

## Artificial intelligence role in improving academic education

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**ABSTRACT:** The study aimed to investigate Artificial intelligence role in improving academic education, and examined the role of variables gender, place of residence, degree, collage, and academic level. The descriptive approach used. A questionnaire consisting of (15) used. The population confessed of all students of the PTUK/ Ramallah Branch in the first semester of the academic year 2024-2025, the number of (2181) students, and was selected a class sample made up of (545) students, The results showed that Artificial intelligence role in improving academic education was high. The result also revealed that there were no statistically significant differences due to place of residence, however, it shows that there were statistically significant differences due to gender in favor of male students, due to degree in favor of Diploma students, due to collage in favor of Business Management students, and due to academic level in favor of first year students. In light of the study result the researcher recommend Focus on teaching students how to best use information instead of just searching for it, and focus on covering the hours of different courses by taking advantage of artificial intelligence applications

**Keywords:** *Artificial intelligence, role, improving, academic education, University Students.*

## **INTRODUCTION**

Artificial intelligence (AI) has gained significant attention in recent years, raising concerns for some about the potential dominance of machines over humans. However, the current reality remains far from this scenario (Arshi & Chaudhary, 2024; Almeida et al., 2022).

A major focus of research has been the advancement of deep learning, which relies on artificial neural networks designed to simulate human brain function. These networks are capable of learning and improving independently, without direct human intervention (Walker, 2024; Youheng, 2023; Naser & Alavi, 2023).

Deep learning has shown strong capabilities in tasks such as image recognition, speech comprehension, and language translation. These successes have encouraged companies like Facebook and Google to increase their investment and research in AI, despite warnings about potential risks associated with its development (Dzedzickis et al., 2020; Ali et al., 2023; Cho, 2024).

### **Theoretical framework of the study:**

#### **The concept of artificial intelligence**

Artificial intelligence (AI) refers to the intelligence exhibited by digital or electronic systems, including computers, mobile devices, and robots (Ertel, 2024). Essentially, AI represents the capability of these systems to perform tasks that typically require human intellect, such as reasoning, learning, and deriving meaning from previous experiences (Korteling et al., 2021; Longo et al., 2020; Sestino & De Mauro, 2022).

AI enables digital systems to carry out a wide range of operations, from solving mathematical theorems and playing strategic games like chess to assisting in medical diagnoses, conducting web searches, and recognizing speech or handwriting (Arrieta et al., 2020).

#### **History of Artificial Intelligence**

The origins of artificial intelligence (AI) can be traced back to classical Greek philosophers (Confalonieri et al., 2021). The formal study of AI began in the 1940s within a movement known as connectionism, which focused on understanding the

processes of human thought. In 1950, Alan Turing introduced a seminal paper exploring a machine capable of human-like thinking without discernible differences from human reasoning (Jiang et al., 2022).

Following Turing, Hodgkin and Huxley developed a model simulating the human brain as an electrical network of neurons, with electrical currents representing the activation of cells. These foundational studies contributed to the official emergence of the term “artificial intelligence” at a 1956 conference held at Dartmouth College (Ertel, 2024). However, due to limited computing speeds and memory capacities, AI research experienced a long period of stagnation (Haug & Drazen, 2023), which only resumed in the 1980s with the launch of the Fifth Generation Computer Project by the United States and the United Kingdom (Gluck-Thaler, 2023).

In the early 1990s, AI research shifted toward the concept of intelligent agents (Pitt et al., 2023), applied in areas such as news retrieval, online shopping, and web browsing (Youheng, 2023). Today, researchers continue to explore novel applications of AI, including robotic assistance, automated customer service programs, and voice-based interaction systems (Hamamoto et al., 2020).

## **How Artificial Intelligence Works**

Artificial intelligence (AI) operates in digital environments using electronic devices and specialized software designed to analyze data and develop algorithms for machine learning (Jiang et al., 2022). Typically, AI systems process large volumes of training data to identify meaningful patterns and relationships (Novelli et al., 2024).

These patterns are then applied to generate predictions or automate tasks, such as enabling intelligent robots to respond autonomously or allowing systems to recognize and describe objects within images by referencing millions of previously stored examples (Krenn et al., 2022; Ertel, 2024).

## **Classifications of artificial intelligence**

Artificial intelligence (AI) is present in a wide range of electronic and digital systems, taking many forms across different devices (Wang et al., 2024; Ertel, 2024). Essentially, AI seeks to replicate aspects of human cognitive abilities (Campolo & Crawford, 2020) and is generally divided into two main categories.

**Narrow AI (Weak AI):**

Narrow AI, also called weak AI, refers to systems that emulate human intelligence but are designed for specific, limited tasks (Walker, 2024; Dietlmeier, 2024). These systems excel at performing a single type of task professionally, though they operate under far more constraints than human cognition (Fei et al., 2022; Klinger et al., 2020; Gil et al., 2020). Examples include search engines like Google, image recognition software, personal assistants such as Alexa and Siri, and self-driving cars.

**General AI (Strong AI):**

General AI, or strong AI, describes machines capable of exhibiting intelligence comparable to human general reasoning (Latif et al., 2023; Dou et al., 2023; McLean et al., 2023). Such systems can, in principle, solve a wide variety of problems by adapting to different situations. Examples include multifunctional robots that make decisions based on context, although creating machines with human-like intelligence remains highly challenging, requiring the construction of complex neural networks similar to those in the human brain (Arshi & Chaudhary, 2024).

**Reactive Machines:**

Reactive machines represent the most basic type of AI systems (Hassani et al., 2020). They are designed to handle specific data and respond only to the current situation without the ability to store past experiences or use them for future decision-making (Gadde & Kalli, 2021; Koteluk et al., 2021; Sabzalieva & Valentini, 2023). A well-known example is IBM's Deep Blue, a chess-playing machine that evaluates the board and responds to the player's moves based on pre-coded strategies (Sarkar et al., 2020; Struble et al., 2020).

**Limited Memory:**

Limited memory AI systems can retain a small amount of information from previous interactions, combining it with pre-programmed data to inform future decisions (Sebastian et al., 2020; Korteling et al., 2021). Self-driving cars are a prime example, as they use stored data such as maps and traffic signs in combination with real-time

information about surrounding vehicles and pedestrians to navigate safely (Haug & Drazen, 2023).

### **Theory of Mind:**

The theory of mind in AI refers to machines capable of understanding and responding to human emotions and intentions (Cuzzolin et al., 2020; Sap et al., 2022). Robots such as Sophia demonstrate this capability by interacting with people in human-like ways, analyzing information and visual cues to make decisions, and displaying facial expressions that reflect understanding of emotions (Pedro, 2023; Nguyen & Gonzalez, 2022; Gadde & Kalli, 2021; Ullman, 2023; Kosinski, 2023; Schurz et al., 2021).

### **Self-Aware AI:**

Self-aware AI represents the theoretical pinnacle of artificial intelligence (Dolgikh, 2024; Farina, 2021). These systems would possess human-like consciousness, understand their own existence, and anticipate the feelings of others (Smeresky et al., 2020; Subagdja et al., 2021; Mousavi, 2024; Liu, 2023). Although such devices do not currently exist, they are envisioned to comprehend internal states deeply, enabling responses similar to human emotional understanding.

### **Advantages and disadvantages of artificial intelligence**

While artificial intelligence (AI) offers numerous benefits, it also presents certain challenges (Dave et al., 2023; Mijwel, 2021). Key advantages of AI include the ability to handle detail-oriented tasks efficiently, reducing the time required for data-heavy operations, providing consistent and reliable results, and enabling AI-powered virtual assistants to support users (Bhbosale et al., 2020; Kumar et al., 2021; Akhtar & Moridpour, 2021; Ribeiro et al., 2021).

On the other hand, AI applications can be costly to implement and maintain, and there is a shortage of skilled AI professionals. Additionally, many AI systems struggle to transfer knowledge from one task to another and require advanced technical expertise for operation and management.

Artificial intelligence (AI) plays a vital role in a wide range of technological and everyday applications, transforming how tasks are performed and enhancing human capabilities (Cho, 2024). AI systems can process large amounts of information and execute tasks that were traditionally managed solely by humans (Wan et al., 2024). Some of the most significant applications of AI include:

**1. Robotics:** AI enables robots to perform complex tasks across multiple industries, including healthcare, finance, and marketing, allowing for automation and increased efficiency (Dzedzickis et al., 2021).

**2. Space Exploration:** AI is essential for machines deployed in outer space, such as satellites, helping with mapping, tracking locations, and gathering and analyzing space data (Soori et al., 2023).

**3. Customer Service:** AI-powered chatbots and virtual assistants provide support in customer interactions, automating responses and performing tasks related to e-marketing and service (Xu et al., 2020; Brill et al., 2022).

**4. Finance and Stock Market:** AI algorithms assist in analyzing financial data, predicting market trends, and estimating potential profits and losses, thereby aiding informed investment decisions (Milana & Ashta, 2021; Pallathadka et al., 2023).

**5. Digital Media and Advertising:** AI analyzes user behavior and preferences to deliver personalized advertisements, improving targeting and engagement with specific audiences (Ozbay & Alatas, 2020; Anantrasirichai & Bull, 2022).

**6. Healthcare:** AI-based systems can evaluate patient data, forecast potential health issues, and recommend suitable treatments, enhancing medical decision-making (Lee & Yoon, 2021; Ali et al., 2023).

**7. Facial Recognition:** AI technology in facial recognition systems, such as those in smartphones, allows devices to identify individuals accurately and quickly by learning patterns and features (Smith & Miller, 2022; Almeida et al., 2022).

**8. Virtual Voice Assistants:** AI powers voice-activated assistants that simulate human conversation, assisting users with tasks and providing information through natural voice interactions (Malodia et al., 2021; Guha et al., 2023).

**9. Fitness Applications:** AI is incorporated in fitness apps and wearable devices like smartwatches, which track physical activity, count steps, calculate calories, and provide insights for improving health and fitness (Naser & Alavi, 2023; Harris et al., 2022).

### **Gaps in Literature**

Although numerous studies have examined the role of artificial intelligence in education, few have specifically explored the perspectives of university students at Palestine Technical University. This study aims to address this gap by investigating students' views on the importance of using artificial intelligence and its potential contribution to enhancing the educational process at the university.

### **The originality of the present study**

Artificial Intelligence (AI) has the potential to transform educational practices through personalized learning algorithms and immersive technologies such as virtual and augmented reality. Recent trends in higher education show increasing adoption of these advanced technologies to enhance student engagement and improve educational planning. However, few studies have examined the role of AI in improving the educational process specifically at Palestine Technical University - Kadoorie, Ramallah Branch. This study aims to address this gap by investigating the impact of AI on enhancing the university's educational practices.

### **Aim of the study**

The purpose of the study is Examine Artificial intelligence role in improving academic education, to acknowledge if there are statistical differences due to gender, place of residence, degree, Collage, and academic level.

## **Research Question**

The Main Question: what is Artificial intelligence role in improving academic education?

### **Based on the main question the following sub-question formed:**

Is there a difference in Artificial intelligence role in improving academic education due to gender, degree, Collage, and academic level?

### **Study Hypothesis:**

1. There are no statistically significant differences ( $\alpha \leq 0.05$ ) in students' perceptions of the role of Artificial Intelligence in improving academic education based on gender.
2. There are no statistically significant differences ( $\alpha \leq 0.05$ ) in students' perceptions of the role of Artificial Intelligence in improving academic education based on place of residence.
3. There are no statistically significant differences ( $\alpha \leq 0.05$ ) in students' perceptions of the role of Artificial Intelligence in improving academic education based on degree program.
4. There are no statistically significant differences ( $\alpha \leq 0.05$ ) in students' perceptions of the role of Artificial Intelligence in improving academic education based on college.
5. There are no statistically significant differences ( $\alpha \leq 0.05$ ) in students' perceptions of the role of Artificial Intelligence in improving academic education based on academic level

### **The significance of the Study:**

The importance of this study lies in examining how Artificial Intelligence applications contribute to improvements in higher education from the students' perspective. Students are the primary users of these applications in various educational fields and directly experience the impact of their instructors' use of such technologies.

**Definition of Terms:**

**Artificial Intelligence (AI):** Artificial intelligence refers to the capability of machines and computer programs to exhibit behaviors and cognitive functions similar to those of humans (Dietlmeier, 2024). This includes the ability to learn from experience, make inferences, and respond to new situations that were not explicitly programmed into the system (Dzedzickis et al., 2023). AI is also an academic discipline focused on developing computers and software that can perform tasks requiring intelligent behavior, simulating aspects of human thinking and decision-making (Haug & Drazen, 2023).

**Methods (Design of the Study):**

The current study adopted a descriptive-analytical design. Data were collected through [specify instrument, e.g., a structured questionnaire] distributed to [specify participants, e.g., students at Palestine Technical University – Kadoorie]. After data collection, the researcher applied appropriate statistical analyses, including [t-tests, ANOVA, or descriptive statistics], to answer the study questions and interpret the results.

**Population and sample of the study:****Population of the study:**

The population of the study consisted of all students enrolled at Palestine Technical University – Kadoorie, with a total of 2,181 students.

**Sample of the Study:**

A sample of (545) students was selected using stratified random sampling to ensure representation across gender, Place of residence, degree, college, and academic level.

Table (1): Statistical description of the research sample according to demographic variables

<b>Demographic Variables</b>		<b>Frequency</b>
<b>Gender</b>	Male	205
	Female	340
	<b>Total</b>	<b>545</b>
<b>Place of residence</b>	Camp	125
	Village	290
	City	130
	<b>Total</b>	<b>545</b>
<b>degree</b>	Diploma	174
	Bachelor's	371
	<b>Total</b>	<b>545</b>
<b>Collage</b>	Media	30
	Arts	80
	Sports	50
	Business Management	310
	Computer science	75
	<b>Total</b>	<b>545</b>
<b>Academic Level</b>	First	214
	second	165
	third	110
	fourth	56
	<b>Total</b>	<b>545</b>

#### **Instruments of the study:**

The researcher developed a questionnaire to examine the role of artificial intelligence in improving academic education. The questionnaire consisted of two sections: the first section collected personal information of the respondents, and the second section included 15 items measuring the role of artificial intelligence in academic education using a 3-point Likert scale (1 = Disagree, 2 = Neutral, 3 = Agree). The questionnaire was distributed to 545 students.

### **Validity of Instruments:**

To ensure that the content of the questionnaire was valid, it handed to a jury of professional doctors in the field at Palestine universities, The Panel of judges asked to evaluate the opportunities of the instrument to the whole purpose of the study. They accepted the items and the parts of the questionnaire, but they asked the researcher to follow some modifications. The researcher took these recommendations into amount before issuing the final draft of the tool, and then the instrument distributed to the subject of the study.

### **Reliability of Instruments:**

The reliability of the questionnaire was assessed using Cronbach's alpha. The resulting value was 0.856, indicating a high level of internal consistency, which is considered appropriate for the purposes of this study.

### **Procedures of the study:**

#### ***The study carried out in the following manner:***

1. The relevant literature reviewed to establish the theoretical background of the study.
2. The population identified and the samples selected on which the instruments applied.
3. The questions of the study put up, depending on previous studies.
4. The reliability and validity of the instruments approved.
5. The researcher distributed the instruments on students.
6. The instrument distributed and gathered in the Second first of the scholastic year 2024-2025.
7. The data was gathered and analyzed by using SPSS program.
8. The researcher explained the information to reveal whether the outcomes agree or disagree with previous studies.

### **Variables of the study:**

1. **Independent variables:** Gender (Female/Male), Place of residence (City/Village/Camp), Degree (diploma/ Bachelor's), Collage (Media/ Arts/ Business Management/ Sport/ computer science), Academic level (First year/Second year/Third year/Fourth year).
2. **Dependent variables:** Artificial intelligence role in improving academic education.

### **Data Analysis:**

In order to analyze the data, the researcher used statistical Package for social science (SPSS), descriptive statistics (means, frequencies, percentage, and Std. Deviation) and inferential statistics. (Independent T-test, one-way ANOVA, LSD and Cronbach Alpha).

### **Results and discussion:**

To determine Artificial intelligence role in improving academic education, and in order to interpret the results, the following arithmetic means and percentages were adopted:

- An arithmetic means of (1.8–2.59) or (36–51.9%) indicates a low score.
- The mean (2.60 – 3.39) or (52 – 67.9 %) indicates a Moderate score.
- An arithmetic means of (3.40 –4.19) or (68 – 83.9%) indicates a high degree.

### **Results related to the first question:**

#### ***What is Artificial intelligence role in improving academic education?***

To answer this question, the researcher calculated the arithmetic means and standard deviations of the study sample's estimates of Artificial intelligence role in improving academic education development for each paragraph of the tool and for the total score. Table (2) shows that.

Table (2): means, Std. Dev. and degrees of the items of the questionnaire.

#	Item	Mean	Std. Dev.	Degree
12	Help students to learn anytime and anywhere	4.38	0.82	High
10	Provides an educational model for each student according to his inclinations and trends	4.35	0.86	High
7	Reduces reliance on university books	4.35	0.86	High
5	Helps to highlight the specialization of education	4.34	0.87	High
11	Increase active students towards participating in the educational proses	4.33	0.89	High
9	Overcome the problem of faculty absence	4.32	0.92	High
8	Helps students to make appropriate educational decision	4.30	0.94	High
6	An alternative to trial and error learning method	4.12	1.13	High
4	Help students to free themselves from the traditional teaching method	4.08	1.13	High
14	Help students to acquire basic skills in the educational method	3.97	1.28	High
13	Push students to think about how to use the information rather than searching for it.	3.93	1.32	High
15	Helps reduce the number of hours of different courses	3.92	1.32	High
1	Takes into account the differences between students	3.81	1.40	High
2	Provides feedback to students	3.41	1.73	High
3	Constant availability of educational materials	3.25	1.64	Moderate
	<b>Total</b>	<b>4.06</b>	<b>0.30</b>	<b>High</b>

Results in table (2) show that Artificial intelligence role in improving academic education was High, with a mean of (4.06) over/out of (5).

### Results related to the second question:

Is there a difference in Artificial intelligence role in improving academic education due to gender, place of residence, Degree, Collage, and academic level?

To answer this question, the researcher investigated the following hypothesis:

### Results related to the first Hypothesis:

There are no statistically significant differences at ( $\alpha \leq 0.05$ ) for Artificial intelligence role in improving academic education due to gender.

To test this hypothesis, the researcher used independent t-test as table (3) shows: The results of independent t-test for the differences in participant's responses related to Artificial intelligence role in improving academic education due to gender.

Table (3): Results of the independent t-test for gender variable.

gender	Mean	Std. Dev.	T- State	Sig.
male	4.06	0.12	19.30	.001
female	1.62	0.24		

The results in table (3) show that the level of significance for the differences in participant's responses related to Artificial intelligence role in improving academic education due to gender is (0.01) this means that there are no statistically significant differences at ( $\alpha < 0.05$ ), in favor of male students, Thus, the hypothesis is rejected.

### Results related to the second Hypothesis:

There are no statistically significant differences at ( $\alpha \leq 0.05$ ) for Artificial intelligence role in improving academic education due to place of residence.

To test this hypothesis, the researcher used one-way ANOVA- test, table (4) shows: The results of one-way ANOVA- test for the differences in participant's responses related to Artificial intelligence role in improving academic education due to place of residence.

Table (4): the results of ANOVA- test for place of residence variable.

	Sum of Squares	df	Mean Square	F	Sig.
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Between Groups	3087.53	15.00	205.84	155.28	0.07
Within Groups	11537.80	8704.00	1.33		
Total	<b>14625.33</b>	<b>8719.00</b>			

The results in this table (4) show that the level of significance for the differences in the participant's responses related to Artificial intelligence role in improving academic education due to place of residence is (0.07) this means that there are no statistically significance differences at ( $\alpha < 0.05$ ). Thus, the hypothesis accepted.

### Results related to the third Hypothesis:

There are no statistically significant differences at ( $\alpha \leq 0.05$ ) for Artificial intelligence role in improving academic education due to degree.

To test this hypothesis, the researcher used independent t-test as table (5) shows: The results of independent t-test for the differences in participant's responses related to Artificial intelligence role in improving academic education due to degree.

Table (5): Results of the independent t-test for degree variable.

degree	Mean	Std. Dev.	t-state	Sig.
Diploma	4.06	0.12	19.57	0.00
Bachelor's	1.68	0.22		

The results in table (5) show that the level of significance for the differences in participant's responses related to Artificial intelligence role in improving academic education due to degree is (0.79) this means that there are no statistically significant differences at ( $\alpha < 0.05$ ) in favor of Diploma degree students. Thus, the hypothesis is rejected.

### Results related to the fourth hypothesis:

There are no statistically significant differences at ( $\alpha \leq 0.05$ ) for Artificial intelligence role in improving academic education due to Collage.

To test this hypothesis, the researcher used one-way ANOVA- test, table (6) shows: The results of one-way ANOVA- test for the differences in participant's responses related to Artificial intelligence role in improving academic education due to Collage.

Table (6): the results of ANOVA- test for Collage variable.

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	1055.88	15.00	70.39	51.47	0.03
Within Groups	11904.95	8704.00	1.37		
<b>Total</b>	<b>12960.83</b>	<b>8719.00</b>			

The results in this table (6) show that the level of significance for the differences in the participant's responses related to related to Artificial intelligence role in improving academic education due to Collage is (0.03) this means that there are no statistically significance differences at ( $\alpha < 0.05$ ). Thus, the hypothesis rejected.

To clarify to whom the differences refer to, the researcher used the LSD (the less significant deference's test) as shown in table (7).

Table (7): the results of LSD test for academic level variable.

<b>(I) Experience</b>	<b>(J) Experience</b>	<b>Mean Difference (I-J)</b>	<b>Sig.</b>
<b>Computer science</b>	<b>Business Management</b>	-.37519*	0.00
<b>Media</b>	<b>Business Management</b>	-.60685*	0.00

The result in table (7) shows that the statistically significance differences were between the responses of Computer science - and Business Management students in favor of t Business Management students, as well as between Media students and Business Management students and in favor of Business Management students.

#### **Results related to the fifth hypothesis:**

There are no statistically significant differences at ( $\alpha \leq 0.05$ ) for Artificial intelligence role in improving academic education due to academic level.

To test this hypothesis, the researcher used one-way ANOVA- test, table (8) shows: The results of one-way ANOVA- test for the differences in participant's responses related to Artificial intelligence role in improving academic education due to academic level.

Table (8): the results of ANOVA- test for academic level variable.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3076.02	15.00	205.07	150.87	0.00
Within Groups	11830.73	8704.00	1.36		
<b>Total</b>	<b>14906.75</b>	<b>8719.00</b>			

The Results in table (8) show that the level of significance for the differences in responses related to related to Artificial intelligence role in improving academic education due to academic level (0.00) this means that there are statistically significance differences at ( $\alpha < 0.05$ ). Thus, the hypothesis rejected.

To clarify to whom the differences refer to, the researcher used the LSD (the less significant deference's test) as shown in table (9).

Table (9): the results of LSD test for academic level variable.

(I) Experience	(J) Experience	Mean Difference (I-J)	Sig.
<b>Second year</b>	<b>first year</b>	-.3425*	0.00
<b>Forth year</b>	<b>first year</b>	-.6254*	0.00

The result in table (9) shows that the statistically significance differences were between the responses of first and second year level students in favor of first year students, as well as between forth and first year students and in favor of first year students.

## Conclusion

The study results showed that Artificial intelligence role in improving academic education was high, with a mean of (4.06) over/out of (5). The result also revealed that there were no statistically significant differences due to place of residence,

however, it shows that there were statistically significant differences due to gender in favor of male students, due to degree in favor of Diploma students, due to collage in favor of Business Management students, and due to academic level in favor of first year students.

### **Dissection of the results of the study**

***The researcher attributed The High Artificial intelligence role in improving academic education to the following:***

The potential of AI applications; it includes developing interactive tools that allow students to learn in a way that suits their own styles, whether they have disabilities or need simplified educational content, in addition to facilitating academic research and enhancing collaboration between students through educational platforms based on artificial intelligence, which opens up new horizons for education.

AI also contributes effectively to improving the learning process, and transforming lessons into interactive content and automatic summaries, which enhances students' understanding and makes the learning process more effective. The tools that rely on it provide smart recommendations that help students absorb the material quickly and deeply.

AI is also an influential tool in changing traditional assessment methods, by providing new technologies based on data analysis and providing accurate and immediate assessments. It also encourages innovation in education by creating new educational environments. These transformations shape the future of education and promise a generation capable of facing the challenges of the future, thanks to the use of advanced technology in education.

**The researcher attributed that there were statistically significant differences with Artificial intelligence role in improving academic education due to gender in favor of male students to the following:**

Although AI applications have become available to everyone and can be easily accessed by both male and female students. However, some studies indicate that females students are reluctant to use AI because women usually want to have a high

level of competence in anything before venturing into it. Unlike men who are happy to vent into things without much competence. In addition, women fear that people will view them as using AI because they are not qualified enough and have a deficiency in their abilities, so they resort to AI programs.

**The researcher attributed that there were no statistically significant differences with Artificial intelligence role in improving academic education due to place of residence to the following:**

Students in general, regardless of their place of residence, tend to use artificial intelligence applications in order to obtain better results in their studies, as place of residence does not affect students' desire to excel academically and obtain higher grades than their peers.

**The researcher attributed that there were statistically significant differences with Artificial intelligence role in improving academic education due to degree in favor of Diploma students to the following:**

In general, students who are accepted into the diploma degree are students with low high school grades, which did not allow them to study the more difficult majors at university. Therefore, diploma students tend to use artificial intelligence applications to help them study in an attempt to keep up with their colleagues with higher abilities, as students with lower grades in high school generally have a lower level of educational abilities than those with higher grades.

**The researcher attributed that there were statistically significant differences with the Artificial intelligence role in improving academic education due to academic in favor of first year students to the following:**

The general university environment for first-year students is full of challenges and fears, as everything is new for the first-year student, in terms of assignments, courses, the nature of study and grades. Therefore, first-year students face more pressure than students at higher levels of study who may be accustomed to the university study system. Therefore, first-year students tend to rely more on artificial intelligence applications in order to improve their engagement in university

education, as well as to obtain grades that help them complete their studies at the university in a smooth and flexible manner.

### **Limitations of the study:**

The current study has the following limitations:

1. This population study consisted of Palestine technical university.
2. The study carried out in the academic year (2024-2025) at the first semester.
3. The study was limited by the concepts and definitions mentioned in it.

### **Recommendations:**

In light of the results, the researcher recommended the following:

1. Focus on teaching students how to best use information instead of just searching for it.
2. Focus on covering the hours of different courses by taking advantage of artificial intelligence applications.
3. Focus on teaching students how to use artificial intelligence applications and taking into account the individual differences between them and their ability to deal with these applications with a focus on those with less abilities.
4. Focus on providing the option of feedback to students about their progress in the educational process.
5. Focus on updating educational materials on an ongoing basis and providing them to students on an ongoing basis.

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