Exploring the Use of Artificial Intelligence Applications by Students of the Practical Education Course at Al al-Bayt University to Enhance their Teaching Practices

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Abstract

As AI increasingly impacts diverse sectors of society, its integration into educational settings, particularly in preschool classrooms, raises important questions about its impact on teaching and learning processes. This research focused on how a practicum course at Al al-Bayt University prepared pre-service teachers to use AI applications in their future classrooms. The population of the study included 2072 female students and the sample of this study was the whole population (2072 female students). Throughout the practicum course, students engaged with a variety of AI tools relevant to teaching practices. The study assessed the impact of the practicum course on pre-service teachers' views of AI's ability to improve teaching methodologies. By evaluating students' projects, presentations, and feedback on the practicum course, the research sought to determine the effectiveness of the practicum course in preparing future teachers to seamlessly integrate AI into their teaching strategies. The findings may inform the design of practicum programs that aim to equip future teachers with the essential skills and knowledge to adapt to the changing educational landscape shaped by AI.

Keywords: Artificial Intelligence, Pre-Service Teachers, Artificial Intelligence Applications, Educational Curricula, Practical Education Programs

استكشاف استخدام تطبيقات الذكاء الاصطناعي من قبل طلبة مساق التربية العملية في جامعة آل البيت لتعزيز ممارساتهم التدريسية

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ملخص

مع تزايد تأثير الذكاء الاصطناعي على مختلف قطاعات المجتمع، يثير دمجه في البيئات التعليمية، لا سيما في فصول ما قبل المدرسة، تساؤلات مهمة حول تأثيره على عمليات التدريس والتعلم. ركز هذا البحث على كيفية إعداد دورة تدريبية عملية في جامعة آل البيت لمعلمي ما قبل الخدمة لاستخدام تطبيقات الذكاء الاصطناعي في فصولهم الدراسية المستقبلية. شملت عينة الدراسة 2072 طالبة، وكانت العينة هي المجتمع بأكمله (2072 طالبة). خلال فترة التدريب العملي، تعاملت الطالبات مع مجموعة متنوعة من أدوات الذكاء الاصطناعي ذات الصلة بممارسات التدريس. قيمت الدراسة تأثير دورة التدريب العملي على آراء معلمي ما قبل الخدمة حول قدرة الذكاء الاصطناعي على تحسين منهجيات التدريس. من خلال تقييم مشاريع الطلاب وعروضهم التقديمية وملاحظاتهم حول دورة التدريب العملي، سعى البحث إلى تحديد مدى فعالية دورة التدريب العملي في إعداد معلمي المستقبل لدمج الذكاء الاصطناعي بسلاسة في إستراتيجياتهم التدريسية. قد تُسهم هذه النتائج في تصميم برامج تدريب عملي تهدف إلى تزويد معلمي المستقبل بالمهارات والمعارف الأساسية للتكيف مع المشهد التعليمي المتغير الذي يشكله الذكاء الاصطناعي.

الكلمات المفتاحية: الذكاء الاصطناعي، المعلمون قبل الخدمة، تطبيقات الذكاء الاصطناعي، المناهج التعليمية، برامج التعليم العملي.

Introduction

Artificial intelligence (AI) is dramatically transforming many sectors, including education, by providing innovative solutions that enhance both teaching and learning experiences. In recent years, AI technologies have attracted significant attention for their potential to reshape traditional educational practices, particularly in preschool and primary settings. As educators navigate the

challenges posed by a rapidly changing technological landscape, it is important to understand teachers' perceptions of AI and its implications for teaching and learning.

Several studies have investigated the integration of AI technologies into education, highlighting its potential to personalize learning, support adaptive learning, and provide real-time feedback (Holstein & McLaren, 2019; Johnson et al., 2020). However, the effective implementation of AI in educational settings depends not only on technological advancements but also on the acceptance and application of these tools by teachers (Ghergulescu et al., 2019). Preschool and primary school teachers are particularly important in influencing the educational experiences of young learners and are essential for adopting AI-enhanced teaching methodologies.

Despite the expanding research on AI in education, there is a notable lack of studies that specifically focus on preschool and elementary teachers' perceptions of AI and its impacts on teaching and learning. Gaining insight into how these teachers view AI technologies and their potential implications for classroom instruction is critical to guiding the design and implementation of AI-powered educational interventions that address the unique needs and preferences of preschool settings.

Finally, this study aims to fill this gap by investigating pre-primary school teachers' perceptions of the impact of AI on teaching and learning processes. Through comprehensive interviews and thematic analysis, we aim to uncover teachers' attitudes, beliefs, and concerns about integrating AI into their classrooms.

Study problem and Research Questions

As AI becomes increasingly entrenched in various aspects of society, its impact within educational settings, particularly in preschool and primary schools, is growing rapidly. However, the integration of AI into education poses distinct challenges and raises critical questions about its impact on teaching and learning dynamics. Despite the increasing prevalence of AI in educational contexts, there

is a notable lack of research on preparing pre-service teachers to effectively use AI tools in their future classrooms (Williamson & Einon, 2020)..

The key issue addressed in this study is the potential gap between the rapid development of AI technologies and the readiness of future teachers to integrate these innovations into their teaching methodologies. Specifically, there is a lack of empirical data on how educational programs, such as the Practical Education course at Al al-Bayt University, prepare pre-service teachers with the essential skills and knowledge to use AI to enhance educational outcomes (Selwyn, 2019). This research gap raises concerns about the adequacy of current teacher education programs in preparing future teachers to address the demands of an AI-influenced educational landscape..

In general, this study aims to evaluate the effectiveness of the practical education course at Al al-Bayt University in providing pre-service teachers with the knowledge and skills necessary to integrate artificial intelligence into their teaching practices in kindergarten and lower primary education in the future. In other words, the current study sought to determine the extent to which the practical education course impacted pre-service teachers' perceptions of the potential of artificial intelligence. Perhaps the results of this study could contribute to the development of teacher preparation programs, which would qualify new teachers to meet the challenges of future education and benefit from the potential of artificial intelligence in enhancing learning and teaching experiences. Therefore, **The above study question sought to verify the effectiveness of the practical education course at Al al-Bayt University in preparing pre-service teachers to benefit from artificial intelligence and its tools in future classrooms.**

Importance of the Study

The integration of AI into teacher training, especially at the pre-service teacher training level, has become a key area of research to investigate emerging needs in contemporary educational practice. Importantly, this study seeks to

explore how female students studying the Practical Education course at Al al-Bayt University interact with AI applications to help improve their teaching practices.

The importance of this study is highlighted in two aspects. The first is that with the increasing integration of AI technologies into a variety of industries, including education, the need to equip future teachers with the skills and knowledge to effectively utilize them in their classrooms is very timely (Williamson & Einon, 2020). This is important to gain insight into the perceptions and use of AI among pre-service teachers, which can provide a basis for understanding how these technologies can be leveraged to enhance educational outcomes.

The results of this study could contribute to re-evaluating teacher training course design and learning processes. By highlighting the setbacks and successes students have experienced in integrating AI into their teaching, this study could provide evidence on how to better prepare future teachers for AI-enhanced classrooms (Selwyn, 2019). This is even more important in ensuring that new teachers are not only competent in using AI tools, but also confident enough to integrate their use into pedagogical practice. Finally, this research also contributes to the broader discussion of AI in education through its practical use in a real-world learning environment. The findings can guide future research and policymaking in considering further approaches to developing more effective and creative teaching practices that leverage the power of AI to meet the needs of diverse learners.

Previous Studies

The increasing integration of AI into educational settings has generated significant interest and research. The potential of AI to transform teaching and learning practices is well documented, particularly in how it can personalize learning experiences, enhance student engagement, and provide teachers with valuable insights into student performance (Lukin, 2017; Holmes et al., 2019). However, despite the recognized benefits, the adoption of AI in education is not without challenges, particularly in the context of teacher preparedness and

practical application of AI tools in the classroom. Some previous studies in the following areas are presented below:

Artificial Intelligence in Education: An Overview

AI applications in education range from adaptive learning platforms that tailor content to individual students' needs, to intelligent tutoring systems that provide personalized feedback, to data analytics tools that help teachers monitor and improve student outcomes (Holmes et al., 2019). These technologies are particularly valuable in supporting differentiated instruction, an educational approach that aims to cater to diverse student learning styles and abilities. Studies have shown that AI-powered tools can significantly improve student performance by providing personalized learning experiences that traditional methods cannot (Lukin, 2017).

Teacher readiness and AI integration

Despite the benefits, the successful integration of AI into educational practices depends largely on teachers' willingness to use these technologies effectively. Research suggests that many teachers feel inadequately prepared to integrate AI into their teaching, citing lack of training and familiarity with these tools as major barriers (This gap in preparedness is particularly concerning given the rapid pace at which AI technologies are being introduced into educational settings. As a result, there is an urgent need for teacher education programs to include comprehensive training in AI applications, ensuring that future teachers are equipped to leverage these technologies to enhance their teaching practices (Williamson & Eynon, 2020).

Artificial Intelligence in Pre-Service Teacher Preparation

The focus of this study on the practicum course at Al al-Bayt University is important because it addresses the urgent need for AI-related training in teacher education. The practicum course aims to provide pre-service teachers with the knowledge and skills necessary to integrate AI into their future classrooms, and to explore various AI applications relevant to teaching and learning (Al al-Bayt University, 2023). This approach is in line with the broader educational trend of

incorporating technology integration into teacher education, which is essential to developing a workforce of teachers who are competent and confident in using AI to enhance educational outcomes (Selwyn, 2019).

Challenges and opportunities

While AI offers many opportunities to improve education, it also poses challenges that must be addressed. One major challenge is the potential for AI to exacerbate existing educational inequalities. For example, female students in under-resourced schools may not have the same access to AI technologies as female students in more affluent areas, widening the achievement gap (Williamson & Enon, 2020). Additionally, reliance on AI could diminish the role of the teacher in the classroom, leading to concerns about the dehumanization of education (Selwyn, 2019). These issues highlight the importance of ensuring that AI is implemented in a way that is equitable and supportive of both female students and teachers.

Overall, previous studies suggest that AI has the potential to revolutionize education, but its successful implementation depends on teachers' willingness to effectively integrate these tools into their teaching practices. The Practical Education Program at Al al-Bayt University is a valuable model for how teacher preparation programs can address this need, equipping future teachers with the skills and knowledge to navigate the challenges and opportunities presented by AI in education. As AI continues to evolve, continued research and adaptation in teacher preparation will be critical to ensuring that these technologies are used to enhance rather than hinder educational outcomes.

Study Procedures

This study used a qualitative research design to investigate the impact of a practicum course on pre-service teachers' understanding and integration of AI into their pedagogical practices. The course curriculum was designed to introduce

students to various AI applications relevant to teaching and learning, and to enhance their knowledge and skills in this emerging field..

All students in the sample of this study practiced many activities related to artificial intelligence applications. These activities may include the following:

Student Projects: Analysis of student-created projects provided insights into their ability to apply AI concepts to real-world teaching scenarios.

Presentations: Feedback from students' presentations assessed their communication skills and understanding of AI tools and their potential applications..

Practical Education Course Evaluations: Various surveys were conducted to gather students' perceptions of the course's effectiveness, the challenges they face, and the value of integrating AI into their preparation as teachers..

Instrument of the Study

The study instrument was an interview consisting of 12 questions (Appendix 1). The researchers developed several questions to be included in the interview based on previous studies. The data collected from the study instrument were analyzed using thematic analysis, identifying recurring themes and patterns related to pre-service teachers' understanding of AI, their confidence in using AI tools, and their perception of the potential of AI to enhance teaching and learning. The findings from this analysis will contribute to a deeper understanding of the factors influencing pre-service teachers' adoption of AI in their future classrooms and the development of effective teacher preparation programs in this rapidly evolving field..

Population and Sample of the Study

The study population was all pre-service teachers (all female students enrolled in the Practical Education course at Al al-Bayt University during the second semester of the academic year 2023/2024) in order to provide these pre-service teachers with the knowledge and skills necessary to utilize AI applications in their future classrooms.

This community included 2072. female students. The study sample was the population included 2072 female students (pre-service teachers).

Study Results

The researchers presented the results of this study by presenting the responses of the students in the study group (pre-service teachers) to the 12 study questions and classifying those responses to each question separately from the other questions. The following is a presentation of those responses to the 12 study questions:

Question 1: How did you come up with the idea of using AI applications in your daily practice?

Students' answers about how they came to the idea of using AI applications in their daily practice can be categorized into the following axes:Note that two examples are given for each axis:

1. Personal experience and experimentation
   - Use experimentation and try to find applications that facilitate the educational process..
   - I tried AI applications in teaching and found them useful and enjoyable..
2. Reading and scientific research
   - Read scientific research and articles related to educational technology..
   - Read many studies and researches that indicate the benefits of using smart technologies in learning..
3. Training and workshops
   - Receive training in the use of technology in education.
   - Participation in training workshops and seminars related to artificial intelligence applications in education.
4. General technological development
   - Technological development and schools' use of smart boards and modern technology.
   - The spread of technology and the expansion of its applications have led to interest in using it in education..

5. Social media and electronic resources
- Access applications through social media and email.
- Follow news and social media related to technology..

6. Data analysis and improvement of the educational process
- Using artificial intelligence to analyze student performance data and create appropriate study plans.
- Find new ways to improve the learning experience, such as providing instant feedback and analyzing data..

7. The need to improve the quality of education
- Desire to improve students' learning experience and provide individual support.
- Using Artificial Intelligence to Evaluate Student Performance and Identify Areas for Improvement.

8. Achieve efficiency and save time and effort
- Use apps to make research easier and find information faster..
- Applications save time and effort, and help facilitate the educational process..

9. Integrating smart tools into education
- Integrating AI-Powered Tools into the Education Process to Improve Teaching Quality.
- Give examples of the benefits of these tools in daily life.

10. Multiple sources of education
- Discovering new software helped motivate its use..
- By working in computer training centers or practicing hobbies.

It is noted that the answers reflect a variety of reasons that prompted female students to use artificial intelligence applications in education, including personal experimentation, scientific reading and research, training and participation in workshops, and technological development, in addition to the desire to improve the quality of education and save time and effort..

Question 2: What are the main applications of artificial intelligence that you have used in your practical breeding course?

The answers have been classified and tabulated, with repeated and similar answers collected.:

First: Positive answers that include the use of educational artificial intelligence applications:

1. Personal learning apps and educational platforms:

- Cortana Alex ChatGPT Coursera Google's personal assistant.
- Personalized learning, chatbots and e-learning platforms.
- Google Class Room, Khan Academy, Duolingo Socratic by Google,
- Kahoot and EDMODO, to create interactive questions and games for students, and to communicate with students and parents.
- Blackboard & Canvas & Mood to organize learning materials and deliver tests.
- Duolingo helps you learn languages and Quizlet helps you memorize vocabulary through games and quizzes.
- organized lesson plans.
- My All Snap Chat & Chat GBT & You.com.

2. Using technology to personalize education and provide individualized support.:

- Personalizing education and improving student experience using AI applications.
- An application to analyze students' performance and provide interactive exercises and individual guidance..
- Provide personalized, interactive learning experiences and analyze student data to understand their needs..

3. Applications in learning languages and developing language skills:

- An app that helps children learn language through interactive activities such as reading, singing, and watching cartoons..
- Developing students' language skills through interactive exercises and self-learning

4. Other:

- Use of AI applications such as image processing, content creation, and data analysis..
- Google & YouTube & Chrome.
- Application for analyzing educational data and analyzing student performance.
- Data analysis and machine learning to understand student performance and provide individualized guidance..

Second: Negative answers or answers not related to educational artificial intelligence applications:

1. Use of social media platforms:
   - YouTube, Facebook, Snapchat.
   - You.com
2. Applications not directly related to education:
   - Marketing and CV.
   - Image processing applications and content creation applications.

These answers were selected for their uniqueness and comprehensiveness in describing the main applications used in the course, with duplicate answers removed to ensure comprehensiveness and brevity..

Question 3: Did you find that the use of artificial intelligence applications had a positive impact on the efficiency and effectiveness of students' learning?

Answers can be classified into the following categories:

Positive answers explain the positive impact of AI applications:

1. Improve the learning experience and personalize education.:

- Yes, it provides personalized learning experiences that help students better understand concepts and develop their skills..
- Certainly, these apps provide innovative learning experiences tailored to the needs of each student..
- Yes, it allows for personalized learning for each student individually and provides instant feedback which enhances understanding and motivation..

- Yes, the use of AI applications can greatly contribute to improving the efficiency of students' learning..
- Certainly, these apps provide personalized interactive learning experiences, deliver customized content, and provide individual guidance to each student..

2. Analyze data and provide feedback:

- Yes, the use of AI applications has positively impacted the efficiency and effectiveness of learning by personalizing education, guiding students, and analyzing data..
- Yes, these apps provide instant and convenient feedback to assess progress and help improve learning effectiveness..
- Certainly, the use of AI applications provides immediate feedback and accurate assessment of progress..
- Yes, educational data analysis helps identify students' strengths and weaknesses and provide individual feedback.

3. Increase engagement and motivation:

- Yes, it increases the effectiveness of education and makes students love the educational process..
- Yes, these applications increase interaction and active participation in the educational process..
- Yes, improving student engagement, motivation and performance helps in cost-effective learning..
- Yes, these applications provide interactive and engaging learning experiences that help motivate students and enhance their learning skills..

4. Facilitating and managing the educational process:

- Yes, it made the educational process easier and saved financial effort for the teacher.
- Yes, it has made teaching and learning easier and many studies have shown that using these applications has a positive impact on students' efficiency..

- Yes, students can progress at their own pace while focusing on areas where they need improvement..

5. Improve academic achievement and creative skills:

- Yes, it helps provide learning experiences that enhance academic achievement and creative thinking skills..
- Yes, providing personalized and diverse learning experiences helps in better understanding of concepts.

Short positive answers:

- Yes I found it.
- Yes.
- Yes, of course.
- Yes, I found that using apps had a positive impact on the efficiency and effectiveness of learning..

All answers to the third question were categorized as positive, as they revolved around the multiple benefits of AI applications in education, such as personalizing education, improving interaction, providing feedback, facilitating the educational process, and motivating students..

Question 4: How did students respond to the experience of using the AI application in the classroom?

After analyzing the answers, the following positive points can be drawn about the students' response to this question:

- Increase interaction and engagement The majority of students indicated that their interaction and participation in the class increased after using AI applications.
- Improve understanding and comprehension Many students confirmed that these applications helped them understand the concepts better and facilitated the learning process.
- Increased attention and focus Teachers noticed an increase in students' interest and concentration during class.

- A fun and innovative learning experience. Many students described the experience as enjoyable and different from traditional ways of learning.
- Personalized and adaptive learning Some students indicated that the apps provided them with a personalized learning experience that suited their individual needs.
- Save time and effortSome teachers have noted that these apps have helped save their time and students' effort.

In addition, some other points can be noted:

- Diversity in responses Not all responses were equally positive, with some students indicating that their response was somewhat good.
- Importance of application typeSome teachers indicated that the type of application used affects students' response.
- Surrounding factorsThere are other factors that may influence student response such as teacher skills in using applications and administrative support.

In general, it can be said that the students' response to the use of artificial intelligence applications in the classroom was generally positive..

Question 5: Do you have any experiences or success stories you would like to share about using AI applications in education?

After analyzing the answers to this question, the following main points can be drawn:

Positive points:

- Improve academic performanceMany participants noted a marked improvement in students' performance, especially in subjects that require a deep understanding of concepts, such as mathematics and science.

- Increase interaction and engagementMany teachers have noticed an increase in student engagement and participation in classes, suggesting that AI applications have made learning more engaging.
- Personalize learningMany answers highlighted the ability of AI applications to provide personalized education for each student based on their individual needs and abilities.
- Improve understanding of conceptsThese apps helped students better understand difficult concepts by providing personalized examples and explanations.
- Increase self-confidenceSome participants indicated that these applications helped students increase their confidence in themselves and their abilities.
- Save time and effortThese applications have helped save teachers and students time by automating some tasks.

Examples of successful uses:

- Student performance analysis: Use applications to analyze student performance and provide individual feedback.
- Provide customized exercisesProviding exercises and educational challenges that suit each student's level.
- Language teaching:Using apps to teach languages in innovative and interactive ways.
- Improve problem solving skills: Help students develop their problem-solving skills by providing a variety of challenges.

Potential challenges:

- CostThe cost of these apps may be high for some schools.
- TrainingTeachers need to be trained on how to use these applications effectively.
- Internet accessThese apps rely on an internet connection, which can be a challenge in some areas.

- The need for human interactionThe role of the teacher in the educational process is indispensable. Artificial intelligence is an assistant tool, not a substitute for the teacher.

In general, it can be said that the experiences of using artificial intelligence applications in education were generally positive.These applications have proven their ability to improve the learning process and meet the diverse needs of female students. However, more research and studies are needed to determine the best ways to benefit from these applications and improve the quality of education.

Question 6: What challenges did you face while using artificial intelligence applications?

The challenges faced by female students in using AI applications in education were analyzed. These challenges can be classified into several main categories:

1. Technical challenges:

- Infrastructure: Lack of necessary equipment and technology, poor internet connection.
- Compatibility: Applications are not compatible with existing curricula or devices.
- Software crashes: Facing technical problems running applications.

2. Training challenges:

- Lack of training: There is not enough training for teachers and students on how to use these applications.
- learning difficulty Difficulty for some students and teachers to understand technical concepts related to artificial intelligence.

3. Data Challenges:

- Data Quality: The quality and accuracy of the data used to train the models is not guaranteed.

- Privacy and Security: Concerns about data privacy and protection from hacking.
- bias: There may be biases in the data used to train the models.

4. Financial challenges:

- Cost:High cost of purchasing necessary applications and hardware.
- Financial support: Lack of sufficient financial support from educational institutions.

5. Other challenges:

- Legal Responsibility: There are no clear laws regulating the use of artificial intelligence in education.
- Social interaction: Concern that these apps will reduce social interaction between students and teachers.
- Trust in technology: Some teachers and students do not trust the effectiveness of these applications.

Recommendations to overcome these challenges:

- Provide appropriate training Intensive training programs should be provided for teachers and students to help them understand how to use these applications effectively.
- Infrastructure construction Schools must be equipped with the necessary infrastructure to use these applications, including computers, high-speed internet, and the necessary software.
- Develop high quality educational content High-quality educational content that is compatible with these applications must be developed.
- Privacy and security guarantee Necessary measures must be taken to protect data privacy and security.
- Collaboration between teachers and developers There must be close collaboration between teachers and developers of these applications to ensure that they meet actual educational needs.
- Providing financial supportFinancial support and resources must be provided to provide these applications.

In addition, further research could be conducted to evaluate the effectiveness of these applications in improving learning outcomes and identify best practices for their use in the education environment..

Question 7: If you faced challenges while using artificial intelligence applications, how did you deal with them?

Students' responses on how to deal with the challenges they faced while using AI applications can be categorized into the following categories::

1. Contact technical support and developers:
- Contact the application support team.
- Providing feedback and ongoing communication.
- Use the in-app help and ask questions to get solutions..

2. Training, education and continuous development:
- Providing continuous training for teachers and students.
- Providing workshops and ongoing guidance.
- Training, education, updating data and forms.

3. Analysis, evaluation and problem solving:
- Evaluate the problem, analyze its causes, and search for alternative solutions..
- Understand the problem precisely and then look for innovative solutions..
- Form multidisciplinary teams to analyze and solve problems..

4. Collaboration and participation:
- Collaborate with colleagues and exchange experiences.
- Collaborate with stakeholders such as schools and AI experts..
- Partnering with technical support teams and developers.

5. Improve infrastructure and data quality:
- Improving the quality of data used to train models.
- Trying to provide the infrastructure needed to run applications.
- Improving technology and user experience.

6. Planning ahead and preparing:
- Planning ahead to use applications and preparing well.

- Take proactive steps to assess the situation and application needs..

7. Commitment to Privacy and Ethics:

- Observe and comply with privacy policies.
- Handle personal data responsibly and ensure anonymity.

8. Research and utilize other resources.:

- Find solutions through online resources..
- Try other apps and find alternative sites..
- Read the instructions and explore..

It is worth noting that each category includes different strategies related to how to deal with challenges, through technical support, training and education, and continuous analysis and development, which shows diversity in the ways to face these challenges..

Question 8: Do you have any suggestions for developing the use of artificial intelligence applications in teaching practices?

Students' responses to suggestions for developing the use of artificial intelligence applications in teaching practices can be classified into the following categories::

1. Application development and user interface improvement:

- Improved user interface to be easier and more suitable for all ages.
- Improving technologies and user experience to make applications more effective..

2. Continuous training and qualification:

- Providing ongoing training for teachers and students to ensure effective use of applications..
- Providing workshops and training courses on how to use AI applications effectively..

3. Cooperation between different parties:

- Enhancing collaboration between schools, teachers and AI experts to develop the use of applications.

- Form multidisciplinary teams to assist in the development and use of applications..

4. Improving data quality and technologies:

- Working on improving the quality of data used in training smart models.
- Update and develop the models used to be more accurate in providing predictions and assisting in teaching..

5. Promote transparency and privacy:

- Observing privacy policies and ensuring personal data is kept secure.
- Promoting transparency around how data and AI applications are used in education.

6. Planning ahead and preparing well:

- Planning ahead to use applications in the educational process.
- Providing the necessary infrastructure to ensure that applications run efficiently.

7. Customization according to students' needs:

- Customizing AI applications to meet individual students' needs and enhance personalized learning experiences.
- Developing algorithms based on student data to deliver educational content appropriate to each student.

8. Increase interaction and engagement:

- Develop features to enhance interaction and engagement between students and applications..
- Providing interactive tools to motivate students to actively participate in learning..

The above categories may include various suggestions related to improving training and technologies, enhancing collaboration between entities, personalizing learning, and advance planning, which are essential elements for developing the use of AI applications in education..

Question 9: Did you feel comfortable using new technology in the classroom? Why yes or why not?

Students' responses about feeling comfortable using new technology in the classroom can be categorized into the following::

1. Comfort and support for new technology:

- Most students felt comfortable using new technology in the classroom, citing reasons such as improving the learning experience, increasing engagement, and providing interactive tools..
- Some have pointed out that technology has helped make the learning process more interesting and effective..

2. Improve interaction and engagement:

- The use of technology has contributed to enhancing interaction and participation between students and teachers..
- Technological applications and tools have made lessons more interactive and engaging and helped stimulate curiosity and exploration..

3. Easy access to information and resources:

- Facilitate faster access to additional information and resources..
- Increase access to diverse and stimulating resources for students..

4. Improving the teaching and learning experience:

- Technology has helped customize the learning process for each student based on their needs..
- Improving students' abilities and promoting self-learning and teamwork.

5. Save time and effort:

- Technology has contributed to facilitating the learning and teaching process, and saving time and effort for teachers and students..
- Facilitating the educational process in general, and increasing teaching efficiency.

6. Multiple advantages of technology:

- Promote active learning and increase interaction and engagement..
- The use of interactive screens and multimedia makes educational content more fun and engaging..
- Improve self-learning and analyze learning data to provide feedback..

7. Challenges and difficulties:

- Some people found it difficult to use technology due to poor basic skills or lack of tools..
- Some students were neutral due to facing challenges and difficulties, but they noticed that technology improved the academic achievement of many students..

The above categories show a variation in students' experiences regarding the use of technology in the classroom, with the majority being positive about the beneficial effects of technology on learning, while some expressed challenges in adoption or perceived benefit..

Question 10: Do you have any guidance or advice for teachers who are considering using AI applications in their teaching?

Students' answers can be classified into several main axes as follows::

1. Research and review suitable applications:

- Research and review the available apps and find the ones that fit your educational needs and topic..
- Start by understanding your educational needs and interests and then find apps that meet those needs..
- Research and explore the variety of available apps and choose the right one for your educational needs and goals.2.

2. Setting educational objectives:

- Start by identifying the main educational goals you want to achieve using smart apps and then find the right apps..
- Teachers should define the educational goals they want to achieve through the use of applications..
- Defining educational goals, choosing the appropriate application, training and continuous learning

3. Try apps before using them:

- Try the apps yourself before using them in class to make sure they're suitable..

- Start by researching and learning about the available apps, then practice yourself and develop a teaching plan..
- Test the apps myself before using them in class to ensure they are appropriate and effective and develop a specific teaching plan..

4. Training and professional development:

- They should prepare themselves through continuous training, cooperation with their colleagues, and taking advantage of available resources..
- Understanding available tools, setting educational goals, training and professional development.
- Teachers receive the necessary training to understand the use of AI recommendations in education..

5. Communication and cooperation:

- Connect with the educational community and talk with other learning experts and teachers about using technology and AI in the classroom..
- Collaborate with teaching colleagues and benefit from the experiences of others..
- Connect with the app's support team, research, learn, experiment and improve.

6. Considering security and privacy:

- Ensure that students' data is protected and their privacy is guaranteed.
- It should start by setting goals and pay attention to data security and student privacy..

7. Guidance and interaction with students:

- Guiding students and providing them with continuous support when using applications.
- Ensure that the applications promote interaction, participation and student activities and ask students for feedback on their experience with these applications..
- The teacher can dedicate a class each week to introduce students to the AI application and how to use it..

8. Continuous evaluation and development:

- Regularly monitor progress and evaluate the impact of using AI applications on students' learning experience and academic development..
- Research, explore, choose the right app, experiment, evaluate and use it as a learning tool..
- Measuring impact, continuous evaluation and using results to improve the educational process.

9. Caution and flexibility in use:

- Teachers should be careful and responsible when using AI and start by setting clear goals..
- Not relying entirely on artificial intelligence and diversifying between it and traditional methods.
- Be patient and persistent in implementing new technologies..

These categories may cover the various aspects that must be considered when using AI applications in education, including research, training, security, collaboration, guidance, evaluation, caution, and continuous communication..

Question 11: What aspects did you like about using artificial intelligence applications in education??

Students' responses about the aspects they liked about using AI applications in education can be categorized into several main themes.:

1- Personalize individual learning

- The ability to customize learning for each student individually according to his needs, level and abilities..
- Provide a personalized learning experience for each student and analyze students' performance to provide individualized instruction to help them improve..
- Improve decisions and personalize experiences and services for each individual student..

2- Analyze data and make recommendations.

- Analyze student performance data and create personalized lesson plans and assessments that match each student's individual strengths and weaknesses..
- Using AI applications to analyze data and provide educational resources tailored to individual needs..
- Providing immediate feedback by analyzing student performance..

3- Promote interaction and participation

- Enhancing interaction and engagement among students and providing interactive learning experiences such as educational games and interactive platforms..
- Increase student engagement and enjoyment of learning through interactive and innovative applications..
- Improve the learning experience by enhancing interaction and engagement..

4- Instant feedback

- Provide immediate feedback which helps students improve their performance and better understand concepts..
- Providing immediate feedback to students, which contributes to improving the learning experience and enhancing their academic progress..

5- Save time and effort

- Speed and time saving for teachers and students through the use of artificial intelligence applications.
- Save a lot of time and improve efficiency by getting things done faster..
- Reduce the effort spent on assessment and assignment marking.

6- Improve the learning experience and make it more enjoyable.

- Make learning fun and engaging for students by providing innovative and interactive learning experiences..
- Providing additional educational resources and innovative references that contribute to improving the learning experience..
- The applications are interactive and encourage students to enjoy learning..

7- Improving educational decisions

- Improve educational decisions by collecting and analyzing data accurately and quickly..

- Using data to improve teaching methods and better understand students' needs.

8- Promote thinking and learning

- Enhancing students' thinking skills by personalizing learning and motivating them to improve..
- Giving students new information and points that they were not aware of before..

9- Improving the teacher experience

- Improving the teacher experience by analyzing student data and providing personalized educational content..
- Reducing teacher time and effort, allowing greater focus on collaboration and interaction with students.

These classifications perhaps cover the different aspects that students liked about using AI applications in education, including personalizing learning, data analysis, interaction, feedback, saving time, improving the learning experience, and making more effective educational decisions..

Question 12: What aspects did you not like about using artificial intelligence applications in education?

Students' responses about the aspects they did not like about using AI applications in education can be categorized into several main axes.:

1. Loss of personal communication and interaction

- Lack of personal interaction between teacher and student, leading to poor social interaction and direct communication.
- Negative impact on building social relationships between students and teachers.
- Poor ability of the intelligent system to understand students' emotions and personal needs.

2. Complete reliance on technology

- Over-reliance on technology, which may lead to a lack of balance between human learning and e-learning.
- Negative impact on education if applications go down or if technology is not adequately available.
- Poor human interaction and social distancing caused by reliance on technology.

3. Privacy and Security Issues

- Concerns about the protection of students' personal data and its use in unwanted ways.
- The need to ensure that personal data is protected and that tools are used in ethical and responsible ways..

4. Cost and availability

- Some apps may be expensive for teachers and schools..
- Difficulty in providing all applications or their absence on the ground in some educational environments.
- The high cost of technology and the dependence of some societies on available capabilities.

5. Limited social interaction

- Lack of interaction between students, teachers and their colleagues, which negatively affects the quality of the educational process..
- The impact of technology on students' interaction and social communication.

6. Technical challenges

- Technical challenges that teachers and students may face, such as lack of infrastructure or lack of knowledge of using technology..
- Technical and internet issues that may affect the effective use of applications.

7. Inaccuracy of information and bias

- Some information provided by the Apps may be inaccurate or out of date..
- The need to verify the accuracy of the information provided to ensure the quality of education.

8. Impact on health

- Excessive use of technology can lead to physical and neurological health problems, in addition to affecting children's ability to learn..

9. Other Challenges

- The impact of technology on traditional teaching jobs and the potential reduction of opportunities for some education workers.
- The need to balance the use of technology and human elements in education to ensure a comprehensive and integrated educational experience.

These categories cover the various concerns raised by students about the use of AI applications in education, including loss of personal interaction, complete reliance on technology, privacy and security issues, technical challenges, cost, social interaction, accuracy of information, and impact on health.

Discussion of the Study Results

Below is a comprehensive discussion of the results of the current study on the use of AI applications in education, highlighting the positive and negative aspects, challenges, and the extent to which these results are consistent with previous studies. Perhaps comparing the results of the current study with the results of previous studies will show the following areas:

1. Using AI to improve education:

The results of the study show a variety of factors that motivated students to use AI in their daily educational practices. Among these factors, many students pointed to personal experimentation, where they tried AI applications and found them useful. This is consistent with the study Locked (2017) which confirms that practical experimentation is an essential part of active learning and skill acquisition. In addition, students reported that exposure to scientific research helped them adopt these technologies, reflecting the role of modern science in encouraging individuals to use technology, as Zawacki-Richter et al. (2019) noted.

2. **Training and participation of female students in Workshops**

They were also pivotal factors in the adoption of AI. A study suggests that**Williamson & Eynon (2020)**Training plays a key role in enabling teachers to

use AI technologies effectively. In addition, the rapid technological development in schools and the promotion of the use of educational technology are strong drivers for the use of AI, as confirmed by studies such as Selwyn (2019).

3. Use of personal learning platforms and robots:

The students used a range of applications such as:**Google Classroom, Duolingo, ChatGPT**, etc. These platforms have helped provide personalized instruction based on each student's needs, which is supported by**Holstein et al. (2018)**, where he confirmed that AI-based learning platforms support individual learning paths by personalizing content. The study results also show the use of robots and augmented reality**(AR)**To enhance interaction and provide interactive learning environments. These results are consistent with what Belpaeme et al. (2018) indicated regarding the role of robots in providing interactive personalized education, and Ibáñez and Delgado-Kloos (2018) showed how AR helps enhance the understanding of difficult concepts.

4. Data analysis and feedback

Students reported using AI to analyze student performance and provide instant feedback, a feature that shows how AI can provide personalized feedback to improve student performance. This is in line with **Luckin et al. (2016)**, who stressed the importance of artificial intelligence in assessing learning progress and providing feedback based on individual performance.

5. Challenges in AI Integration

Despite the benefits, students reported challenges, most notably technical issues such as poor infrastructure, as well as lack of training on these technologies. Concerns about privacy and cost were also present, which is in line with what was noted by**Selwyn (2016)**On the impact of privacy and cost concerns on AI adoption. In addition, as Popenici and Kerr (2017) point out, teachers need adequate training to overcome these challenges and ensure effective use of AI.

6. Lack of human interaction

Among the criticisms raised by students was the over-reliance on technology, which may reduce personal interaction between teacher and students. This is consistent with **Zawacki-Richter et al. (2019)**, who stressed that artificial intelligence may not be a sufficient substitute for the social and emotional support provided by teachers.

7. Mixed responses to language learning

Regarding language learning applications such as:Duolingo was praised by students for its interactive exercises, but was criticized for the lack of human feedback. Wang & Tahir (2020) supported this idea by pointing out the importance of a human tutor in providing accurate and personalized feedback beyond what automated tools can provide.

8. Achieve efficiency and save time and effort

Some students pointed out that using AI to search for information and analyze data saves time and effort, reflecting a fundamental advantage of technology in facilitating the educational process. This is consistent with **Locked (2017)** Who pointed out that artificial intelligence can improve the efficiency of the educational process by automating routine tasks.

A In general The study suggests that AI can enhance the learning experience by delivering personalized instruction, analyzing data, and saving teachers and students time. However, technical challenges, privacy concerns, and social isolation remain critical issues that need to be addressed. To effectively integrate technology with traditional methods, extensive teacher training and advanced infrastructure are required, which will help realize the full benefits of AI technologies in education..

Overall, the current study shows that AI can significantly enhance learning experiences by providing personalized instruction, enhancing engagement through interactive technologies, and providing real-time feedback. However, challenges such as technical limitations, privacy concerns, and the need for human interaction remain critical issues. These findings suggest that while AI is a

powerful educational tool, its integration must be carefully managed to effectively balance technology with traditional teaching methods.

Study Limitations

The study includes several potential limitations, including:

1- The study was conducted at one site (at one university, Al al-Bayt University). This limits the possibility of generalizing the results to other educational contexts.

2- The study sample size is limited (203 female students), which may affect the generalization of the results..

3- Self-reported data from the study sample students as the data collected through students' projects, presentations, and course evaluations relied on self-reported information. This may lead to biases or inaccuracies..

4- Short-term impact: The study focuses on the immediate impact of the practicum course on pre-service teachers' perceptions and skills. It may not capture the long-term impact of integrating AI into their classrooms.

5- Limited scope of AI applications: The study explores a limited scope of AI applications relevant to teaching and learning. There may be other AI tools and techniques that could be more useful for pre-service teachers to learn about..

6- Lack of a control group: There is no control group in the study of teachers who did not participate in the practical education course. This makes it difficult to isolate the specific effect of the course..

7- Ethical considerations: The use of AI in education raises ethical concerns, such as privacy, bias, and accountability. The study may not have fully addressed these issues.

Conclusion of the Study

In summary, this study demonstrated that integrating AI into teacher preparation programs can lead to improved teaching practices in the future. Results showed that students who received training in the use of AI tools demonstrated a deeper understanding of the potential of these technologies and

greater acceptance of their use in the classroom. However, the study also revealed some challenges to integrating AI into education, such as lack of infrastructure and training, and privacy concerns. and To fully harness the potential of AI in education, higher education institutions must invest in developing comprehensive teacher training programs, providing necessary technical support, and developing clear policies on data use and privacy. In addition, researchers must continue to study the long-term implications of integrating AI into education, and develop new tools and technologies to enhance learning experiences. On the other hand, Summary of results For study Current highlights include the following points:

- The positive impact of AI training and Teachers' readiness and the challenges they face.
- Implications of the results for teacher training programs and educational institutions.
- Suggestion Areas for future research, such as exploring the long-term impacts of integrating AI and developing new tools and technologies.

Recommendations:

Although the summary of the current study provides a clear overview of the purpose, methods, and potential contribution, there are a few areas where it could be improved. Below are some suggestions for future research or practical applications:.

1- Clarify the focus on preschool classrooms: The study should explicitly identify the target audience of preschool teachers to ensure clarity and relevance. This will help potential readers understand the specific context of the study.

2- Strengthening the research questions: Adding more specific research questions would guide the study and make its objectives more precise. For example, the summary could explore pre-service teachers' perceptions of the potential of AI, their acquired knowledge and skills, and the effectiveness of the course in preparing them to integrate AI.

3- Highlight the unique contribution: The abstract should emphasize the unique value of the study and how it differs from existing research on AI in education. This will help establish its significance and attract the interest of potential readers.

4- Strengthening the Methods Section: Providing more detail about the data collection and analysis techniques will enhance the credibility of the study. This includes information about the research design, data sources, and methods used to analyze the data.

5- Expanding Potential Implications: The abstract should discuss the broader implications of the study findings beyond the specific context of the practicum course. This may include potential implications for educational policy, practice, or future research directions.

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Appendix A

Interview Questions in English

1- How did you come up with the idea of using AI applications in your teaching practices?
2- What are the main AI applications that you have used in a practical education course?
3- Did you find that using AI applications has positively impacted the efficiency and effectiveness of student learning?
4- How did students respond to the experience of using AI applications in the classroom?
5- Do you have any experiences or success stories that you would like to share about using AI applications in education?
6- What challenges did you face while using AI applications?
7- If you faced challenges while using AI applications, how did you deal with them?
8- Do you have any suggestions for developing the use of AI applications in teaching practices?
9- Did you feel comfortable using new technology in the classroom? Why yes or why not?
10- Do you have any guidance or advice for teachers who are considering using AI applications in their teaching?
11- What aspects did you like about using AI applications in education?
12- What aspects did you not like about using artificial intelligence applications in education**?**