The Role of Using AI Applications in Teaching Secondary Stage Students in Public Schools in Palestine from the Technology Teachers' Perspective

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Abstract

The study aimed to investigate how the employment of AI and its diversified mechanism can enhance the diversified skills of the teachers, planning skills, implementing skills, evaluation skills among the secondary school students in Palestinian public schools. The study depends on the quantitative analysis of the primary data collected via a questionnaire distributed among 300 teachers and through employing SPSS program and conducting the correlation analysis to test the hypothesis set by the researcher about the nature of the relationship between the variables of the study. The study revealed high approval ratings for planning skills (4.37), implementation skills (4.39), and evaluation skills (4.38) in AI mechanisms. Challenges included large student numbers and limited Arabic applications. Strong positive correlations were found between all skills and teaching effectiveness in Palestinian public schools. The study concluded that the implementation of AI in the secondary schools given that the adequate human capabilities and physical infrastructure required will improve and enhance the teaching skills in the schools.

Keywords: AI, Mechanism of AI, Planning Skills, Implementation Skills, Evaluation Skills, Challenges of AI, Teachers' Perspectives.

دور استخدام تطبيقات الذكاء الاصطناعي في تدريس طلاب المرحلة الثانوية في المدارس الحكوميّة في فلسطين من منظور معلمي التكنولوجيا

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ملخص

هدفت الدراسة إلى استقصاء كيف يمكن لتوظيف الذكاء الاصطناعي وآلياته المتنوعة أن يعزز المهارات المتنوعة لدى المعلمين، ومهارات التخطيط، ومهارات التنفيذ، ومهارات التقييم بين طلاب المدارس الثانوية في المدارس الحكومية الفلسطينية. اعتمدت الدراسة على التحليل الكمّي للبيانات الأولية التي تم جمعها عبر استبيان وُزع على 300 معلم ومن خلال استخدام برنامج SPSS وإجراء تحليل الارتباط لاختبار الفرضية التي وضعها الباحث حول طبيعة العلاقة بين متغيرات الدراسة. كشفت الدراسة عن معدلات موافقة عالية لمهارات التخطيط (4.37)، ومهارات التنفيذ (4.39)، ومهارات التقييم (4.38) في آليات الذكاء الاصطناعي. وشملت التحديات الأعداد الكبيرة للطلاب والتطبيقات العربية المحدودة. وُجدت علاقات إيجابية قوية بين جميع المهارات وفعالية التدريس في المدارس الحكومية الفلسطينية. وقد خلصت الدراسة إلى أن تطبيق الذكاء الاصطناعي في المدارس الثانوية، بالنظر إلى توفر القدرات البشرية الكافية والبنية التحتية المادية المطلوبة، سيحسن ويعزز مهارات التدريس في المدارس الحكومية.

الكلمات المفتاحيّة: الذكاء الاصطناعي، آلية الذكاء الاصطناعي، مهارات التخطيط، مهارات التنفيذ، مهارات التقييم، تحديات الذكاء الاصطناعي. وجهات نظر المعلمين.

1. INTRODUCTION

The present age is marked by swift technological advancements that significantly influence every aspect of life. Technology has changed human existence, and consequently, it has achieved numerous significant objectives. Teaching approaches have evolved because of modern technology like artificial intelligence (AI) and the Internet. The complete education system has changed due to the advancement of the revolution, as it is governed by artificial intelligence. Numerous nations have aimed to incorporate artificial intelligence. With the rise of AI, every aspect of life has been impacted, education included.

Artificial intelligence has broadened the use of AI in the worldwide AI revolution, mirroring global fascination with AI. In recent years, the world has observed numerous swift transformations in scientific and technological advancement, which have, to a certain degree, influenced people's lives and existing systems. This can be viewed as either beneficial or detrimental, particularly in relation to the scientific and industrial revolutions that have generated numerous applications, particularly artificial intelligence, a significant challenge of our time. Artificial intelligence is a modern advancement that has become a crucial element of our existence. Artificial intelligence has infiltrated every domain, ranging from basic computers to smartphones and gadgets, and has expanded to include robots (Adiguzel et al., 2023)

The most notable contemporary uses of artificial intelligence are the initial intelligent systems. Artificial intelligence is fundamentally embedded in contemporary knowledge creation and simulation. Intelligent computers can serve as advanced tools that need coding to perform a variety of functions, including automated reasoning and evaluation. Humans appreciate their capacity to infer, derive, and generate intelligent behaviors, as well as to utilize artificial intelligence in daily activities. The significance of artificial intelligence in educational and training institutions is substantial, and it cannot be overlooked when creating educational systems aligned with the needs of smart cities, which are essential for executing artificial intelligence projects aimed at national development and personal education, ensuring the highest possible level of adaptability to various educational demands. The significance of educational artificial intelligence applications is emphasized by: creating non-invasive AI that offers alternative adaptive learning materials and employs specialized technological education, where learning aims to enhance student achievement (Kritandani et al., 2024). Artificial intelligence applications have demonstrated their effectiveness in education and training, with a growing trend towards emphasizing these technologies across various educational sectors, due to their user-friendly nature, cost-efficiency, and capacity for seamless information transfer. This can be accomplished by integrating electronic systems with intelligent technology, which is the most efficient approach to address the issues of education and training. Artificial intelligence

embodies the essence of intelligence and represents the efforts of a delegation that aligns with what allows systems to make human-like decisions based on the nature of the water designated for them. (Adubra et al., 2019)

In order to succeed academically and professionally in the future, secondary school pupils in public schools must possess digital skills, technical literacy, and problem-solving talents. At this point, incorporating AI applications into instruction can provide students with personalized learning paths, help them grasp technology concepts practically, and give them access to cutting-edge digital tools that mirror current technological trends. However, how teachers—especially technology teachers—view, accept, and use these tools within the limitations and realities of their educational setting will determine how effective AI integration actually is. (Harry, 2023)

Technology teachers in Palestinian public schools significantly affect students' experiences with AI educational tools. Their views affect AI adoption, integration strategies, and expectations of AI's influence on academic performance and engagement. Understanding teachers' perceptions is crucial to grasp the state of AI use in schools and identify factors that facilitate or obstruct effective implementation.

The study examines AI applications in teaching secondary students in Palestinian public schools, focusing on technology teachers' perspectives. It explores their attitudes, perceived benefits, challenges, and experiences to understand how AI can enhance learning, improve teaching effectiveness, and develop students' technological competencies.

Moreover, it is important to develop a unified curriculum, as it helps the educator in developing content that is individually tailored to the individual’s needs. Furthermore, any existing curriculum will help develop these curricula, as the purpose is not to create a unique curriculum that is different from what the early educators used to create. Artificial intelligence

An integrated synthesis of general intelligence methods and computer simulation for the development of artificial intelligence.

Student assistance and training can be used in the real world and develop the global standard and its ability to support the large-scale program in general secondary education

The current situation is that artificial intelligence is being employed in secondary and general education in Palestinian schools.

To explore clearly the problem of this study ,the researcher reviewed diversified relative studies to define accurately the key problem and determine the basic variables, dimensions to be analyzed.

2. Literature review:

The study of Yim (2024) reveals that Artificial intelligence (AI) literacy education predominantly targets secondary and university students, neglecting primary school learners. This gap poses theoretical and pedagogical challenges, as younger students rarely grasp AI principles. Although recent developments in age-appropriate AI tools have emerged, frameworks for this demographic remain underdeveloped. This study analyzes existing frameworks and proposes a new inclusive approach for young students. By reviewing 19 articles, it identifies 17 AI literacy frameworks across educational levels, emphasizing the need for a transdisciplinary approach that recognizes interactions between human and technological agents in AI education. The research guides policymakers and curriculum designers toward holistic AI literacy for young learners.

The study of Adams (2023) reveals that Advances in Artificial Intelligence in Education (AIED) are enhancing tools for teachers to improve student learning. However, public concern about AI's societal impacts has led to numerous AI ethics guidelines from various organizations. While ethical guidance for children and K-12 education has been slow to develop, this is changing. This paper explores current ethical principles shaping AI ethics policies for K-12 education by analyzing four recent global AIEdK-12 ethics guidelines using eleven principles from Jobin et al. (2019). Key findings include adaptations of existing principles and the introduction of four unique principles: Pedagogical Appropriateness, Children's Rights, AI Literacy, and Teacher Well-being. The analysis advocates for a "humanized post human" ethic in classrooms.

While the study of Xiao (2025), thinks that, the Artificial Intelligence (AI) technology is gaining recognition as a major catalyst for innovation in education. While there is substantial literature on AI integration in educational contexts,

there is a lack of focus on teachers and their professional development needs. This study reviews research from 2015 to 2024 on teachers' use of AI, specifically examining the balance between the supply of professional development opportunities and the demand for AI integration. Utilizing PRISMA guidelines, 95 relevant articles were analyzed, revealing that 65% focused on AI applications in teaching, while only 35% addressed AI's role in teacher development. The findings highlight a critical gap in addressing teachers' needs, underscoring the necessity for future research in this area.

According to the study of Wang (2024), Artificial intelligence in education (AIED) has produced extensive literature with varied perspectives. This review addresses three key questions: the main categories of AI applications in education, the leading research topics and findings, and the status of research design elements, including theories, methodologies, and contexts. A bibliometric analysis of 2,223 articles and a content analysis of 125 papers reveal a comprehensive structure of AIED literature. The research covers adaptive learning, intelligent assessment, and more, while highlighting diverse theories, multidisciplinary publications, and underexplored areas, providing insights for future research opportunities.

While Mohan (2021) reveals that (AI) is increasingly significant across various economic sectors, particularly education. Recent advancements in technology have transformed the education system, with AI playing a crucial role in this evolution. This study explores the concept of AI and its significant impact on education, highlighting both immediate and future implications across different areas. Additionally, it examines challenges faced during implementation and its effects on teaching and learning processes. Ultimately, the report indicates that AI enhances students' learning capacities and presents a promising future for the education sector.
While Akgun (2022), thinks that Artificial Intelligence (AI) combines machine learning, algorithm development, and natural language processing, revolutionizing educational tools. Its applications in education include personalized learning platforms, automated assessment systems, and facial recognition for analyzing student behaviors. Despite the benefits of enhancing learning experiences and teacher practices, ethical and societal concerns surrounding AI are often overlooked in K-12 settings. This paper addresses these challenges by: (1) defining AI through

machine learning and algorithms; (2) showcasing AI applications and their benefits in education; (3) discussing ethical dilemmas associated with AI use; and (4) providing instructional resources from the Massachusetts Institute of Technology (MIT) Media Lab and Code.org. The goal is to help educators harness AI's advantages while addressing ethical issues, equipping students with a better understanding of AI and its implications.

Kevin (2023), This study investigated the mediating role of learning motivation in the relationship between ChatGPT, used as an academic support tool, and students' academic performance. A mixed-method triangulation research design was employed, with a sample of 178 learners from a secondary institution in Lal-lo, Cagayan, using purposive sampling. Results revealed that learning motivation fully mediates the effect of ChatGPT on academic performance, enhancing students' motivation and thereby improving achievement. However, the study did not include additional variables that could influence this relationship. Findings provide insights for educators and policymakers to effectively utilize AI tools to enhance students' motivation and academic success.

According to Levchenko (2024), the topic of artificial intelligence (AI) has gained global significance since the 1950s, with recent advancements placing it at the forefront of European and international discussions. In education, AI is increasingly explored for enhancing personalized learning and aligning educational systems with labor market needs. While the benefits include revolutionizing teaching practices and reducing planning time, concerns such as privacy, bias, trust, and cost must be addressed. This paper examines the dual nature of AI in education, emphasizing that its primary role is to support educators rather than replace them. Additionally, it underscores the importance of addressing the challenges posed by AI and the broader implications related to climate change, resource scarcity, and energy supply continuity in developing a resilient education system.

According to the study of Zhao (2022), The integration of artificial intelligence (AI) education in primary and secondary schools has significant implications for broadening access to AI knowledge, nurturing talent for national development, and enhancing student skills. This article discusses the evolution of AI education in China and its associated challenges, such as course standards and instructional methods.

Recommendations include updating standards, designing effective textbooks, increasing qualified instructors, and fostering collaboration among agencies to enhance AI teaching in schools.

The study of Vieriu (2025), that The integration of Artificial Intelligence (AI) in education significantly impacts academic learning, presenting both opportunities and challenges. This study examines how AI technologies affect students' learning processes and academic performance, focusing on their perceptions and associated challenges. Conducted at the National University of Science and Technology POLITEHNICA Bucharest, it involved 85 second-year students with direct AI experience. A structured questionnaire with 11 items assessed perceptions and experiences. Findings indicate AI enhances personalized learning, academic outcomes, and engagement, but challenges include over-reliance, diminished critical thinking, data privacy risks, and academic dishonesty. A structured framework with ethical guidelines is necessary to maximize AI benefits while addressing concerns for responsible learning experiences.

The study of Alkan (2024), Artificial intelligence (AI) in education marks a significant shift, especially for special needs students. AI has the potential to enhance learning experiences, support teachers, and reduce educational inequalities. By effectively understanding the unique learning needs of these students, AI can offer customized learning experiences through expert systems, adaptive tutorials, dialogue-based systems, and learning analytics. These technologies aim to boost productivity, facilitate learning goals, provide instant feedback, and enhance student interaction. Assessing individual strengths and weaknesses allows AI to tailor content that meets specific requirements. This article outlines a roadmap for educators and researchers regarding the integration and consideration of AI technologies in special needs education.

This study Walter (2024), investigates how Artificial Intelligence (AI) is transforming education, emphasizing the vital need for AI literacy, prompt engineering proficiency, and stronger critical thinking skills. AI's entry into educational settings represents a significant shift from traditional teaching, offering personalized learning and support for a wide range of educational needs, including those of students with special needs. However, this integration comes

with its own set of difficulties, such as the requirement for thorough educator training and curriculum adjustments to fit current societal frameworks.

3. The Problem Of The Study

The evolving mind is regarded as complex and challenging, except when intelligence is utilized during the learning experience. It is essential to educate children on how to interact with other children, as well as with parents. The secondary stage varied concerning the teacher's role, transforming the teacher into a facilitator and organizer of the educational process rather than merely an information provider. Both the student and the teacher concentrated on presenting the curriculum content in a collaborative and straightforward manner, rather than solely on content absorption. Artificial Intelligence (AI) ranks among the most crucial applied sciences. It is viewed as a fundamental aspect of everyday life with its numerous uses and applications. It underpins scientific progress, the waning trends of globalization, and modern industrial communication that impacts the globe via technological revolution and diminishing communication across all areas

This research seeks to answer a key question which is "***what is the significant role of the usage of AI application in Teaching the secondary stage student in the Palestinian public schools from the specific perspective of Technology Teachers?***. To answer this question, there are some sub-questions will be answered through this study:

- To what extent do the Palestinian Technology Teachers in public schools use AI Apps in Teaching the students in the secondary stage?
- What are the perceptions of the Technology Teachers of the key Benefits of integrating the diversified AI Apps in teaching process for the secondary stage students?
- What are the challenges faced By those Teachers when using AI Apps in the public secondary schools in the Palestinian society?
- How teachers perceive the impacts of those apps of AI on the learning outcomes for the secondary students, the technological skills & the active engagement?
- What are the factors that can affect on the acceptance of those teachers and

their willingness to use the apps of AI in the teaching process such as the experience of the teachers, support of the school, the infrastructure, and the training process?

- Finally, how effectively integrate the apps of AI into technology education to improve the learning and teaching in the public Palestinian secondary schools?

4. Objectives of the current study

The main objective of this study is to explore the role of the usage of AI apps in teaching the secondary stage in the Palestinian public schools from the perspective of technology teachers.

Specific objectives:

- To identify the extent to which technology teachers in the Palestinian public schools use AI apps in the teaching process in the secondary stage.
- To explore the perceptions of technology teachers about the benefits of the integration of AI apps into secondary-stage teaching activities.
- To determine the diversified barriers and challenges that technology teachers may face when using AI apps in the Palestinian public secondary schools.
- To explore the perceptions of those teachers about the impacts of AI apps on the engagement, learning outcomes, and technological skills of secondary school students.
- To investigate the diversified factors that can influence the acceptance of teachers' technology, their willingness, and readiness to use AI apps in teaching activities.
- Finally, to propose recommendations to improve the effective integration of AI apps in teaching technology for secondary public Palestinian schools.

5. The Importance Of The Study

5.1 Theoretical importance:

This study focuses on the secondary level and efforts to enhance education in general studies. Its significance stems from how teachers perceive the real-world applications of secondary education and the value of learning. Furthermore,

Artificial Intelligence serves as a means to augment human intelligence and acts as a vital resource for assisting researchers in conducting general science studies

5.2 Applied importance:

The study aims to grasp the essence of employing artificial intelligence in scientific fields and the methods for its application. These applications can be found in secondary schools and are tailored to the secondary school curriculum. The current authority or official overseeing the educational process must consider the suggestions in this message to put these applications into practice. Secondary intelligence is the key element in the world. Generalized intelligence is the most advantageous element in the difficulties of contemporary knowledge, science, and technology.

The contemporary age of swift globalization and the rise of novel diseases has significantly affected the world, particularly education.

6. Methodology

The study will implement the descriptive survey methodology as it aims to investigate The Role of Using the AI Applications in Teaching Secondary Stage Students in Public Schools in Palestine from the Technology Teachers' Perspective through the following

The applications of AI can be measured through the responses of the teachers in the questionnaire, which addresses:

- AI-based educational apps
- Automated assessment tools
- Adaptive learning platforms

7. Procedural Definitions

7-1-**Artificial Intelligence**: Artificial intelligence is described as the creation of artificial intelligence, primarily for human use, utilizing computers that continually think psychologically when interacting with programs that can mimic brain functions and replicate human actions. A collection of computer-aided technologies, the phrase "artificial intelligence" allows for systems like visual recognition, which depends on

mimicking current artificial intelligence frameworks, translation, and the theoretical aspects of artificial intelligence, undertaking essential actions to learn, gather, and evaluate data at a human-like pace through computer systems, where it can identify connections. In this manner, the machine is capable of thinking, learning, making choices, taking actions, and acting like a human. Definition of Applications of Artificial Intelligence: Artificial Intelligence Applications are software or tools created to merge different systems or applications of artificial intelligence within the digital landscape, analyze this information, and manage it (Apolzan & Cîmpineanu, 2024) . These steps need to be followed to establish the precise objective, or recognize the data flow, and then pinpoint the original features, replicate the original features, and incorporate intelligence. They are systems and applications capable of importing external data, generating new knowledge repositories, and modifying and utilizing these tools to establish a process for developing an artificial device or apparatus for novel objectives and challenges. Artificial intelligence tools encompass robots or intelligent software. (Akgun & Greenhow, 2022) Nevertheless, they are combined and unified. Definitions of applications of artificial intelligence differ. They are systems, software, or devices that enable the completion of different tasks more quickly with enhanced fluidity, ease, and adaptability. (Galiana & Seguí, 2024)

Artificial intelligence applications are computer-based systems that mimic the interactions between data, elements, and training with people. The definition chosen by the researcher is: A collection of applications in artificial intelligence that can be utilized to identify intelligent computer programs developed for a specific goal or utilizing specific tools, such as employing human intelligence benchmarks in programs crafted to mimic artificial intelligence. (Harry, 2023)

7-2. Teaching secondary stage students: This refers to the diversified educational activities directed to grades 10–12 in the Palestinian public schools. It is assessed through the responses of the teachers about how to employ the AI in assignments, practical activities, and assessments.

7-3. Public schools in the Palestinian society: Public schools are those schools which operate under the supervision of the Ministry of Education and procedurally are those schools that technology teachers are working in and the sample is

limited to the teachers at the secondary stage only.

7-4. Teachers of technology's perspective:

The study assesses technology subject teachers' attitudes towards AI in teaching using a structured questionnaire. It examines perceived benefits, challenges, actual usage, impact on student learning, and readiness to adopt AI, with responses evaluated on a Likert scale from strongly agree to strongly disagree.

7-5. The role of using AI Apps

"The role" signifies AI's contribution to teaching secondary students, evaluated via questionnaires on AI's support in teaching practices, impact on engagement and learning, enhancement of technological skills, and effectiveness in classroom management and assessment, reflecting teachers' perceptions.

7-6. The challenges of using AI Apps:

Challenges in AI teaching include lack of training, limited infrastructure, insufficient devices or internet, resistance, and concerns regarding accuracy, ethics, or increased workload.

7-7. Factors that affect the adoption of AI Apps:

Teacher willingness to use AI is influenced by experience, digital skills, school support, resources, professional development, and attitudes toward technology.

The study depended on the questionnaire, we succeeded to get 300, and through the questionnaires designed to test the hypothesis set by the researchers and through the employing of SPSS Version 25, and the correlation analysis among the diversified dimensions of the dependent and independent variables and T-test to investigate there is differences because of demographic.

8. Analysis

8.1 Reliability

Table (1) Reliability analysis for research variables.

Variables	Cronbach's Alpha	number of phrase
Planning Skills	0.991	6
Implementation Skills	0.992	6
Evaluation Skills	0.991	6
Challenges of AI	0.992	6
Teaching	0.991	6
All	0.997	**30**

The reliability analysis results, presented in the table above, demonstrate that research variables exhibit high internal consistency and reliability. With Cronbach's alpha values ranging from 0.991 to 0.992, these findings confirm the accuracy and consistency of the data collected through the questionnaire, providing confidence in the research results.

8.2 Validity

The questionnaire's validity is determined by how well its questions capture the intended concept. To validate the questionnaire, the researcher has implemented the following measures to ensure that the questions accurately reflect the underlying constructions they are designed to measure.

Table (2) Coefficient of correlation between the degrees of each statement of Planning Skills.

Statements	Pearson	Sig.
Smart applications provide enjoyable and convenient planning for the lessons taught.	.967**	0.000
Smart applications can be employed effectively and efficiently in anytime and any place by the teachers.	.979**	0.000
Smart applications can assist teachers to break from the traditional lesson planning pattern.	.982**	0.000
Smart applications assist teachers for self learning processes.	.984**	0.000
Smart applications can save efforts and time of teachers, compared with the traditional planning process.	.981**	0.000
Smart application enable teachers to set multiple plans with a higher flexibility.	.978**	0.000

The table (2) shows that the correlation coefficients between each statement of (Planning Skills), where the value of the correlation coefficient are between (0.967 – 0.984) which is a positive correlation. The Sig value of each statement is less than 0.05 and thus considered to be honest and intended to measure.

Table (3) Coefficient of correlation between the degrees of each statement of Implementation Skills.

Statements	Pearson	Sig.
Smart applications of AI enable students and teachers for a better communication.	.984**	0.000
Smart application of AI enable students to acqure the key and significant skills and abilities.	.987**	0.000
Smart applications of AI participate significantly to display the scientific subjects easily.	.985**	0.000
The majority of the teachers can easily employ the smart applications of AI and share their experiences to their peers.	.984**	0.000
The majority of the teachers in the public schools can learn the active and effective implementations of smart applications of AI to provide better educational services.	.973**	0.000

Statements	Pearson	Sig.
There is sufficient capabilities and adequate infrastructure (the environment, the management support, the facilities) to implement the smart applications of AI.	.978**	0.000

The table (3) shows that the correlation coefficients between each statement of (Implementation Skills), where the value of the correlation coefficient are between (0.973 – 0.987) which is a positive correlation. The Sig value of each statement is less than 0.05 and thus considered to be honest and intended to measure.

Table (4) Coefficient of correlation between the degrees of each statement of Evaluation Skills.

Statements	Pearson	Sig.
Smart applications improve the qualification of teachers for more accurate and fair evaluation for the students performance.	.978**	0.000
Smart application of AI in the evaluation process transfer the saved time in the electronic evaluation for another critical dimensions in the education process.	.978**	0.000
The accuracy and fairness of the smart applications of AI can lead to better modifications for the corporate education policies due to the corporate data collected from the country as a whole.	.980**	0.000
Smart application of AI in the evaluation process can improve significantly the teaching process due to the historical data that can be employed about the performance of students.	.984**	0.000
Smart applications of AI in the education process improve the creativity and innovation of the students deriving from the inherent equality and fairness of AI included applications	.971**	0.000
The equality and fairness of the smart application of AI empower the satisfaction of the students on the performance process.	.973**	0.000

The table (4) shows that the correlation coefficients between each statement of (Evaluation Skills), where the value of the correlation coefficient are between (0.971 – 0.984) which is a positive correlation. The Sig value of each statement is less than 0.05 and thus considered to be honest and intended to measure.

Table (5) Coefficient of correlation between the degrees of each statement of Challenges of AI.

Statements	Pearson	Sig.
The scarcity of training courses for male and female teachers to train them on the use of various smart applications by the Ministry of Education and Higher Education, represented by the Director	.979**	0.000
The large number of students is a challenge for teachers in terms of their enjoyment while employing artificial intelligence applications.	.984**	0.000
The scarcity of food applications in the Arabic language and the introduction of foreign terms hinders the use of these applications.	.982**	0.000
There is a weakness in the technological level among many K6 teachers, both male and female.	.984**	0.000
The physical and administrative environment in schools in Palestine poses a problem for teachers regarding the extent to which they use artificial intelligence applications.	.981**	0.000
There is a scarcity of training courses for male and female teachers to train them on the use of various smart applications provided by the Ministry of Education and Higher Education, represented by the Directorate General of Education.	.981**	0.000

The table (5) shows that the correlation coefficients between each statement of (Challenges of AI), where the value of the correlation coefficient are between (0.979 – 0.984) which is a positive correlation. The Sig value of each statement is less than 0.05 and thus considered to be honest and intended to measure.

Table (6) Coefficient of correlation between the degrees of each statement of Teaching.

Statements	Pearson	Sig.
Education level will be improved when smart applications of AI can be involved.	.973**	0.000
It is expected that the majority of the existing traditional schools will be transformed soon and a mix of robots and AI.	.981**	0.000
The active implementation of a smart AI will solve multiple problem in the teaching such as the scarcity of teachers or the scarcity of highly experiences teachers.	.980**	0.000

Statements	Pearson	Sig.
Robots or electronic guidance don't set any pressure or constraints such as calling the parents if there is a student's failure or has a poor performance.	.984**	0.000
AI will substitute gradually the innate intelligence and always.	.984**	0.000
The use of AI application enable for better management of all the educational and teaching activities or even the supporting or secondary activities.	.971**	0.000

The table (6) shows that the correlation coefficients between each statement of (Teaching), where the value of the correlation coefficient are between (0.973 – 0.984) which is a positive correlation. The Sig value of each statement is less than 0.05 and thus considered to be honest and intended to measure.

8.3 Demographic Characteristics

Table (7) Characteristics of Gender.

Gender	Frequency	Percent
Male	200	67%
Female	100	33%
Total	**300**	**100%**

From the above table we can conclude that most Observations were males with frequency 200 and with percent 67% and females with frequency 100 and with percent 33%.

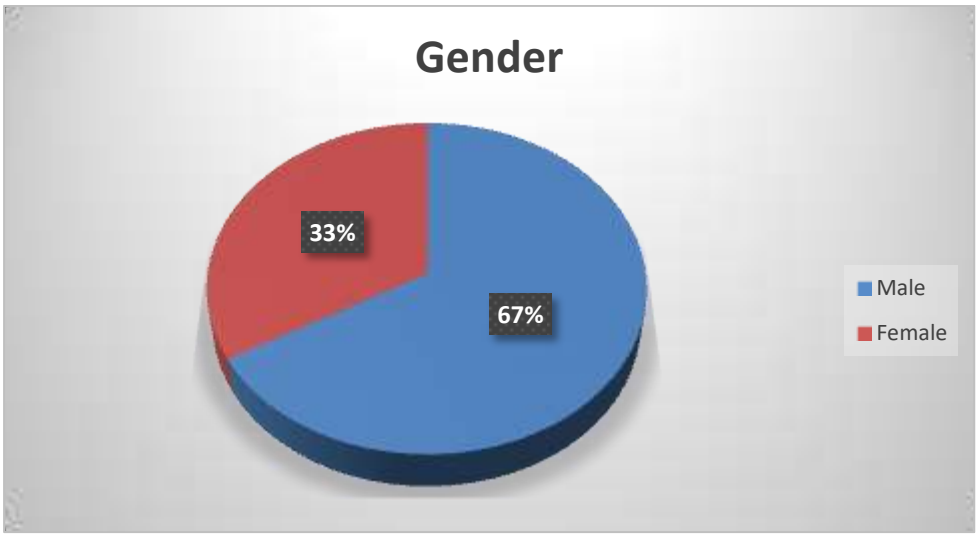

Figure (1) Characteristics of Gender.

Table (8) Characteristics of Years of Age

Age	Frequency	Percent
less than 25	21	7%
Between 26 and 35	74	25%
Between 36 and 45	111	37%
Between 46 and 55	83	28%
More than 55	11	3%
Total	300	100%

From the above table we can conclude that most observations had Age 36-45 years with frequency 111 and with percentage 37%, 46-55 years with frequency 83 and with percent 28%, 26-35 years with frequency 74 and with percent 25%, less than 25 years with frequency 21 and with percent 7%, and More than 55 with frequency 11 and with percent 3%.

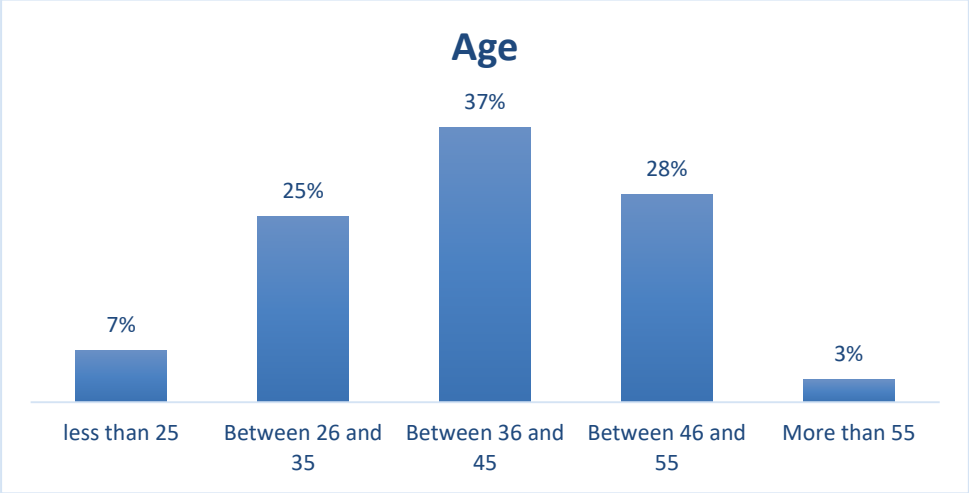

Figure (2) Characteristics of Age.

Table (9) Characteristics of Experience.

Experience	Frequency	Percent
less than 5 years	24	8%
6 – 10 years	65	22%
11-20 year	204	68%
more than 20 years	7	2%
Total	**300**	**100%**

From the above table we can conclude that most observations had Experience. 11–20 years with frequency 204 and with percentage 68%, 6–10 years with frequency 65 and with percentage 22%, Less than 5 years with frequency 24 and with percentage 8%, and more than 20 years with frequency 7 and with percentage 2%.

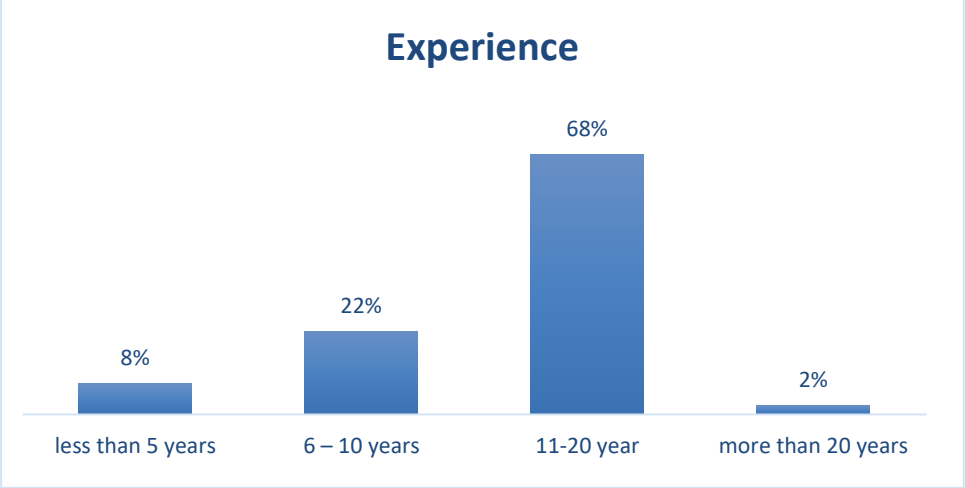

Figure (3) Characteristics of Experience

- **Descriptive Statistics:**

Table (10) Descriptive Statistics of Planning Skills.

N	Phrases	Mean	Std. Deviation	Rank
1	Smart applications provide enjoyable and convenient planning for the lessons taught.	4.40	0.71	1
2	Smart applications can be employed effectively and efficiently at any time and anyplace by the teachers.	4.35	0.70	6
3	Smart applications can assist teachers to break from the traditional lesson planning pattern.	4.35	0.70	5
4	Smart applications assist teachers for self-learning processes.	4.36	0.70	4
5	Smart applications can save efforts and time of teachers, compared with the traditional planning process.	4.37	0.70	2
6	Smart application enable teachers to set multiple plans with a higher flexibility.	4.37	0.70	3
All		4.37	0.69	

From the above table which describes the observations attitudes to Planning Skills we found that the average for all questions was 4.37 with standard deviation 0.69 and this reflects the high approval of observations on that Planning Skills play a good role in teaching with AI, for the first rank the sentence of (Smart applications provide enjoyable and convenient planning for the lessons taught.) came the first with average 4.40 and with standard deviation 0.71, because educators appreciate how smart applications make lesson planning more engaging and user-friendly, for the sentence of (Smart applications can save efforts and time of teachers, compared with the traditional planning process) came the second with average 4.37 and with standard deviation 0.70 and for the last sentence was (Smart applications can be employed effectively and efficiently in anytime and anyplace by the teachers.) with average 4.35 and with standard deviation 0.70, because they may have some reservations about implementation or accessibility in certain contexts.

To sum up, the planning skills as concluded from the results obtained play a vital role in the teaching process especially when supporting the planning tools with the diversified AI Apps which comply with Yim (2024), Vierio (2025) and Pedro (2019).

Table (11) Descriptive Statistics of Implementation Skills.

N	Phrases	Mean	Std. Deviation	Rank
1	Smart applications of AI enable students and teachers for a better communication.	4.40	0.70	1
2	Smart application of AI enable students to acqure the key and significant skills and abilities.	4.39	0.71	2
3	Smart applications of AI participate significantly to display the scientific subjects easily.	4.39	0.71	3
4	The majority of the teachers can easily employ the smart applications of AI and share their experiences to their peers.	4.38	0.71	6
5	The majority of the teachers in the public schools can learn the active and effective implementations of smart	4.39	0.71	4

N	Phrases	Mean	Std. Deviation	Rank
	applications of AI to provide better educational services.			
6	There is sufficient capabilities and adequate infrastructure (the environment, the management support, the facilities) to implement the smart applications of AI.	4.39	0.71	5
All		**4.39**	**0.69**	

From the above table which describes the observations attitudes to Implementation Skills we found that the average for all questions was 4.39 with standard deviation 0.69 and this reflects the high approval of observations on that Implementation Skills play a good role in teaching with AI, for the first rank the sentence of (Smart applications of AI enable students and teachers for a better communication.) came the first with average 4.40 and with standard deviation 0.70, this statement ranked highest, indicating that educators strongly believe AI-powered tools facilitate improved communication between students and teachers. This might be due to features like real-time feedback, personalized messaging, or collaborative platforms, for the sentence of (Smart application of AI enable students to acqure the key and significant skills and abilities) came the second with average 4.39 and with standard deviation 0.71 and for the last sentence was (The majority of the teachers can easily employ the smart applications of AI and share their experiences to their peers.) with average 4.38 and with standard deviation 0.71, because while educators are optimistic about AI adoption, there could be some concerns about teacher readiness or ease of implementation. Some teachers might need additional training or support to effectively integrate AI tools and share their experiences.

Similarly, it is concluded that implementation skills have a greater impact on education compared with the planning capabilities which may encourage the students, teachers, and decision-makers in the public schools to overcome the challenges or barriers derived from the penetrating AI field. This is fully compliant with Adiguzel (2023), Adubra (2019), Al Hatheq (2023), and Apulzan (2024).

Table (12) Descriptive Statistics of Evaluation Skills

N	Phrases	Mean	Std. Deviation	Rank
1	Smart applications improve the qualification of teachers for more accurate and fair evaluation for the students performance.	4.36	0.71	6
2	Smart application of AI in the evaluation process transfer the saved time in the electronic evaluation for another critical dimensions in the education process.	4.39	0.71	2
3	The accuracy and fairness of the smart applications of AI can lead to better modifications for the corporate education policies due to the corporate data collected from the country as a whole.	4.38	0.71	3
4	Smart application of AI in the evaluation process can improve significantly the teaching process due to the historical data that can be employed about the performance of students.	4.39	0.71	1
5	Smart applications of AI in the education process improve the creativity and innovation of the students deriving from the inherent equality and fairness of AI included applications	4.37	0.71	4
6	The equality and fairness of the smart application of AI empower the satisfaction of the students on the performance process.	4.37	0.71	5
All		**4.38**	**0.69**	

From the above table which describes the observations attitudes to Evaluation Skills we found that the average for all questions was 4.38 with standard deviation 0.69 and this reflects the high approval of observations on that Evaluation Skills play a good role in teaching with AI, for the first rank the sentence of (Smart application of AI in the evaluation process can improve significantly the teaching process due to the historical data that can be employed about the performance of students.) came the first with average 4.39 and with standard deviation 0.71, this might be attributed to the ability of AI tools to facilitate personalized feedback,

streamline communication channels, and promote collaboration, for the sentence of (Smart application of AI in the evaluation process transfer the saved time in the electronic evaluation for another critical dimensions in the education process) came the second with average 4.39 and with standard deviation 0.71 and for the last sentence was (Smart applications improve the qualification of teachers for more accurate and fair evaluation for the students' performance.) with average 4.36 and with standard deviation 0.71, because they may have some reservations about the ease of adoption and implementation among their peers. This could be due to varying levels of technological proficiency or access to resources among teachers.

It is clearly to conclude that at the end that the evaluation skills is not a primary skill that can differentiate the charismatic teachers from the normal one, but also it plays a vital role in empowering the teaching process especially when employing the diversified adequate AI apps. Their skills with the diversified adequate AI apps which in turn can maximize the output of the active usage of AI and ease the teaching process for both students and teachers. This is comply with Walter (2024) and Muhammad (2024).

Table (13) Descriptive Statistics of Challenges of AI

N	Phrases	Mean	Std. Deviation	Rank
1	The scarcity of training courses for male and female teachers to train them on the use of various smart applications by the Ministry of Education and Higher Education, represented by the Director	4.39	0.71	4
2	The large number of students is a challenge for teachers in terms of their enjoyment while employing artificial intelligence applications.	4.40	0.71	1
3	The scarcity of food applications in the Arabic language and the introduction of foreign terms hinders the use of these applications.	4.39	0.71	2
4	There is a weakness in the technological level among many K6 teachers, both male and female.	4.38	0.71	5

N	Phrases	Mean	Std. Deviation	Rank
5	The physical and administrative environment in schools in Palestine poses a problem for teachers regarding the extent to which they use artificial intelligence applications.	4.37	0.71	6
6	There is a scarcity of training courses for male and female teachers to train them on the use of various smart applications provided by the Ministry of Education and Higher Education, represented by the Directorate General of Education.	4.39	0.71	3
All		**4.39**	**0.70**	

From the above table which describes the observations attitudes to Challenges of AI we found that the average for all questions was 4.39 with standard deviation 0.70, and for the first rank the sentence of (The large number of students is a challenge for teachers in terms of their enjoyment while employing artificial intelligence applications.) came the first with average 4.40 and with standard deviation 0.71, because the high rating for this statement suggests that educators believe AI-powered evaluation tools can significantly enhance teaching by providing valuable insights from historical data. This data-driven approach can help teachers identify areas of improvement, track student progress, and inform instruction, for the sentence of (The scarcity of food applications in the Arabic language and the introduction of foreign terms hinders the use of these applications) came the second with average 4.39 and with standard deviation 0.71 and for the last sentence was (The physical and administrative environment in schools in Palestine poses a problem for teachers regarding the extent to which they use artificial intelligence applications.) with average 4.37 and with standard deviation 0.71, because they may have some reservations about the extent to which AI can improve teacher qualifications or ensure entirely accurate and fair evaluations.

Regardless of their challenges and the reasonable rationality displayed by the respondents, the benefits gained from the employment of AI apps in teaching are supported with the adequate training and development programs allocated for the technology teachers, and the parallel programs allocated for parents and students

to improve their skills, awareness, and abilities to use such apps. This will play a significant role in overcoming all these challenges mentioned, and especially when the Ministry of Education supports the active implementation of the AI apps with an agreed code of ethical practices that direct all the users; teachers, and students for the safe and moral usage which can comply with the Arabic and Islamic culture. This is comply with Simeunović (2024), Louis (2023), Liu (2024), and Kritandani (2024). AI can easily manage & mitigate its challenges as through a well Constructed strategy to employ it effectively.

Table (14) Descriptive Statistics of Teaching

N	Phrases	Mean	Std. Deviation	Rank
1	Education level will be improved when smart applications of AI can be involved.	4.40	0.71	1
2	It is expected that the majority of the existing traditional schools will be transformed soon and a mix of robots and AI.	4.39	0.71	2
3	The active implementation of a smart AI will solve multiple problem in the teaching such as the scarcity of teachers or the scarcity of highly experiences teachers.	4.37	0.71	6
4	Robots or electronic guidance don't set any pressure or constraints such as calling the parents if there is a student's failure or has a poor performance.	4.38	0.72	4
5	AI will substitute gradually the innate intelligence and always.	4.39	0.72	3
6	The use of AI application enable for better management of all the educational and teaching activities or even the supporting or secondary activities.	4.38	0.71	5
All		**3.39**	**0.84**	

From the above table which describes the observations attitudes to Teaching we found that the average for all questions was 4.39 with standard deviation 0.84 and this reflects the high approval of observations on that teaching with AI will improve teaching methods, for the first rank the sentence of (Education level will be improved when smart applications of AI can be involved.) came the first with

average 4.40 and with standard deviation 0.71, because educators highly value AI's potential to enhance teaching through data-driven insights, enabling informed instruction and targeted support, for the sentence of (It is expected that the majority of the existing traditional schools will be transformed soon and a mix of robots and AI) came the second with average 4.39 and with standard deviation 0.71 and for the last sentence was (The active implementation of a smart AI will solve multiple problem in the teaching such as the scarcity of teachers or the scarcity of highly experiences teachers.) with average 4.37 and with standard deviation 0.71, because educators may see some limitations or nuances in AI's role in teacher qualification and evaluation fairness.

Whatever the existing infrastructure of the effective implementation of AI in teaching, either the physical infrastructures or the qualities of the teachers, it is easy and simple to adapt the diversities AI apps in teaching in the secondary public schools in the Palestine gradually which comply with the economic conditions of the ministry and to proceed with deliberate steps, but with confidence and effectiveness. (Adubram, 2019, and AlKan, 2024).

- **Inferential Statistics:**

H0: There is no relationship between the AI mechanisms and the teaching for the secondary school students in public schools in Palestine.

H1: there is a statistically significant relationship between the AI mechanism and the teaching for the secondary school students in public schools in Palestine

Table (15) Person Correlation results to test the significance of relationship between the AI mechanisms and the teaching for the secondary school students in public schools in Palestine

Correlations						
		Planning Skills	**Implementation Skills**	**Evaluation Skills**	**Challenges of AI**	**Teaching**
Planning Skills	Pearson Correlation	1	.957**	.956**	.944**	.949**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	300	300	300	300	300

Correlations						
		Planning Skills	**Implementation Skills**	**Evaluation Skills**	**Challenges of AI**	**Teaching**
Implementation Skills	Pearson Correlation	.957**	1	.967**	.963**	.978**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	300	300	300	300	300
Evaluation Skills	Pearson Correlation	.956**	.967**	1	.972**	.963**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	300	300	300	300	300
Challenges of AI	Pearson Correlation	.944**	.963**	.972**	1	.974**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	300	300	300	300	300
Teaching	Pearson Correlation	.949**	.978**	.963**	.974**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	300	300	300	300	300
**. Correlation is significant at the 0.01 level (2-tailed).						

From the above table which tests the significance of relationship between the variables of the study we found that person correlation coefficient between Planning Skills and teaching for the secondary school students in public schools in Palestine was strong positive significant relationship and its value was 0.949, person correlation coefficient between Implementation Skills and teaching for the secondary school students in public schools in Palestine was strong positive significant relationship and its value was 0.978, person correlation coefficient between Evaluation Skills and teaching for the secondary school students in public schools in Palestine was strong positive significant relationship and its value was 0.963, person correlation coefficient between Challenges of AI and teaching for the secondary school students in public schools in Palestine was strong positive significant relationship and its value was 0.974.

The great values of Pearson correlation among the skills of planning, evaluation,

teaching, and in the secondary public schools in Palestine either with the great value of the challenges and obstacles reveals a strong motivation to not only encourage and adopt the active adoption of AI in these schools, but to generalize the experiments in all the schools to reap the significant results of the diversified AI apps. This is fully comply with Levchenko (2023), Harry (2023) and Kevin (2023).

Table (16) Independent Samples Test to test there is difference in answers for Mechanisms for applying AI because of Gender

Independent Samples Test						
Gender		**Mean**	**Std. Deviation**	**Std. Error Mean**	**df**	**Sig. (2-tailed)**
Mechanisms for applying AI	Male	4.4344	0.64775	0.04580	298	0.049
	Female	4.2702	0.73985	0.07398		

From the above table which tests the difference in answers for Mechanisms for applying AI because of Gender, we found that there is difference as sig was 0.049 lower than 0.05 and it was for males as the mean of them were 4.4 higher than females 4.2.

9. Conclusion

In analyzing the role of skills in AI mechanisms, Planning Skills averaged 4.37 (SD 0.69), Implementation Skills at 4.39 (SD 0.69), and Evaluation Skills at 4.38 (SD 0.69), reflecting high approval of their significance. Major challenges identified include a large student population affecting teacher engagement and limited Arabic language applications, compounded by foreign terminology. Correlation analysis revealed strong positive significant relationships between Planning Skills (0.949), Implementation Skills (0.978), Evaluation Skills (0.963), and Challenges of AI (0.974) in relation to teaching secondary school students in Palestinian public schools

After analyzing the data collected, we found that:

1- For Planning Skills, we found that the average for all questions was 4.37 with a standard deviation of 0.69 and this reflects the high approval of observations on that Planning Skills play a good role in AI mechanisms.

2- For Implementation Skills we found that the average for all questions was 4.39 with a standard deviation of 0.69 and this reflects the high approval of observations on that Implementation Skills play a good role in AI mechanisms.

3- For Evaluation Skills we found that the average for all questions was 4.38 with a standard deviation 0.69 and this reflects the high approval of observations on that Evaluation Skills play a good role in AI mechanisms.

4- For Challenges of AI, we found that most challenges were the large number of students is a challenge for teachers in terms of their enjoyment while employing artificial intelligence applications and the scarcity of food applications in the Arabic language and the introduction of foreign terms hinders the use of these applications.

5- For testing the relationship between the variables of the study we found that person correlation coefficient between Planning Skills and teaching for the secondary school students in public schools in Palestine was strong positive significant relationship and its value was 0.949, person correlation coefficient between Implementation Skills and teaching for the secondary school students in public schools in Palestine was strong positive significant relationship and its value was 0.978, person correlation coefficient between Evaluation Skills and teaching for the secondary school students in public schools in Palestine was strong positive significant relationship and its value was 0.963, person correlation coefficient between Challenges of AI and teaching for the secondary school students in public schools in Palestine was strong positive significant relationship and its value was 0.974, The strong positive correlations between teaching effectiveness and planning skills, implementation skills, evaluation skills, and challenges of AI can be attributed to several factors. Effective planning enables teachers to set clear goals, personalize learning, and allocate resources efficiently, ultimately enhancing student outcomes. Strong implementation skills facilitate seamless integration of AI tools, boost teacher

confidence, and improve student experience. Meanwhile, effective evaluation skills provide valuable data-driven insights, enable accurate assessments, and inform targeted interventions. Addressing AI-related challenges is also crucial, as it allows educators to overcome obstacles, provide necessary support to teachers, and optimize AI's potential. By developing these skills and addressing challenges, educators can harness the full potential of AI to enhance teaching effectiveness and improve student learning outcomes.

10. Recommendations:

Based on the study's findings, here are some recommendations:

The following suggestions are put out in light of the results anticipated from investigating technology instructors' opinions regarding the use of AI applications in secondary education in Palestinian public schools:

1. **Improving AI Application Training for Teachers** Programs for ongoing professional development that emphasize the useful application of AI tools in the classroom should be organized by the Ministry of Education.
   Online courses, practical workshops, and real-world examples of incorporating AI into technology classes should all be part of the training.
2. **Enhancing Public Schools' Technical Infrastructure** Boost internet connection, supply modern computers, and guarantee that educational software with AI assistance is available.
   Provide equipment for technology laboratories that can run high-performance AI applications.
3. **Merge/Integrate AI** Integrate AI into the technology curriculum through encouraging the teachers and decision-makers in the Ministry of Education to acquire the required AI skills by updating the technology curriculum to include ethical AI concepts and practical apps.
4. **Address Barriers and Challenges** Allocate a reasonable budget for the improvement in the public schools and assist the teachers in the transitioning stage, and support all their practices through an acceptable code of ethical

and conduct practices.

5. **Encourage Active Engagement** Encourage the active and effective engagement of students through AI apps such as AI-based simulations, virtual labs, and AI personalized learning platforms which can match the student needs with the modern teaching context.
6. **Foster Effective Collaboration** Foster the effective collaboration between the schools and educational institutions through partnerships with institutes, universities, and tech firms, and encourage shared platforms to encourage shared experiences and knowledge among teachers.
7. **Evaluate and Monitor Implementation** Evaluate and monitor the implementation of AI in the teaching through conducting periodical and regular evaluations to assess the effect of AI on the students' digital competency and students' academic achievement.
8. **Improve Awareness** Improve the awareness among parents and students through conducting regular sessions to explain the diversified benefits of AI which support the safe and responsible use of AI.
9. **Encourage Research and Innovation** Encourage research and innovation in AI education through the adequate support for the school-based projects using the apps of AI.

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