statistical analysis to ascertain relationships and associations between them, utilizing SPSS tools. Figure 2 illustrates the three distinct sources: database documents of GDE, a survey to explore teachers’ and students’ perspectives for AI, and interviews with policy/decision makers. The study has an ethical approval statement, reference number (41/3/4/59168), date: 14-11-2024, from the Educational Research and Studies Section, Ministry of Education, Babylon-Iraq.

According to the database and documents of GDE-Babylon, the number of Iraqi secondary schools (intermediate and high schools) in Babylon Governorate is 541. The distribution of these schools breaks down as follows: There are 323 schools located in urban areas and 218 in rural areas. These schools are divided into 214 schools for boys, 186 schools for girls, and 141 schools for mixed students. The ages of students at this stage range from 12 to 18 years. This documentary investigation undertaken in Babylon Governorate reached the following conclusions: There are 121 computer laboratories. Furthermore, 10 classes, each accommodating between 40 and 60 students, share each laboratory’s 20 computers. A single school allocates one computer for every 25 students. This data further demonstrates that the quantity of gadgets and electronic supplies is disproportionate to the student population and fails to provide the intended benefits.

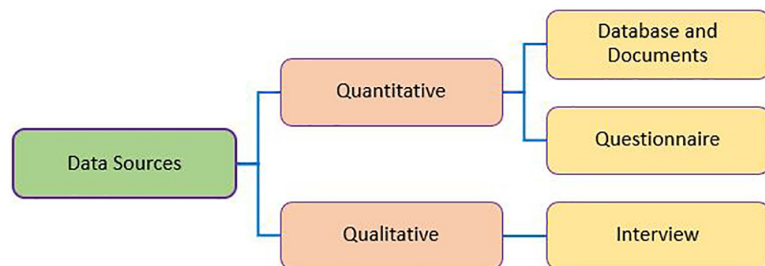


Fig. 2. Source of data collection

In line with [24] [25], there is a variance factor of less than 5%, and this accepted formula is dependable to a degree of 95%. Members of the teaching staff working in secondary schools in Babylon province are the demographic group that the questionnaire is intended to reach. A survey consisting of twenty-five questions [18] [26] was distributed to teachers and 20 questions for students to explore their perspectives of the use of AI in their schools. Interviews with important players in the information technology industry are conducted as part of the qualitative procedure, as are those responsible for IT and AI projects in the Babylon Province (head of the computer curricula section in the department of curricula and educational technologies, head of the distance education section, and head of the information and communication section).

In order to provide an explanation of the respondents' backgrounds, the degree of information that the respondents had about the use of AI, their attitudes toward the utilization of AI, the apps that they utilized, and the challenges that they encountered, a descriptive test was utilized. The analysis method of data used in this study involves seven steps as shown in Figure 3. Microsoft SPSS was used in order to carry out the analysis of the data. For entering data, generating new variables, and doing exploratory data analysis (EDA), this program is thought to be the ideal tool [27]. In addition, conducting extensive statistical analysis in order to investigate the potentiality and anticipation of the use of AI on the basis of the viewpoints of both instructors and pupils. In accordance with the findings of certain studies, each of the dimensions was operationalized by averaging the corresponding 6-point item scores. On a Likert scale of five points, the average of ratings from many items was calculated in line with some researchers [28] [29].



Fig. 3. Steps of data analysis

## 4 RESULTS ANALYSIS

### 4.1 Existing infrastructure

The objective of the data analysis conducted on the available document in the schools is to investigate the existing IT infrastructure associated with the deployment of AI applications in such schools. The subsequent findings have been achieved through the analysis: The education sector in the Babylon governorate comprises 543 secondary schools. Of these, 67 schools possess their own autonomous computer laboratories, while 54 schools share their laboratories with them. Due to the fact that these institutions operate in the same building during both morning and evening hours. Most of the computers in these labs were installed between 2008 and 2012 and are now old, and some of them are worn out. This is an indication that the IT infrastructure is very weak. The major uses of computer laboratories in 121 schools that have computer laboratories are to learn essential computer skills such as MS (Windows, Word, and Excel). There are 422 secondary schools without computer laboratories. On the other hand, 121 schools, which is 29% of the total, have computers. This indicates that 71% of schools do not have any computers or other electronic devices. Schools that do not have a computer lab do not have a computer

subject in their curriculum, as more than 70% of secondary school students do not have basic computer skills. As for reliance on mobile devices, there is a need to change some laws because the majority of educators do not permit the use of mobile devices as a teaching tool in the classroom, and there are many obstacles that were previously mentioned in our previous study [12].

Moreover, the secondary schools' access to the Internet, servers, and communication is rather inadequate, as evidenced by the document study and database. The internet is accessible to nine schools (2%), and there are only six schools (1%) that are outfitted with networks and servers. Additionally, the software consumption is low, with a small number of schools relying on office suite software to manage their activities. The documents' findings also indicated that the state of the IT infrastructure in the school's operations is rather inadequate. Generally, the Iraqi's Ministry of Education (MoE) has launched several projects to improve the educational reality through the use of AI in schools, but the size of the challenges and the lack of infrastructure in the field of technology have made progress in this matter very difficult. Rather, there is a gap between ministerial directives and actual reality due to the lack of a comprehensive plan for implementation. It is unreasonable for the ministry to request the application of AI while 90% of these schools do not have internet service and 70% do not have a computer. In addition to the continued ban on the entry of private smart devices into schools, such as smartphones or tablet devices, under the pretext that students are busy with them and do not focus on the lesson.

#### 4.2 Teachers' perspectives

Most of the teachers, around 72%, are familiar with the concept of AI. Also, most of them, around 79%, do not use AI in their classes. More than 73% of teachers think that AI can enhance the educational experience for learners. Furthermore, 90% of teachers have a great desire to see more use of AI in their school, and they are interested in learning more about AI technology; even so, 10% are troubled about using AI in schools. At the same time, 84% of them think that AI technology can enhance creativity and innovation among students, while 16% are not sure. 79% of teachers feel adequately prepared to engage with AI technology in their studies. 68% of responding teachers do not believe that AI technology will replace human teachers in the future. Figures (4–9) illustrates the most ethical considerations regarding AI in education.

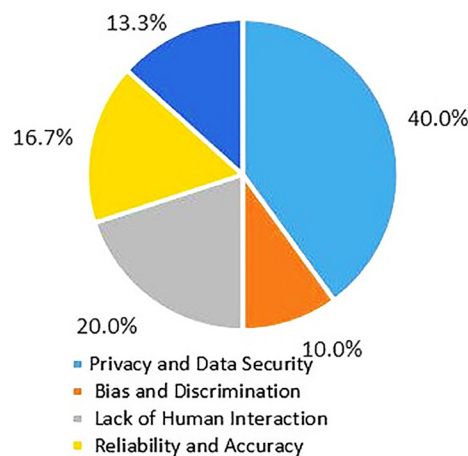


Fig. 4. Ethical considerations have teachers regarding AI

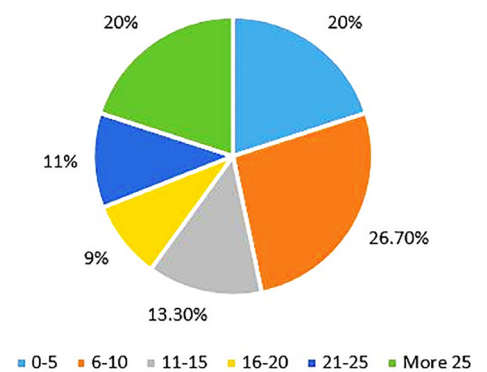


Fig. 5. Teachers based on the number of years of work

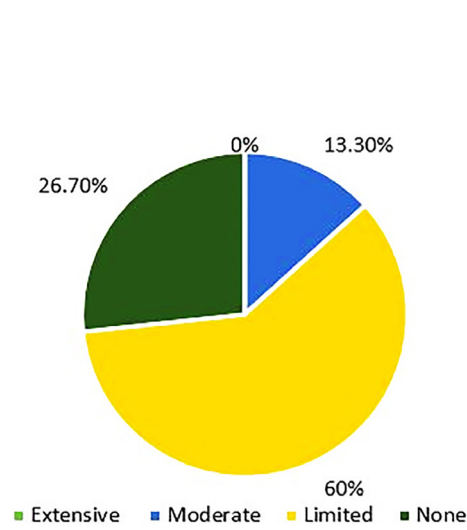


Fig. 6. Teachers provide feedback on the current level of AI integration

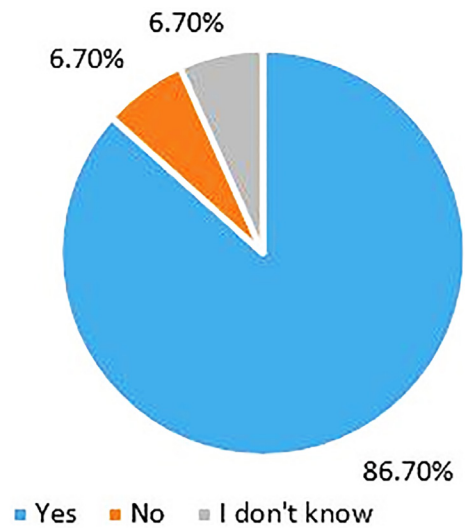


Fig. 7. Teacher perspective on using AI technologies

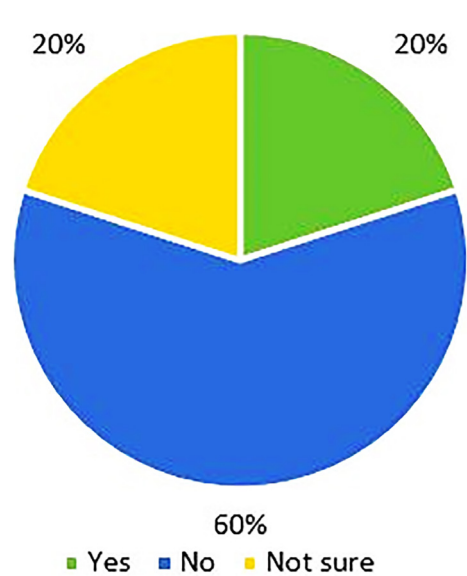


Fig. 8. Teachers' AI feedback considers student differences

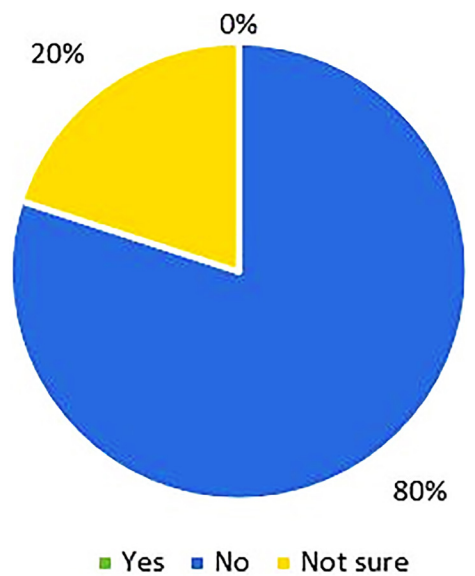


Fig. 9. Teachers' thoughts about AI replacing teachers

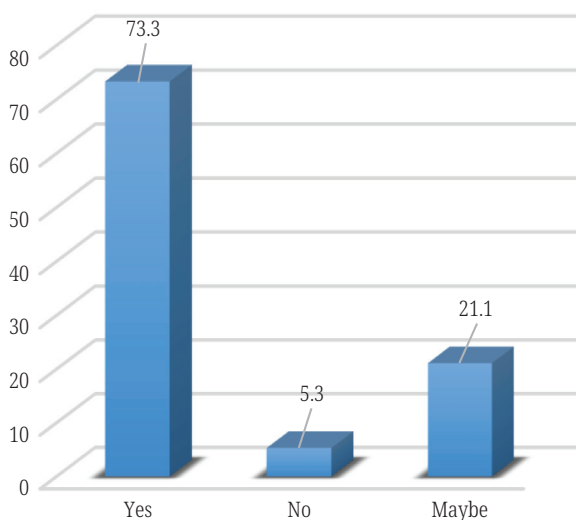
The information that was gathered from instructors in order to ascertain their level of knowledge about AI revealed that their level of awareness is positive and varies according to age. Providing educators with in-service training is crucial for their effective use of AI applications. In addition to this, it is recommended that educators be provided with training on how to use AI applications and technology tools in the schools. Teachers believe that they have the ability to implement this technology in their classes, and there is an opportunity to increase cooperation and communication between students. At the same time, teachers have the belief there are many obstacles to implementing AI in their schools, and they need more support, including computers, other smart devices, technological tools, internet access, and continuous electricity to implement AI technologies. The details of these impressions are as shown in Table 1.

**Table 1.** Descriptive of teachers' perspective of AI

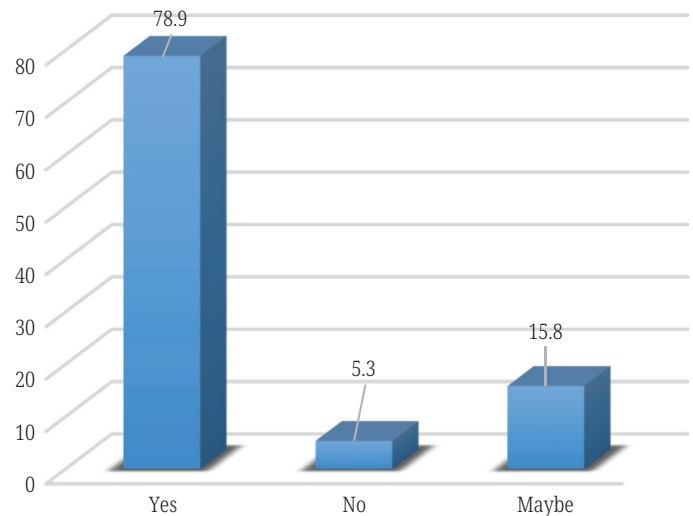
| Seq. | Statement  | Mean  | %   |              |
|------|--|-------|-----|--------------|
| 1.   | I am familiar with the concept of artificial intelligence.                                     | 3.867 | 72% | Positive     |
| 2.   | I have received training related to integrating AI into teaching.                              | 2.867 | 47% | Negative     |
| 3.   | I am aware of the latest developments in artificial intelligence applications.                 | 3.400 | 60% | Intermediate |
| 4.   | I'm afraid of AI.  | 3.000 | 50% | Negative     |
| 5.   | I believe I can implement AI successfully in the classroom.                                    | 3.667 | 67% | Intermediate |
| 6.   | AI promotes student collaboration.   | 3.800 | 70% | Positive     |
| 7.   | AI helps students improve their communication abilities.                                       | 3.667 | 67% | Intermediate |
| 8.   | AI is a valuable instructional tool.   | 3.600 | 65% | Intermediate |
| 9.   | AI increases academic achievement (e.g., grades)   | 3.933 | 73% | Positive     |
| 10.  | AI leads students to disregard the resources of essential conventional education (like books). | 4.067 | 77% | Positive     |

### 4.3 Students perspectives

The questionnaire included urban schools (47.4%) and rural schools (52.6%), while we were unable to obtain the opinions of remote schools due to the lack of internet coverage. The results showed that the field of AI is attractive to students; 73% are considering getting jobs in this field in the future. Additionally, 21% of them are considering careers in this field (see Figure 10). At the same time, most students, about 78.9% of respondents, are willing to use AI in their studies, and 15.8% expect to do so (see Figure 11). In addition, students believe that the use of AI in their education enhances their creativity and innovation. While students agreed that AI technology could replace human teachers in the future, the percentage was divided into three close sections: Yes (31.6%), No (36.8%), and Maybe (31.6%). Schools in Iraq have not started to actually apply AI technology, as more than 84% of students explained. What is actually available is a general explanation within other topics, and there is no practical application except in some individual cases. The results also showed that some students have used AI technologies at home to help them write homework, create school reports, and translate, respectively. Students explained that their schools lack computers and smart devices, as well as internet service, in addition to the continuous power outages.



**Fig. 10.** Students' perspectives about considering a career in AI



**Fig. 11.** Students' readiness to interact with AI technology in their study

#### 4.4 Interview of IT key leaders

In addition, interviews were carried out to collect qualitative data that would shed light on the difficulties faced by leaders in Babylon's education sector as well as their perspectives on AI technology. Because of AI, students are less likely to make use of conventional learning materials, such as library books. Interviews were also conducted with four IT leaders for implementing technology projects in Babylon Governorate schools: the Head of the Distance Education Unit, the Head of the Computer Curriculum Unit, the Head of the Information and Communications Unit, and the Head of the Networks and Internet Unit. The leaders stressed that there are governmental efforts being made in this field and that there is a desire from the Iraqi government to implement AI projects in schools. However, the challenges are severe, and the financial allocations are very low compared to the actual need. Most of the current spending is on school buildings and their renovation, and there is no allocated spending for AI projects or the application of technology in schools in general.

Furthermore, this investigation implemented thematic analysis, a qualitative methodology that was employed to analyze interview data. This method allows researchers to identify common themes and patterns in the interactions of pupils with AI equipment. The thematic analysis employed a systematic approach to data collection, meticulous classification, and theme development to investigate the influence of AI and mobile technologies on Iraqi secondary education. The subsequent thematic analysis of the interview data is designed to identify the primary themes associated with students' engagement with AI tools. A summary of these findings is provided in Table 2, which includes the perspectives of the four key education leaders.

**Table 2.** Thematic analysis from interview

| Theme                        | Sub-Themes   | Description  |
|------------------------------|--|--|
| Personalized Learning        | <ul style="list-style-type: none"> <li>– Adaptive learning systems</li> <li>– Lifelong and informal learning</li> </ul>                    | Mobile applications that are powered by AI customize content according to the learning preferences and advancements of the user. |
| Intelligent Tutoring Systems | <ul style="list-style-type: none"> <li>– Real-time feedback</li> </ul>   | Mobile AI tutors enhance self-directed learning by providing learners with immediate feedback.                                   |
| Teacher Support              | <ul style="list-style-type: none"> <li>– Automated administrative</li> <li>– Instructional design assistance</li> </ul>                    | AI assists in content creation and planning, while simultaneously decreasing the workload of educators.                          |
| Curriculum Development       | <ul style="list-style-type: none"> <li>– Content recommendation</li> <li>– Skill mapping</li> </ul>  | AI aids in the alignment of content with the requirements of learners and the future job markets.                                |
| Assessment and Feedback      | <ul style="list-style-type: none"> <li>– Automation grading process</li> <li>– Online feedback</li> </ul>                                  | AI facilitates immediate feedback and impartial evaluation of student achievement.   |
| Student Engagement           | <ul style="list-style-type: none"> <li>– Virtual teaching assistants</li> <li>– Educational robots</li> <li>– Educational games</li> </ul> | AI improves engagement via chatbots, virtual agents, and gamified learning experiences.  |
| Ethical and Privacy          | <ul style="list-style-type: none"> <li>– Algorithmic bias</li> <li>– Data security</li> </ul>  | Risks associated with data exploitation, monitoring, and prejudiced algorithms in education.                                     |
| Learning Analytics           | <ul style="list-style-type: none"> <li>– Performance monitoring</li> <li>– Predictive analytics</li> </ul>                                 | AI gathers and evaluates learning behavior to design personalized pathways.  |

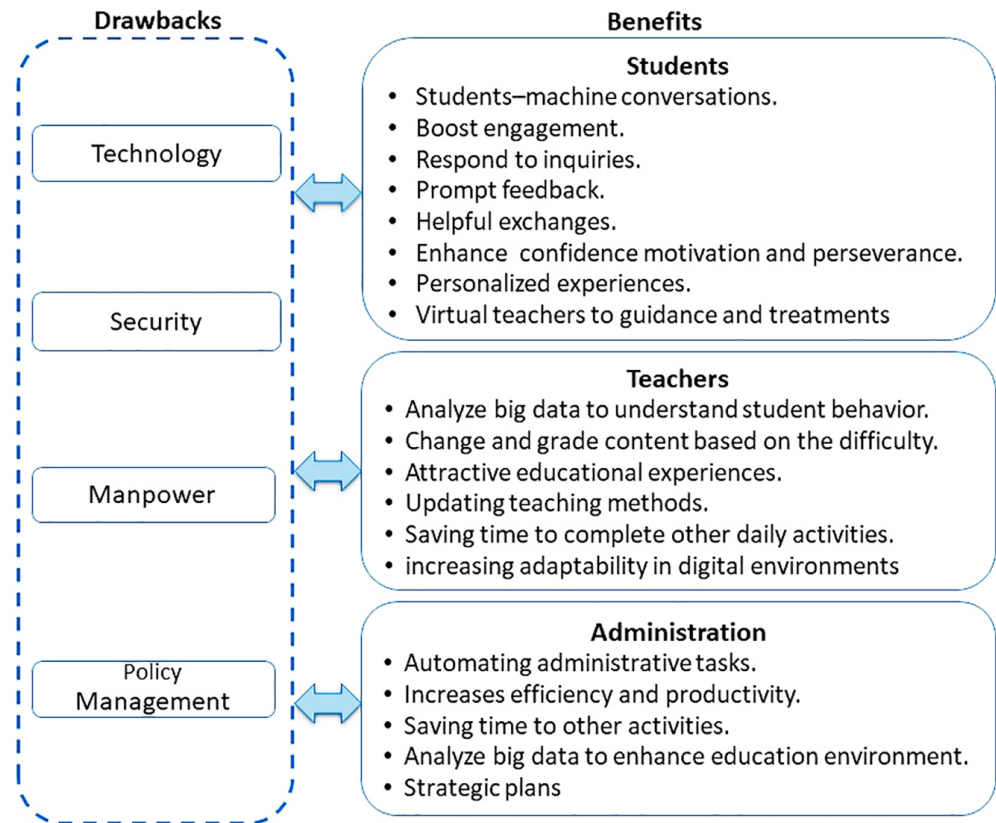
(Continued)

**Table 2.** Thematic analysis from interview (Continued)

| Theme                        | Sub-Themes   | Description   |
|------------------------------|--|---|
| Equity and Accessibility     | <ul style="list-style-type: none"> <li>– Assistive technologies</li> <li>– Multilingual support</li> <li>– Support for learners with disabilities</li> </ul> | AI provides assistance to learners from a variety of linguistic contexts and those with various disabilities. |
| Institutional Implementation | <ul style="list-style-type: none"> <li>– Training &amp; Adoption</li> <li>– Policy &amp; Infrastructure</li> </ul>   | Barriers and facilitators to the expansion of AI within educational institutions.                             |
| Human-AI Collaboration       | <ul style="list-style-type: none"> <li>– Decision Support</li> <li>– Hybrid Teaching Models</li> </ul>   | AI enhances human instruction, rather than taking its place.  |

## 5 AI IN IRAQI SECONDARY SCHOOLS

Artificial intelligence and mobile technology integration in education have a number of benefits, and it is anticipated that global reliance on AI will escalate in the coming years within this sector. AI technology may enhance education, facilitating the development of the education sector to more effectively serve students and educators. This study will examine the prospects for integrating AI technology in secondary schools in Iraq, particularly in Babylon Governorate, along with the problems associated with this initiative. The findings of this research provide a guide for stakeholders in the education sector, whether by investing in existing possibilities or by addressing the problems associated with this initiative. Figure 12 illustrates the significance of using AI applications in education and the primary challenges they encounter.



**Fig. 12.** AI drawbacks and benefits for schools

## 5.1 AI challenges and risks

Proper installation of any technology is unfeasible without skilled personnel to configure it and maintain its functionality. It has come to the attention of both educators and students that there is an inadequate supply of technical assistance accessible to address any problems that users may have. The results obtained from this research demonstrate that fostering AI is challenging due to a lack of appropriate technical aid and are in line with some researchers [30] [31]. Inadequate information and communication technology (ICT) infrastructure is one of the most significant challenges to the use of AI in public schools. Neither do schools provide free access to the Internet nor do they have sufficient computers. Additionally, the findings of this study have shown that both educators and students in Iraq consider the frequent power outages to be a cause for worry that will impede the effective application of AI in their respective institutions.

Furthermore, there are severe potential consequences to data intrusions in education, including the disclosure of private data, academic fraud, and identity theft. Stakeholders in the education sector must protect data and prevent access by available means such as encryption and continuous auditing of procedures to address concerns about keeping student data from unauthorized access. Other challenges include difficulty in accessing educational resources due to the digital divide, lack of communications and internet service, as well as the lack of computers and other digital devices. Skills in using these devices, low income of individuals, and digital illiteracy are also real challenges of the current reality.

Moreover, in line with [32] [33], all students have the right to equal access to AI tools and other resources, regardless of their social or economic status or geographical location. There are a large number of areas that are deprived and lack access to communications and smart devices, and it is difficult for them to access educational platforms and AI applications due to the lack of Internet service. In addition, there is another important segment of people with disabilities for whom the digital gap is exacerbated because these individuals face many technical obstacles unless they are specifically designed to meet their requirements for obtaining AI technologies. This study divided the most obstacles faced by AI implementation in schools into four categories: school, technology, manpower, and security. The subcategories of each part are illustrated in Figure 13.

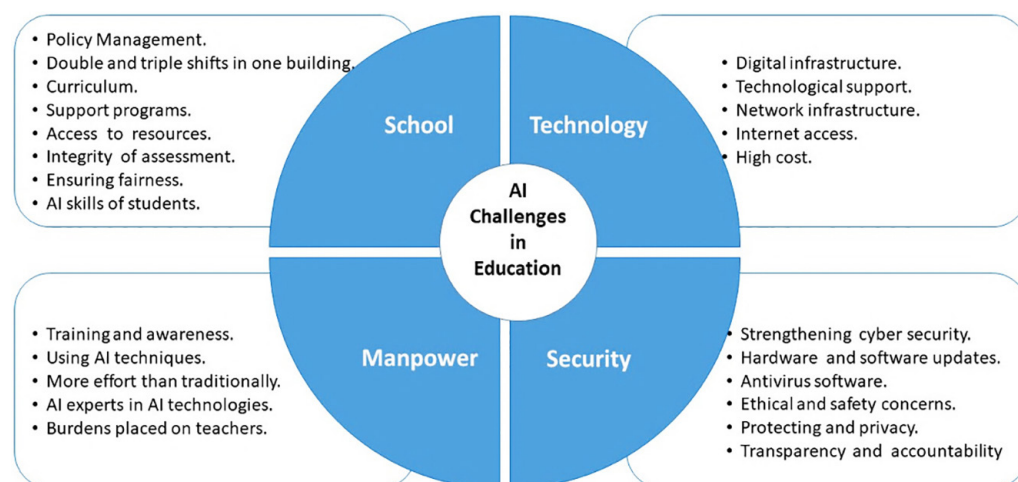


Fig. 13. AI challenges in education

Furthermore, risks are associated with the implementation of AI in schools. Data security and privacy dangers are well-known to educators; however, they are significantly increased by AI in comparison to education technology products that do not incorporate AI. For instance, AI may accumulate additional personal information from individuals, including their accents, features, or gestures, in order to customize or adjust. AI systems that automate duties based on data associations generate additional hazards. Automations that are derived from biased data can result in flawed decisions, which can propagate damage on a large scale. This is due to the fact that all data is a product of humans and contains some degree of bias. There are numerous other categories of risk that require equal attention, such as overconfidence in the accuracy of AI, overreliance on AI for decision-making, the provision of inaccurate information, the absence of or insufficient evidence for the asserted benefits, negative environmental impacts, underprepared users, and more. Figure 14 illustrates the common risks of AI implementation in schools.



Fig. 14. Common AI risks in education

## 5.2 AI opportunities and benefits

People increasingly view AI as a powerful tool for transforming education in new environments [34]. By using AI technology, educators may access several possibilities to improve the quality of education, enhance the results of the students, deliver learning environments that are immersive, and optimize administrative procedures. Through the facilitation of more interactive learning experiences, AI technologies have the ability to significantly boost student engagement and academic achievement. AI-driven virtual tutors and chatbots may facilitate substantive dialogues with students, respond to inquiries, and provide prompt feedback, emulating the helpful exchanges often provided by human educators [35]. This tailored assistance may enhance student confidence, motivation, and perseverance, resulting in elevated academic success [36].

In this study, despite the challenges and obstacles to implementing AI projects in Iraqi schools, there is a lot of optimism about the future of education in light

of AI technologies and the arrival of these technologies to a distinguished stage of progress and creativity over the coming years, due to the high efficiency of these applications that helped in addressing many educational problems. According to [37], the most important services and features that AI provides are personalized experiences, which consider the unique circumstances of each student. AI techniques analyze big data to understand student behavior and learning trends and then build educational strategies based on these insights. AI algorithms that let teachers change and grade content based on the difficulty of the courses will help students learn how to adapt by learning in a way that works for them. This approach provides students with more effective and attractive educational experiences, demonstrating the role of AI in transforming and updating teaching methods. Intelligent systems in teaching improve students' comprehension and retention of information by diagnosing areas in which students struggle and providing the required support. In addition, chat programs and providing immediate responses to student inquiries have made great progress in the field of education, saving time to complete other daily activities and administrative tasks.

Furthermore, this study cites the many advantages that AI brings to the educational system: As part of customized learning, AI-powered solutions play a crucial role. AI-powered solutions, such as adaptive learning platforms and smart teaching systems, rely on customized experiences based on each student's needs, thereby increasing motivation and enhancing engagement. Automating administrative tasks, such as assessment and grading, increases efficiency and productivity and frees up teachers' time to refocus on providing assistance to individual students. Enhancements to feedback: AI systems provide students with detailed and tailored feedback, enabling them to gain an awareness of their own strengths and weaknesses and offering ideas on how to improve. It is possible that AI may reduce the barriers that prevent students with disabilities from receiving an education by providing them with alternate modes of instruction and support [38] [39] [40]. This is the fourth benefit of AI. AI helps instructors analyze enormous volumes of data, which is the fifth benefit of increased data analysis. These suggestions are in agreement with those that have been proposed by other academics [41] [15].

## 6 RECOMMENDATIONS

This study urges educators to approach AI slowly and deliberately to explore the best ways to integrate AI across the education system, as the consequences of rushing and rushing too quickly can be more severe. To achieve satisfactory results in the use of AI in secondary schools, the study recommends the following:

- AI literacy.
- Continuous power supply.
- Enhancing internet speed and providing a free service for students coming from economically disadvantaged households.
- Assisting individuals in mastering the use of AI platforms via guidance and knowledge dissemination.
- Students should have access to a diverse array of materials and courses pertinent to their field of study via the use of AI and mobile technology tools.
- It is advisable to provide in-service training for educators to use AI software proficiently. Furthermore, educators need to receive training on integrating AI applications and mobile technology into the classroom.

- Address the need to supply computers, tablets, educational robots, and mobile technology to assist students in their studies. This will enable them to gather knowledge effectively, transforming each device into an excellent educational tool for individual learners.
- Reevaluate the curriculum to ensure it remains contemporary by including AI systems and applications in an engaging manner, thereby motivating students to use them to enhance learning and achieve targeted educational objectives.
- Encourage educators to adopt contemporary pedagogical approaches and practices, particularly those using AI systems and apps.
- Investigate the experiences of established nations in AI and forge collaborations for remote training programs for educators, highlighting their advancements and training while offering regular feedback.
- Investigate more research that examines the significance of AI and its applications, evaluating its capacity to improve the performance of students and instructors across diverse samples and nations.

## 7 CONCLUSION

Artificial intelligence and mobile technology have the capacity to transform education by providing several advantages, including enhanced efficacy and individualized learning experiences. Utilizing AI enables students to cultivate their problem-solving and critical reasoning skills, which are vital in the 21st century. Furthermore, AI can support students with unique and engaging learning experiences. However, integrating AI into education also poses risks, including potential biases and data privacy issues. To fully use AI to improve education, it is important to find a balance between technological progress and new political, moral, and other issues. The findings indicate that the majority of secondary schools in GDE-Babylon are deficient in IT infrastructure and mobile technology. Teacher competencies are fundamentally rudimentary, necessitating comprehensive training in the use of technological tools and AI applications. Nonetheless, it was determined that instructors exhibit considerable enthusiasm for integrating AI in their classrooms and are generally open to the transition towards AI, while a few seem less inclined towards this concept. The Iraqi government needs more support for the education sector to improve electronic infrastructure. Moreover, the quantity of ICT specialists is insufficient, hindering the execution of the AI project. Education officials must implement a comprehensive strategy to standardize AI projects in schools, thereby saving time and associated costs.

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