

## **The Impact of Information and Communication Technology on the Educational Process in some Faculties of Physical Education in the Arab Republic of Egypt from the Viewpoint of Professors**

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### **Introduction and Research Problem:**

Communication technology today is conspicuously the backbone of development in light of the waves of scientific progress, and the essential element in the development and advancement of humankind and the expansion of its capabilities and energies. Besides, the various rapid technical products were reflected on the global community as a whole, and formed the main factor in the movement of people during the current century. Consequently, man has become living on the strings of this progress movement, its techniques and its frequent melodies. Moreover, among the manifestations of global progress, is the use of digital technology applications in all areas of life. Digital information has also become surrounding us everywhere. Thus, individuals have to adapt and respond to the changes and developments of this era in order to search for new ways to develop the thinking skills of learners to be partners in this rapid and amazing development.

The technological revolution has led to the emergence of many patterns of using information and communication technology in the educational process, including:

**1- The use of information and communication technology in-person**, as it is one of the aspects of education using information and communication technology in institutions of higher education, or what is called technological integration in higher education within the classrooms. The information and communication technology used in it is the education that takes place in the same place where both the teacher and the student are, where the conversation and communication is face to face between the parties to the educational learning process as it is called follow-up education through the site (location), where this type of education is characterized by a large and good overlap of every student (a trainee) with his professors and fellow students. This is in addition to the in-person of strictness in times and places where the professor and student meet at a fixed time and place. (12:4)

- The variables or axes of the use of information and communication technology in the in-person education are summarized in five main axes represented in:

- **The Professor:** The use of information and communication technology in higher education has caused a huge revolution in the work

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of the professor. The role of the professor has shifted from the traditional teacher whose role is limited to the tutor, the dominant, the only source of knowledge and the transmitter of it to a teacher in the age of knowledge who plays the role of explainer using technical and encouraging means. To interact in the educational learning process and encourage the generation of knowledge and creativity. (14:807)

• **Student:** The use of information and communication technology as an educational tool attracts and encourages students to be independent learners. Information and communication technology also achieves effective learning for the learner, modeling and simulation of real life situations, and resource-based learning. Here, the role of the learner in learning based on the computerized curriculum has risen from a mere recipient of information to a participant, active, creative, producer of knowledge, as well as his ability to practice critical thinking and problem solving. (7:90) (3:21)

• **Teaching Process:** ICT enabled the professor to teach more efficiently than before, especially with the application of modern learning strategies. (14:815)

• **Curriculum:** The integration of information and communication technology into the teaching and learning process will lead to the restructuring of educational curricula according to new technology. This perspective has led to the emergence of educational computer programs. The textbook is no longer the only source of knowledge, but the scientific

material appeared on CDs, and the Internet was used to access knowledge with the use of computer programs in presentations without neglecting the use of educational portfolios.

• **Educational Leadership:** The enormous influence of information and communication technology has led to the need for a leadership capable of bringing about change in the educational system in its various fields. Besides, this leadership must take a strategic decision to change towards the integration of information and communication technology in teaching. Besides, the elements of the strategic plan can be represented needed by the iceberg shown below. (14: 815 – 817)

## 2- E-learning:

- This is in addition to the emergence of modern means of information and communication technology that has flooded our current society and is still in continuous development. This development has been divided into three fields represented in:

- **First Field:** education by mail and radio

- **Second Field:** televised education

- **Third Field:** Interactive (participatory) online learning (13: 14) (23: 16) (22: 23)

It must include e-learning or interactive online learning on the following components:

- **The Educational Component.**

- **The Technological Component**

- **Administrative component.** (12:5) (11:335) (15:81)

- The types of e learning are divided into:

**- First: According to Concurrency**

Simultaneous e-learning

- \* Asynchronous e-learning

**-Second: Horton's Classification**

- \* Learner-oriented e-learning
- \* Facilitated e-learning
- \* E-learning directed to the teacher
- \* Embedded e-learning (4:301)

There are many obstacles to employing e-learning in the educational process.

- \* Obstacles related to professors
- \* Obstacles related to educational administration
- \* Obstacles related to funding and the educational system, which are:
- \* obstacles related to society

In addition to these previous challenges, the following challenges stand as an obstacle to the application of e-learning, which are:

**Accompaniment**

- \* **Lack of facts and implementers**
- \* **The certification problem (linear fixation) (5:13) (19:293)**

**3- Blended Education**

- Proceeding from the defects that appeared in e-learning and the presence of many advantages of the traditional method of teaching and in order to avoid the defects of both methods and obtain their advantages, blended education emerged through a process of mixing and mingling between e-learning and education in the traditional way. This has been called by many names, namely, blended education, hybrid education, and mixed education. Blended education is one of the learning styles in which pure e-learning merges with traditional classroom education in one framework so that e-learning tools are employed, whether computer-based or

internet-based. The Internet in learning activities for lectures, practical lessons, training sessions in traditional classes and virtual classes and the professor meets with the student face to face most of the time. (6:168) (16:10) (10:255)

With the multiplicity of media and communication, the educational process needs an effective means of communication that works to raise the level of society culturally, socially, educationally and politically. The media and communication are not just giving information and knowledge to people, but rather aim at the process of changing trends and motivating groups to work in certain directions to achieve the desired goals, achieve development, disseminate ideas and form personality. This is why many countries have worked to exploit this technology in the educational process in order to build and develop society and consolidate its cultural identity.

This research conspicuously aims to clarify the impact of the use of information and communication technology in the educational process through working and controlling new electronic media in the field of education as well as social, economic, cultural and political fields. The dependence on information and communication technology in the educational process has increased, especially after the world was exposed to the Corona pandemic, and since then, the importance of information and communication technology in general and especially in the educational process has emerged.

We find that the greater the need of man and institutions for this technology, the greater its continuity and innovation, and thus its development. With the development of electronic means in modern societies and their use in digital data processing, the importance of information and communication technology has increased until it became what it is now. The progress achieved in this field, given that the possession of information and communication technology currently represents the possession of a competitive ability at the international level.

Today, information and communication technology has become the focus of attention of those working to develop and improve the output of the educational process and one of the main pillars of contemporary technical creativity and the most widespread and most influential means in the school of the future, because the success of education in achieving its goals is measured by the speed of its response and interaction with the changes in society. Therefore, the integration of information technology with communication in education is a response to these variables, which would lead to a reformulation of the roles of the teacher, the learner, the book, and the classroom to keep pace with the rapid developments taking place in the global educational system. Accordingly, the educational field can no longer but respond to the current of scientific and technological progress. Therefore, a modern trend has emerged that is similar to educational

engineering, whose features are manifested in a science concerned with selecting, analyzing, designing, organizing, developing and evaluating educational material in accordance with the cognitive characteristics of the learner. This is what can be called the science of instructional design. Those in charge of the educational process have realized the benefits and advantages of information and communication technology in the teaching and learning process because of its positive effects that have been proven by research and studies such as the study of Ibrahim Yahyaoui (2016) (8), Nassima Dhaif Allah (2017) (17), Salma Konda (2018) (21) Raqeq Madani (2020) (20), which was reflected in the quality of educational outputs and their acquisition of skills, experience and knowledge, which would enable the future generation to face challenges and keep pace with the accelerating age of technology.

Moreover, since physical education is part of general education that aims to develop the individual in all aspects, and what applies to education and its branches applies to him, and information and communication technology plays an important role in the educational process, especially in the field of physical education, and through the researcher's experience and his work as a faculty member in the Department of Curriculum and Instruction at the Faculty Physical Education, Fayoum University. In light of the scientific and technological progress that the country is going through, the researcher asserted the need to know the viewpoint of professors of all

categories and types in the faculties of physical education on the impact of information and communication technology on the educational process in some of the faculties of physical education in the Arab Republic of Egypt.

#### **Objectives of the Research:**

The research aims to identify the impact of information and communication technology on the educational process in some faculties of physical education in the Arab Republic of Egypt from the viewpoint of teachers.

#### **Hypotheses of the Research:**

- 1- There is a positive, statistically significant impact relationship at the significance level (0.05) between the use of information and communication technology and the improvement of the quality of the educational process.
- 2- There is a negative impact relationship with statistical significance at the significance level (0.05) between the obstacles to the use of information and communication technology of its various types and the quality of the educational process.

#### **Terms used in the research:**

- **Information and communication technology:** Information and communication technology represents a real revolution that started with the rising sense that the existing communicative reality is no longer sufficient to meet the requirements of the twenty-first century. The concept of information and communication technology according to communicative approach is a realizing material or a proper element from reality. It presents hypotheses and missions that need interpretation and explanation, which is related to the

official approaches, is electronic means that transmit, store, process and disseminate information (18:40)

#### **Procedures of the Research:**

##### **Method used:**

The researcher chose the descriptive-analytical approach, which describes a phenomenon in order to reach the causes of this phenomenon and the factors that control it. Besides, it aimed to draw conclusions to generalize it. This is in addition to the deductive approach for the purpose of confirming the connection between the variables.

##### **Research Community and Sample:**

The research community represented in the faculty members of all categories, starting from a teaching assistant to a full-time professor in some faculties of physical education in Egyptian universities, namely (Fayoum - Minya - Port Said - Helwan - Zagazig - Alexandria - Beni Suef). The difference in their categories in those universities, according to the latest statistics available in 2019, is about 5,000 faculty members. The researcher calculated the number of the sample representing that community using the Herbert Arkin equation to calculate the sample number from the total community.

##### **Data Collection Methods:**

The researcher designed a questionnaire for professors of different degrees in the faculties of physical education in the Arab Republic of Egypt in order to find out their viewpoint about the impact of information and communication technology on the educational process in some faculties of physical education in the Arab Republic of Egypt. The

researcher followed the following steps:

- **Design of the questionnaire:** the questionnaire for the study was designed after an arbitration process that lasted nearly two months due to the multiplicity of viewpoints and the complexity of the topic of information and communication technology and its rapid development. In the end, it reached the form relied upon in distribution and analysis, as it included:

**The psychometric properties of the questionnaire**

**First: the validity of the questionnaire**

**a. Apparent validity (arbitrators):**

The questionnaire has been corrected

to appear in its final form by a group of seven experienced arbitrators, in order to express their opinions on the importance of the paragraphs placed, their degree of clarity and the extent to which they belong to the axes of the study, while giving them the right to submit the proposed amendment and in the light of the arbitrators' opinions. Thus, the fields of the questionnaire were modified, some phrases were added, some were deleted, and some phrases were reformulated

**B. Internal consistency validity:**

**First: the internal consistency of the field of "the reality of information and communication technology"**

**1- Physical capabilities**

**Table No (1)**

**Correlation coefficients between each of the items in the physical capabilities field and the total score of the field (n = 30)**

No.	Statement	Coefficient of Correlation	Significance Level
1	The means of information and communication technology are used for the purpose of organization and planning (assisting the professor in managing his educational work)	0.95	0.00
2	ICT means are used for the purpose of acquiring new concepts and methodologies related to students (information registration)	0.93	0.00
3	The means of information and communication technology are used for the purpose of producing and creating educational projects and productions that develop and increase new competencies	0.91	0.00
4	The means of information and communication technology are used for the purpose of communication and sharing (a participatory educational space between students and professors)	0.86	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table No. (1) that the correlation is statistically

significant at the level of significance (0.05). Thus, this confirms that the

questionnaire has a high degree of physical capabilities.  
internal consistency in terms of

## 2- Software

**Table No (2)**  
**Correlation coefficients between each item of the "software" field and the total score for the field (n = 30)**

No	Statement	Coefficient of Correlation	Significance Level
1	Software is used for the purpose of processing information	0.87	0.00
2	Software is used for the purpose of providing information as useful output for business performance and operations management	0.89	0.00
3	Software is used for the purpose of operating a computer	0.85	0.00
4	Software is used for the purpose of organizing the relationship of computer units to each other	0.76	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table No. (2) that the correlation is statistically significant at the level of significance (0.05). Thus, this confirms that the questionnaire has a high degree of internal consistency on the software aspect.

## 3- Networks

**Table No (3)**  
**Correlation coefficients between each item of the network field and the total score of the field (n = 30)**

No.	Statement	Coefficient of Correlation	Significance Level
1	Networks are used for the purpose of searching for metric information	0.92	0.00
2	Networks are used for the purpose of sending files through their services (e-mail, telephone and Internet fax)	0.89	0.00
3	Networks are used for the purpose of publishing work research	0.72	0.00
4	Networks are used for the purpose of benefiting from electronic conferences	0.88	0.00
5	Networks are used for the purpose of obtaining faculty databases	0.86	0.00
6	Networks are used for the purpose of document revision and improvement	0.81	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table No. (3) that the correlation is statistically significant at the level of significance (0.05). Thus, this confirms that the questionnaire has a high degree of internal consistency on the network aspect.

#### 1- The course

**Second:** the internal consistency of the field of "the impact of information and communication technology on improving the quality of the educational process"

**Table No. (4)**  
**Correlation coefficients between each paragraph of the "course" field and the total score for the field (n = 30)**

No.	Statement	Coefficient of Correlation	Significance Level
1	The use of information and communication technology in the educational process has increased the enrichment of academic contents	0.92	0.00
2	Suitability of the course with the available IT uses	0.94	0.00
3	The use of information and communication technology in the educational process has increased the professor's control over the academic contents	0.93	0.00
4	The use of information and communication technology has increased the course's relevance to the requirements of the labor market	0.93	0.00
5	Increasing the use of information and communication technology from the course coverage of the basic topics in the school standards	0.92	0.00
6	The use of ICT has increased the proportionality between course intensity and timing	0.91	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table (4) that the correlation is statistically significant at the level of significance (0.05). Thus, this confirms that the questionnaire has a high degree of

internal consistency in the aspect of the impact of information and communication technology on the quality of the course.

### 3- Professor

**Table No. (5)**  
**Correlation coefficients between each paragraph of the "Professor" field and the total score of the field (n = 30)**

No.	Statement	Coefficient of Correlation	Significance Level
1	The use of information and communication technology has increased the professor's analytical capabilities	0.94	0.00
2	The use of information and communication technology helped the professor to arrange the lesson during the class	0.94	0.00
3	The use of information and communication technology enabled the professor to facilitate the access of information to students	0.94	0.00
4	The use of information and communication technology has increased the teacher's motivation towards education	0.92	0.00
5	The use of information and communication technology increased the professor's familiarity with the purpose of the teaching method used	0.93	0.00
6	The use of information and communication technology enabled the professor to simplify the information for students	0.92	0.00
7	The use of information and communication technology increased the professor's awareness of the different abilities of the student	0.94	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table (5) that the correlation is statistically significant at the level of significance (0.05). Thus, this confirms that the questionnaire has a high degree of

internal consistency in the aspect of the impact of information and communication technology on the quality of the professor.

### 3- The Student

**Table No. (6)**  
**Correlation coefficients between each paragraph of the "student" field and the total score for the field (n = 30)**

No.	Statement	Coefficient of Correlation	Significance Level
1	The use of information and communication technology increased the level of students' understanding of the lessons	0.91	0.00
2	The use of information and communication technology increased the professor's encouragement to the student to ask questions related to his learning	0.94	0.00
3	The use of information and communication technology has increased students' demand for lectures and lessons	0.85	0.00
4	The use of information and communication technology has increased students' motivation to learn	0.91	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table (6) that the correlation is statistically significant at the level of significance (0.05). Thus, this confirms that the questionnaire has a high degree of

#### 4- Teaching process

internal consistency in the aspect of the impact of information and communication technology on student quality.

**Table No. (7)**

**Correlation coefficients between each of the paragraphs of the field of "teaching process" and the total score of the field (n = 30)**

No.	Statement	Coefficient of Correlation	Significance Level
1	Supporting the use of information and communication technology for the professor to perform the educational process according to the established objectives	0.90	0.00
2	Supporting the use of information and communication technology in the teaching process with a dynamic dialogue through the proposed activities	0.91	0.00
3	Supporting the use of information and communication technology in the teaching process with a dynamic dialogue through the use of the critical thinking method	0.92	0.00
4	Supporting the use of information and communication technology in the teaching process with a dynamic dialogue through the use of the problem-solving method	0.95	0.00
5	Supporting the use of information and communication technology in the teaching process with a dynamic dialogue through the use of groups or small teams	0.86	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table (7) that the correlation is statistically significant at the level of significance (0.05). Thus, this confirms that the questionnaire has a high degree of

#### 5- Faculty Administration

internal consistency in the aspect of the impact of information and communication technology on the quality of the teaching process.

**Table No (8)**

**Correlation coefficients between each of the paragraphs of the field of "faculty administration" and the total score of the field (n = 30)**

No.	Statement	Coefficient of Correlation	Significance Level
1	The faculty administration uses modern methods of electronic management sometimes	0.90	0.00
2	The use of information and communication technology helped the faculty administration to deal positively with the professor's complaints	0.92	0.00

**Follow Table No (8)**  
**Correlation coefficients between each of the paragraphs of the field of "faculty administration" and the total score of the field (n = 30)**

No.	Statement	Coefficient of Correlation	Significance Level
3	The faculty administration has an effective information system on the various internal dealers, professors and students	0.93	0.00
4	Information and communication technology has provided a good communication system between the faculty administration and the professor	0.95	0.00
5	The use of information and communication technology has enhanced the administration's positive role in the success of the quality of the educational process	0.86	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table (8) that the correlation is statistically significant at the level of significance (0.05). Thus, this confirms that the questionnaire has a high degree of internal consistency in the aspect of the impact of information and communication technology on the quality of faculty management.

**Third: the internal consistency of the field of "obstacles to the use of information and communication technology in the educational process".**

#### **1- Human Obstacles**

**Table No. (9)**  
**Correlation coefficients between each of the paragraphs of the field of "human obstacles" and the total score of the field (n = 30)**

No.	Statement	Coefficient of Correlation	Significance Level
1	The professor's lack of personal interest in the use of technological tools	0.67	0.00
2	Lack of professor training regarding the use of information and communication technology in the educational process	0.61	0.00
3	The student is busy most of the class time with technology	0.74	0.00
4	Lack of specialists in the use of information and communication technology in the faculty	0.80	0.00
5	The professor is not convinced of the necessity of using information and communication technology	0.73	0.00
6	The professor's conviction that it is not necessary to use information and communication technology due to its negative effects	0.72	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table No. (9) that the correlation is statistically significant at the level of significance (0.05). Thus, this confirms that the questionnaire has a high degree of

### 2- Physical and software obstacles

internal consistency in the aspect of human obstacles to the use of information and communication technology.

**Table No. (10)**

**Correlation coefficients between each of the paragraphs of the field of "Physical and software obstacles" and the total score of the field (n = 30)**

No.	Statement	Coefficient of Correlation	Significance Level
1	Publicity of software available in the faculty network	0.80	0.00
2	Lack of technology in the faculty	0.86	0.00
3	Many problems of technological means such as defects, damage...etc.	0.70	0.00
4	Ineffectiveness of the computer laboratories in the faculty	0.80	0.00
5	The faculty is devoid of computer labs	0.69	0.00
6	Not connecting the faculty to networks (Internet, intranet, extranet)	0.64	0.00
7	Weakness of the network traffic density	0.68	0.00
8	Technology damage due to viruses	0.65	0.00
9	Lack of educational software	0.66	0.00
10	Lack of software in Arabic	0.66	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table (10) that the correlation is statistically significant at the level of significance (0.05). Thus, this confirms that the questionnaire has a high degree of

### 3- Organizational and administrative obstacles

**Table No. (11)**

**Correlation coefficients between each of the paragraphs of the field of "organizational and administrative obstacles" and the total score of the field (n = 30)**

No	Statement	Coefficient of Correlation	Significance Level
1	The lack of an appropriate environment for the application of information and communication technology, such as electricity, halls, and ventilation	0.72	0.00
2	Lack of technology in the faculty	0.88	0.00
3	Misframing the administration of the various procedures related to the use of technological means in the educational process	0.90	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table (11) that the correlation is statistically significant at the level of significance (0.05). Thus, this confirms that the questionnaire has a high degree of

#### 4- Course Obstacles

internal consistency in the aspect of organizational and administrative obstacles to the use of information and communication technology.

**Table No. (12)**  
**Correlation coefficients between each of the paragraphs of the "course obstacles" field and the total score for the field (n = 30)**

No	Statement	Coefficient of Correlation	Significance Level
1	Lack of compatibility between the use of information and communication technology and the curriculum	0.69	0.00
2	Lack of specialists in designing programs and electronic courses	0.81	0.00
3	Lack of time allotted for the course	0.79	0.00
4	Intensity of the course	0.77	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table (12) that the correlation is statistically significant at the level of significance (0.05) Thus, this confirms that the questionnaire has a high degree of internal consistency in the aspect of course obstacles to the use of information and communication technology.

#### C. Structural Validity

Structural validity is one of the tool's validity scales that measure the extent to which the goals that the tool wants to reach have been achieved. Besides, it shows the extent to which each field of study is related to the total degree of the fields of the questionnaire.

**Table No. (13)**  
**Correlation coefficient between each degree of each of the fields of the questionnaire and the total degree of the questionnaire (n = 30)**

No.	Field	Coefficient of Correlation	Significance Level
1	Physical Capabilities	0.94	0.00
2	Software	0.93	0.00
3	Networks	0.93	0.00
4	Course	0.96	0.00
5	Professor	0.93	0.00
6	Student	0.95	0.00
7	Teaching Process	0.96	0.00
8	Faculty Administration	0.95	0.00
9	Human Obstacles	0.76	0.00
10	Physical and Software obstacles	0.65	0.00
11	Organizational and Administrative Obstacles	0.59	0.00
12	Course Obstacles	0.62	0.00

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table (13) that the correlation is statistically significant at the level of significance (0.05). Thus, it is clear from the table that the axes of the questionnaire are correlated with the total degree of the questionnaire at the level of significance (0.05), which confirms that the questionnaire has a high degree of internal consistency.

### Second: Questionnaire Reliability

The researcher used the Alpha Cronbach coefficient to calculate the reliability of the questionnaire by applying the questionnaire to the exploratory study group, numbering (30) from within the research community and outside the main sample.

**Table No (14)**  
**Cronbach's alpha coefficient to measure the reliability of the questionnaire (n = 30)**

No.	Field	Paragraphs Number	Alpha Cronbach coefficient
1	Physical Capabilities	4.00	0.93
2	Software	4.00	0.86
3	Networks	6.00	0.92
4	Course	6.00	0.97
5	Professor	7.00	0.93
6	Student	4.00	0.92
7	Teaching Process	5.00	0.95
8	Faculty Administration	5.00	0.95
9	Human Obstacles	6.00	0.81
10	Physical and Software obstacles	10.00	0.88
11	Organizational and Administrative Obstacles	3.00	0.77
12	Course Obstacles	4.00	0.79

The tabular value of "t" at a significant level of 0.05 = 0.306

It is clear from Table (14) that the value of Cronbach's alpha coefficient is high for each field, ranging between (0.77, 0.95). Thus, this indicates the reliability of the questionnaire. Therefore, the questionnaire in its final form as it is in the appendix is distributable. Besides, we have ensured the validity and reliability of the questionnaire, which makes us fully confident in the validity of the questionnaire and its reliability to analyze the results, answer the study questions and test its hypotheses.

### • Survey Study:

The exploratory study of the data collection tool "Questionnaire" was conducted on (30) professors of different degrees from the research community and from outside the basic sample in the period from Saturday corresponding to 2/10/2021 AD to Sunday corresponding to 10/10/2021 AD for the purpose of calculating scientific transactions for the questionnaire (validity and reliability)

**Presentation and discussion of the results:**

**First: the characteristics of the study sample**

The characteristics of the study sample are diverse. We find what is

related to gender, age, academic degree, type of courses, beneficiary levels, university, faculty, so that the statistical description of it is included in the following points:

**Table No. (15)  
Description of the Study Sample**

Variables		Frequencies	Percentage
Gender	Male	211.00	52.00
	Female	195.00	48.00
Age	Less than 30 years	53.00	13.10
	From 30 to 40 years	139.00	34.20
	From 41 to 50 years	124.00	30.50
	51 years and over	90.00	22.20

**Second: The Normal Distribution Test of the Study Variables**

**Table No. (16)  
The Normal Distribution Test for the Study Variables**

No.	Variables	Torsion Coefficient	Flattening Coefficient
1	Physical Capabilities	-0.89	-0.14
2	Software	-0.52	-0.62
3	Networks	-0.94	0.29
4	Course	-0.81	-0.07
5	Professor	-0.81	0.18
6	Student	-0.85	-0.07
7	Teaching Process	-0.92	0.01
8	Faculty Administration	-0.81	-0.24
9	Human Obstacles	-0.41	-0.13
10	Physical and Software obstacles	-0.98	0.79
11	Organizational and Administrative Obstacles	-0.24	-1.27
12	Course Obstacles	-0.45	-0.69

Through the results of the table, all study variables follow a normal distribution. Where the values of the torsion coefficient ranged between (-0.24 and -0.98) and the values of the flattening coefficient were confined between (-1.27 and 0.79). Besides,

they are confined within the framework of the laws that bear the normal distribution of the study variables, which allows analyzing the hypotheses of the study using appropriate statistical tools suitable for the tests

**Third: Display the Results**

Arithmetic averages for the fields of information and communication technology

**First: The Financial Capabilities****Table No. (17)**

**Arranging the arithmetic averages for the field of physical capabilities, information and communication technology**

No.	Statement	Arithmetic mean	Standard deviation	Rank	Score
1	The means of information and communication technology are used for the purpose of organization and planning (assisting the professor in managing his educational work)	3.79	1.32	2.00	Agree
2	ICT means are used for the purpose of acquiring new concepts and methodologies related to students (information registration)	3.78	1.18	3.00	Agree
3	The means of information and communication technology are used for the purpose of producing and creating educational projects and productions that develop and develop new competencies	3.60	1.24	4.00	Agree
4	The means of information and communication technology are used for the purpose of communication and sharing (a participatory educational space between students and professors)	3.82	1.22	1.00	Agree

The table shows the arithmetic mean and standard deviation for each of the financial possibilities paragraphs, where the use of information and communication technology means for the purpose of communication and sharing, meaning the formation of a participatory educational space between students and the professor, ranked first in the ranking on the use of information and

communication technology means for the purpose of organizing and planning. Thus, it helps the professor in managing his work in education, which ranked second, and then the use of these means for the purpose of acquiring new concepts and methodologies related to students with regard to the basis of recording information, occupying the third place.

**Second: Software**

**Table No. (18)**  
**Arranging arithmetic averages for the field of information and communication technology software**

No.	Statement	Arithmetic mean	Standard deviation	Rank	Score
1	Software is used for the purpose of processing information	3.36	1.36	4.00	Neutral
2	Software is used for the purpose of providing information as useful output for business performance and operations management	3.48	1.36	3.00	Agree
3	Software is used for the purpose of operating a computer	3.74	1.24	1.00	Agree
4	Software is used for the purpose of organizing the relationship of computer units to each other	3.56	1.19	2.00	Agree

The arithmetic mean and standard deviation table for each paragraph of the software shows that the use of this software for the purpose of operating the computer is at the forefront of the purposes, occupying the first place with each other to occupy the second place. This completes the first use, especially in

**Third: Networks**

the case of sequential work as a single link, and then using this software for the purpose of providing information as useful outputs for work performance and operations management to occupy the third place. It also occupies the fourth rank, and this is related to the aforementioned points

**Table No. (19)**  
**Arranging the arithmetic averages for the field of networks for information and communication technology**

No.	Statement	Arithmetic mean	Standard deviation	Rank	Score
1	Networks are used for the purpose of searching for metric information	3.68	1.20	4.00	Agree
2	Networks are used for the purpose of sending files through their services (e-mail, telephone and Internet fax)	3.72	1.22	2.00	Agree
3	Networks are used for the purpose of publishing work research	3.88	1.15	1.00	Agree

**Follow Table No. (19)**  
**Arranging the arithmetic averages for the field of networks for information and communication technology**

No.	Statement	Arithmetic mean	Standard deviation	Rank	Score
4	Networks are used for the purpose of benefiting from electronic conferences	3.62	1.17	6.00	Agree
5	Networks are used for the purpose of obtaining faculty databases	3.64	1.25	5.00	Agree
6	Networks are used for the purpose of document revision and improvement	3.72	1.35	3.00	Agree

The table shows the arithmetic mean and standard deviation for each of the networks' paragraphs, where the use of these networks for the purpose of publishing research works has been ranked first. This is due to its great role in the development of scientific research and community development, which are considered very important dimensions in achieving the quality of higher education after the educational process, then came the use of these networks are for the purpose of sending files through their services, whether by e-mail, phone or Internet fax because of their role in facilitating communication and gaining time in the second place. Then, the use of networks to revise and improve documents came in the third place..

- Analyzing the impact of the regression relationship of the use of information and communication technology on improving the quality of the educational process

The researcher used **Minitab 16 Program** to analyze the impact of the regression relationship and to identify the impact of the use of information

and communication technology on improving the quality of the educational process.

Through the results contained in the diagram, we show the impact of information and communication technology (TIC) on the quality of the educational process (QA), according to the following equation:

$$QA=0.977TIC+0.169$$

An increase of one unit of information and communication technology increases the quality of the educational process by 0.977. It was also found through the results that the explanatory ability of using information and communication technology on the quality of the educational process is estimated at 97.7%, which is very high. Therefore, the first hypothesis is achieved as following: there is a positive, statistically significant impact relationship between the using information and communication technology and improving the quality of the educational process. The following is a detail on the impact of the three elements of information and

communication technology (financial capabilities, software, and networks) on the quality elements of the educational process represented by the professor, student, course, and the teaching process. This is in addition to the faculty administration to come up with evidence to prove this, with the identification of the most influential element using these means among the five elements that lead us to take the necessary measures:

### **1- The impact of physical capabilities, software and networks on the course**

To find out the impact of ICT elements on course quality, Minitab 16 software was used by taking the following notation (PP Physical Capabilities, LG Software, RS Networks, CR Course Quality)

Through the results contained in the diagram, the impact of the three elements of information and communication technology on the quality of the course was shown, but with a difference between them, as we find them summarized in the following equation:

$$CR=0.367PP+0.321LG+0.301RS+0.102$$

An increase of one unit of physical capabilities leads to an increase in the quality of the course by 0.367, and an increase of one unit of software leads to an improvement in its quality by 0.321. Besides, an increase of one unit of networks leads to an improvement of its quality by 0.301 software on the course, while this software affects it more than networks and it was found through the results that the explanatory power of using information and communication

technology on the quality of the course is estimated at 96.3%, which is very high. Moreover, by reviewing the values of the inflation and variance coefficients according to the diagram, we find that their values are confined between 5.071 and 7.449, which are less than 10. This is evidence that there is no linear correlation between the independent variables, which explains the nature of the regression as being real and not fake. This confirms the direct relationship between the use of information and communication technology and the improvement of the quality of the course. Therefore, there is a positive and statistically significant impact of the use of information and communication technology on improving the quality of the course in the educational process.

### **2- The impact of physical capabilities, software and networks on the professor**

To find out the impact of the elements of information and communication technology on the quality of the professor, Minitab 16 program was used by taking the following coding (PP physical capabilities, LG software, RS networks, PR quality of the professor) Through the results contained in the diagram, we can see the impact of the three elements of information and communication technology on the professor, but with a difference between them, as we find them summarized in the following equation:

$$PR=0.371PP+0.295LG+0.206RS+0.604$$

An increase of one unit of material capabilities leads to an increase in the quality of the professor's work by

0.371. Besides, an increase of one unit of software leads to an improvement in the quality of his work by 0.295. Moreover, an increase of one unit of networks leads to an increase in the quality of his work by 0.206. More than software affects the quality of the professor, while this software affects more than networks the quality of the professor's work. Thus, it is clear from the results that the explanatory ability of using information and communication technology on the professor is estimated at 92.0%, which is high. By reviewing the values of the inflation and variance coefficients according to the diagram, we find that their values are confined between 5.071 and 7.449, which is less than 10, and this is evidence that there is no linear correlation between the independent variables. This explains the nature of the regression as being real and not fake. This confirms the direct relationship between the use of information and communication technology and the improvement of the quality of the university professor. Thus, there is a positive, statistically significant impact of the use of information and communication technology on improving the quality of the teacher in the educational process.

### **3- The impact of physical capabilities, software and networks on the student**

To find out the impact of ICT elements on student quality, Minitab 16 program was used by taking the following notation (PP Physical Capabilities, LG Software, RS Networks, ET Student)

Through the results contained in the diagram, we can see the impact of the three elements of information and communication technology on the student, but with a difference between them, as we find them summarized in the following equation:

$$ET=0.312PP+0.380LG+0.301RS+0.116$$

An increase of one unit of material capabilities leads to an increase in the student's abilities by 0.312. Besides, an increase of one unit of software leads to an improvement in the abilities of the student by 0.380. Moreover, an increase of one unit of networks leads to an improvement of student abilities by 0.301. Therefore, according to the opinions of professors, software affects more from the material capabilities to the student's abilities, while these physical capabilities affect more than the networks on the development and development of the student's abilities as it is clear from the results that the explanatory ability of using information and communication technology on the student is estimated at 95.7%, which is high. By reviewing the values of the inflation and variance coefficients according to the diagram, we find that their values are confined between 5.071 and 7.449, which is less than 10. Thus, this is evidence that there is no linear correlation between the independent variables, which explains the nature of the regression as being real and not fake. This confirms the direct relationship between the use of information and communication technology and the improvement of the quality of the university student, and therefore there is a positive and

statistically significant impact of the use of information and communication technology on improving the quality of the student in the educational process.

#### **4- The impact of physical capabilities, software and networks on the teaching process**

To find out the impact of ICT elements on the teaching process, Minitab 16 program was used by taking the following coding (PP Physical Capabilities, LG Software, RS Networks, EP Teaching Process)

Through the results contained in the diagram, we can see the impact of the three elements of information and communication technology on the teaching process, but with a difference between them, as we find them summarized in the following equation:

$$EP=0.331PP+0.388LG+0.293RS+0.0643$$

An increase of one unit of material capabilities leads to an increase in the quality of the teaching process by 0.331. Besides, an increase of one unit of software leads to an improvement in the quality of the teaching process by 0.388. Moreover, an increase of one unit of networks leads to an improvement in the quality of the teaching process by 0.293. Software affects more than physical capabilities the quality of the teaching process, while these physical capabilities affect them more than networks. It was also found through the results that the explanatory ability of using information and communication technology on the quality of the teaching process is estimated at 97%, which is very high. By reviewing the values of the inflation and variance coefficients

according to the diagram, we find that their values are confined between 5.071 and 7.449, which is less than 10. This is evidence of the absence of a linear correlation among the independent variables, what explains the nature of the regression as being true and not false. This confirms the direct relationship between the use of information and communication technology and the improvement of the quality of the teaching process, and therefore there is a positive, statistically significant impact of the use of information and communication technology on improving the quality of the teaching process in the educational process.

#### **5- The impact of physical capabilities, software and networks on the management of the faculty**

To find out the impact of the elements of information and communication technology on the quality of the faculty administration, Minitab 16 program was used by taking the following coding (PP physical capabilities, LG software, RS networks, FA faculty administration)

Through the results contained in the chart, the impact of the three elements of information and communication technology on the management of the faculty was shown to us positively, but with disparity among them, as we find them summarized in the following equation:

$$FA=0.351PP+0.465LG+0.191RS+0.0617$$

An increase of one unit of material capabilities leads to an improvement in the quality of faculty administration by 0.351. Besides, an increase of one unit of software leads

to an improvement in the quality of faculty administration by 0.465. Moreover, an increase of one unit of networks leads to an improvement in the quality of faculty administration by 0.191 and therefore according to the opinions of professors, the software more than the physical capabilities affect the quality of the faculty administration, while these physical capabilities affect more than the networks in improving its quality. It is also clear from the results that the explanatory power of using information and communication technology on the quality of faculty management is estimated at 95.4%, which is high. By reviewing the values of the inflation and variance coefficients according to the diagram, we find that their values are confined between 5.071 and 7.449, which is less than 10. This is evidence that there is no linear correlation between the independent variables that explain the nature of the regression as being true and not false. This also confirms the direct relationship between the use of information and communication technology and the improvement of the quality of the faculty administration. Therefore, there is a positive and statistically significant  $v$  of the use of information and communication technology on improving the quality of faculty management in the educational process.

Also, through the results of the analysis, we conclude that according to the professors' opinions, the use of information and communication technology in the educational process leads to a significant improvement in

its quality on the one hand, and on the other hand, the priorities of attention to the elements of the quality of the educational process were arranged. So we find in the first place the teaching process, then the course, followed by the student side, then the faculty administration and finally the professor, but this impact is very close. This is evident through the explanatory capacity of each element.

Accordingly, the results of the first hypothesis can be summarized as follows (there is a positive, statistically significant impact relationship between the elements of using information and communication technology and improving the quality of the educational process)

**- Arithmetic averages of the areas of obstacles to the use of information and communication technology:**

**First: Human Obstacles**

**Conclusions:**

The current study focused on knowing the extent of the impact of information and communication technology on improving the quality of the educational process in general first, then defining the impact of each element of information and communication technology (material capabilities, software, networks) on the five elements of the quality of the educational process (professor, student, course, teaching process, faculty management), with identifying the various obstacles that stand in the way of the successful and positive use of information and communication technology, without neglecting the difference in this impact and these obstacles according to the intermediate

variables. The results of the study are interpreted as follows:

- The study confirmed, through the views of professors in a group of universities, that the use of information and communication technology has a very strong impact on improving the quality of the educational process in its various elements in varying proportions, but they are very close to each other. This is due to the tremendous power of information and communication technology in creating an interactive, participatory educational space between the parties to the educational process in the classrooms and the various changes that occur as a result of that, whether in enriching new positives or eliminating many negatives.

- The study also confirmed that the use of information and communication technology in the educational process has many obstacles that are grouped into four main groups: human, material and software, organizational and administrative, and the curriculum. However, they vary between them, and this could also be due to the lack of good planning to embody any new change on the one hand and the lack of interest in implementation on the other hand. This is in addition to the lack of training in that and the rest of the obstacles mentioned previously.

**- Recommendations:**

Teachers' recommendations related to improving the quality of the educational process using information and communication technology

**First: Regarding the professor:**

- Allocating a large amount of space and time to the application shares of the use of technological means.
- Organizing training courses for teachers regarding the use of information and communication technology.
- Raising teachers' awareness of the need to keep pace with technological developments in the field of software and informatics through awareness sessions that show the advantages and disadvantages of using information and communication technology.
- Establishing a special body to follow up on the technological aspects of the faculty.
- Orientation towards virtual education through online learning. This is so that the professor remains completely linked to the student, and this can only be achieved through internet connectivity and making it available free of charge to each student.

**Second: Regarding students:**

- Sensitizing students to the need to adapt to these developments and educating them regarding the importance and positivity of information and communication technology.
- Opening websites for each professor to communicate with his students.
- Using online education to make lectures, exercises, model answers and discussion forums accessible to students.

**Third: Regarding management:**

- Connecting the faculty to the Internet and improving its flow.
- Continuous follow-up and maintenance of devices by workers specialized in this because of its importance in avoiding any malfunction or waste of time for all parties.
- Allocating a larger budget to finance projects related to the provision of information and communication technology in the educational process.
- Forming an effective will on the part of the administration to adopt the use of these technologies.
- Reconsidering the training programs in line with the use of electronic programs.

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