

**How to Cite:**

Alshishani, A. M. K. (2022). Using technological creations in the teaching process and their impact on the development of faculty skills in Jordanian universities. *International Journal of Health Sciences*, 6(S4), 11138–11153.  
<https://doi.org/10.53730/ijhs.v6nS4.10959>

# Using technological creations in the teaching process and their impact on the development of faculty skills in Jordanian universities

**Ayat Mohammad Khair Alshishani**

Information and Communications Technology - Jordan

Corresponding author email: [Ayatalskishani@gmail.com](mailto:Ayatalskishani@gmail.com)

**Abstract**---The study aims to demonstrate the impact of demographic variables on the efficiency of technological advancements in developing faculty members' Competencies at Jordanian universities. The descriptive approach was used through a questionnaire with 40 items distributed among 3 areas: the availability of technological innovations in classrooms, the use of technological innovations in the teaching process, and faculty members' competence in using technological innovations to measure effectiveness and its main areas from faculty members' perspective. The results showed that the effectiveness of technological innovations in developing faculty members' competencies at Jordanian universities was medium, with the areas of the questionnaire coming in the following order: faculty members' competence in dealing with technological innovations came first with a high average range, followed by the use of technological innovations in the teaching process with a medium average range.

**Keywords**---competencies, effectiveness, technological creations.

## Introduction

The world has undergone a significant information, scientific, and technological revolution in recent decades, which has driven man to expand his experiences and skills in all aspects. This advancement has played and continues to play an important role in the advancement and prosperity of nations. The educational system was not immune to progress, and the educational process became a demand for research into new educational techniques and models capable of meeting problems and keeping up with the updates forced by the knowledge revolution. As a result, it was inevitable for technological breakthroughs to arise, resulting in a qualitative shift in the desired educational methods, concepts, and aims.

And, because universities are one of the bodies responsible for a country's progress and renaissance, they are the indispensable tributary to bringing about scientific development in societies through the educational services they provide, and as such, they must be able to fulfil their societal obligations. Preparing cadres capable of meeting the demands of a continually changing and developing labour market, on the one hand, and graduating generations capable of leading countries to higher qualities, on the other (Badrakhan et al., 2020).

In this regard, Al-Omran and Al-Salal (2009) stressed that the educational system should move its focus away from the cognitive content of curricula and toward the processes of learning, as well as away from the approach of distinct study courses and toward the integrative approach to knowledge. From knowledge transfer and creation This shift in educational thinking necessitates the incorporation of technological developments into the teaching process.

Using technological innovations in education is an integrative process that addresses all aspects of the educational programme, including objectives, content, evaluation, and information delivery methods, in order to create an interactive learning environment between the learner and the educational material (Seven, 2011). According to Badia and colleagues (Badia et al., 2014), employing technology advancements in the educational process generates novel solutions to educational difficulties, raises the quality of its products, and motivates learners to be creative and innovative. Learning, educational activity development, assessment methodologies, and teaching-learning practices

Technological breakthroughs can be used at multiple levels. Each level has its own set of circumstances in which employment occurs, such as employing a new educational programme to teach a specific lesson or course, which is planned and implemented at the level of a faculty member or educational institution. The application is subject to ministerial regulations and regulations, and technological innovations, such as e-school and distance education, can be used at the comprehensive national level and in national education strategies, and then planning will be at the ministry level and national strategies (Al-Haroun, 2020).

The significance of using technological innovations in the educational process can be seen in its contribution to overcoming the problem of overcrowded classrooms and addressing the massive increase in human knowledge in contrast to the low level of competencies of some faculty members; additionally, technological innovations can support education by supporting and strengthening curricula. Studying, making it useful and purposeful, boosting the effectiveness of education by providing more than one method and source for it, promoting knowledge integration and diversity of its sources, and developing continuous and adaptable self-learning for learners (Al-Dariwish and Abdel-Alim, 2017).

### **Problem of the study**

The current era is referred to as the informatics era, and recent years have seen a massive scientific boom in the field of educational technology at the level of concepts and applications, including what is related to the field of education, due to its positive ramifications on the educational process as a whole. According to

the Baborikar (2016) study, the use of technological advances in the educational process contributes to the faculty member's professional competence and provides him with skills to assist him pick the appropriate decision for the educational environment. According to the Olayan research (2019), the usage of the digital revolution gave new horizons for faculty members and students working together to collect information accurately and in less time, which would increase the university's reputation.

Many practises, policies, and habits have changed as a result of the Corona pandemic. Education was one of the areas most affected by the change, as countries were obliged to close their educational institutions because they are among the most crowded places and thus among the most sensitive to viral propagation, so it was required. The quest for solutions to complete the educational process, as well as the shift from face-to-face education to distance education via e-learning platforms, increased the need for technological innovations. As a result, the responsibilities of faculty members and students have changed, as have the type of curricula and their presentation techniques; it is obvious that this employment will be reflected in faculty members' professional competencies.

As a result, the researcher devised the following study, which investigated the usefulness of technological innovations in enhancing teacher competencies in Jordanian universities by answering the following two questions:

1. What is the effectiveness of technological innovations in developing the competencies of faculty members in Jordanian universities?
2. Are there statistically significant differences at the significance level ( $\alpha = 0.05$ ) in the responses of the study sample members about the effectiveness of technological innovations in developing the competencies of faculty members in Jordanian universities due to the variables (gender, experience, university, College, academic qualification)?

### **Study objectives**

The current study sought to accomplish the following goals: - determining the usefulness of technological advances in increasing the competencies of faculty members in Jordanian universities from the perspective of the study sample members.

Identifying statistically significant differences in research sample members' replies about the usefulness of technological innovations in building faculty competencies in Jordanian universities, which can be attributable to the effect of factors (gender, experience, university, College, and academic qualification).

### **The significance of studying**

The current study received theoretical value from the importance of using technological advancements in the educational process, as well as the importance of professional skills of faculty members in universities in enhancing the process

and outcomes of the educational process. The researcher hopes that the new study will add to the theoretical literature on its variables.

The current study achieved practical significance through the development of its tool, its results, and the discussion of its impacts. The researcher hopes that each of the following will benefit from this:

- Planners, educators, and those in charge of the educational process, by boosting the activation of technology advancements in the educational process.
- University faculty members, through increasing their enthusiasm in using technology innovations in the teaching process.
- Interested researchers by doing similar investigations on new societies.

### **Study Limits**

The study included the following limits:

- Objective limit: the extent to which technological innovations are effective in developing the competencies of faculty members in Jordanian universities.

The human limit: the study was limited to faculty members in Jordanian universities.

Time limit: The study was conducted during the second semester of the year 2021-2022.

- Spatial boundary: Jordanian public and private universities.

### **Determinants of study**

The following limitations determined the current study:

- The validity and reliability of the study tool.
- The comprehensiveness of the tool for the effectiveness of technological innovations.
- The comprehensiveness of the study population and sample.
- The accuracy and objectivity of the responses of the study sample.

### **Literature review**

Abdel-Maksoud (Abdel-Maksoud, 2017) conducted a study to identify the extent to which faculty members use educational technology at Assiut University in Egypt. The study used the descriptive survey method, and the questionnaire was a tool for the study, which was distributed to (257) faculty members. The results showed that the importance of using technological innovations among faculty members was high and that some faculty members lacked the knowledge and skills necessary to apply technological innovations in education.

Al-Qahtani's study (2018) aimed to identify the special education teacher's competencies in Using educational technology innovations through social media. The study used the descriptive analytical method, and its sample consisted of (114) special education teachers in Saudi Arabia, they were chosen by the available method, and the questionnaire was used as a study tool. The results

showed that there were no statistically significant differences due to the effect of the gender variable and the presence of statistically significant differences due to the effect of the experience variable in favor of those with less experience.

Ira, Gecer, & Colak (2019) conducted a study to identify secondary school principals' views in Using smartphone learning in Izmit County, Kocaeli City, Turkey. The study followed the qualitative research method through the interview tool, which was applied to an intentional sample consisting of (15) managers. The results of the study showed that secondary school principals use smartphones in their educational practices (in transmitting audio-visual data used during training sessions to the smart board), and the results showed that principals perceive the use of smartphones as making positive changes in the educational process.

The study of Al-Azmi and Hamadaneh (2019) aimed to identify the degree to which Islamic education teachers use the skills of cognitive journeys strategy for the second stage in the State of Kuwait. And the impact of the variables of gender, academic qualification, and years of experience in that, and to achieve the objectives of the study, the researcher followed the descriptive approach and the questionnaire as a tool for data collection as it was applied to a random sample consisting of (130) teachers. The results showed that the degree of use by Islamic education teachers of the skills of cognitive trips strategy for the second stage in the State of Kuwait from their point of view was moderate, and there were no statistically significant differences due to the variables of sex and educational qualification, and the presence of statistically significant differences due to the variable of experience and in favor of the category "less than five years."

Abu Raya and Abdel Aziz (2020) conducted a study to reveal the trends of newly graduated science teachers at the Faculty of Education at the Egyptian University of Tanta towards integrating technological innovations in science teaching. The study used the case study method by following up and studying a sample of (15) male and female students through standardized rating scales. The results showed that the level of attitudes of newly graduated science teachers at the Faculty of Education at the Egyptian University of Tanta towards integrating technological innovations in science teaching was high.

The study of Badrakhan et al. (2020) aimed to know the degree of impact of the use of modern educational technologies on the quality and development of education at Al-Ahliyya Amman University in Jordan from the point of view of the members of the academic staff, Faculty member. The results showed the Internet came at the forefront of the technologies used in university education, then social networking sites, and the degree of impact of the use of modern technologies on the quality and development of university education was high, and there were no statistically significant differences between the responses of the study members due to the variables of gender, college, academic qualification, and the number of University working years.

Al-Shuaibi (2020) conducted a study to identify the training needs of faculty members at Umm Al-Qura University in Saudi Arabia in the field of educational technology. The study used the descriptive survey method, and the study sample consisted of (350) faculty members. Training needs in educational technology for

faculty members. The study results showed the presence of the Umm Al-Qura University faculty members for training in educational technology (computer skills, network applications, and data communication, preparing e-learning courses, managing e-learning content, and educational devices necessary for educational technology innovations). The results showed statistically significant differences due to the study variables (gender, specialization, academic qualification, and scientific experience).

The study of Al-Zahrani and Allam (2021) aimed to reveal the effect of using cognitive trips via the web in developing some computer skills among first-year secondary students in Al-Makhwah Governorate in Yemen. The study tools consisted of an achievement test to measure the cognitive aspect of the course and a note card to measure the skill aspects in the same course, and their validity and reliability were confirmed. The results showed that there were statistically significant differences between the average scores of the two groups in the post-measurement in the achievement test and the observation card in favor of the experimental group.

## **Methodology**

Following is a description of the study's method, population, and sample, the tool used, the indications of its validity and reliability, the identification of the study's variables and procedures, and the statistical treatments used to answer its questions.

## **Study Approach**

The descriptive approach was used to reveal the effectiveness of technological innovations in developing the competencies of faculty members in Jordanian universities. among faculty members in Jordanian universities, and to reveal the impact of their gender, universities, colleges, experience, and academic qualifications on the effectiveness of technological innovations in developing the competencies of faculty members in Jordanian universities and their axes.

## **Study population**

The study population consisted of (4269) faculty members in public and private universities covered by the study (government universities; From the academic year 2021/2022 AD according to human resources statistics in each university covered by the study in the light of the correspondences of the Middle East University with the Ministry of Higher Education and Scientific Research. The study individuals were selected by the cluster method, which has a size of (400) members of the teaching staff in the universities included in the study; Because the link to the questionnaire of the study tool produced using the Google Forms feature was distributed electronically to the university emails of all members of the study community obtained by the deanships of scientific research and computer centers in the universities covered by the study as shown in Table 1.

Table 1. Distribution of study population and sample according to gender, university, College, experience, and academic qualification

| Variable               | study population                     |            | study sample  |            |
|------------------------|--------------------------------------|------------|---------------|------------|
|                        | The Frequency                        | percentage | The Frequency | percentage |
| Gender                 |                                      |            |               |            |
| Male                   | Not mentioned in the community stats |            | 256           | 64.0       |
| Female                 |                                      |            | 144           | 36.0       |
| University             |                                      |            |               |            |
| Government             | 3395                                 | 79.5       | 261           | 65.3       |
| Private                | 874                                  | 20.5       | 139           | 34.8       |
| College                |                                      |            |               |            |
| Human                  | 2049                                 | 48.0       | 171           | 42.8       |
| Scientific             | 1488                                 | 34.9       | 179           | 44.8       |
| Health                 | 732                                  | 17.1       | 50            | 12.5       |
| Experience             |                                      |            |               |            |
| less than five years   | Not mentioned in the community stats |            | 123           | 30.8       |
| Between (5-10) years   |                                      |            | 114           | 28.5       |
| More than ten years    |                                      |            | 163           | 40.8       |
| Academic qualification |                                      |            |               |            |
| Professor              | 1291                                 | 30.2       | 113           | 28.2       |
| Associate professor    | 1352                                 | 31.7       | 83            | 20.8       |
| Assistant Professor    | 1456                                 | 34.1       | 93            | 23.3       |
| full-time lecturer     | 170                                  | 4.0        | 111           | 27.8       |

### **Content authenticity**

Faculty members confirmed the logical correctness of determining the effectiveness of technological advancements in increasing the capabilities of faculty members in Jordanian universities. By presenting it to a panel of fourteen arbitrators (Professors, Associate Professors, and Assistant Professors) with experience and knowledge in the subjects of (educational principles, educational technology, educational computer, curriculum and teaching, English language and translation, and educational administration).

### **The sincerity of the internal consistency**

A questionnaire on the efficiency of technological innovations in increasing the competencies of faculty members at Jordanian universities was administered to a pilot sample of (30) faculty members working in universities not included in the study sample. They are divided into 15 males and 15 females for the purpose of calculating the Corrected item-total Correlation coefficients for the relationship of the paragraphs to the questionnaire and its axes; and as indicators of the sincerity of their questionnaire items' internal consistency, as shown in Table 2. (Lord and Novick, 1968).

Table 2. The values of the corrected correlation coefficients for the relationship of paragraphs with the Using technological innovations in the teaching process and their impact on developing the competencies of faculty members in Jordanian universities

| Axes<br>Paragraph<br>No. | The text of the paragraphs of using technological innovations in the teaching process and their impact on developing the competencies of faculty members in Jordanian universities | Paragraph Correlation Coefficient |               |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------|
|                          |                                                                                                                                                                                    | Axis                              | Questionnaire |
| 1                        | Technological innovations are used to develop computerized lessons                                                                                                                 | 0.72*                             | 0.63*         |
| 2                        | Technological innovations are used in curricular activities, assignments, and solving exercises related to the lesson                                                              | 0.75*                             | 0.63*         |
| 3                        | Self-reliance in the use of technological innovations                                                                                                                              | 0.44*                             | 0.42*         |
| 4                        | Diversification of teaching methods through the use of modern technology                                                                                                           | 0.77*                             | 0.66*         |
| 5                        | The foundations of self-learning are employed in the use of technological innovations                                                                                              | 0.69*                             | 0.59*         |
| 6                        | The foundations of programmed learning are employed in the teaching process                                                                                                        | 0.72*                             | 0.61*         |
| 7                        | The foundations of the uniqueness of education are employed in the teaching process                                                                                                | 0.73*                             | 0.63*         |
| 8                        | The foundations of blended learning are used in teaching design                                                                                                                    | 0.72*                             | 0.61*         |
| 9                        | Technology is used in the assessment process of students                                                                                                                           | 0.72*                             | 0.59*         |
| 10                       | Technological innovations are used to build students' achievement tests                                                                                                            | 0.72*                             | 0.63*         |
| 11                       | Technological innovations are used in the teaching process                                                                                                                         | 0.80*                             | 0.68*         |
| 12                       | Computer programs are used to print lessons and make tables                                                                                                                        | 0.64*                             | 0.60*         |
| 13                       | Technological innovations are used to monitor student results                                                                                                                      | 0.65*                             | 0.60*         |
| 14                       | Technological innovations are used to create the educational situation                                                                                                             | 0.72*                             | 0.65*         |

\* Statistically significant ( $\alpha = 0.05$ ); because its calculated value is greater than its critical value of (0.34734) at (28) degrees of freedom.

Table 2 shows that the corrected correlation coefficients for the association of the paragraphs of the availability of technological advancements in classrooms axis varied between (0.68-0.80), and their questionnaire ranged between (0.68-0.80). (0.55-0.63). The corrected correlation coefficients for the relationship of the

paragraphs of the axis of Using technological advancements in the teaching process with its axis varied between (0.44-0.80), and its questionnaire ranged between (0.44-0.80). (0.42-0.68). And the corrected correlation coefficients for the axis of the faculty members' competency paragraphs in dealing with technological developments with their axis ranged between (0.61-0.81), and their questionnaire ranged between (0.50-0.67).

### **Study procedures**

to achieve the objectives of the study; The following steps were followed:

1. Determining the problem of the study and reviewing the educational literature and previous studies related to the subject of the study.
2. Determining the output of the study population included in the study and selecting the sample from the faculty members in Jordanian private and public universities.
3. Distributing the link of the questionnaire of the study tool produced using the Google Forms feature in its final form to the university emails of the targeted study members in coordination with the scientific research deanships and computer centers in the universities covered by the study.
4. Placing a cover sheet in the study tool's questionnaire link; It explains the purpose of the study to the study members and asks them to answer the paragraphs of the study tool as they see it, expressing their point of view and view in all honesty and objectivity, and informing them that their answers and answers will only be used for scientific research purposes.
5. Analyzing the responses of the study sample and collecting them in an excel file format, and then analyzing these data using the Social Package (SPSS) program.
6. Analyzing data using appropriate statistical methods, obtaining results, presenting, discussing, and interpreting the study results, using theoretical literature and previous studies, and making recommendations.

### **Results and Discussion**

By answering the following questions, the study aimed to reveal the availability of technological innovations in classrooms and their impact on developing the competencies of faculty members in Jordanian universities from their perspective, as well as the impact of demographic variables on their estimates. What, in their opinion, is the usefulness of technological advancements in strengthening the skills of faculty members in Jordanian universities? To answer the first study question, the arithmetic means and standard deviations of the effectiveness of technological innovations in developing faculty members' competencies in Jordanian universities, as well as their axes (availability of technological innovations in classrooms, use of technological innovations in the teaching process, and faculty members' competencies in dealing with technological innovations) were calculated from their point of view.

Table3. Using technological innovations in the teaching process and their impact on developing the competencies of faculty members in Jordanian universities and their axes from their point of view

| Sr.                 | Using technological innovations in the teaching process and their impact on developing the competencies of faculty members in Jordanian universities | Means     |                    |        | SD   |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------|--------|------|
|                     |                                                                                                                                                      | Its value | It's qualification | Range  |      |
| 1                   | Using technological innovations in the teaching process                                                                                              | 3.46      | 2                  | Medium | 0.73 |
| Total questionnaire |                                                                                                                                                      | 3.64      |                    | Medium | 0.61 |

It is noticed from Table 5 that the effectiveness of technological innovations in developing the competencies of faculty members in Jordanian universities from their point of view is within a medium range. The axes of the effectiveness of technological innovations in developing the competencies of faculty members in Jordanian universities from their point of view are in the following order: Medium range, then the availability of technological innovations in classrooms qualification third within a medium range. The axis's arithmetic means and standard deviations were calculated for the availability of technological innovations in the classrooms from their point of view, as shown in Table 4.

Table 4. Arithmetic means to the paragraphs of the axis of Using technological innovations in the teaching process from their point of view

| Paragraph No. | The text of paragraphs focuses on the use of technological innovations in the teaching process | Means     |                    |        | SD   |
|---------------|------------------------------------------------------------------------------------------------|-----------|--------------------|--------|------|
|               |                                                                                                | Its value | It's qualification | Range  |      |
| 13            | Technological innovations are used to monitor student results                                  | 3.81      | 1                  | High   | 0.99 |
| 12            | Computer programs are used to print lessons and make tables                                    | 3.65      | 2                  | Medium | 1.02 |
| 3             | Self-reliance in the use of technological innovations                                          | 3.63      | 3                  | Medium | 0.97 |
| 10            | Technological innovations are used to build students' achievement tests                        | 3.50      | 4                  | Medium | 0.97 |
| 8             | The foundations of blended learning are used in teaching design                                | 3.46      | 5                  | Medium | 0.98 |
| 14            | Technological innovations are used to create the educational situation                         | 3.44      | 6                  | Medium | 0.94 |
| 9             | Technology is used in the assessment process of                                                | 3.43      | 7                  | Medium | 1.02 |

|    |                                                                                                                      |      |    |        |      |
|----|----------------------------------------------------------------------------------------------------------------------|------|----|--------|------|
|    | students                                                                                                             |      |    |        |      |
| 4  | Diversification of teaching methods through the use of modern technology                                             | 3.42 | 8  | Medium | 0.92 |
| 11 | Technological innovations are used in the teaching process                                                           | 3.42 | 9  | Medium | 0.95 |
| 2  | Technological innovations are used in curricular activities, assignments and solving exercises related to the lesson | 3.40 | 10 | Medium | 1.00 |
| 5  | The foundations of self-learning are employed in the use of technological innovations                                | 3.38 | 11 | Medium | 0.94 |
| 1  | Technological innovations are used to develop computerized lessons                                                   | 3.36 | 12 | Medium | 1.02 |
| 6  | The foundations of programmed learning are employed in the teaching process                                          | 3.28 | 13 | Medium | 0.99 |
| 7  | The foundations of the uniqueness of education are employed in the teaching process                                  | 3.25 | 14 | Medium | 0.98 |

It is noticed from Table 8 that the paragraphs on the axis of availability of technological innovations in the classrooms came from their point of view within an average range of the paragraphs (with numbers: 3, 1, 5, 2, 6, 4) with arithmetic means that ranged between (3.44-3.01).

**The results of the impact of gender on the using technological innovations in the teaching process and their impact on developing the competencies of faculty members in Jordanian universities and their axes from their point of view**

The t-test of independent samples of the two arithmetic means of the effectiveness of technological innovations in developing the competencies of faculty members in Jordanian universities and their axes (the availability of technological innovations in the classrooms, the employment of technological innovations in the teaching process, and the competencies of faculty members in dealing with technological innovations) was used from the point of view of Considering them in light of the two standard deviations of each according to their gender as shown in table 5

Table5. The results of the (t) test of the two arithmetic mean of the using technological innovations in the teaching process and their impact on developing the competencies of faculty members in Jordanian universities and their axes from their point of view in light of their respective standard deviations according to the university

| Gender                                                               | Mean |      | SD               | t              | Degree of freedom |                     | Probability of error |                   |
|----------------------------------------------------------------------|------|------|------------------|----------------|-------------------|---------------------|----------------------|-------------------|
| The focus on Using technological innovations in the teaching process |      |      |                  |                |                   |                     |                      |                   |
| Male                                                                 | 3.40 |      | 0.77             | -2.28*         | 398               |                     | 0.02                 |                   |
| Female                                                               | 3.57 |      | 0.63             |                |                   |                     |                      |                   |
| Total questionnaire                                                  |      |      |                  |                |                   |                     |                      |                   |
| Male                                                                 | 3.64 |      | 0.63             | -0.19          | 398               |                     | 0.85                 |                   |
| Female                                                               | 3.65 |      | 0.57             |                |                   |                     |                      |                   |
| University                                                           | Mean |      | SD               | t              | Degree of freedom |                     | Probability of error |                   |
| The focus on Using technological innovations in the teaching process |      |      |                  |                |                   |                     |                      |                   |
| Government                                                           | 3.32 |      | 0.73             | -5.23*         | 398               |                     | 0.00                 |                   |
| Private                                                              | 3.71 |      | 0.65             |                |                   |                     |                      |                   |
| Total questionnaire                                                  |      |      |                  |                |                   |                     |                      |                   |
| Government                                                           | 3.53 |      | 0.61             | -5.40*         | 398               |                     | 0.00                 |                   |
| Private                                                              | 3.86 |      | 0.55             |                |                   |                     |                      |                   |
| College                                                              | Mean | SD   | Contrast source  | Sum of squares | Degree of freedom | Mean sum of squares | F                    | Error probability |
| The focus on Using technological innovations in the teaching process |      |      |                  |                |                   |                     |                      |                   |
| Humane                                                               | 3.38 | 0.79 | Between groups   | 2.18           | 2                 | 1.09                | 2.06                 | 0.13              |
| Scientific                                                           | 3.49 | 0.71 | Within groups    | 209.53         | 397               | 0.53                |                      |                   |
| Health                                                               | 3.60 | 0.55 | Total            | 211.71         | 399               |                     |                      |                   |
| Total questionnaire                                                  |      |      |                  |                |                   |                     |                      |                   |
| Humane                                                               | 3.57 | 0.63 | Between groupsps | 1.78           | 2                 | 0.89                | 2.41                 | 0.09              |
| Scientific                                                           | 3.71 | 0.62 | Within groups    | 146.84         | 397               | 0.37                |                      |                   |
| Health                                                               | 3.69 | 0.48 | Total            | 148.62         | 399               |                     |                      |                   |
| Experience                                                           | Mean | SD   | Contrast source  | Sum of squares | Degree of freedom | Mean sum of squares | F                    | Error probability |
| The focus on Using technological innovations in the teaching process |      |      |                  |                |                   |                     |                      |                   |
| less than five years                                                 | 3.56 | 0.69 | Between groups   | 2.34           | 2                 | 1.17                | 2.21                 | 0.11              |
| Between (5-10) years                                                 | 3.36 | 0.76 | Within groups    | 209.38         | 397               | 0.53                |                      |                   |
| More than ten years                                                  | 3.45 | 0.73 | Total            | 211.71         | 399               |                     |                      |                   |
| Total questionnaire                                                  |      |      |                  |                |                   |                     |                      |                   |
| less than                                                            | 3.66 | 0.61 | Between          | 0.13           | 2                 | 0.07                | 0.17                 | 0.84              |

|                                                         |      |      |                 |                |                   |                     |      |                   |
|---------------------------------------------------------|------|------|-----------------|----------------|-------------------|---------------------|------|-------------------|
| five years                                              |      |      | groups          |                |                   |                     |      |                   |
| Between (5-10) years                                    | 3.62 | 0.56 | Within groups   | 148.49         | 397               | 0.37                |      |                   |
| More than ten years                                     | 3.65 | 0.65 | Total           | 148.62         | 399               |                     |      |                   |
| Academy qualification                                   | Mean | SD   | Contrast source | Sum of squares | Degree of freedom | Mean sum of squares | F    | Error probability |
| Availability of technological innovations in classrooms |      |      |                 |                |                   |                     |      |                   |
| Professor                                               | 3.18 | 0.92 | Between groups  | 5.98           | 3                 | 1.99                | 2.43 | 0.06              |
| Associate professor                                     | 3.05 | 0.96 | Within groups   | 324.81         | 396               | 0.82                |      |                   |
| Assistant Professor                                     | 3.25 | 0.90 | Total           | 330.79         | 399               |                     |      |                   |
| full-time lecturer                                      | 3.41 | 0.85 |                 |                |                   |                     |      |                   |
| Total questionnaire                                     |      |      |                 |                |                   |                     |      |                   |
| Professor                                               | 3.53 | 0.61 | Between groups  | 2.82           | 3                 | 0.94                | 2.55 | 0.06              |
| Associate professor                                     | 3.62 | 0.65 | Within groups   | 145.80         | 396               | 0.37                |      |                   |
| Assistant Professor                                     | 3.67 | 0.57 | Total           | 148.62         | 399               |                     |      |                   |
| full-time lecturer                                      | 3.75 | 0.59 |                 |                |                   |                     |      |                   |

Table 5 demonstrates that there are no statistically significant differences ( $\alpha = 0.05$ ) between the arithmetic circles for the effectiveness of technological innovations in developing the competencies of faculty members in Jordanian universities and their axes (the availability of technological innovations in classrooms, the use of technological innovations in the teaching process, and the competencies of faculty members in Dealing with technological innovations) from the arithmetic circles for the effectiveness of technological innovations in developing the competencies of faculty members in Jordanian universities.

The table also shows that there are no statistically significant differences ( $\alpha = 0.05$ ) between the arithmetic circles for the effectiveness of technological innovations in developing faculty members' competencies in Jordanian universities and their axes (the availability of technological innovations in classrooms, the use of technological innovations in the teaching process, and faculty members' competencies in Dealing with technological innovation).

This result can be attributed to the joint cooperation between faculty members of different academic qualifications in Jordanian universities on the one hand, and their receiving enrichment training workshops commensurate with the specificity of the situation that academic institutions are going through in light of the Covid-19 pandemic by the departments of quality and performance development of faculty members, each in his university on the other.

## Recommendations

In light of the study's findings, the researcher suggests the following:

1. Inviting the Ministry of Scientific Research and Higher Education's Public and Private Accreditation Commission for Academic Institutions to impose more quality standards related to the need to provide technological innovations in classrooms in public and private academic institutions; In order to overcome the problem of mediating availability in light of the study's findings.
2. Inviting the Ministry of Scientific Research and Higher Education's Public and Private Accreditation Commission for Academic Institutions to impose more quality standards related to the need to provide technical and technical cadres in government and private academic institutions; in order to overcome the problem of mediating their availability in academic institutions.
3. Inviting government and private academic institutions to provide all aspects of technical support to their faculty members; to be able, in turn, to make greater efforts to incorporate technological innovations into the teaching process; to overcome the problem of mediating employment in academic institutions.

## Conclusion

In summary the study sought to uncover the efficiency of technology innovations in developing the Competencies of faculty members in Jordanian universities, as well as the impact of faculty members' demographic variables on the effectiveness of technological innovations in developing their Competencies. The descriptive approach was used through a questionnaire that consisted of forty items distributed among three areas: the availability of technological innovations in classrooms, the use of technological innovations in the teaching process, and faculty members' competence in using technological innovations. The questionnaire was designed to measure the effectiveness and its main areas from the perspective of faculty members. The questionnaire's validity and reliability were both confirmed.

## References

1. Al Khaja, May (2015). Teaching techniques and their effects on the educational process, a case study of the College of Humanities and Social Sciences at the United Arab Emirates University. Emirates Lecture Series, Emirates Center for Strategic Studies and Research, Abu Dhabi, United Arab Emirates.
2. Al-Dariwish, Ahmed Abdullah and Abdel Alim, Rajaa Ali (2017). Technological innovations and educational innovation. Cairo: Arab Thought House, Egypt.
3. Al-Khatib, Mahmoud Mohamed (2015). Evaluating the professional competencies of mathematics faculty members in the preparatory year at King Saud University from the point of view of their students. Journal of Mathematics Education, 18(6), 53-75.

4. Al-Saud, Khaled Mohamed (2008). Technology and means of education and its effectiveness. Amman: The Arab Society Library for Publishing and Distribution.
5. Al-Shammari, Muhammad bin Khuzaym (2019). The degree of availability of teaching competencies for faculty members in the faculties of education at Shaqra University from the students' point of view. *Specialized International Educational Journal*, 8(10), 51-62.
6. Al-Shehri, Ahmed Atef (2018). The reality of English language teachers' use of the Blackboard system at King Khalid University. *King Khalid University Journal of Educational Sciences*, 1(29), 482-403.
7. Al-Shehri, Mona and Al-Hejailan, Mohammed (2018). The effectiveness of using the NearPod application in tablets on the classroom interaction of computer subjects among second-year secondary school students. *Specialized International Educational Journal*, 7(1), 129-140.
8. Al-Shuaibi, Amani Hamad (2020). From their point of view, the training needs of the faculty members at Umm Al-Qura University in the field of educational technology innovations. *Journal of the Islamic University of Educational and Psychological Studies*, 28(3), 65-87.
9. Al-Subaie, Fahad (2020). Using technology innovations to develop artistic taste in the field of interior design. *Sohag University Educational Journal*, (75), 325-350.
10. Al-Thaqafi, Mahdia Bint Saleh (2019). The professional competencies required for university faculty members specializing in curricula and methods of teaching Islamic education in the light of the executive framework for the development of teacher preparation programs in Saudi universities. *Journal of the Faculty of Education in Benha*, (120), 281-331.
11. Al-Zahrani, Ahmed Yahya and Allam, Islam Jaber (2021). The effect of using cognitive trips in developing some computer skills for first year secondary school students in Al-Makhwah Governorate. *Journal of the College of Education, Assiut University*, 37(5), 83-112.
12. Bawab, Radwan (2013). The professional competencies required for university faculty members from the students' point of view, Jijel University students as a model. Unpublished doctoral thesis, University of Setif, Algeria.
13. Bin Hafeez, Shafia, and Shayeb, Mohammed. (2016). The effectiveness of administrative leadership according to the theory of "Hersey and Blanchard" from the point of view of employees: a field study at the University of Ouargla. *Journal of Human and Social Sciences, Algeria*, (23), 117-132.
14. Domy, Hassan (2010). The extent to which science teachers in Karak governorate possess educational and technological competencies. *Studies in Educational Sciences*, 37(1), 252-272.
15. El-Heila, Mohamed Mahmoud (2017). Educational technology between theory and practice. 10th floor, Amman: Dar Al Masirah for Publishing and Distribution.
16. Hepsiba, N., Subhashini, A., Raju, M., & Rao, Y. P. (2018). Changing role of teachers in the present society. *International Journal of Health & Medical Sciences*, 1(1), 35-38. <https://doi.org/10.31295/ijhms.v1n1.37>
17. Hosamou, Soha Ali and Al-Abdullah, Fawaz Ibrahim (2011). The reality of electronic education at Tishreen University from the point of view of both faculty members and students. *Damascus University Journal*, 27(1), 243-278.

18. Khreisheh, Ali Kayed (2011). The reality of social studies teachers' use of computers and the Internet in Jordan. *Damascus University Journal of Educational and Psychological Sciences*, 27 (1), 653-690.
19. Radwan, Wael Wafik and Suleiman, Hana Ibrahim (2020) A proposed vision for developing a remote e-training system to achieve professional competencies for language school teachers. *Journal of the Faculty of Education, Damietta University*, (75), 248-272.
20. Sevin, Imad Shawky (2011). Teachers in the age of globalization and information. Cairo: World of Books, Egypt.
21. Shakur, Ali Zuhdi (2013). The reality of Using technological innovations and its obstacles in schools in the West Bank and Gaza Strip from teachers' point of view. *An-Najah University Journal of Research: Humanities*, 27(2), 383-416.
22. Suleiman, Muhammad (2014). The effectiveness of training on using the learning management system and electronic content in developing informational awareness and e-learning skills among faculty members at Taibah University. *Journal of the Faculty of Education at Zagazig University*, (83), 111-127.
23. The poet, Manal (2020). The extent of home economics students' awareness of the employment of educational and information technology innovations and their motivation for achievement. *Arab Research Journal in the Fields of Specific Education*, (7), 347-382.
24. The trick, Mohamed Mahmoud (2012). Educational and information technology. Al Ain: Arab Book House, United Arab Emirates.
25. Wartawan, P. G. (2017). The effectiveness of the use of portfolio assessment by controlling prior knowledge to enhance scientific attitude among senior high school students. *International Journal of Physical Sciences and Engineering*, 1(3), 9-18. <https://doi.org/10.21744/ijpse.v1i3.54>
26. Widana, I.K., Sumetri, N.W., Sutapa, I.K., Suryasa, W. (2021). Anthropometric measures for better cardiovascular and musculoskeletal health. *Computer Applications in Engineering Education*, 29(3), 550-561. <https://doi.org/10.1002/cae.22202>
27. Zahran, Amna (2021). Professional competencies of faculty members in technical colleges in the West Bank in light of international standards. *The Arab Journal for Scientific Publishing*, (31), 379-412.