مدى تطبيق معلم الحاسوب والتكنولوجيا الفلسطيني للمهارات الرقمية لمعلم القرن الحادي والعشرين في التعليم

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مدى تطبيق معلم الحاسوب والتكنولوجيا الفلسطيني للمهارات الرقمية لمعلم القرن الحادي والعشرين في التعليم

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الملخص: هدف البحث الكشف عن مدى تطبيق معلم الحاسوب والتكنولوجيا الفلسطيني للمهارات الرقمية لمعلم القرن الحادي والعشرين في التعليم، من وجهة نظرهم؛ واتبع الباحث المنهج الوصفي التحليلي، وقد قاما ببناء وتطبيق استبانة على عينة عشوائية بسيطة بلغت (51) من معلمي الحاسوب والتكنولوجيا في مديرية التربية والتعليم غرب غزة، وجاءت النتائج قصور في تطبيق المهارات الرقمية من معلم الحاسوب والتكنولوجيا الفلسطيني، وممارستها في العملية التعليمية بشكل فعلي ، وأنه لا توجد فروق ذات دلالة إحصائية في متوسطات درجات استجابتهم للاستبانة، من وجهة نظرهم، تعزى لمتغير الجنس (ذكر / أنثى) ، ومتغير عدد سنوات الخدمة (0-5، 6-10، 11-15، 16-20)، وأوصى البحث بدمج مهارات القرن الحادي والعشرين، وخاصة المهارات الرقمية في مناهج إعداد كلية التربية، ولا سيما برامج إعداد معلمي الكمبيوتر والتكنولوجيا. وفي برامج التدريب أثناء الخدمة لمعلمي الحاسوب والتكنولوجيا.

الكلمات الدلالية: المهارات الرقمية، معلم الحاسوب والتكنولوجيا، معلم القرن الحادي والعشرون، المعلم الفلسطيني.

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The Extent to which computer and technology teachers in the digital skills of the 21st century in the schools of Gaza City

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Abstract: This research aims at finding out The Extent to which computer and technology teachers in the digital skills of the 21st century in the schools of Gaza City. The researcher adopted the analytical descriptive method and applied a questionnaire on a simple random sample of (51) computer and technology teachers in the directorate of education in the west of Gaza. The results showed that there was a lack of applying and practicing the digital skills by Palestinian computer and technology teachers. There were also no statistically significant differences in the mean of their responses to the questionnaire due to the variable of sex and years of services (0-5, 6-10, 11-15, 16-20). and the research recommended Integrating the skills of the 21st century, especially digital skills in the curricula of the preparation of the college of education, in particular, programs to prepare computer and technology teachers. and, into in-service training programs for computer and technology teachers.

Keywords: digital skills, computer and technology Teacher, 21st Century Teacher, Palestinian Teacher

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Introduction:

The development of knowledge and technology imposes many variables, which affect the international and Arab societies such as knowledge, digital information, economic competition, citizenship, and multiculturalism. All those variables affect elements of the educational system, the preparation of the teacher in terms of knowledge, culture, and professionalism. The effects necessitate the speed of movement in dealing with them and the introduction of significant educational changes at the level of policy, objectives, plans, programs, practices, and teaching aids for guiding and preparing innovative researcher- teachers, digital teacher and competitive teacher. Besides, these require following up training and re-training those who are on the job to take advantage of global applications and experiences of educational institutions. (EL-Hafni, 2015)

Due to communication and technology revolution, teachers begin focusing on their tools such as: Storing and retrieving knowledge, experiences, and sending information either textually, aurally or digitally via the internet to upgrade learning environment (Ibrahim, 2009). The shift from the behavioral theory of learning to the cognitive and social constructivism, which is concerned with information with the aims of storing and processing, has become essential (EL-Dbabisy, 2000). Mikre (, 2011) points out the importance of using computer and internet in transferring knowledge to achieve good learning. Tonoi, (2001-2002) emphasizes the importance of using informational technology's tools in communication by the teacher, creating, storing and managing information such as computers, internet, broadcasting technologies (radio and television and telephone communications) in order to enhance the learning process.

The teacher has a great job, which is the preparation of future generations. A teacher is a member of his community he belongs to and tries to develop it. He has many responsibilities towards the community. He is expected to play a positive role toward community sons' education, which is a future social industry. The goals cannot be achieved without a good relationship between the school and the community or between the teacher and the student. Therefore, we have a great belief in the

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importance of the teacher. We emphasize the role of the teacher in the technological and professional aspect not just in school but also in society. (EL Naqa & EL Eid, 2012, 2-3). Educationists need to reconsider the skills that the teachers need to qualify properly and correctly regarding the digital age since the present curricula are not enough to qualify the students for life and work in a rapidly changing society. As a result, some studies ask the ministries of educations, like: (EL-Hafni, 2015), (UNESCO, 2014), (Livingstone, 2012), (Boaduo, Milondzo & Gumbi. 2011), (Mikre, 2011), (Eshtawi & Elian, 2010, 38-42), (Darling-Hammond, 2006) to provide the learners with technological skills to succeed in their respective communities and work in the 21 century. For that, many institutions, concerned with education, have sought to develop frameworks for defining 21 century skills and suggest how they can be integrated into the educational system in general (Shalabi, 2014)

The teacher will remain the main factor in identifying the quality of education and educated generations on different levels, so a teacher's skills are the most important for achieving this goal (AL Zaharny, 2010, 3). At the same time, if teachers have digital skills, they will achieve the objectives of education, evaluate and test its outputs.

Teachers' acquisition of digital skills contributes to organizing instructional situations to efficiently and effectively attain educational goals through designing measures to assess and test learning outcomes, and providing different forms of information, storing , retrieving , exchanging it via communication and information technology(ICT) tools and students' interaction with them. This enhances learning effectiveness and actualizes it as well (Tinio, 2000-2002). This also contributes to accessing learning resources at any time or from anywhere by an unlimited number of individuals.

The researcher summarizes the importance of acquiring digital skills and using them in developing learning and teaching process (Hafny, 2015), (UNESCO, 2014), (Livingstone, 2012), (Boaduo, Milondzo & Gumbi. 2011), (Mikre, 2011), (Eshtawi & Elian, 2010, 38-42), (Darling-Hammond, 2006) as follows:

- Enriching education by adding special effects and special programs.

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- Economizing of education by achieving measurable learning goals in a cost, time, effort and source – effective way.
- Stimulating the students' attention and satisfying their needs for learning, increasing their experience to make them more willing to learn.
- Engaging all senses of a learner. This will lead to consolidate his learning and to avoid falling in verbosity.
- Forming sound good concepts by distributing tools, increasing the positive participation of the student and following scientific thinking to find solutions to problems.
- Diversifying reinforcement methods that lead to correct responses and diversifying teaching methods to address individual differences.
- Leading the students to form arranged and constant ideas, and modify behavior and develop positive attitudes.

Using technologies in education aims at preparing a generation capable of looking for information rather than memorizing it. For this reason, the teacher should be well- prepared for the use of all available technologies in the educational institutions and employ these potentialities in the educational institutions (Amowr & Abo Rayash, 2007, 131). The effective integration of teaching and learning technology depends on teachers who know how to use technologies to achieve the objectives of the teaching and learning process.

In the digital age, that has imposed itself on 21st-century education; the conventional teacher who focuses on transmitting information has no longer a place in modern educational systems that focus on modern technology in designing and implementing educational programs. This requires the teacher of the digital age to be able to use technology and apply it in the teaching process (AL Ani, AL Samarrai & AL Tamimi, 2009). Rather, s/ he is required to develop his/ her knowledge to update their information and skills, which enable them to absorb modern and sophisticated technology. What we are witnessing and will witness in the field of information and technology revolution and developments will be more than we expect for the future. (Obaid, 2006)

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This means that the teacher of the 21st century has many characteristics, which are different from those of the traditional one, such as personal characteristics related to the values of educational work, professionalism, cooperation, communication, project-based learning, innovation, continuing education, problem solution, time management and decision- making. All these characteristics are essential for the teacher to enter the field of knowledge economy to cope with the challenges facing educational systems. (Zamil, 2016)

Therefore, teacher's preparation programs in the second half of the twentieth century are subjected to revision and development. Consequently, the outlook to the teacher is changed from cramming students' minds with theoretical information to caring for his performance and roles and providing him with good skills for good teaching (Awashriyah, 2010, 64) via the recruitment of diverse ICT tools to increase the effectiveness of learning (Abdulsalam, 2009, 329) in line with the requirements of 21st century. The current teacher must master modern teaching methods and employ modern technology, practice different assessment and measurement methods as these contribute to the teacher professional development and enable him to become self-directed, capable of adaptation to change, and able to achieve desired outcomes of the learning process. (Abdulkader, 2014, 678)

Teacher preparation programs in the faculties of educations have begun to provide students with the culture of technology and information technology due to their importance in the formation of teachers by enabling them to provide his students with different ways for learning according to their rates, individual differences, inclinations, and attitudes. Each learner will be able to learn according to his ability. Teachers who are free from a large amount of exhausting paperwork provide sufficient information for their students and they have the energy and time to meet the individual needs of each student. Teachers will also be able to review and discuss details about the progress of the student using ICT tools. (Ibrahim, 2009)

Based on the above, the researcher summarizes the justification for possessing the skills of information and technology education for student- teachers at the faculty of education at Palestinian universities considering that education aims to

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prepare individuals for life within a particular society especially the Palestinian one, which has so many aspects of technology despite the security and political circumstances. It is necessary to prepare the Palestinian teachers in a manner that makes them more adapted to the society and its technical content and provide the minimum elements of the culture of education and information technology alongside their innovations. They need to be enabled to master both theoretical knowledge of instructional technology, its concepts and tools and the applied skills in the same field to acquire the skills of organizing and managing the process of designing and learning in classroom emphasizing human values and ethical principles as guides to social patterns of behavior.

Reviewing previous research such as (EL-Hafni, 2015; EdTech, 2015; UNSCO, 2014; White, 2013; DoDEA, 2012; Young, 2012; UNC, 2011; Zimmer, 2010; UNSCO, 2009), the researcher summarizes the digital skills necessary for the 21st century computer and technology teacher. These are (1) Using office software to support the teaching, (2)Creating and editing digital audio, (3) Exploiting digital images for classroom use,(4) Using video content to engage students,(5) Using info graphics to visually stimulate students, (6) Using Social bookmarking to share resources with and between learners, (7) Using blogs and wikis to create online platforms for students, (8) Using Social networking sites to connect with colleagues and grow professionally, (9) creating E-test and editing it, (10) creating Portfolio for achievement and editing it.

The problem of the search and its questions:

The computer and technology teacher has new roles to play in 21- century including the acquisition of technological skills to search for knowledge, employ it efficiently and continuously, train to practice the process of education in a way that suits the changes of the digital age (Darling-Hammond, 2006) besides being able to manage the new school since the teachers' abilities have a big role in developing the educational system. (Boaduo , Milondzo & Gumbi, 2011) .The cognitive development of the past decade has highlighted the need to develop teaching methods

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then incorporating modern technological techniques into courses and this requires technological skills which must available for teachers.

Based on the importance of possessing digital skills and their effective role in the educational process, the researcher notices that there are some obstacles, which hinder their employment in teaching processes. These are technical, financial, training and others as pointed by (Estawi, 2013) (Alhaq & Yassen, 2008). One of the obstacles is the lack of the financial and technical support for educational facilities. In addition, language and, the lack of training and system of education in some countries constitute other sources of difficulty.

The third international conference on E-learning in its recommendations to the educational institutions pointed to the need of overcoming all obstacles encountered in the application of e-learning and development of teaching skills to be used in teaching and learning process (AL-Sharhan,2014)

The explosion of knowledge, the spread of ICT tools in education and technological literacy characterize this age by providing an interactive learning and training environment that attracts and interests individuals in an era characterized by rapid development and constant change (Fatouh and EL-Harbi, 2016). The change in role of the teacher, the development of communication technologies, and the multiplicity of sources of learning led to fundamental changes in the requirements of educational situation in terms of the means of knowledge transfer and the role of the teacher, which turned from traditional roles that the teacher is only a transmitter of knowledge to a facilitator and guide (Fatouh and EL-Harbi, 2016)

Weak training and lack of continuous training of the Palestinian computer and technology teacher, lack of skills and expertise required to perform his roles effectively and the speed and intensity of cognitive and technological growth necessitate following up the scientific development in field of specialization as a cornerstone of the work in the Palestinian educational institutions (Ahmed,2007). The need for information and communication technology, and learning and teaching technologies require students to acquire self-learning skills, collaborative learning,

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and distance learning which demand mastering twenty- first technology skills (Salam, 2004).

In this study, the researcher identifies the extent to which Palestinian computer and technology teachers apply the digital skills of 21st-century in education by answering the following main question.

To what Reality do the Palestinian computer and technology teacher apply the digital skills of the 21st-century teacher in education from their point of view?

- What are the digital skills of the Palestinian computer and technology teachers in the 21st century?
- What is the degree to which the Palestinian computer and technology teachers apply the digital skills of the 21-century in education from their point of view?
- Are there any statistically significant differences in the extent to which the 21st-century teachers' digital skills are applied to education between computer and technology teachers as perceived by them due to the gender variable?
- Are there statistically significant differences in the extent to which the 21st-century teacher's digital skills are applied in education by computer and technology teachers as perceived by them due to the number of years of service variable (0-5, 6-10, 11-15, 16-20)?

Definition of terms:

- **The researcher operationally defines the following terms | the procedure of:**
- **Digital Skills:**
- Technological tools that are available on the World Wide Web free or paid used in the design, organization, construction, and storage of educational resources according to international standards for their production.
- **Application of Digital Skills:**
- The extent to which the technological tools available on the internet are used in the educational process and their application by the Palestinian computer and technology teachers in the educational process.
- **21st-century skills teacher:**

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- A modal teacher who has the skills to make him successful in conveying knowledge and possessing information, and technological culture to educate young people who are capable of innovation and integration into life and work.
- **Computer and technology teacher:**
- All teachers in the Directorate of the education the west of Gaza who teach technology from the fifth grade to the twelfth grade in the schools of the ministry of education and those who have a certificate in the field of computer and technology education.

Research limitations:

- The research investigates the extent to which the Palestinian computer and technology teachers apply the digital skills of a 21-century teacher in education from their point of view as: Storing and retrieving knowledge, experiences, and sending information either textually, aurally or digitally via the internet to upgrade learning environment.
- The research was conducted in the fourth and final half of the second semester of 2107/2018.
- The research was implemented on computer and technology teachers at the ministry of education – west Gaza directorate.

Research objectives:

1. To identify the digital skills of Palestinian computer and technology teachers in the 21st century.
2. To explore the degree to which the Palestinian computer and technology teachers apply the digital skills of 21st-century from their point of view.
3. To assess the level of applying the digital skills of the 21st on the part of Palestinian computer and technology teacher in education.

The importance of research:

1. It may provide a realistic picture of the level of application of the Palestinian computer and technology teacher of the digital skills of the 21st-century in education in terms of strengths and weaknesses.

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2. It may help educational institutions and universities improve the preparation programs targeting the Palestinian computer and technology teachers in terms of the digital skills of the 21st-century.
3. It may contribute to the enrichment of intellectual production in the field of evaluation and development of the digital skills of the Palestinian computer and technology teachers.

RESEARCH PROCEDURES

Research methodology:

The researcher used the analytical descriptive approach, which focuses on describing phenomena, actual scientific and professional facts in order to diagnose the extent to which Palestinian computer and technology teachers apply the digital skills of 21st century in education. This is achieved by collecting data from the teachers' point of view and explaining to what extent they apply the digital skills in order to come to generalizations related to description and evaluation (Abdel Hammeid, 2005)

Research Population:

All male and female teachers of computer and technology from the fifth grade to the twelfth grade in the Palestinian ministry of education the Directorate of education- west Gaza and those who have certificates in the field of computer and technology of education totaling (155) teachers.

The research sample:

A simple random sample of (51) technology and computer teachers is taken from the fifth grade to the twelfth grade, in the Palestinian ministry of education directorate of education- west Gaza.

Research tool: (The digital skills of the Palestinian computer and technology teachers in the 21st-century questionnaire)

The list of digital skills for the Palestinian computer and technology teacher in the 21st century was derived, and placed in the form of a questionnaire according the following steps:

1. **Determination of the objective of questionnaire:** the questionnaire is to be used as a reliable basis for detecting the application of digital skills of the

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Palestinian computer and technology teacher and the degree of practicing them in the educational process in the light of the skills of the 21st-century teacher.

2. **Identification of the source of questionnaire:** the researcher relied on preparing a questionnaire to determine the extent of applying the digital skills on previous research as guidelines such as (AL Harbi, 2016; Hafni, 2015; Shalaby, 2014; EdTech,2015; Young,2012; Livingstone,2012; Boaduo & et.al , 2011; Darling,2006)
3. **The initial picture of the questionnaire:** it was composed of (10) main domains. Each standard includes several items with total number of (102) items.
4. **Quantitative estimation of the questionnaire:** the researcher used the five - point Likert scale and includes the following estimates (highly available, available, moderately available, rarely available –unavailable), giving the gradient values (5, 4, 3, 2, 1). When the researcher constructed the questionnaire, he considered the following issues: their relevance and scope, clarity and comprehensiveness of the domains and their flexibility.
5. **The validity of the questionnaire:** it was verified by:
    1) **The referees' validity**: the questionnaire was presented in its initial form to five specialists in the fields of educational technology, information technology, and computer sciences. They have direct experience in the field of information technology and E-learning in the Palestinian universities at Gaza Strip in addition to four supervisors of computer at Gaza strip. They proposed what they thought appropriate about the domains of the digital skills of computer and technology teachers in the 21st century in addition to the relevance of items and the importance of each domain. They were required to delete the repeated or inappropriate ones, add and merge or transfer items as they see fit and introduce any amendments. in The researcher adopted and adapted the items that obtained the proportion of agreement (80%) or more by arbitrators. The questionnaire, after the amendments, consisted of 10 domains and, (79) items.

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- **The first domain** is" Using of office software to support the education process" and contains (13) items.
- The second domain is "creating and editing digital audio" and contains (6) items.
- The third domain is "exploiting digital images for classroom use, and it contains (7) items.
- The fourth domain is "the use of video to attract the attention of students (use video content to engage students)" and it contains (8) items.
- The fifth domain is "employing info graphics to visually stimulate student "and it includes (4) items.
- The sixth domain is "using social bookmarking to share resources with and between learners" and includes (9) items.
- The seventh domain is "use blogs and wikis to create online platforms for students" and includes (10) items.
- The eighth domain is "use of social networking to connect with colleges and grow professionally" and contains (8) items.
- The ninth domain is "creation and editing of E-test including" includes (8) items.
- The 10th domain: creating and editing e-profile, includes (6) items.

2) **The internal consistency of the questionnaire**: the researcher used Pearson correlation coefficients to calculate the degree of correlation between the total scores of each domain of the questionnaire and the total score of the questionnaire. The results were as shown in the table (1):

Table (1) calculate the degree of correlation between the total score of each axis of the questionnaire and the total score of the questionnaire

	Filed	correlation
1.	The use of office software to support the education process	0.615
2.	Create and edit digital audio	0.536
3.	Exploit digital images for classroom use	0.748
4.	Use video content to engage students	0.786
5.	Use info graphics to visually stimulate student	0.776
6.	Using social bookmarking to share resources with and between learners	0.805
7.	Use blog and wiki to create online platforms for students	0.792
8.	Use social networking to connect with colleges and grow professionally	0.752
9.	Creating and editing of E-test	0.789

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10.	Creating and editing e-profile	0.679

It is clear from the table (1) the reliability of the questionnaire.

3) Reliability of the questionnaire:

The reliability of the questionnaire was confirmed by:

A. Split- half Technique:

The researcher determined the reliability by using (Spearman-Brown Coefficient) for split - half and by calculating (Spearman-Brown Coefficient) according to the questionnaire (AL Lhyany, 2008) using SPSS and the value was (0.866) which indicates the reliability of the questionnaire.

B. internal consistency of Cronbach coefficient:

The researcher verified the internal consistency of Cronbach coefficient by using SPSS program (AL Lhyany, 2008). The value was (0.974) which indicates a high coefficient of stability of the scale and its accuracy and stability.

4) The final draft of the questionnaire:

It was both as a reliable and valid to identify the digital skills of 21st century's teachers and the degree these practice them in the light of teacher's skills in the 21st century from the teachers' point of view.

Apply the research tool: (the digital skills for the Palestinian computer and technology teacher 21st-century questionnaire)

The questionnaire was implemented by addressing the competent authorities of the Directorate of education - west Gaza to instruct computer and technology teachers in the directorate, participate in the study, and fill the questionnaire.

Research results and discussion

A. The result of the first question which says," What are the digital skills of the Palestinian computer and technology teachers in the 21st century?" The researcher did the following:

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- Reviewed the previous studies and benefitted from them such as those of AL Harbi,(2016) , Hanfi, (2015), Shalaby (2014), Edtech,(2015) Young,(2012), Livingstone & Baduo & et.al,(2011), Darling (2006).
- Making a list of the digital skills for the Palestinian computer and technology teachers in the 21st century.
- The presentation of the list of the Palestinian computer and technology teachers in the 21st century in its initial form to five specialists in the fields of education information, computer technology and four supervisors of technology teachers for refereeing. Those have direct experience in the field of information and computer technology. They were also required to suggest every suitable item for the domains and their respective items. They were invited to add, integrate, delete, or transfer any item, as they deem appropriate. Their suggestions and recommendations were adopted. The final version consisted of 10 domains and (79) items.
- The following is the list of the digital skills: The first domain is the use of office software to support the education process and contains (13) items. The second domain is" create and edit digital audio" which contains (6) items. The third domain" exploit digital images for classroom use" contains (7) items. The fourth domain" the use of video to attract the attention of students" (use video content to engage students) contains (8) items. The fifth domain "employing info graphics to visually stimulate student" includes (4) items. The sixth domain" using social bookmarking to share resources with and between learners" includes (9) items. The seventh domain" use blog and wiki to create online platforms for students" includes (10) items. The eighth domain:" the use of social networking to connect with colleagues and grow professionally and contains (8) items. The ninth domain: "creation and editing of E-test" includes (8) items. The 10th domain: "creating and editing e-profile," includes (6) items.

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B. The result of the second question which says," To what extent do the Palestinian teachers of computer and technology apply the digital skills in education from their point of view?"

C. The researcher verified the hypothesis" The degree of applying digital skills of the twenty first century in education on the part of the Palestinian computer and technology teachers exceeds the hypothetical level of 85% of the total percentage of the questionnaire" through the following:

Calculation of the arithmetical means, standard deviations, and relative weight of the scores of (1) each item of the questionnaire. (2) Each domain of the questionnaire. (3) The total score of the questionnaire.

Table (2): shows the arithmetic average, Std. Deviation and Rel. weight of the grades.

Items	N	Mean	Std. Deviation	Rel. weight	Rank
The 1st domain: Use office software to support the learning process					
Use word processing software to edit text.	51	4.75	.63	94.90	6
Coordinate text and adjust page margins.	51	4.92	.27	98.43	2
Capable of charting, controlling and formatting cells.	51	4.92	.27	98.43	2
Ability to store and retrieve text document from word processing programs.	51	4.88	.38	97.65	5
I can print text documents from word processing programs.	51	4.94	.31	98.82	1
Use spreadsheet programs to enter data and make simple calculations.	51	4.55	.76	90.98	10
Generate data and coordinate cells in tables using spreadsheet programs.	51	4.55	.78	90.98	10
I can calculate values by using formulas and equations in the spreadsheet program.	51	4.39	.80	87.84	13
Able to print and store data using a spreadsheet table.	51	4.51	.78	90.20	12
I can create and edit PowerPoint presentations.	51	4.90	.36	98.04	4
Capable of enhancing slide shows by adding audio, animation, customizing and inserting image	51	4.73	.60	94.51	7
I can print the presentation as an educational bulletin.	51	4.69	.68	93.73	8
Capable of creating and editing the interactive	51	4.63	.75	92.55	9

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Items	N	Mean	Std. Deviation	Rel. weight	Rank
The 1st domain: Use office software to support the learning process					
presentation.					
Total	**51**	**61.35**	**5.01**	**94.38**	**1**
The 2ed domain: Crate and edit digital audio					
I have an account on SOUND CLOUD.	51	2.59	1.75	51.76	3
I can record a soundtrack on the SOUND CLOUD.	51	2.45	1.64	49.02	4
I can upload a soundtrack to my account at SOUND CLOUD.	51	2.69	1.71	53.73	1
Add comment text on the soundtrack on SOUND CLOUD.	51	2.67	1.72	53.33	2
Create audio track tracks in the SOUND CLOUD list.	51	2.43	1.64	48.63	5
I share sound clips from SOUND CLOUD with my peers.	51	2.27	1.61	45.49	6
Total	**51**	**19.00**	**15.10**	**50.33**	**9**
The 3rd domain: Exploit digital images for classroom use.					
I upload different images from web pages.	51	4.76	.51	95.29	1
I share edit and poster with photo shirring tools online.	51	4.51	.73	90.20	2
Create an educational poster to suit educational goals.	51	4.24	.81	84.71	4
Produce educational cards to suit learner's experiences.	51	4.22	.88	84.31	5
Edit the educational images and treat them in proportion to the educational goals.	51	4.39	.72	87.84	3
I can create and share animations with learners.	51	3.37	1.36	67.45	6
I can edit images through their web editing tools (Pamunkey, Befunky, Pixar, Fetor, Picghost).	51	2.82	1.28	56.47	7
Total	**51**	**28.31**	**4.57**	**80.88**	**3**
The 4th domain: Use video content to engage student					
Create videos by using a web tool (Wevideo, Google Story Builder, Pixorial, Powtoon, Interview, Web of Stories, Flixtime, Video)	51	3.16	1.27	63.14	5
Edit video using a web tool (Wevideo, Google Story Builder, Pixorial, Powtoon, Interview, Web of Stories, Flixtime, Video)	51	3.06	1.29	61.18	6
Share videos by using a web tool (Wevideo, Google Story Builder, Pixorial, Powtoon, Interview, Web of Stories, Flixtime, Video)	51	3.04	1.28	60.78	7
Combine educational image m video and music to	51	3.92	.93	78.43	1

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Items	N	Mean	Std. Deviation	Rel. weight	Rank
The 1st domain: Use office software to support the learning process					
create videos that attract the attention of learner. Produce and edit my educational video and share it.	51	2.73	1.36	54.51	
Take a computer screenshot and record video to teach, edit and share it with the student.	51	3.69	1.22	73.73	2
Encourage students and creating by uploading, editing and sharing their video.	51	3.63	1.23	72.55	3
Crate mini-movies or video with educational purpose and share them with others.	51	3.27	1.30	65.49	4
Total	**51**	**26.49**	**7.80**	**66.22**	**7**
The 5th axis: Employment of info graphics for visual stimulation of leaner.					
Use web tools to produce educational info graphics (Piktochart, Easel.y, Google Draw)	51	2.47	1.29	49.41	2
I design educational info graphics including (structural, graphs, pictorial, mental maps, cognitive maps, digital data, information…)	51	2.43	1.25	48.63	3
Produced instructional info graphics.	51	2.39	1.22	47.84	4
I publish info graphics tutorial.	51	2.49	1.33	49.80	1
Total	**51**	**9.78**	**4.78**	**48.90**	**10**
The 6th domain: Use Social bookmarking to share resources with and between learners					
I have a personal control panel on Netvibes, Scoop.it, Edshelf, Diigo, Evernote,…to archive and organize aggregated content from around the web and share it with others.	51	1.78	1.10	35.69	9
I share the important topics in the field of specialization on my Facebook profile.	51	3.53	1.38	70.59	4
Create a Tag from a blog if you see the topic of interest to someone on Facebook.	51	3.45	1.38	69.02	5
I manage the Facebook group to invite colleagues to share themes and exchange views.	51	3.65	1.48	72.94	3
I share videos in my especially on YOUTUBE.	51	3.29	1.51	65.88	6
I make Tag c my blog if I see a topic of interest to someone on YOUTUBE.	51	3.16	1.42	63.14	7
I manage a channel on YOUTUBE to invite colleagues to share a video.	51	2.75	1.55	54.90	8
I manage cloudy account (Google Drive, Sky Drive, Dropbox…) for saving the files of subjects with some objects.	51	4.25	1.13	85.10	2
I can share the files on social media with other colleagues or students.	51	4.37	.87	87.45	1

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Items	N	Mean	Std. Deviation	Rel. weight	Rank
The 1st domain: Use office software to support the learning process					
Total	**51**	**30.24**	**8.31**	**67.20**	**6**
The 7th domain: Use blogs and wikis to create online platforms for students					
I have the educational blogs on (Facebook Group, Google Blogger, Wordpress, Kidblog, Google Classroom, Glogster Edu…)	51	2.92	1.45	58.43	10
I encourage the student to good writing by posting and commuting.	51	3.24	1.29	64.71	5
I enhance learning by providing sources of electronic education.	51	3.57	1.08	71.37	3
I enhance learning by sharing between students and exchange the idea.	51	3.82	1.01	76.47	2
Parents must follow up on the teaching of a student during the semester.	51	3.22	1.03	64.31	6
I encourage the student to contact with another student from other schools and exchange the idea.	51	3.22	1.29	64.31	6
I post the duties and recommendations for students.	51	3.06	1.17	61.18	9
I am able to download files and other educational things for students.	51	4.20	1.10	83.92	1
Publish class ads. Important dates and school calendar.	51	3.20	1.25	63.92	8
Create digital records to document the level of students learning and achieve goals.	51	3.27	1.30	65.49	4
Total	**51**	**33.71**	**9.35**	**84.27**	**2**
The 8th axis: Engaging Social networks in peer communication and professional development.					
I have accounts in number of social networks that support the growth in the world of education (Twitter, Facebook, Education World, Classroom2.0, Diigo, Discovery Education, Google RSS, Staff Develop, Yahoo! Answers, Ed Week، LinkedIn, Educators Professional Development, Pinterest, Delicious, Teacher Vision, Scoop.it …)	51	3.94	1.16	78.82	1
Organize and exchange my favorite article in specialty areas with others	51	3.45	1.12	69.02	5
Introduce creative ideas through social networks and inspire them with the opinions of others.	51	3.35	1.04	67.06	6
Help others through social networking to address common questions about using technology in	51	3.71	1.01	74.12	2

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Items	N	Mean	Std. Deviation	Rel. weight	Rank
The 1st domain: Use office software to support the learning process					
teaching and learning providing easy access to resources and online activities.					
Participate in the free professional development program through social networks and take advantage of the series of instructional courses on learning concepts in the 21st century.	51	3.18	1.09	63.53	8
I can search for specialty topics networks like twitter,	51	3.47	1.27	69.41	4
I can create a personal learning network with others who share my interest in helping others and sharing experiences with them.	51	3.35	1.16	67.06	6
I have a forum and group to exchange view with student and others on subjects of specialization.	51	3.61	1.34	72.16	3
The whole 8th axis	**51**	**28.06**	**6.93**	**70.15**	**4**
The 9th domain: Edit and create E-Test.					
I can make E-Tests and E-Metris on a technology tool (Google Forms, Quiz Tree, ProProf Quiz Maker, Flubaroo, That Quiz …)	51	3.43	1.43	68.63	1
I can make E-Tests and E-Metris on learning management systems (Moodle, WebCT, ClassRoom, Centra, BlackBoard, WiZiQ…)	51	3.06	1.42	61.18	8
I can make a bank of questions for E-Tests and E-Metris.	51	3.29	1.33	65.88	4
I am able to create and marge E-Tests and E-Measurements in different formats (multiple choice, checklist, True and False, boxes…)	51	3.39	1.40	67.84	2
I can put an electronic correction key for electronic tests and measurements.	51	3.24	1.49	64.71	5
I can electronically publish Tests and measurements electronically.	51	3.35	1.47	67.06	3
I can download the respondent's responses file from the E-Test and E-measurement management panel.	51	3.18	1.40	63.53	6
I am able to publish the responses of the exams to the E-Test and E-measurements of each of them separately.	51	3.14	1.39	62.75	7
The whole 9th axis	**51**	**26.08**	**10.50**	**65.20**	**8**
The10th axis: create and edit Profile.					
I can make Profile on a technology tools (Google Site, Silk.co, Weebly.com…)	51	3.78	1.35	75.69	1

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Items	N	Mean	Std. Deviation	Rel. weight	Rank
The 1st domain: Use office software to support the learning process					
Use the Profile to display my educational products.	51	3.53	1.42	70.59	2
I use the Profile to publish my files.	51	3.43	1.42	68.63	3
I do my work on my Profile.	51	3.37	1.43	67.45	4
I share my educational activity through my Profile.	51	3.37	1.46	67.45	4
I share homework with students through my Profile.	51	2.98	1.38	59.61	6
Total	**51**	**20.47**	**7.83**	**68.23**	**5**
Total score of questionnaire	**51**	**279.59**	**55.16**	**70.78**	

Table (2) shows that:

i. Questionnaire domains:

- The first domain: Use of office software to support the learning process ranked first with a relative weight of (94.38%).
- The second domain" Crate and edit digital audio" ranked second with a relative weight of (50.33%).
- The third domain "exploit digital images for classroom use" ranked third level a relative weight (80.88%).
- The fourth domain" the use of video to attract the attention of students (use video content to engage students" ranked seventh a relative weight of (66.22%).
- The fifth domain "employing info graphics to visually stimulate student" ranked the last and tenth with a relative weight of (48.90%)
- The sixth domain" using social bookmarking to share resources with and between learners" ranked sixth with a relative weight of (67.20%)
- The seventh domain" use blog and wiki to create online platforms for students" ranked second with a relative weight of (84.27%).
- The eighth domain "the use of social networking to communicate with colleges and grow professionally" ranked first with a relative weight of (94.38%)
- The ninth domain" creation and editing of E-test" ranked eighth with a relative weight of (65.20%).

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- The tenth domain" creating and editing e-profile" ranked fifth with a relative weight of (68.23%).

ii. Questionnaire as a whole:

- The top item is (I can print text documents from word processing programs) in the first domain ranked first in the questionnaire as a whole with a relative weight of (98.82%).
- The lowest item is (I produce instructional info graphics) in the fifth domain ranked last in the questionnaire as a whole with a relative weight of (47.84%).
- The mean scores of the responses of computer and technology teachers in the west of Gaza in of applying the digital skills of the 21st century is (70.87%) and it equals (279.59 degrees). This indicates that the average is less than (85%) of the maximum score or (335.75 points). As a result, the hypothesis that the Palestinian computer and technology teachers' application of the digital skills of 21st century exceeds the hypothetical mean (85%) is refuted. These show there are deficiencies in some aspects of the application of digital skills on the part of Palestinian computer and technology teachers in the educational process.

D. The result of the third question which says" Are there any statistically significant differences in the mean scores of the application of digital skills of the 21st-century in education among computer and technology teachers from the point of view due to the gender variable?", the researcher verified the hypothesis " there are no statistically significant differences in the mean scores of applying the 21st-century digital skills on the part of computer and technology teachers in education from their point of view due to the gender either(male/female) "

Table (3): the results (T)Test to compare The difference between the mean scores of the questionnaire scores.

Axis	Gender	N	Mean	Dev.st.	T	df	Sign.	Sign. Stat.
1st	F	31	60.32	5.78	1.87	49	0.067	No
	M	20	62.95	2.96				
2ed	F	31	12.41	8.59	2.73	49	0.009	Yes
	M	20	19.25	8.90				
3rd	F	31	27.58	4.74	1.44	49	0.156	No

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Axis	Gender	N	Mean	Dev.st.	T	df	Sign.	Sign. Stat.
	M	20	29.45	4.13				
4th	F	31	25.61	8.35	1.00	49	0.322	No
	M	20	27.85	6.81				
5th	F	31	9.12	4.98	1.22	49	0.226	No
	M	20	10.80	4.73				
6th	F	31	29.93	8.80	0.31	49	0.752	No
	M	20	30.70	7.67				
7th	F	31	33.45	9.06	0.23	49	0.812	No
	M	20	34.10	10.00				
8th	F	31	27.41	7.22	0.81	49	0.417	No
	M	20	29.05	6.49				
9th	F	31	25.54	11.29	0.44	49	0.658	No
	M	20	26.90	9.35				
10th	F	31	20.83	7.49	0.41	49	0.680	No
	M	20	19.90	8.48				
The Whole Questionnaire	F	31	272.25	58.66	1.18	49	0.241	No
	M	20	290.95	48.46				

Table (3) proves the acceptance of hypothesis that "there are no statistically significant differences in the mean scores of applying the 21st-century digital skills on the part of computer and technology teachers due to the gender variable.

E. The result of the 4th question which states that" Are there statistically significant differences in the mean scores of applying digital skills of the 21st century due to the variable of years of service (0-5, 6-10, 11-15, 16-20)?"

F. The researcher verified the validity of the hypothesis "There are no statistically significant differences in the mean scores of applying 21st century digital skills in the education by the computer and technology teachers as perceived by them due to the number of years of service variable (0-5, 6-10, 11-15, 16-20)". The researcher processed the data statistically by using ONE WAY ANOVA in order to examine the differences.

Table (4): the results ONE WAY ANOVA to compare the difference between the mean the questionnaire scores

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Axis	Sum of Squares	Total	DF	Mean Square	F	Sig.	Sign. Stat.
1st	Between Groups	218.88	3	72.96	3.31	0.28	No
	Within Groups	1034.76	47	22.01			
	Total	1253.64	50				
2ed	Between Groups	195.99	3	65.33	0.75	0.52	No
	Within Groups	4096.51	47	87.16			
	Total	429251	50				
3rd	Between Groups	65.09	3	21.69	1.04	0.38	No
	Within Groups	977.88	47	20.80			
	Total	1042.98	50				
4th	Between Groups	179.22	3	59.74	0.98	0.40	No
	Within Groups	2859.52	47	60.84			
	Total	3038.74	50				
5th	Between Groups	26.30	3	8.76	0.36	0.77	No
	Within Groups	1116.32	47	23.75			
	Total	1142.62	50				
6th	Between Groups	252.72	3	84.24	1.23	0.30	No
	Within Groups	3198.45	47	68.05			
	Total	3451.17	50				
7th	Between Groups	710.48	3	236.82	3.03	0.03	Yes
	Within Groups	3664.10	47	77.96			
	Total	4374.58	50				
8th	Between Groups	179.70	3	59.801	1.26	0.29	No
	Within Groups	2219.41	47	47.22			

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Axis	Sum of Squares	Total	DF	Mean Square	F	Sig.	Sign. Stat.
	Total	2398.82	50				
9th	Between Groups	414.24	3	138.08	1.27	0.29	No
	Within Groups	5099.43	47	108.49			
	Total	5513.68	50				
10th	Between Groups	310.42	3	103.47	1.79	166	No
	Within Groups	2752.28	47	58.55			
	Total	3062.70	50				
The Whole Questionnaire	Between Groups	14221.49	3	4740.49	1.61	0.19	No
	Within Groups	13702.85	47	2934.10			
	Total	152124.35	50				

Table (4): shows the acceptance of the hypothesis that "there are no statistically differences in the mean scores of the extent to which 21st-century teachers apply the digital skills ascribable to the number of years of service variable (0-5, 6-10, 11-15, 16-20) that because the (F)Value isn't significant.

Discussion and interpretation of results

The results show that there were deficiencies in some aspects of the application of the digital skills among the Palestinian computer and technology teachers as their actual practice in the educational process as demonstrated in (table2). Besides, were are no differences in the mean scores of applying the digital skills of the 21st century teacher from the teachers' point of view attributable to gender (male/female) as (table 3) shows and the variable of numbers of years of service (0-5, 6-10, 11-15, 16-20) as table(4) displays. This is ascribable according to the following reasons:

- The computer and technology teachers encounter the educational and scientific problems of the Palestinian society; resulting from the siege imposed on Gaza by Israeli occupation. In addition, the teachers are similar in their capabilities and possibilities related to addressing the problems and predicting their

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consequences. Moreover, long experience of the teachers was not adequate to overcome these problems. This finding agrees with that of Ashtoy's study (,2013)

- There is a lack of new initiatives in preparing computer and technology teachers to help them adequately meet new challenges in the 21st century and train them technologically and professionally to enhance the teaching profession and facilitate the integration of teachers in the 21st century. This result agrees with those of Boaduo, Milondzo & Gumbi, (2011)
- There is a failure in following up and identifying current and future changes and challenges and the absence of technological development of the teacher in the university level which is a focal point.
- Technological possibilities and tools available for computer and technology teachers get no specialized and professional supervision in the Palestinian ministry of education and the Directorate of education- west Gaza.

Recommendations

- Integrating the skills of the 21st century, especially digital skills in the curricula of the preparation of the college of education, in particular, programs to prepare computer and technology teachers.
- Incorporating 21st-century skills, especially digital skills, into in-service training programs for various subject's teachers especially computer and technology teachers.
- Continually updating courses, training initiatives, and focusing on preparing them to adequately meet new challenges in the 21st century.
- Developing the programs of preparing the technology and computer teacher in faculties of education in the Palestinian universities to help them possess and implement the digital skills of the teacher of the 21st century.
- Overcoming obstacles and identifying challenges to develop the performance and employment of digital skills of computer and technology teacher in the directorates of education as a teacher in the 21st century and devising proposals to overcome them.

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- Paying attention to the practical side and performance skills and working on mastery of computer and technology teachers in the Palestinian education departments.

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