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# EDUCATIONAL LEADERSHIP AND SCHOOL DIRECTORATES IN THE AGE OF ARTIFICIAL INTELLIGENCE: ADMINISTRATIVE PRACTICES AND PROFESSIONAL CHALLENGES

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**Abstract**

This study aimed to identify the educational leadership of school principals in the age of artificial intelligence: administrative practices and ethical challenges. The descriptive (mixed) approach was used, and the study population consisted of all teachers in government schools in Qalqilya Governorate The number of them for the year 2024/2025 (1543 male and female teachers, distributed among 587 male teachers and 956 female teachers), and all the educational supervisors in Qalqilya Governorate, whose number is (28) male and female supervisors, and the study measures were applied to a stratified random sample, which included (308) male and female teachers, on whom the questionnaire tool was applied, and a purposive sample, which included (12) male and female educational supervisors, on whom the interview tool was applied. The results showed that the level of administrative practices among school principals in the age of artificial intelligence was moderate, with a mean score of (2.96). The results also showed no statistically significant differences at the significance level (α≤0.05) between the study sample's assessments of the level of administrative practices among school principals In the age of artificial intelligence, differences were attributed to the variable of years of service, and differences were attributed to the variables of gender, which favored males, and academic qualification, which favored those with a bachelor's degree. The interview results also showed an average level of administrative practices among school principals in the age of artificial intelligence the results also showed that the level of ethical challenges faced by school principals in the age of artificial intelligence was high, with a mean score of (3.74). Furthermore, the results indicated no statistically significant differences at the significance level (α≤0.05) between the study sample's assessments of the ethical challenges faced by school principals in the age of artificial intelligence Artificial intelligence is attributed to the variables of years of service and academic qualification, and there are differences attributed to the gender variable, which came in favor of the male. The interview results also showed a high level of ethical challenges among school principals in the age of artificial intelligence. Based on these findings, the study recommends holding training courses and workshops regarding the use of artificial intelligence tools and applications in administrative work, digital technology ethics, and AI applications. It also recommends instructing the Ministry of Education and Higher Education to activate the role of monitoring, follow-up, evaluation, and assessment systems. Continuous development of AI programs, technologies, platforms, and applications in schools; designing curricula that focus more on AI and its concepts; creating an effective digital culture related to AI; and strengthening partnerships with civil society organizations and universities.

**Keywords:** Leadership, Educational Leadership, Artificial Intelligence, Challenges.

## INTRODUCTION

The world today is living under a series of rapid changes and modern technological developments, which make individuals constantly strive to keep up with these developments and changes and make more efforts in order to achieve goals in all fields, especially in the field of education It is one of the fields that faces the greatest challenge in providing all the basic requirements to achieve goals and keep pace with modern educational innovations, within the religious, cultural, and moral context of society. It

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constantly exerts more effort to prepare educational leaders capable of sustaining themselves in light of these changes and developments, in order to achieve levels of competitiveness, excellence, and quality.

Educational leadership is considered a fundamental element and the main pillar from which strategic plans are launched, in order to achieve goals and visions, achieve the highest performance, communication and connection between employees, discover their strengths and weaknesses, and influence them in positive ways and strategies that reflect positively on all elements of the educational system.

Educational leadership contributes to improving the quality of education by developing the necessary plans and programs, and activating successful administrative methods to achieve the desired goals, in light of the availability of many skills such as decision-making skills and building strategies and visions that directly affect the educational process, in addition to providing a positive and distinctive educational environment Within a specific framework for improving performance and developing skills (Nofal and Salem, 2020).

Artificial intelligence contributes to supporting educational leaders in administrative processes, especially with regard to making effective administrative decisions, in light of the broad information and knowledge revolution, and this helps them achieve outstanding successes It enhances their decision-making abilities, promotes a culture of creativity, innovation and efficiency, increases competition among educational institutions, improves and facilitates administrative processes, and saves time and effort (Al-Harbi, 2024).

Mr. (2024) pointed out that artificial intelligence, with its systems, applications and technologies, has helped educational leaders in making complex administrative decisions. It has been used in preparing school schedules, distributing class periods, dividing students into classes, after providing it with the necessary information, conducting tests in different styles, and evaluating student performance Artificial intelligence applications impact the efficiency of educational institutions by building strategic visions and constructive strategic thinking to achieve leadership at all local and global levels, given that artificial intelligence is the cornerstone of the Fourth Industrial Revolution; it is the science that aims to make computers capable of performing tasks such as thinking, creativity, and others(Abdul Aziz, 2020).

The importance of using artificial intelligence applications for educational leaders lies in transferring human experiences and working to store and preserve them, and in mitigating the risks and pressures that individuals may be exposed to, especially in accomplishing difficult tasks that require high concentration (Smith, 2018) In addition to the ability to make decisions, and the qualities of independence and objectivity, free from bias and error (Abdul Raouf, 2017).

Problem of the Study: In light of technological advancements and the emergence of artificial intelligence applications and technologies, the need has grown for educational leaders capable of addressing these developments to improve the quality of the educational process and achieve excellence in its operations.

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Administrative, in order to meet the necessary and essential needs of teachers and students, and this requires the optimal and safe use of artificial intelligence applications (Al-Omari, 2025). Artificial intelligence is considered one of the modern concepts and human innovations that has contributed to the development of life and society in all fields, including health, education, technology, and others. Despite these significant contributions, some concerns and problems still exist that pose a threat to humanity. Therefore, it is essential to understand Individuals need to understand the extent of this risk and to have a deep understanding of the decisions made by AI applications, working to scrutinize and analyze them (Al-Arroub, 2024). Several studies have addressed the topic of artificial intelligence, such as Atoun's study (2025), which highlighted the numerous challenges facing school administrators when using AI applications, such as the lack of comprehensiveness.

The research problem is defined by answering the following main question: What is the reality of educational leadership among school principals in the age of artificial intelligence: administrative practices and ethical challenges?

The following sub-questions stem from this main question:

Question 1: What is the level of administrative practices among school principals in the age of artificial intelligence?

Question 2: What are the ethical challenges facing school principals in the age of artificial intelligence?

Question 3: Are there statistically significant differences in the study sample's assessments of the level of administrative practices among school principals in the age of artificial intelligence, attributable to the variables of gender, educational qualification, and years of service?

Question 4: Are there statistically significant differences in the assessments of the sample group regarding the ethical challenges faced by school principals in the age of artificial intelligence, attributable to the variables of gender, educational qualification, and years of service?

**Interview Questions**

Question 1: What are the most important administrative practices adopted by the educational leader (school principal) to create a positive and safe school environment, in light of modern trends in management, especially with the emergence of artificial intelligence tools and applications?

Question 2: How can educational leaders in Palestinian schools keep pace with technological advancements and utilize artificial intelligence applications while upholding professional ethics? What are the most significant ethical challenges they might face?

Question 3: What practical solutions do you propose to address the ethical challenges of using artificial intelligence in Palestinian schools?

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**Study Objectives**:

The current study aimed to achieve the following:

**First:** To identify the level of administrative practices among school principals in the age of artificial intelligence.

**Second:** To identify the ethical challenges facing school principals in the age of artificial intelligence.

**Third:** To determine whether there are differences in the assessments of the study sample regarding the level of administrative practices of school principals in the age of artificial intelligence, attributable to the variables of (gender, academic qualification, years of service).

**Fourth:** To determine whether there are differences in the assessments of the study sample regarding the reality of ethical challenges for school principals in the age of artificial intelligence, attributable to variables (gender, academic qualification, years of service).

**Fifth**: To identify the most significant ethical challenges facing school administrators in implementing management practices in the age of artificial intelligence.

**Sixth:** To determine the most prominent practical solutions proposed to address the ethical challenges of using artificial intelligence in Palestinian schools.

**Importance of the Study**

*Theoretical Importance*

The importance of the study stems from the importance of its subject, which is related to the cognitive component, in forming a clear picture of educational leadership among school principals in the age of artificial intelligence, the administrative practices of the school principal as an educational leader, and the ethical challenges he faces in order to achieve the goals and objectives of the educational system. In light of contemporary educational demands and innovations, this study contributes to building a comprehensive conceptual framework that assists researchers and specialists in developing effective educational practices. Furthermore, it serves as a theoretical reference that can be utilized in subsequent studies aimed at developing managers' technological skills in light of artificial intelligence and building programs. Continuous training and courses enhance the application of these skills in educational institutions, thus opening new horizons for scientific research in this vital field, as well as enriching the Palestinian library with a study that addresses the topic of educational leadership among school principals in the age of artificial intelligence, and forming an important starting point for related studies with the aim of expansion Building upon these findings in other areas of the study.

**Applied Significance**

It is hoped that this study will contribute to determining the level of administrative practices among school principals in the age of artificial intelligence, the reality of the ethical challenges facing school principals in the age of artificial intelligence, and the extent of

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their impact. This study focuses on the entire educational system and aims to assist leaders in the field of education in understanding the level of implementation of social-emotional learning and creative thinking skills in schools. This understanding will enable them to implement educational measures that effectively contribute to the continuous development of educational leadership in the field and foster competitiveness, excellence, and quality.

**Study Scope**

1. Thematic Scope: To determine the perceived level of administrative practices among school principals and the ethical challenges they face in the age of artificial intelligence.
2. Geographical Scope: Limited to government schools in the Qalqilya Directorate of Education.
3. Temporal Scope: This study was conducted during the first semester of the 2025/2026 academic year.
4. Human Scope: Limited to teachers and supervisors in government schools within the Qalqilya Directorate of Education.
5. Conceptual Scope: Limited to the concepts and terminology used in the study.
6. Procedural Limitations: These were defined by the instruments used, such as the Administrative Practices Level Scale and the Ethical Challenges Scale, and by restricting the generalization of the study's results to the validity and reliability of the instruments used, and the extent of the objective response of the study sample to these instruments, on the one hand, and to similar populations, on the other.

**Terminological Definitions**:

The most important concepts or terms included in the study can be explained as follows:

Leadership: “The process of influencing, persuading, creating, changing, and aligning the ambitions of the leader with the ambitions of the subordinates” (Al-Mutairi, 2015: 14).

Educational leadership: “It is the leadership that deals with the affairs of teachers, students, administrative staff, study materials, equipment, financial resources necessary for education, management of activities related to the educational process, and organizing, directing and controlling all these elements” (Al-Ajarmeh, 2012: 13).

Artificial intelligence (AI) is a branch of computer science that aims to design systems and programs capable of mimicking human intelligence through learning, reasoning, analysis, and decision-making.

AI encompasses a range of Technologies such as machine learning, deep learning, and artificial neural networks help systems process data and extract patterns to provide intelligent responses (Perez, 2023: 118).

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## Theoretical Framework

### Educational Leadership

Educational leadership has focused on the use of modern management systems, which aim to prepare qualified educational leaders And trainers, and they acquire leadership skills that facilitate administrative and organizational work within institutions, to raise the level of performance, advance the educational process, improve its outputs and achieve its goals easily and conveniently, in light of modern and contemporary educational trends, in addition to increasing the burdens and efforts placed on these educational leaders (Al-Dawood, 2018).

The importance of educational leadership in educational institutions: Leadership in general contributes to improving the school climate and school environment, enhancing cooperation and communication between teachers and students, providing support and motivation for teachers and students towards creativity, innovation and excellence, and directing all efforts to achieve educational goals (Al-Amiri, 2021).

### Artificial Intelligence

The Concept of Artificial Intelligence

Artificial intelligence is: “The ability of machines and digital computers to perform tasks that mimic and resemble those performed by intelligent beings, such as the ability to think or learn from past experiences or other processes that require mental operations” (Musa and Bilal, 2019: 19).

Zafer (2019: 24) defined it as: "A set of algorithms, methods, and approaches—both theoretical, practical, and applied—that are concerned with implementing decision-making processes in place of humans, whether holistic or partial, with the ability to adapt, predict, or infer."

### Challenges of Artificial Intelligence

Despite the many benefits that can be obtained from using artificial intelligence applications and technologies, there are several challenges that Al-Qahtani (2022) and Jonson (2023) pointed out, which are as follows:

- **Technical challenges**: These include a weak digital infrastructure that cannot meet all the requirements of artificial intelligence applications.
- **Shortage of trained personnel:** A lack of training and qualifications among these personnel hinders the use of artificial intelligence applications and technologies.
- **Ethical challenges**: These include issues of privacy, data security, and ensuring fair and secure access for all students and teachers.
- **Resistance to change:** Resistance to change is one of the biggest challenges facing educational institutions due to fear of job losses or a lack of knowledge about artificial intelligence applications.

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Al-Kahtani (2024) pointed to some of the challenges facing the educational system in the field of using artificial intelligence applications, namely concern and fear about data privacy and security when using these programs, and the presence of some hackers who try to breach this privacy and steal data.

Similarly, teachers and students sometimes hesitate to use artificial intelligence applications and technologies due to a resistance to technological change and a reliance on traditional methods, which they believe to be more effective and beneficial. This reluctance is compounded by a lack of proficiency in AI applications among both teachers and students.

## Previous Studies

### Previous studies related to the administrative practices of school principals in the age of artificial intelligence

The study by Al-Musallami and Al-Sharqawi (2025) aimed to identify the reality of using artificial intelligence tools in school administration in basic education schools in the Al-Dakhiliyah Governorate from the perspective of school principals. The researchers used the descriptive survey method was used, and the study population consisted of all school principals and assistant principals, totaling (40) principals and assistant principals. The study sample was selected using a comprehensive survey method, and it consisted of (40) principals and assistant principals. The study instrument was a questionnaire, and the results showed the degree to which school principals used the tools Artificial intelligence scored low in the areas of planning, organization, and control. The study also reported no differences in the use of AI tools attributable to gender. It recommended providing financial, material, and technical support to school administrations and offering professional development programs for principals and assistant principals in the use of AI tools.

The study by Ahmed et al. (2025) aimed to develop the administrative performance of educational leaders in the North Sinai Governorate's Directorate of Education in light of the dimensions of digital transformation. The researchers used the descriptive method with quantitative content analysis. The study sample consisted of (10) educational leaders, and the study instrument was the interview. The results showed the study revealed a lack of clarity regarding the concept of digital transformation among leaders, their weak digital infrastructure, resistance to change by educational leaders, limited awareness of modern technological developments, and the absence of a supportive infrastructure for digital transformation. The study recommended the necessity of training leaders in technology-based planning mechanisms and the creation of digital dashboards to support decision-making processes, software updates, and ongoing training.

The study by Jundiya and Al-Sayyah (2024) aimed to identify the role of artificial intelligence in improving digital leadership among private secondary school principals in Tripoli. The researchers used a descriptive approach, and the study population consisted of principals all private secondary schools in Tripoli were included in the study. The sample, selected using a comprehensive survey method, consisted of (16) principals. The

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study instrument was a questionnaire. The results showed that artificial intelligence contributes to improving decision-making processes, data management, and enhancing communication concepts. The study also revealed the importance of training Technical support empowers school administrators to overcome technical and organizational challenges, and the study recommended strengthening the integration of artificial intelligence in educational leadership.

**Previous studies related to the ethical challenges of artificial intelligence**

The study by Al-Feel (2024) clarified the security and ethical issues of using artificial intelligence and their relationship to the attitude towards its applications among university students in the Kingdom of Saudi Arabia. The researcher used the descriptive correlational method, and the study population consisted of all students in the faculties of Special Education, Education, and Early Childhood Education The study included physical education, fine arts, agriculture, and social work. The sample consisted of (1134) male and female students. The study instrument was a questionnaire. The results showed an average level of security and moral aspects, and no statistically significant differences in moral and security aspects attributable to the gender variable. The study recommended the study emphasizes the need for optimal investment in training and developing the skills of gifted students in the field of artificial intelligence.

**Methodology and Procedures:**

Study Methodology: The descriptive method was used as it is suitable for the nature of this study.

Study Population: The study population consisted of all teachers in government schools in the Qalqilya Governorate, totaling 1,543 teachers (587 male and 956 female) for the academic year 2024/2025, and all educational supervisors in the Qalqilya Governorate, totaling 28 supervisors.

Study Sample: The study sample consisted of (308) teachers (117 male and 191 female) and (12) supervisors. The sample size of the teachers was determined using Robert Mason's formula, and a stratified random sampling method was employed, with the teacher's gender considered a primary factor in the selection process.

The analysis reflects the characteristics of the study population according to the independent variables, showing diversity in terms of gender, with females constituting the largest percentage of the sample (62.0%), compared to (38.0%) for males. Regarding educational qualification, the vast majority of participants held a bachelor's degree (76.0%), while the percentage of those with a master's degree or higher was (24.0%). Regarding years of service, more than half of the participants (52.6%) have professional experience of ten years or more, while (25.6%) have average experience ranging from 5 to less than 10 years, and only (21.8%) have experience of less than five years.

From the data analyses it is observed that the item correlation coefficients ranged between (0.71-0.93), and were of acceptable and statistically significant value. Garcia (2011) stated that a correlation coefficient value less than (30) is considered weak, values within the range (30 - less than or equal to 70) are considered moderate, and values

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exceeding (70) are considered strong. Therefore, no items were removed from the instrument.

**Second: Instrument Reliability**

To ensure the reliability of the instrument, Cronbach's Alpha was used on the sample data the exploratory survey, consisting of (30) teachers from the study population and outside the original sample, was conducted after verifying the validity measurement shows that the Cronbach's alpha reliability coefficients for the study instrument ranged between 0.94 and 0.96. It is also noted that the Cronbach's alpha reliability coefficient for the overall instrument score was 0.98. These values are considered high and indicate the instrument's applicability to the original sample.

**Instrument Scoring**

The five-point Likert scale was used to determine the level of administrative practices and the reality of ethical challenges among school principals in the age of artificial intelligence. The positive items of this scale were corrected as follows: (Very high (5) points, High (4) points, Moderate (3) points, Low (2) points, Very low (1) point For the purpose of interpreting the arithmetic means, the mark was converted according to the scale ranging between (1-5) points, according to the following equation:

For the following equation:

Class Interval Length:

Class Interval Length = (Upper Limit − Lower Limit) / Number of Levels

= (5 − 1) / 3

= 1.33

Number of Assumed Levels = 3

It was classified into three levels: low level (1-less than 2.33), medium level (2.33-less than 3.66), and high level (3.66-5).

Second: The Interview Tool

The researcher used individual interviews by posing questions to each member of the study sample individually The study's objectives relied on a pre-defined open-ended question system that allowed respondents to express themselves in their own words, based on their personal experiences. This type of interview involves posing questions to respondents in the same wording and order.

**1- Validity of the interview instrument**

To verify the validity of the interview instrument, the researcher used face validity, also known as expert validity. The instrument, in its initial form, was presented to a group of specialists and service providers. The initial version of the interview consisted of (3) questions; a minimum agreement rate of (85%) was adopted as the criterion for accepting a question, and based on this Based on the reviewers' comments and opinions, the proposed modifications were made, including rewording some questions.

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## 2- Interview Reliability

To establish the interview's reliability, the time-reliability method was used. The responses of the participants were analyzed, and two weeks after the initial analysis, the analysis was repeated using Holsti's equation.

As follows:

Holsti's Formula (Inter-Coder Reliability):

$$\text{Reliability Coefficient} = \frac{(2 \times \text{Number of Agreements between Coders})}{\text{Total Number of Coding Decisions in Both Coding Rounds}} \times 100$$

Based on the results, the number of ideas agreed upon the first time was (16), while the number of ideas agreed upon the second time was (19). The total number of ideas included in the analysis in the two analysis times was (15). Based on this, the results can be extracted: (2*15=30). Therefore, (30/35=85*100=85%). Thus, the reliability value was (85%), which is a high value.

## Study Results and Discussion:

First: Results Related to the Study Questions

Question 1: What is the level of administrative practices among school principals in the age of artificial intelligence?

To answer this question, it was necessary to calculate the arithmetic means and standard deviations to determine the level Administrative practices of school principals in the age of artificial intelligence from the teachers' perspective, according to the items and the total score

In light of the results of analysis which presents the arithmetic means and standard deviations of the items related to administrative practices among school principals in the age of artificial intelligence, it appears that the total score reached (2.96) and the standard deviation was (0.87), and it fell within the average level from the teachers' point of view.

Upon detailed analysis of the paragraphs, we find that the highest average score was achieved in paragraph (15), "Promotes teachers who employ artificial intelligence applications," with a score of (3.46), followed by paragraph (13), "Guides teachers to use artificial intelligence applications to prepare lesson presentations," with an average of (3.32), reflecting an average level among School principals, from the teachers' perspective. The lowest average score was (2.72), indicating an average level, for (11) "uses artificial intelligence applications in evaluating teacher performance."

The researcher attributes this result to the teachers' moderate confirmation that school principals attempt to use Artificial intelligence applications in their administrative practices include preparing school plans, analyzing, organizing, and managing data, providing databases for teachers and students, using these applications to prepare schedules, and encouraging teachers to use them in preparing presentations. This also works to enhance

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the skills of teachers who they show a marked improvement in using these applications, and despite administrators' use of them, gaps and shortcomings remain in the application of artificial intelligence technologies, requiring continuous development.

This contrasts with the study by Al-Musallami and Al-Sharqawi (2025), which confirmed the degree of school administrators' use of AI tools.

Artificial intelligence scored low in the areas of planning, organization, and control. A study by Behbahani and Al-Rashidi (2024) found that the level of strategic planning practices in light of artificial intelligence applications was high. A study by Al-Shamas (2024) showed that the overall score of primary school teachers' use of artificial intelligence was high The percentage of artificial intelligence used in the educational process, in light of the ethical charter of the teaching profession, was high.

The second question: What is the reality of the ethical challenges facing school administrators in the age of artificial intelligence? To answer this question, it was necessary to calculate the arithmetic means and standard deviations to determine the reality Ethical Challenges Facing School Principals in the Age of Artificial Intelligence from the Teachers' Perspective

This is presented according to the items and the total score The overall score showed a high arithmetic mean of (3.74), confirming that the ethical challenges associated with artificial intelligence are tangibly present and require further attention and practical plans to address them.

Table (5) indicates that the most prominent ethical challenges faced by school principals in From the perspective of educators, the era of artificial intelligence was characterized by concerns about security breaches during the use of AI applications, with a mean score of 3.83 (a high level), followed by a decrease in the number of specialized technicians to solve problems related to personal security, also with a mean score of 3.80 (a high level) In contrast, the paragraph relating to the absence of an ethical charter in the use of artificial intelligence applications came as the least challenge with an average of (3.65) and at an average level, which indicates that the existence of an ethical charter is still of lower priority compared to security and technical risks.

The researcher attributes this result to the teachers' consensus that school administrators face significant ethical challenges, particularly regarding fear of breaches and violations of privacy and ownership, as well as the low number of AI specialists and weak security and protection programs The use of these applications, and the lack of training courses and programs, indicates that the field of artificial intelligence applications is still in its early stages and needs support and development in many areas, which reflects the teachers' awareness of the importance of the security and technical aspect as one of the most pressing challenges.

This is consistent with Al-Shamas's study (2024), which confirmed that the overall degree of use of artificial intelligence tools by upper elementary school teachers in the educational process, in light of the ethical charter of the teaching profession, was high,

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and it differed from Al-Feel's study (2024), which confirmed the existence of an average level of security and ethical aspects.

Question 3: Are there statistically significant differences in the study sample's assessments of the level of administrative practices among school principals in the age of artificial intelligence, attributable to the variables of gender, educational qualification, and years of service?

**Results related to the first hypothesis:**

There are no statistically significant differences at the significance level (α<.05) between the average ratings of the study sample members regarding the level of administrative practices of school principals in the age of artificial intelligence, attributable to the variables of (gender, academic qualification, years of service).

To test the first hypothesis, the arithmetic means and standard deviations of the study sample's ratings on the administrative practices scale were calculated according to the variables: gender, educational qualification, years of servicethe analysis shows apparent differences between the mean scores of the study sample on the Administrative Practices Scale, based on their distribution according to the study variables. To determine the significance of the differences between the mean scores of the total Administrative Practices Scale, a multivariate analysis of variance (MANOVA) without interaction was conducted, as shown in analysis

**Table (1): Multivariate Analysis of Variance (without interaction) on the total score of the Administrative Practices Scale according to the variables: gender, educational qualification, years of service**

| Source of Variance | Sum of Squares | Df | Mean Square | F value | Sig. |
|---|---|---|---|---|---|
| Gender | 10.6 | 1 | 10.6 | 14.81 | 0.00** |
| Qualification | 3.39 | 1 | 3.39 | 4.73 | 0.03* |
| Years of Service | 2.01 | 2 | 1.0 | 1.4 | 0.25 |
| Error | 216.83 | 303 | 0.72 | - | - |

Question 4: Are there statistically significant differences in the study sample's assessments of the reality of the challenges how are the ethical standards of school principals in the age of artificial intelligence attributed to the variables of gender, educational qualification, and years of service?

Results related to the second hypothesis: There are no statistically significant differences at the significance level (α<0.05) between the mean ratings of the sample members the study of the reality of ethical challenges for school principals in the age of artificial intelligence is attributed to variables (gender, academic qualification, years of service).

To test the second hypothesis, the arithmetic means and standard deviations of the study sample's ratings on the ethical challenges scale were calculated according to the variables: gender, educational qualification, years of service, and Table (2) shows this:

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**Table (2): Arithmetic means and standard deviations of the study sample's responses on the ethical challenges scale according to the variables: gender, educational qualification, years of service**

| Variable | Category | Mean | Standard Deviation |
|---|---|---|---|
| Gender | Male | 3.85 | 0.63 |
| Gender | Female | 3.68 | 0.6 |
| Qualification | Bachelor's Degree | 3.73 | 0.61 |
| Qualification | Master's Degree or Higher | 3.79 | 0.61 |
| Years of Service | Less than 5 years | 3.7 | 0.56 |
| Years of Service | 5 to less than 10 years | 3.81 | 0.54 |
| Years of Service | 10 years or more | 3.74 | 0.67 |

Table (3) shows apparent differences between the mean scores of the study sample on the ethical challenges scale, based on their distribution according to the study variables. To determine the significance of the differences between the mean scores of the total score on the ethical challenges scale, a multivariate analysis of variance (ANOVA) was performed "Without Interaction" (MANOVA "without Interaction"), as shown in Table (9):

**Table (4): Multiple Variance Analysis (without Interaction) on the total score of the Ethical Challenges Scale according to the variables: gender, educational qualification, years of service**

| Source of Variance | Sum of Squares | df | Mean Square | F value | Sig. |
|---|---|---|---|---|---|
| Gender | 2.18 | 1 | 2.18 | 5.86 | 0.02* |
| Qualification | 0.16 | 1 | 0.16 | 0.43 | 0.51 |
| Years of Service | 0.5 | 2 | 0.25 | 0.67 | 0.51 |
| Error | 112.45 | 303 | 0.37 | - | - |

*Statistically significant at the significance level ($p < .05$),

**Second: Results related to the interview questions**

The researcher selected (12) male and female supervisors in a purposive manner and conducted interviews with them. The aim was to identify the level of administrative practices among school principals in light of artificial intelligence, and the reality of the ethical challenges they face. The answers were classified according to the question, indicating the frequency and percentage. It is evident from analysis, that paragraph (1), which states "data analysis and decision-making," obtained the first rank with a percentage of (66%), and paragraph (4), "automation of administrative tasks," obtained the lowest percentage of (40%).

The researcher attributes this result to the consensus of (66) educational supervisors that school principals practice data analysis and make administrative decisions to a moderate degree. Similarly, (50%) of educational supervisors confirmed that school principals promote digital security and provide some degree of protection and safety for data and information, while (40%) agreed Among them is the finding that school principals contribute to improving teachers' performance in using artificial intelligence applications, but only at moderate levels, meaning that principals still need to develop their AI skills.

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This aligns with the study by Ahmed et al. (2025), which emphasized the need to train leaders in planning mechanisms Using technology, creating digital dashboards that support decision-making processes, updating software, and continuous training, and the study by Hendia and Al-Sayyah (2024), where the results of the study showed that artificial intelligence contributes to improving decision-making processes, data management, and enhancing communication concepts, and the study by Karakosh and Tolubas (Karakose & Tülübas, 2024) confirmed that school leadership uses artificial intelligence applications, and that these applications have effects on school leadership and its administrative practices through data processing, decision-making, task execution, and information processing. Jamtsho & Loday (2021) also studied this Studies have shown that technology intervention strategies are highly effective on school leadership. A study by Tyson & Sauer (2021) revealed that school principals relied on artificial intelligence in shaping organizational structures within schools. A study by Al-Samsami et al. (2025) confirmed the existence of roles Different applications of artificial intelligence in managing educational processes, in the field of strategic planning, decision-making and taking, job descriptions, employee performance evaluation, data management and protection, security and safety programs and communication.

Analysis show that paragraph (1), which states “excessive and uncontrolled reliance on artificial intelligence tools,” obtained the first rank with a percentage of (90%), and paragraph (5), “loss of connection and communication and reduced interaction,” obtained the lowest percentage of (75%). The researcher attributes this result to the confirmation by (90%) of educational supervisors that excessive and uncontrolled reliance on artificial intelligence tools is one of the biggest ethical challenges facing school principals when using AI applications and technologies, as this leads to a loss of transparency and accountability, which was unanimously agreed upon (90%) of supervisors also agreed, in addition to (83%) of supervisors agreeing that algorithm bias produces unfair results, which is another challenge facing administrators. (83%) of educational supervisors agreed that data privacy and security breaches are among the biggest challenges facing school administrators, and (75%) of Supervisors emphasized that the excessive use of artificial intelligence tools and applications reduces communication and interaction between administrators, teachers, and students, and diminishes opportunities for exchanging practical experiences and knowledge.

It is evident from analysis , that paragraph (1), which states “strengthening the partnership with local community institutions and universities,” obtained the first rank with a percentage of (100%), and paragraph (6), “providing digital educational platforms that are compatible with the social, cultural and religious context in Palestinian society,” obtained the lowest percentage of (50%) The researcher attributes this result to the keenness of educational supervisors to work diligently to mitigate the ethical challenges faced by school principals when using artificial intelligence applications, through a set of constructive practical measures. Educational supervisors unanimously (100%) confirmed that partnership Community engagement plays a significant role in mitigating the ethical challenges of artificial intelligence by supporting the education sector through programs, workshops, and seminars. Furthermore, approximately 83% of educational supervisors

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agreed on the necessity of forming monitoring and continuous evaluation committees for all applications used, particularly during training courses, a point also emphasized by 75% Regarding the promotion of digital literacy, (66%) of supervisors agreed that it is necessary to reinforce the concept that artificial intelligence is a tool to assist and not replace humans, and (66%) of supervisors emphasized the need to develop educational policies that respect privacy and fairness, and protect personal information and data Of the workers surveyed, 50% emphasized the need to provide digital educational platforms that align with the social, cultural, and religious context of Palestinian society.

This finding is consistent with Abdel-Khaleq's 2024 study, which recommended raising awareness of the ethical and guiding principles of artificial intelligence and expanding and solidifying the concept of an ethical charter as a reference point during its use Artificial intelligence, and the study by Al-Shamas (2024) which emphasized the need for continuous adherence to the ethical charter during the use of artificial intelligence applications, and strengthening the role of decision-makers in developing educational policies related to artificial intelligence, and the study by Darwish and Hashem (2023) which recommended that institutions should always strive to acquire Individuals demonstrate these ethical values through their programs, projects, and plans, and consider the ethical dimension when using artificial intelligence.

## Recommendations:

- Conduct training courses and workshops on the use of artificial intelligence tools and applications in administrative work, digital technology ethics, and AI applications.
- Directing the Ministry of Education and Higher Education to activate the role of monitoring, follow-up, evaluation, and continuous assessment systems for artificial intelligence programs, technologies, platforms, and applications in schools.
- Directing policymakers to design curricula that give greater attention to artificial intelligence and its concepts.

Strengthening partnerships with civil society organizations and universities.

Creating an effective digital culture related to artificial intelligence.

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