

The Degree of Possession Digital Skills by Science School Teachers in Ein Al Basha Directorate of Education, from their point of view

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ABSTRACT

This study aims to identify the extent to which science teachers in the Directorate of Education, Ain Basha District in Jordan, possess the digital skills necessary to work as teachers, in addition to the variables (gender, ICDL certificate obtained, years of experience, academic qualifications). The researcher relied on quantitative descriptive methods. used in this study. The research community consisted of 150 male and female teachers, and the research sample consisted of 30 male and female teachers. In order to collect data for this study, we developed a questionnaire that included four aspects: the first aspect was about the advantages of familiarity with OFFICE programs, the second aspect was about dealing with external accessories for computers, and the third aspect was about the advantages of familiarity with Office programs. With regard to dealing with the Internet, the fourth area is learning how to construct electronic tests after ensuring their validity and stability. The results of the study showed that male and female teachers have an mean level of possession of digital skills, and in terms of fields, they are more familiar with the advantages of office programs, while possession of digital skills is higher in other fields. Fields are mean . The study showed that since the gender variable is biased towards men, there is a statistically significant difference in possession of skills at the significance level ($\alpha = 0.05$), but there is no statistically significant difference at the significance level ($\alpha = 0.05$). Due to the variable of obtaining the International Computer Driving License (ICDL) certificate, with the exception of one area, which is the area in which familiarity with office procedures is an advantage. As for the years of experience variable, the study showed no statistically significant differences. Regarding educational variables, the study showed that there were statistically significant differences in two areas: familiarity with the advantages of office and office procedures, and dealing with the Internet. For the benefit of postgraduate studies, the study recommends the establishment of ICDL courses because of their impact on teachers who possess digital skills. And creating courses related to dealing with external accessories, especially the interactive whiteboard function, due to teachers' lack of these skills.

Keywords: Digital skills, science teachers, secondary stage, Ain Al Basha District.



1. Introduction

Since the beginning of the twenty-first century, the world has witnessed rapid progress in all aspects, especially with regard to information technology, this tremendous development has increased the interest of individuals, societies and institutions in technology, and imposed on societies the introduction of technology in all different aspects of life, to help them develop performance and improve outputs, and since preparing a distinguished human being capable of solving problems and adapting to everything he faces in life is the most important output, educational institutions are the first to use technology in the educational process. There is no doubt that the learning process consists of a set of elements that interact and complement each other to achieve the teaching and learning process, including: educational objectives, educational content, teaching method, learner, and teacher (Hashem, 2019). Nowadays, which is the era of technology par excellence, which scientists call the digital age, the computer, the Internet, multimedia, smart devices and many other modern digital means are among the elements that must be added to the educational process. Although each of these elements is important, the teacher is the most important element. Given the key and important role of the teacher in the teaching and learning process, educators need to reconsider the skills teachers need to properly qualify for the digital age because current curricula are not enough to prepare students for life and work in a rapidly changing society (Hassounh, 2019). The effective integration of technology into the learning and teaching process also depends on teachers' knowledge of how to use different technologies to achieve learning and teaching goals in the digital age. Traditional teachers who focus on the transmission of information no longer have a place in modern times. An educational system based on modern technology in the design and implementation of educational programs. This requires teachers in the digital age to be able to use and apply technology in the teaching process (Alani et al., 2009). To achieve this integration, the teacher needs to master many digital skills that help him prepare, design and present educational materials using modern technologies, including: computers, the Internet, search engines and various applications. Digital learning skills need to be used to assess teaching in non-traditional ways, which also allows it to guide students and help them search for information rather than just receive it. Science teachers in particular need to possess computer skills to keep pace with the great development that is constantly happening for various science subjects; it needs skills to deal with the Internet in order to keep pace with everything new, and it needs to be familiar with Office programs to deal with shapes and graphs and use them to clarify many ideas, as well as science teachers in particular need the ability to deal with videos and multimedia in order to simulate and clarify many abstract and tangible scientific phenomena and concepts. From the above, it is clear to us that the educational process, especially for teaching various science curricula, requires a good knowledge by its teachers of basic digital skills, which helps them achieve educational goals in the best way.



1.1 Study Problem

Based on what was mentioned earlier about the importance of teachers possessing digital skills and the ability to apply these skills in the teaching and learning process, the aim of this study is to determine the extent to which science teachers in Ain El Basha education possess digital skills. By answering the following research questions:

- To what extent do science teachers in the Directorate of Education in Ain al-Basha District have digital skills?
- Is there a statistically significant difference at $\alpha = 0.05$ in the extent to which science teachers in the Directorate of Education in Ain Al-Basha District possess digital skills according to each of the following variables: gender, ICDL certificate, years of experience, and academic qualification?

1.2 Question of study

RQ1: The extent to which science teachers have basic digital skills.

RQ1: The impact of each of the following variables: (gender, years of experience, education, and obtaining an ICDL certificate) on the availability of basic digital skills among science teachers.

1.3 Significance of the Study

The importance of this study lies in the following:

- Revealing the extent to which science teachers in the Directorate of Education of the Ain Al-Basha Brigade possess digital skills.
- Reveal the important digital skills that a teacher must possess to teach effectively.
- Identify the necessary training courses to increase the digital skills of science teachers in Ain El Basha.
- Shedding light on the mechanism for following up the effective use of digital skills in the educational process.

1.4 Procedural Definitions

○ **Digital skills:** defined by Bourgeau, T. et. Al: 2020) "Ability to interact with basic digital tools. Basic digital skills include knowledge of the hardware and software required to use various technological devices (computers, smartphones, software (word processors, applications)), online operations (internet, search engines, social networks, e-commerce, privacy), and media communication (cellular and IP networks)."

○ **It is defined procedurally as:** a set of skills based on the use of modern technologies such as computers, the Internet and various applications to produce digital media (texts, images, audio, and video), presentations, lessons, traditional and electronic tests, semester and daily plans, assessment tools, performance records, and others to help the teacher accomplish his tasks in the educational process effectively.

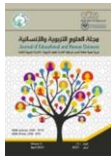
○ **Science teachers:** They are teachers who teach science from fourth to eighth grades and teachers (physics, chemistry, biology, earth sciences) from ninth to twelfth grade.

○ **International Computer Driving License (ICDL):** ECDL offers degrees in non-European countries, and globally recognized ICT and digital literacy certificates.



2. Previous Studies

Previous studies related to the subject of this study were reviewed, so the researcher used what is appropriate to the subject of his research. The studies are divided into two parts and will be presented in chronological order from oldest to newest, as follows: Domi and Radrakeh (2012) conducted a study that revealed the extent to which computer teachers in His Majesty King Hamad Project schools in the Kingdom of Bahrain possess e-learning competencies based on variables such as gender, educational experience and professional title. The search tool was a questionnaire containing (52) items distributed over five sides. The research sample consisted of (160) male and female teachers, and the results showed that computer teachers have a high degree of ability to learn online. The results also showed that there was no statistically significant difference in the tool and in all aspects due to the effect of gender, while there was a statistically significant difference in the tool due to the impact of that teaching experience of more than 10 years, and in various aspects except for the aspects of e-learning management and assessment. The results also showed that there was no statistically significant difference in the tool and in all aspects attributed to the professional title except for the use of e-learning. The study of Al-Maamari and Al-Masrouri (2013) aimed to reveal the availability of ICT competencies among social studies teachers in post-basic education in some governorates of the Sultanate of Oman, and to study the impact of gender, specialization and experience. To achieve the objectives of the research, the descriptive approach was used, and the research tool was a questionnaire consisting of (37) items distributed on (3) axes: the ability to operate the computer, the ability to benefit from Internet resources, and the ability to use information and communication technology in teaching and evaluating social studies. The questionnaire was applied to the study sample consisting of (236) teachers of social studies in basic education schools in the following governorates: Muscat, North Batinah and South Sharqiya. The results of the study showed that the extent to which social studies teachers acquire these competencies reaches (3.17), which is at the mean level. Al-Yousef (2017) conducted a study aimed at revealing the ability of Islamic education teachers in Amman Governorate to use smart technologies in education, using the quantitative descriptive approach. The research sample consisted of 170 male and female teachers who were selected from the study population in the first semester of the academic year 2010/2011 through the simple random method. The research tool was a questionnaire consisting of (35) items distributed on four sides. The results of the research showed that the ability of Islamic education teachers to apply smart technology in education is at an mean level, and the results of the research showed that there are statistically significant differences in the degree of ability of Islamic education teachers to apply smart technology in education related to increasing years of experience and increasing scientific qualifications. Shaaban's study (2018) aimed to reveal the extent to which Islamic education teachers in secondary schools in Mafraq Governorate possess computer skills from their point of view. To study the impact of variables such as gender, qualifications, and experience on this, use the



descriptive approach. The study sample consisted of (100) male and female teachers. A questionnaire containing (45) items was distributed. The study found that Islamic education teachers in Mafrq Governorate have higher levels of computer skills in secondary schools, and the results showed that there were no statistically significant differences in the level of computer skills between gender variables and scientific qualifications across the entire tool and in all aspects, and there were statistically significant differences. Computer proficiency depends on teaching experience, with preference given to candidates with more than (10) years of experience. The study recommends organizing training courses for Islamic education teachers to enable them to use the Internet in teaching. Al-Smadi (2019) conducted a study aimed at revealing the extent to which mathematics teachers at the secondary level in Ajloun Governorate possess digital competencies from their point of view. Both descriptive and analytical approaches were used. The research community included (590) teachers, and the research sample reached (274) teachers, who were randomly selected, and the research tool was a questionnaire developed by the researcher that included (17) items related to digital competencies. The study reached a set of results, the most important of which is that teachers have high competencies with an mean of (3.51). The aspects studied were arranged in descending order as follows: the adequacy of technology processes and concepts with an arithmetic mean (3.55), followed by the adequacy of planning and designing the learning environment, with an arithmetic mean (3.52), and the adequacy of productivity and professional practice with an arithmetic mean (3.48). The results also indicate that the gender variable does not affect teachers' acquisition of digital competencies. Hassouna's study (Hassouna, 2019) aims to reveal the extent to which Palestinian computer and technology teachers apply the digital skills of twenty-first century teachers in education from their point of view. Using descriptive analysis, the researcher conducted a random survey of 51 computer and technology teachers in the Directorate of Education in West Gaza, which revealed gaps in teachers' application and practice of digital skills in the educational process. In fact, the study recommends the inclusion of twenty-first century skills, especially digital skills, in preparatory courses in faculties of education, specifically in courses for computer and technology teachers. Tara and Rabie (2020) conducted a study aimed at revealing the impact of the COVID-19 pandemic on the expansion of e-learning in Egypt. The first axis of the study consists of determining the extent to which teachers possess the skills to use e-learning tools and apply them in education. The criteria for applying the study include the ability to search through digital platforms, and the ability to use applications and e-learning tools. and communication via electronic networks. The descriptive approach was adopted and a four-sided questionnaire was used, which was distributed after verifying its validity and stability to a research group of 130 randomly selected teachers. The study showed that the level of teachers' skill in the use of e-learning and its application in the teaching process is low with an arithmetic mean of 1.92 and a standard deviation of 0.90. The study concluded that the Ministry of Education should organize training courses for teachers to provide them with digital skills and their



educational applications. Al-Mufadhi and Al-Daghaim (2021) aims to reveal the extent to which social studies teachers are aware of the digital skills of teachers in the twenty-first century. The researchers used the descriptive survey approach and used a measure measuring the awareness of twenty-first century teachers of digital skills, which consists of three aspects. This scale was randomly selected for 39 female teachers working in the government sector, and the results of the study showed that the teachers They have higher levels of knowledge and arithmetic, with the mean value reaching (3.48). Moreover, study conducted by Lorenia et al. (2017) aimed to determine the capabilities of the digital level of primary school teachers and their relationships with some variables such as age, gender, educational training related to the use of technology and the number of weekly hours they spend on the computer or tablet, the researcher and the researcher followed the quantitative descriptive approach, and the sample was non-random included (88) teachers for the fifth and sixth grades of (32) School from the towns of Obregon and Navojoa, Sonora. The results showed that the digital skills of the majority of teachers were at the intermediate level, and showed a high level of digital skills in favor of younger teachers between (24-36), as well as a high level of digital skills in favor of teachers who follow educational training related to the use of technology, as well as a high level in favor of teachers who spend more time on a computer or tablet. Also, Çam and Kiyici (2017) conducted a quantitative descriptive study aimed at determining the levels of digital literacy of potential teachers in terms of several variables. The random sample consisted of 354 teachers studying in different departments of the Faculty of Education at Sakarya University. The 30-element tool used to collect data was the "Digital Knowledge Scale" developed and used by the researchers. The scale consists of (5) different factors: Information knowledge, visual knowledge, programming knowledge, technological knowledge, and computer knowledge. Exploratory factor analysis was used to analyze the data. The results showed a higher level of digital literacy for prospective teachers in terms of gender in favor of males and a high level of digital literacy for prospective teachers who have a constant internet connection or a computer that they can use frequently. In addition, the researchers found that the personal income levels of potential teachers have no effect on their digital literacy levels.

Commenting on previous studies

By reviewing previous research, it was noted that some studies dealt with the extent to which teachers possess digital skills, such as: the study of Domi and Daradkeh (2012) and the study of Al-Smadi (2019), and some of them dealt with the extent to which potential teachers who are in school possess the level of digital knowledge, such as the study of Jam and Kiyici (Çam and Kiyici, 2017), and regardless of the term used in the studies, whether it is digital skills, computer competencies, digital knowledge or other nomenclature, the aim of these studies is to find out the extent of Teachers possess digital age skills, with the exception of Hassouna's study (2019, which aimed to see to what extent teachers apply digital skills. The studies followed



the descriptive approach and took into account several factors, including gender, the number of years of experience and the extent to which the teacher connected to computers or tablets. Most of the results indicate that teachers' possession of digital skills is mean , which indicates the need to research this aspect to know the reality of Jordanian schools. This study was distinguished from previous studies in terms of not only studying the extent to which teachers possess digital skills according to one or two variables, but also took into account several variables, including obtaining the ICDL certificate, which was not previously addressed to verify the importance of this certificate and its impact on the degree of teacher possession of digital skills, as well as the importance of dealing with science teachers, who must be characterized by high possession of digital skills due to the importance of these skills in teaching science in particular and as This is the first study in the aspect of digital skills in the Ain al-Basha district.

3. Methodology

3.1 Approach of the study

To determine the digital skills of science teachers in the concerned directorate, the researcher adopted the quantitative descriptive approach. The method involves observing and recording phenomena in their natural state, providing an accurate representation of the collected data. Which involves collecting and analyzing data to determine answers to research questions. The main goal of the study was to determine the extent to which science teachers believe they have the necessary digital skills. As part of the method, the researcher calculated the arithmetic mean and standard deviation.

3.2 Population of the study

The study was conducted on all science teachers in Ain Al-Basha District during the first semester of the academic year 2021/2022. The study sample included 150 male and female teachers. Table 1 shows the distribution of the study sample of 30 male and female teachers, divided according to the study variables.

Table 1. Frequencies and Percentages of Study Sample by Variables.

Variable	Category	Frequency	Percentage (%)
Gender	males	13	44%
	females	17	56%
	Total	30	100%
Obtaining ICDL Certification	Yes	16	53%
	No	14	47%
	Total	30	100%
Number of years	Less than 5 years	5	18%



of experience	5 to 10 years	6	20%
	More than 10 years	19	62%
	Total	30	100%
Qualification	Intermediate Diploma	1	4%
	Bachelor	22	72%
	Graduate	7	24%
	Total	30	100%

3.3 Study Tool

The researcher used the questionnaire as a study tool to measure the degree to which teachers possess digital skills and includes four aspects: The first aspect: familiarity with the advantages of office programs (the most important of which are word processors, presentations and electronic tables), the second side: knowing how to deal with external accessories for the computer (printer, interactive board, scanner, etc.), side Third: Dealing with the Internet (searching for information, downloading programs, ...) The fourth aspect: familiarity with the methods of building electronic tests. The development of the study tool was guided by previous studies: Young (2012) and Livingstone (2012).

• Validity of the study tool

The tool was provided to a number of experienced professional arbitrators to obtain their opinion on the compatibility of the questionnaire with the objectives for which it was prepared and to ensure its clarity and comprehensiveness, as this included the allocation of the paragraphs of the subject of the questionnaire as well as the aspect to which this paragraph belongs. Some of the agreed paragraphs were reviewed and redrafted by stating what the paragraph was trying to achieve in a direct and concise manner and deleting paragraphs that were agreed to be unnecessary.

• Reliability of the study tool

The researcher calculated the stability coefficient (Cronbach alpha), which amounted to (0.86) as well as the coefficient (Gutmann) through the half fractionation, which amounted to (0.88) and since both values are high, this indicates a high stability of the study tool.

3.4 Study procedure

To achieve the objectives of the study, the researcher followed the following steps:

- Refer to the theoretical literature and previous studies as a theoretical basis for the study, and to prepare the problem of the study and determine its questions, importance, limits and determinants.
- Developing the study tool using what has been achieved through reading the theoretical literature related to the topic.



- Presenting the tool to experienced and competent arbitrators and then making the necessary adjustments based on their judgments.
- Apply the questionnaire to the study sample.
- Unpack the results on Excel.
- Analyze statistical data using SPSS software.
- Present, discuss and interpret the results of the study.

3.5 Study variables

- Gender.
- Obtain ICDL certification.
- Number of years of experience
- Qualification
- Digital Skills

3.6 Statistical treatments

After conducting the questionnaire survey on the sample, the statistical package for the social sciences (SPSS) was used to answer the research questions, using the following statistical methods:

1. To answer the first question, find the arithmetic mean and standard deviation.
2. To answer the second question, a T-test was performed on two independent samples.
3. To answer the third and fourth questions, make dimensional comparisons using single analysis of variance and the Schiffet test.

4. Discussion of Results

Results related to the answer to the first question: What is the degree to which science teachers possess digital skills?

The arithmetic mean s and standard deviations of the tool as a whole and for each aspect of the study were calculated for the responses of the sample members on the study tool in descending order of the aspects as shown in Table (2).

Table.2. Mean and standard deviations of the responses of the study sample members to the aspects of the study tools in descending order.

Rank	Item No.	Item	Mean	Standard deviation	Grade
1	3	Dealing with the Internet	3.79	0.87	High
2	1	Familiarity with the advantages of Office programs	3.37	0.89	Medium
3	4	Familiarity with the methods of building electronic tests	3.32	1.13	Medium
4	2	Handling external computer accessories	2.98	0.78	Medium
Total			3.36	0.79	Medium



Table (2) shows that from the teachers' point of view, the arithmetic mean of the extent to which science teachers possess digital skills is (3.36), which is an mean level, and the standard deviation (0.79) among which (Internet processing) obtained the highest arithmetic mean (3.79) and a standard deviation (0.87) in first place and with a high degree, followed by the side (Familiarity with the functions of office programs) with an arithmetic mean (3.37), a standard deviation (0.89) and an mean score, then the side (familiarity with the methods of building electronic tests) with an arithmetic mean (3.32), a standard deviation (1.13) and an mean score, while the side (dealing with external computer accessories) comes in last place B with an mean of My arithmetic is 2.98 and a standard deviation of (.780) with a mean degree. It is also worth noting that the standard deviation values are low, which indicates consistency between opinions and lack of dispersion.

To determine the extent to which the sample members possessed each aspect of the study, the arithmetic mean and standard deviation of the responses of the study sample members were extracted for each paragraph in each aspect.

- **First:** Arithmetic mean s and standard deviations of the paragraphs of the first side (familiarity with the advantages of office programs) where the results were as in Table (3).

Table 3. Mean and standard deviations of the responses of the study sample for the paragraphs of the side of familiarity with the advantages of office programs.

Rank	Item No.	Item	Mean	Standard deviation	Grade
1	1	I can use a word processor to edit and format text.	3.86	0.95	High
2	2	I can adjust the text and edit the page margins.	3.74	1.00	High
3	6	I can create presentations and edit them.	3.43	1.15	Medium
4	3	I can format cells in Excel (borders, shading, resizing...).	3.35	1.08	Medium
5	5	I can create graphs from data in Excel.	3.02	1.17	Medium
6	4	I can use formulas and associations such as (sum, count) in calculations in Excel.	2.80	1.11	Medium
Total			3.37	0.87	High

As can be seen in Table (3), the arithmetic mean of the respondents' answers to each paragraph in the first column ranges between (3.86 - 2.80), where the first paragraph is (I can use a word processing program to edit and edit texts). Text formatting), highest rank, arithmetic mean (3.86), standard deviation (0.95), score is very high,



followed by the second paragraph, content is (I can adjust text and adjust text margins), arithmetic mean is (3.74), standard deviation is (1.00), which is a high score. The fourth paragraph states (I can use formulas and conjunctions in arithmetic operations such as (addition and counting)) and the Excel program comes at the bottom of the list with an arithmetic mean (2.80) and a standard deviation (1.11), which is moderate.

From the previous results, it is clear that the skills related to the use of the Word program are at a high level, because most teachers use this program to write test questions and assignment papers, while the rest of the programs use the Word program. Word program. Make presentations in class or use Excel to create charts or create mathematical formulas from some of the best teachers.

- **Second:** Arithmetic mean s and standard deviations of the paragraphs of the second side (dealing with some external accessories of the computer) where the results were as in Table (4).

Table 4. Mean s and standard deviations of the responses of the study sample for the paragraphs of the side of dealing with some external accessories of the computer.

Rank	Item No.	Item	Mean	Standard deviation	Grade
1	9	I can install the external units (keyboard, mouse, screen) with the computer case.	3.73	3.73	High
2	13	I can use the printer to print various files.	3.69	3.69	High
3	7	I can connect the printer to my computer.	3.58	3.58	Medium
4	11	I can use the interactive board as a projector.	2.88	2.88	Medium
5	8	I can identify the printer on my computer.	2.58	2.58	Medium
6	10	I can use the scanner.	2.50	2.50	Medium
7	12	I can use the advantages of interactive board.	1.87	1.87	Weak
Total			2.98	2.98	Medium

As can be seen from Table (4), the arithmetic mean of the paragraphs of this aspect (dealing with some external accessories for computers) ranges between (3.73 - 1.87), where the ninth paragraph (I can install external devices (keyboard, mouse and screen) and computer box). (Status)) ranked first with a high arithmetic mean (3.73) and standard deviation (1.18), followed by the thirteenth paragraph that reads (I can



use the printer to print different files), with an arithmetic mean (3.69), the standard deviation is (1.14), and the score is high. The twelfth paragraph, which says "I can use the interactive whiteboard function", came in last place with an arithmetic mean (1.87) and a standard deviation (1.09), which is weaker..

Reviewing the results related to this aspect, we find that the skill of installing external units and using the printer had high results because teachers must use these units permanently and continuously, so they have these skills, on the other hand, we find that dealing with the rest of the peripherals such as the scanner or installing the printer and the interactive board came in medium proportions because teachers do not need them continuously during teaching or because they are not available in schools sufficiently. While teachers' possession of the skill to use the advantages of the interactive board according to their opinion was weak in line with the reality of schools in Jordan because of the lack of availability of the interactive board in many schools and if it is available in small numbers is not commensurate with the number of classes and teachers and because of the lack of training for teachers.

• **Third:** Arithmetic mean s and standard deviations of the paragraphs of the third side (dealing with the Internet) and Table (5) shows the results.

Table 5. Mean s and standard deviations of the responses of the study sample members for the paragraphs of the side of dealing with the Internet.

Rank	Item No.	Item	Mean	Standard deviation	Grade
1	15	I can use the search engine.	4.13	0.93	High
2	18	I can download a picture from the Internet	3.97	0.97	High
3	14	I can check if the device is connected to the Internet.	3.85	1.02	High
3	17	I can download a file from the Internet.	3.85	1.04	High
4	16	I can use the advanced options in the search process	3.78	1.04	High
5	19	I respect property rights by documenting information taken from the Internet.	3.66	1.13	Medium
6	20	I can back up my files and data on online storage spaces like Google Drive.	3.30	1.25	Medium
Total			3.79	0.87	Medium

As can be seen from Table (5), the arithmetic mean of the responses of the sample members to deal with the Internet side ranges between (4.13 - 3.30), and the fifteenth



paragraph (I can use search engines) ranked first, the arithmetic mean is (4.13) and the standard deviation is (0.93), which is very high, followed by the eighteenth paragraph, which says (I can upload an image from the Internet), the arithmetic mean is (3.97) and the standard deviation is (0.97) and with a very high score. The 20th paragraph (I can back up files and data on Internet storage spaces like Google Drive) ranked last with an arithmetic mean (3.30) and a standard deviation (1.25), giving it an mean score..

We find through the review of the results related to the third aspect related to dealing with the Internet that the degree of teachers' possession of Internet skills was mostly high, and this corresponds to the real reality, as the Internet is available everywhere in school, home and even commercial markets, and many human activities such as communicating with others and paying bills are linked to the use of its advantages permanently. On the other hand, teachers' possession of the mean degree of intellectual rights skill can be attributed to the lack of awareness among teachers of the importance of documentation, as well as there is weakness among teachers in dealing with some Google applications, including Google Drive, because there are no training courses covering this aspect, except for the new Intel course, in which a limited number of teachers from all disciplines register.

Fourth: Arithmetic mean s and standard deviations of the paragraphs of the fourth side (familiarity with the methods of building electronic tests) and table (6) shows the results.

Table 6. Mean s and standard deviations of the responses of the study sample members to the paragraphs of the side of familiarity with the methods of building electronic tests.

Rank	Item No.	Item	Mean	Standard deviation	Grade
1	23	I can adjust the question score in the prepared exam using any application for building electronic tests (such as Google Forms).	3.39	1.24	medium
2	25	I can determine the exam time prepared using any application for building electronic tests (such as Google Forms).	3.37	1.27	medium
3	24	I can insert an image of the question into the exam prepared using any application for building electronic tests (such as Google Forms).	3.34	1.22	medium
4	22	I can add different types of questions in the prepared exam using any application for building electronic tests (such as Google Forms).	3.31	1.21	medium
5	26	I can limit the number of times an examinee can repeat while taking the prepared exam using any application to build electronic tests.	3.28	1.22	medium



6	21	I can use one or more applications to build electronic tests such as Google Forms.	3.26	1.22	medium
Total			3.32	1.13	

Table 6. shows that the arithmetic mean of the respondents' answers ranges between (3.39-3.26), which are all mean, and the twenty-third paragraph ranked first in the arithmetic mean (3.39). The standard deviation is (3.26), and the arithmetic mean of the twenty-fifth segment is (3.26). (3.37), and the standard deviation is (1.27), and then the arithmetic mean of the twenty-first paragraph comes in last place. (3.26) and standard deviation (1.22).

When studying the results, we note that the degree to which teachers possess all the skills of methods of building electronic tests is of an mean degree, and this may be due to the fact that teachers do not implement this type of tests, and the presence of an mean degree of teachers' possession may be attributed to the application of this type in the period of the existence and spread of Corona disease, where education and evaluation have become remote.

The results related to the second question: Are there statistically significant differences at the level of ($\alpha = 0.05$) to the degree of possession of science teachers in the Directorate of Education of the Ain Al-Basha Brigade of digital skills according to the gender variable?

To answer this question, the arithmetic mean s and standard deviations were extracted to the degree of possession of the stage teachers in the Directorate of Education of the Ain Al-Basha Brigade for digital skills and a test (T) was conducted for independent samples.

Table 7. Results of Test (T) for the Effect of the Gender Variable on the Teachers' Degree of Possession of Digital Skills.

Domain	Gender	frequency	Mean	Standard Deviation	t	P-value	Degree of freedom	Difference of squares
Familiarity with the advantages of Office programs	males	13	3.65	0.95	3.34	*0.01	123.00	0.51
	females	17	3.14	0.77				
Handling external computer accessories	males	13	3.31	0.63	4.53	*0.00	123.00	0.59
	females	17	2.72	0.79				
Dealing with the Internet	males	13	3.97	0.85	2.01	*0.046	123.00	0.31
	females	17	3.65	0.87				



Familiarity with the methods of building electronic tests	males	13	3.58	1.13	2.27	*0.025	123.00	0.46
	females	17	3.12	1.1				
The tool as a whole	males	13	3.63	0.76	3.38	*0.001	123.00	0.46
	females	17	3.16	0.76				

*D statistically

As can be seen from Table.7, there are statistically significant differences in each aspect (familiarity with the functions of Office programs, dealing with some external attachments, dealing with the Internet, familiarity with office methods, etc.) at the significance level ($\alpha = 0.05$). According to the gender and male preference variables, the significance levels are (0.01, 0.00, 0.046, 0.025) respectively, which are statistically significant. There are also statistically significant differences in digital property. The level of significance of the teacher's skills according to the gender variable is (0.001). Examining the results on the gender variable, which indicate a higher degree of male possession of computer skills than females, it may be attributed to the fact that males generally enrol more than females because training is after school and on holidays, where many teachers are reluctant to enroll due to family circumstances and raising children.

The results related to the third question: Are there statistically significant differences at the level of ($\alpha = 0.05$) to the degree of possession of science teachers in the Directorate of Education of the Ain Al-Basha Brigade for digital skills according to the variable of obtaining the ICDL certificate?

To answer this question, the arithmetic mean s and standard deviations of the degree of possession of the stage teachers in the Directorate of Education of the Ain Al-Basha Brigade for digital skills were extracted and a test (T) was conducted for the independent samples, and Table (8) shows the results.

Table 8. Test Results (T) for the Effect of ICDL Certification Variable on Teachers' Digital Skills Acquisition Score.

Domain	Obtaining (ICDL)	frequency	Mean	Standard Deviation	t	P-value	Degree of freedom	Difference of squares
Familiarity with the advantages of Office programs	Yes	16	3.62	0.84	3.50	0.001	123.00	0.53
	No	14	3.08	0.86				
Handling external computer accessories	Yes	16	3.09	0.77	1.80	0.075	123.00	0.25
	No	14	2.85	0.78				
Dealing with the	Yes	16	3.87	0.89	1.07	0.285	123.00	0.17



Internet	No	14	3.70	0.86				
Familiarity with the methods of building electronic tests	Yes	16	3.35	1.19	0.23	0.817	123.00	0.05
	No	14	3.30	1.08				
Digital Skills	Yes	16	3.48	0.81	1.76	0.082	123.00	0.25
	No	14	3.24	0.76				

- International Driving Permit (ICDL)

As can be seen from Table 8, according to the ICDL certificate variable , there is a statistically significant difference in the degree of familiarity with the advantages of the office project at the significance level ($\alpha = 0.05$), in favor of ICDL certificateholders. A certificate of significance (0.001) and statistical significance was obtained. As for the rest of the digital aspects and skills as a whole, it should be noted that there are no statistically significant differences in the variables of obtaining the ICDL certificate. By reviewing the results related to obtaining the ICDL certificate, we find that there are statistically significant differences in the aspect of familiarity with the advantages of office programs only, and this is consistent with the topics taught by trainees in the ICDL curriculum , which are mainly related to office programs.

The results related to the fourth question: Are there statistically significant differences at the level of ($\alpha = 0.05$) to the degree of possession of science teachers in the Directorate of Education of the Ain Al-Basha Brigade for digital skills according to the variable of years of experience?

To answer this question, the arithmetic mean s and standard deviations of digital skills were found according to the variable of years of experience and Table (9) shows the results.

Table 9. Arithmetic mean s and standard deviations of the degree of possession of digital skills of digital skills at the level of aspects and at the level of the tool as a whole according to the variable of years of experience.

Domain	Years of Experience	frequency	Mean	Standard deviation
Familiarity with the advantages of Office programs	Less than 5 years	5	Less than 5 years	0.91
	5 to 10 years	6	5 to 10 years	1.01
	More than ten years	19	More than ten years	0.85
	Total	30	Total	0.89
Handling external computer accessories	Less than 5 years	5	Less than 5 years	0.78
	5 to 10 years	6	5 to 10 years	0.78
	More than ten	19	More than ten years	0.77



	years			
	Total	30	Total	0.78
Dealing with the Internet	Less than 5 years	5	Less than 5 years	0.91
	5 to 10 years	6	5 to 10 years	1.01
	More than ten years	19	More than ten years	0.83
	Total	30	Total	0.87
Familiarity with the methods of building electronic tests	Less than 5 years	5	Less than 5 years	0.86
	5 to 10 years	6	5 to 10 years	1.27
	More than ten years	19	More than ten years	1.13
	Total	30	Total	1.13
The tool as a whole	Less than 5 years	5	Less than 5 years	0.78
	5 to 10 years	6	5 to 10 years	0.87
	More than ten years	19	More than ten years	0.77
	Total	30	Total	0.79

As can be seen in Table (9), there are clear differences between the arithmetic mean s of the respondents' perceptions of the extent to which science teachers possess numerical skills, according to years of experience in the aspect and the tool used as a tool. In order to understand the significance of these differences, a unidirectional ANOVA test was performed, and the results are shown in Table 10.

Table 10. Results of Single Variance Analysis to Detect the Impact of Years of Experience on the Degree of Teachers' Acquisition of Digital Skills at the level of aspects and at the level of the tool as a whole.

Significance level	Contrast source	Sum squares of	Degree of freedom	Mean squares	P-value	Significance level
Familiarity with the advantages of Office office programs	Between groups	2.789	2	1.395	.2340	.7920
	Inside groups	28.085	27	1.040		
	Total	30.874	29			
Handling external computer accessories	Between groups	1.335	2	0.667	1.628	.2000
	Inside groups	15.185	27	0.562		
	Total	16.520	29			



Dealing with the Internet	Between groups	4.925	2	2.463	.0480	.9530
	Inside groups	33.171	27	1.229		
	Total	38.096	29			
Familiarity with the methods of building electronic tests	Between groups	3.846	2	1.923	2.313	.1030
	Inside groups	35.489	27	1.314		
	Total	39.335	29			
The tool as a whole	Between groups	2.593	2	1.296	.5870	.5580
	Inside groups	22.918	27	0.849		
	Total	25.510	29			

The results in Table (10) showed that at the level of the entire tool there is no statistically significant difference in the arithmetic means of the extent to which science teachers possess numerical skills at the level of significance ($\alpha = 0.05$) because the value of F at the level of significance (.558) reaches (.587) which is not statistically significant, and the results showed that there are no statistically significant differences in all aspects with the change of years of experience, including P ((0.234) For those who know the advantages of office procedures, while in the aspect of dealing with physical computer components, it is at the level of significance (0.792), and the value of F is (1.628) which is at the level of significance (0.200). On the side of dealing with the Internet, the value of F is (0.048), which is statistically significant, and the level of significance is (0.953), and in the aspect of familiarity with the methods of building electronic tests, the value of F is (2.313) and the value of F is (2.313) The level of importance is (.103). None of these are statistically significant. The lack of statistical significance in the results related to teaching experience may be due to the similarity of teachers' interest regardless of their experience in the same digital skills because they are necessary for them and to be used effectively and permanently during their teaching.

The results related to the fifth question: Are there statistically significant differences at the level of ($\alpha = 0.05$) to the degree of possession of digital skills by secondary school teachers in the Directorate of Education of the Ain Al-Basha Brigade according to the scientific qualification variable?

To answer this question, the arithmetic means and standard deviations of digital skills were found according to the qualification variable and Table (11) shows the results.



Table 11. Arithmetic mean s and standard deviations of the degree of possession of digital skills of digital skills at the level of aspects and at the level of the tool as a whole according to the variable of academic qualification.

Domain	Qualification	frequency	Mean	Standard deviation
Familiarity with the advantages of Office programs	Intermediate Diploma	1	2.20	1.02
	Bachelor	22	3.24	0.85
	Graduate	7	3.93	0.65
	Total	30	3.37	0.89
Handling external computer accessories	Intermediate Diploma	1	2.34	0.82
	Bachelor	22	2.95	0.78
	Graduate	7	3.17	0.73
	Total	30	2.98	0.78
Dealing with the Internet	Intermediate Diploma	1	2.86	1.15
	Bachelor	22	3.70	0.83
	Graduate	7	4.20	0.78
	Total	30	3.79	0.87
Familiarity with the methods of building electronic tests	Intermediate Diploma	1	2.32	1.25
	Bachelor	22	3.29	1.11
	Graduate	7	3.58	1.12
	Total	30	3.32	1.13
The tool as a whole	Intermediate Diploma	1	2.43	0.95
	Bachelor	22	3.30	0.76
	Graduate	7	3.72	0.70
	Total	30	3.37	0.79

As shown in Table (11), there are statistically significant differences in the arithmetic mean s of the sample members' mastery of the numerical skills of science teachers according to the years of experience in the aspect and the tool used as a tool. In order to understand the significance of these differences, a unidirectional ANOVA test was performed, and the results are shown in Table 12.

Table.12. Results of Single Variance Analysis to Detect the Impact of Qualification on the Degree of Teachers' Acquisition of Digital Skills at the level of aspects and at the level of the tool as a whole.

Domain	Contrast source	Sum of squares	Degree of freedom	Mean squares	Significance level
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Familiarity with the advantages of Office office programs	Between groups	8.57	2	4.285	*.0000
	Inside groups	22.304	27	0.826	
	Total	30.874	29		
Handling external computer accessories	Between groups	4.016	2	2.008	.0720
	Inside groups	12.504	27	0.463	
	Total	16.520	29		
Dealing with the Internet	Between groups	10.03	2	5.015	*.0010
	Inside groups	28.066	27	1.039	
	Total	38.096	29		
Familiarity with the methods of building electronic tests	Between groups	8.134	2	4.067	.062
	Inside groups	31.201	27	1.156	
	Total	39.335	29		
The tool as a whole	Between groups	8.947	2	4.487	*.001
	Inside groups	16.536	27	.612	
	Total	25.510	29		

*Statistically significant at significance level ($0.05=\alpha$)

Table (12) shows that according to the variable of the level of science, there is a statistically significant difference in the arithmetic mean of science teachers' mastery of the numerical skill of the entire tool at the level of significance ($\alpha = 0.05$), and the value of F (7.55), and the level of significance (0.001). It was noted that there was a statistical difference in the degree of familiarity with the functions of office software, where the value was P (13.561) and the level of significance (0.000), and in the Internet processing side, the value was P (7.345). and significance level (.001). The results showed that there were no statistically significant differences, where the value of F reached (2.689), and the level of significance is (.072). It was also found that there were no statistically significant differences in knowledge of the construction method. In electronic tests, the value of F reaches (2.851) level of significance. (.062)



To find out in favor of the differences, a Scheffe test was conducted for dimensional comparisons and Table (13) shows the results.

Table13. Chevy Test Results for Dimensional Comparisons.

Domain	Variables	Intermediate Diploma	Bachelor	Graduate
Familiarity with the advantages of Office programs	Intermediate Diploma		1.04*	1.73*
	Bachelor			.69*0
	Graduate			
Dealing with the Internet	Intermediate Diploma		.8400	1.34*
	Bachelor			0*50
	Graduate			
The tool as a whole	Intermediate Diploma		.86*0	1.29*
	Bachelor			.42*0
	Graduate			

*Statistically significant

As can be seen from Table 13, the tool as a whole has a statistically significant difference in favor of holders of a graduate degree in both aspects of the advantages of familiarity with office programs and the aspect of dealing with the Internet. This may be due to the fact that teachers with higher degrees have used computers and practiced computer skills during their master's or doctoral studies or during the preparation of a thesis or educational research, which increased their possession of these skills.

5. Recommendations

In light of the results of the research, the following recommendations are made:

- Holding many courses related to computer skills for teachers, especially those related to building electronic tests and dealing with Google applications.
- Returning the ICDL course on a continuous and permanent basis accompanying the new teachers course.
- Holding an Intel Education Course on an ongoing basis for teachers and changing its different topics to better match the needs of teachers.
- Include teachers' guides on how science teachers deal with activities related to making electronic films carried out by students and train them on how to make them to be mentors and supporters of students.
- Holding training courses to deal with the advantages of the interactive board so that its advantages are taken advantage of to the maximum degree.



6. Delimitation of the Research

- Spatial boundaries: This study was applied to public schools in the Ministry of Education, Directorate of Education in Ain Al-Basha District.
- Time limits: This study was applied in the first semester of this year (2021/2022).
- Human limits: This study is limited to science teachers in all disciplines.
- Objective limits: This study was limited to identifying the basic skills that a science teacher must possess, including familiarity with the advantages of office programs, the use of the Internet in searching for information, downloading images, building electronic tests using various sites such as Google Forms, and dealing with some external accessories such as the printer, interactive board and others.

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