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The acquired technological competencies among the teachers of Medina educational district according the digital skills diploma

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The acquired technological competencies among the teachers of Medina educational district according the digital skills diploma

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Abstract:

The present study aimed to investigate the availability of acquired technological competencies among the teachers of Medina educational district, according to the digital skills diploma. The researcher used the analytical descriptive approach and relied on the questionnaire that he designed to achieve the study objectives. The study sample included (110) male and female public education teachers of the Medina educational district. The study obtained several findings, most importantly the following: The degree of availability of acquired technological competencies among teachers of Medina educational district, in the light of the digital skills diploma, from the perspectives of respondents, was rated (very high); there are statistically significant differences at the significance level of (0.05) in the opinions of respondents on the total score of the questionnaire, as regards the gender variable, in favor of females; there are statistically significant differences at the significance level of (0.05) in the opinions of the respondents on the second, fourth, and fifth axes, as regards the years of experience variable, in favor of teachers with an experience of (5-10) years; the study also found that there are no statistically significant differences at the significance level of (0.05) in the opinions of respondents on the questionnaire axes and its total score, as regards the educational qualification variable. In light of these findings, the researcher presents several recommendations, most importantly the following: the need to conduct mutual visits between teachers of Medina educational district and other educational districts to share experiences and maximize the benefit from excellent teachers in their possession of technological competencies; the need to encourage all public education teachers in the Kingdom to develop their digital competencies before and in-service as well as continuous follow-up by school principals and educational supervisors to develop their technological competencies.

Keywords: technological competencies , digital skills diploma.

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الكفايات التكنولوجية المكتسبة لدى معلمي منطقة المدينة المنورة التعليمية وفقا لدبلوم المهارات الرقمية

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مستخلص الدراسة:

هدفت الدراسة الحالية إلى التعرف على مدى توفر الكفايات التكنولوجية المكتسبة لدى معلمي منطقة المدينة المنورة التعليمية وفقا لدبلوم المهارات الرقمية وقد استخدم الباحث المنهج الوصفي التحليلي واعتمد على الاستبانة التي قام بتصميمها لتحقيق أهداف الدراسة، واشتملت عينة الدراسة من (110) معلم ومعلمة من مراحل التعليم العام بمنطقة المدينة المنورة التعليمية، وقد توصلت الدراسة للعديد من النتائج أهمها: أن درجة توافر الكفايات التكنولوجية المكتسبة لدى معلمي منطقة المدينة المنورة التعليمية وفقا لدبلوم المهارات الرقمية من وجهة نظر أفراد عينة الدراسة جاء بدرجة (عالية جدا)، ووجود فروق ذات دلالة إحصائية عند مستوى الدلالة (0.05) في آراء أفرد عينة البحث حول الدرجة الكلية للاستبانة طبقاً إلى اختلاف متغير النوع لصالح الإناث، كذلك وجود فروق ذات دلالة إحصائية عند مستوى الدلالة (0.05) في آراء أفرد عينة البحث حول المحاور الثاني والرابع والخامسوفقا لمتغير سنوات الخبرة لصالح المعلمين ذوي الخبرات من (5 إلى 10) سنوات، بينما توصلت الدراسة إلى عدم وجود فروق ذات دلالة إحصائية عند مستوى الدلالة (0.05) في آراء أفرد عينة البحث حول محاور الاستبانة ودرجتها الكلية وفقا لمتغير المؤهل العلمي؛ وفي ضوء تلك النتائج أوصى الباحث بالعديد من التوصيات أهمها: ضرورة إجراء زيارات متبادلة بين معلمي منطقة المدينة المنورة التعليمية وغيرها من المناطق التعليمية لتبادل الخبرات وتحقيق الاستفادة القصوى من المعلمين المتميزين في امتلاكهم للكفايات التكنولوجية، وضرورة تشجيع كافة معلمي التعليم العام بالمملكة على تطوير كفاياتهم الرقمية قبل وأثناء الخدمة والمتابعة المستمرة من مديري المدارس والمشرفين التربويين لتطوير كفاياتهم التكنولوجية.

الكلمات المفتاحية: الكفايات التكنولوجية، دبلوم المهارات الرقمية.

Introduction:

In view of the changes the world is witnessing in various aspects of life, it has become necessary to adapt the field of educational work to reflect the needs of contemporary societies. Among the most prominent changes is the great technological development, which forced teachers to acquire and develop the competencies necessary to deal with the new technological reality in the field of public education.

With the advent of the 21st century, educators are under increasing scrutiny to discover who are not technologically competent enough to provide students with the knowledge and opportunities they need to become successful global citizens in the 21st century; Over the past century, there has been a shift in education from a focus on industrial skills to a focus on procedural and fact-related knowledge, and then a focus on informational and cognitive skills, which in turn focus on the development of conceptual and metacognitive knowledge; This major transformation is due to the changes taking place in societies, particularly the rapid development of technology and the impact of this development on the ways of living, working and learning among individuals (Acker, 2015, 16).

The current era is known as the era of the knowledge and technological explosion, and the use of technology in human life has increased day by day as a result of the facilities and benefits that these technologies provide to humans in all fields of life, as they save time and facilitate communication with others without the limits of time and space; Education is one of the most important fields affected by this qualitative shift in technology, instead of focusing on the role of the dictating teacher in traditional education, the focus is now on the role of the teacher as a mentor, planner and observer of the educational process, which provides many opportunities for the learner to discover paths to obtain information instead of focusing on it, and this leads to a deeper understanding of the information and easier representation into knowledge that can be used in new life situations. (Al-Sharida & Al-Qaramity, 2019, p. 126)

Employing educational technology innovations in teaching is one of the important contemporary topics, as education occupies a prominent position within the framework of societal transformation, and education is one of the most important pillars covered by the winds of change and renewal, and the great challenge facing our schools today is how to change schools to meet the requirements of the future, including the effective employment of various technologies, and in order for schools to be ready to

employ technological innovations effectively, they must have good infrastructure, a flexible educational system, effective management, and teachers who are aware of the modern technological competencies that they should possess. (Al-Anzi, 2021, p. 292)

Educational scientific conferences in the modern era have emphasized the great role of technological innovations in education, such as the Internet, which helps the teacher to prepare teaching aids, to develop the learner's performance, motivation, and achievement; and its use acts as the mediator between the teacher and the student, to send messages to all students, In addition to sending all required papers in the course, homework, and responding to inquiries, the use of the Internet also acts as a mediator to obtain feedback, and thus teachers can benefit from e-learning in solving problems facing the educational process to keep pace with technological development, by providing them with some technology-related competencies, as they help in teaching various courses. (Al-Ardan, 2017, p. 65-66).

Thus, digital skills have become essential for all individuals in general, and teachers and students in particular, in order to carry out normal daily activities such as using a mobile phone, using the internet in classrooms and for distance classes, conducting research, preparing and delivering courses, and acquiring basic skills to stay safe online; Thus, educational institutions need to establish appropriate policies, and training institutions need to provide training in relevant digital skills, and teachers need to support the adoption and use of digital technology. (International Telecommunication Union, 2020, p. 7)

In order to develop the technological competencies of teachers, it is important to take into account the need to apply the digital skills diploma, where educational and training courses should be provided for teachers that integrate modern technological techniques into the educational process, and training courses must combine traditional teaching methods with digital technologies (Biletska et al., 2021, 25).

Hence the significance of providing teachers with the necessary technological competencies to deal with contemporary educational changes. Indeed, it is important that this be done taking into account the standards of the digital skills diploma, which combine professional and practical requirements for teaching in an integrated manner, so that traditional teaching methods are combined with technological skills in teaching; Thus,

the teacher becomes more able to adapt to the ever-changing requirements of the educational process.

Study problem:

Teachers' possession of technological competencies – especially in light of the digital skills diploma requirements – has become an educational and pedagogical necessity that cannot be ignored. The field of education has witnessed radical transformations due to the great developments in information and communication technologies. However, despite the importance of having such competencies, recent relevant studies show that the level of teachers' possession of these competencies is still below the desired level.

One of the studies that shed light on the levels of technological proficiency among teachers was the study of (Mutohhari et al., 2021), which indicated that the level of using digital technologies is low among teachers, which indicates their low level of technological competencies. The study of Al-Maamari and Al-Masrouri (2013) indicated similar findings; The findings showed that the skills of using information and communication technologies exist among teachers to a moderate degree. These findings are consistent with the findings of the (Kibici, 2022) study, which also indicated that teachers possess technological competencies a moderate degree; As for the (Mohalik, 2019) study, it indicated that teachers clearly low levels of certain technological competencies, and the most prominent of these competencies is the ability to use presentation files, prepare digital educational materials, and provide feedback to students.

The study of (Cantú-Ballesteros et al., 2017) examined the factors that may exacerbate the problem of lack of technological competencies among teachers; And as indicated by the findings, the levels of possession of technological competencies are significantly lower among older teachers.

The problem of the study can be highlighted through the following main question **(What is the degree of availability of the acquired technological competencies among teachers of Medina Educational District according to the Digital Skills Diploma)?**

Study questions:

- What is the degree of availability of the acquired technological culture competencies, competencies of planning and design of the learning environment, competencies of using educational technology applications, competencies of using educational

equipment, and technological assessment competencies among teachers of Medina educational district according to the digital skills diploma?

- Are there statistically significant differences in the responses about the degree of availability of the technological competencies acquired by the teachers of Medina educational district according to the digital skills diploma according to the variables (gender – academic qualification – years of experience)?

Study objectives:

- Investigate the degree of availability of the acquired technological culture competencies, competencies of planning and design of the learning environment, competencies of using educational technology applications, competencies of using educational equipment, and technological assessment competencies among teachers of Medina educational district according to the digital skills diploma.
- Investigate the statistically significant differences in the responses about the degree of availability of the technological competencies acquired by the teachers of Medina educational district according to the digital skills diploma according to the variables (gender – academic qualification – years of experience).

Significance of the study:

The significance of the present study stems from the importance of the topic it deals with, which is the need for the technological competencies acquired by the teachers of Medina educational district according to the digital skills diploma. The significance of the study can be highlighted as follows:

First: Theoretical Significance:

- The present study may contribute to investigating the levels of availability of acquired technological competencies among teachers of Medina educational district according to the Digital Skills Diploma and enhancing them.
- The present study may help draw the attention of officials towards the generalization of teachers' acquisition of technological competencies and skills in all educational stages in the Kingdom.

- The researcher hopes to enrich Arab libraries with more studies and research on the degree of availability of technological competencies acquired by teachers of Medina educational district according to the digital skills diploma in light of the scarcity of studies in this context - as far as the researcher knows -.

Second: Applied Significance:

- The findings of the present study may help in generalizing the promotion of technological and digital competencies among public education teachers by preserving the consolidation of the culture of technological competencies among teachers?
- The findings of the present study may contribute to putting forward appropriate recommendations to achieve complete digital transformation in the educational process in the Kingdom and for all its parties.

Terms of the study:

Technological competencies:

Technological competencies are "the minimum knowledge, skills, and attitudes that a teacher must possess to use and employ the skills of modern technology, to achieve the purposes of the educational process". (Suleiman et al., 2022, p. 333)

Technological competencies are defined as a combination of knowledge, skills, and attitudes that depend on the effective employment of technological technologies (Ajlouni & Hazaimeh, 2023, 429).

The researcher believes that technological competencies mean that teachers have sufficient modern and technological capabilities to manage the educational process and curricula within the classroom in line with the requirements of the era and its outputs, which are (technological culture competencies - competencies of planning and design of the learning environment - competencies of using educational technology applications - competencies of using educational equipment – technological assessment competencies).

Digital skills diploma:

The digital skills diploma is defined as "a diploma for classrooms through which students are empowered to use digital devices and their various applications, while helping them acquire the most important skills of

the 21st century, such as communication, cooperation, sharing, problem-solving, and others". (Al-Harbi, 2023, p. 533)

The digital skills diploma is defined as a diploma for developing the ability to distinguish, manage, and integrate access, retrieval, evaluation, and assimilation of information in digital environments (Bassey & Ayeni, 2022, 1043).

The researcher defines the digital skills diploma as: a course that increases the Kingdom's education colleges' conduct of training of student teachers to teach in accordance with an adaptive learning environment in developing the skills of designing and producing digital repositories, computer applications, and technological teaching aids.

Theoretical framework:

The current era is characterized by scientific and technological developments, and is called the era of the communications revolution, with the related technical development in the field of communications and information circulation; So, the teacher's technological and professional development has become a goal for all educational institutions in the world, due to the rapid spread of the internet, and the tremendous technological development in all fields in the recent years, which changed the methods and forms of communication in all aspects of life, and then it became necessary for the teacher to possess the skills of using modern technologies, dealing with the internet, and using modern devices, smart phone applications, interactive screens, and computers. (Bahout et al., 2021, p. 249)

E-learning technology provides theory, application and practice in the design, development, use, management and evaluation of learning resources and processes in order to solve educational problems. Electronic educational environments are one of the most important fields in e-learning technology; as the use of electronic educational environments also requires good preparation in terms of their design, development, use and management according to specific standards to ensure they are used effectively in the educational process; And the purpose of using electronic educational environments in higher education institutions is to support and improve the learning process in various sectors of higher education. (Al-Anzi, 2021, p. 291)

It is important to employ technological innovations in teaching, which has imposed the need to keep pace with this development and adopting its products on the education system to develop and improve the outcomes of the educational process at all stages of education. Here, the role of the teacher contributes to applying these tools and employing these innovations during teaching to develop the various skills of students to keep pace with this technological and knowledge development with all its requirements. Therefore, preparation, qualification, and professional development programs tended to develop the technological competencies of teachers in various disciplines by providing various educational and training programs that support this trend, and to support teachers' abilities to perform their work with accuracy, skill, and proficiency. (Hassan, 2020, p. 1590)

Given the primary role that teachers play in managing the educational process, it is very important for them to be able to use modern technologies that can help them enhance the effectiveness of teaching and learning processes; Therefore, the effective integration of information and communication technologies in teaching and learning processes requires teachers to have technological competencies, and through this integration, teachers can promote effective and active learning among students (Kalinga & Ndibalema, 2023, 2).

Nowadays, one of the main skills of teachers is to be able to integrate information and communication technology (ICT) into teaching; Besides the skills of teaching subjects effectively, teachers must also know how to integrate digital technology into education. The opportunities provided by ICT (e.g. communication, interaction, information retrieval, presentation and analysis) are recognized as essential elements in improving 21st century skills, and this also requires a more comprehensive inclusion of ICT and its pedagogical use in students' curricula as well as in teacher training (Demeshkant, 2020, 3173).

Hence the need for teachers to possess technological competencies appears, as the great development of information and communication technologies has led to comprehensive developments in all aspects of life, and the educational field is no exception. Given the huge potential provided by these technologies in exchanging information and facilitating communication, integrating these technologies into the educational process may enhance the quality of educational opportunities provided to students. Hence the importance of technological competencies among teachers, as there is a positive correlation between possessing these competencies and

the teacher's ability to employ modern technologies in improving the quality of educational opportunities.

The importance of technological competencies for teachers:

In the contemporary world, the knowledge, skills and attitudes related to technology are in the forefront of the teaching profession as in all other professions; The teacher's ability to use technology in educational activities has become extremely important, and this ability affects the extent of their success in teaching. Technological competencies are important not only for efficient and effective teaching but also for the continued professional growth of the teacher (Vaiz et al., 2021, 107).

The intense growth of information technology and the rapid digital transformation of education impose requirements for the availability of the latest competencies suitable for all participants in the educational process. The use of digital skills today is one of the conditions for the competitiveness of specialists; It is necessary to teach students in the current era what will be required in the future, therefore, the modern teacher must keep pace with the times, and must be aware of various modern technologies, possess them, and be able to apply them practically depending on the goals and objectives of education (Serezhkina, 2021, 1).

The use of technology in the educational process depends on following an approach, and method of work that proceeds in a clearly defined sequence, and a system in which all the capabilities provided by modern technology are used in accordance with teaching and learning theories, in order to achieve the goals of the educational process, Hence the great importance of teachers having sufficient technological competencies. (Amayra, 2019, p. 2)

Therefore, it has become important for teachers to acquire the ability to engage in technological change and development in education. Learning environments are being improved using technology, along with accompanying changes in course content, classroom management, and classroom implementation in light of these technologically improved arrangements; This has forced teachers to acquire the necessary knowledge and skills to be able to integrate technology into education (Kazu & Erten, 2014, 126).

It has become important for the teacher to acquire many competencies, such as mastering scientific applications in the use of information networks and databases, being able to design and use

multimedia in the educational process, and being able to develop and create various educational methods that are compatible with the information he provides, whose impact is reflected in the educational process. (Al-Zahrani et al., 2018, p. 68)

The importance of teachers' practice of technological competencies is evident in their helpful role in quickly presenting, transferring, storing, and displaying information to students. They also improve the quality of the educational experience and enable teachers to integrate and link the elements of the educational process and translate them into effective and influential educational attitudes and behavioral patterns. In light of the development of the teacher's role, it has become necessary for the teacher to practice basic technological competencies in education to perform his teaching role effectively and efficiently, which benefits students and contributes to achieving the desired educational goals (ALzatari, 2022, 2391).

From the above, it can be said that the success of teachers in the current era cannot be achieved without them having sufficient technological competencies; Because technological competencies represent the necessary components for integrating information and communication technologies into the educational process. Given the deep penetration of technologies into education in the current era, it can be said that teachers' possession of technological competencies is no longer just an addition to their list of professional competencies, but is now a necessity that must be available in order to ensure the progress of the educational process in a manner compatible with the nature of emergent and successive developments. in the field of educational work.

The importance of digital skills diploma for public education teachers:

It is not possible to talk about the use of technology in education without mentioning digital skills, given that they are the key to all processes based on modern technology. It is important that teachers have digital skills so that technology can be easily and smoothly used in the educational process. (Ben Sharik et al., 2022, p. 380)

Therefore, a digital skills diploma has become an important requirement for raising the performance levels of public education teachers. Recent developments in innovative technological technologies have created new possibilities for the teaching profession, but at the same time they have also increased the demands placed on teachers, requiring teachers to learn to

use these technologies as part of their teaching practices; And these challenges require retraining teachers and providing them with knowledge and skills on an ongoing basis while they continue their work in the teaching profession (Kiwonde, 2018, 21).

From the above, it is clear that the digital skills diploma has become an important requirement for preparing teachers to assume and perform their work tasks in the contemporary educational reality; As one of the prominent features of the current era is the continuous and rapid development in information and communication technologies and their increasing integration into various areas of life, including the field of public education. The Digital Skills Diploma represents an extremely important means of preparing teachers for the contemporary reality of the field of educational work and its unique challenges.

The reality of developing technological competencies in public education teachers in the Kingdom of Saudi Arabia:

The General Project for Curriculum Development (GPCD), a national project launched by the Ministry of Education of the Kingdom of Saudi Arabia in 1998, aimed to develop education by integrating ICT across a range of aspects, including: curricula, teachers' skills and competencies, teaching strategies, the teaching and learning environment; In 2015, the Ministry of Economy and Planning launched the Tenth National Development Plan (2015-2019), which set 24 goals, including the need to improve teachers' and students' ICT skills (Alghamdi & Holland, 2020, 4723).

Enhancing digital knowledge, technological and digital skills and competencies has been included in the agenda of the Kingdom's government since 2007, and a state-level project for public education was established known as the King Abdullah bin Abdulaziz Project for the Development of Public Education, or the Development Project 2007-2023, which aims to achieve Higher integration of information and communications technology into Saudi curricula; And one of the most important goals of the project is to train teachers to enhance the technological skills and competencies needed to improve educational services (Alghamdi, 2022, 422).

And despite the Kingdom's tireless efforts to integrate the use of technology into the educational process, there are still deficiencies in the Kingdom's experience. The Kingdom's government allocates about 25% of

the country's general budget to the education sectors, and a large portion of the government's spending on education is directed to integrating technology into school curricula; However, the Kingdom is still relatively lagging behind in terms of computer literacy levels among the Kingdom's educational workforce (Albahiri & Alhaj, 2023, 837).

Hence, it becomes clear that there is an urgent need to make more efforts to raise the level of development of technological competencies among general education teachers in the Kingdom of Saudi Arabia. It cannot be denied that the Kingdom's government has made and is still making enormous financial resources and tireless efforts to integrate technologies into the educational process, but the Kingdom is still considered relatively lagging behind in terms of the levels of technological competencies of teachers and their ability to benefit from them effectively. Therefore, it is important for the Ministry of Education to focus on directing a larger portion of its resources towards teacher training initiatives, such as the Digital Skills Diploma Program, given the great importance of adequate training, which is no less important than providing the necessary technological infrastructure to integrate modern technologies into the educational process.

The technological competencies required for teachers:

A teacher's technological competencies are the set of knowledge, abilities, skills and attitudes that a teacher possesses and practices in the field of educational technology to design, implement and evaluate teaching and learning processes to achieve more effective education; They also include the skills that enable the teacher to use technological innovations, including the devices and techniques contained in the educational process to perform his educational work successfully and effectively (Al-Ghasab, 2022, 1270-1271).

In order to develop the competence of teachers in the field of information and communication technology, UNESCO has developed a competency framework for teachers in the field of information and communication technology in order to train teachers in the use of information and communication technology in the field of education. (United Nations Educational, Scientific and Cultural Organization, 2019, p. 11)

In general, the UNESCO Project of ICT Competency Standards for Teachers aims to improve the practice of teachers in all areas of their

professional work, combining ICT competencies and innovations in teaching, curricula and organization of the educational institution. Another objective is to ensure that teachers use ICT competencies and resources to improve teaching and collaboration with colleagues, and ultimately to become innovation leaders within their own institutions (Cruz & Díaz, 2016, 99).

The most important technological competencies that a teacher must have include several aspects, such as the use and employment of educational technology innovations, awareness of the importance of technological innovations in human lives and appreciation of their role in their well-being, defining the general, specific and procedural objectives of the electronic course for the subject, the ability to organize time to provide the course through the network, and preparing learners to take responsibility for learning through electronic courses. (Suleiman et al., 2022, p. 339)

Hence, it becomes clear that there are a number of technological competencies that teachers must acquire and use in order to be able to adapt effectively to the reality of the field of contemporary educational work. From the perspective of teachers' ICT competency standards, these competencies include understanding information and communication technologies in education, curriculum and evaluation, pedagogical methods, applying digital skills, organization and management, and teacher professional learning.

- **Understanding information and communication technologies in education:**

Understanding information and communication technologies in education means understanding the role that these technologies play in light of the country's national educational policies. Teachers should consider the goals to be achieved and work towards achieving them (Knyazeva, 2021, 6).

The teacher's understanding of information and communication technologies also includes the ability to easily access various sources of information and the effective use of these technologies to develop and improve the traditional education system and create new forms of modern education systems so that the student assumes a greater role in the learning process. (Al-Amoudi, 2018, p. 18)

The role of information and communications technologies is also highlighted in a number of other aspects; This understanding involves the ability to identify the main characteristics of classroom educational practices supported using specific educational technologies (such as virtual education

and distance learning), and to determine how these characteristics contribute to the implementation of educational policies. This understanding also involves the ability to describe policies applied in educational scenarios based on information and communication technologies, and to analyze potential problems that may arise from the application of those principles and how those problems can be addressed(Zervas et al., 2015, 192).

- **Curriculum and Evaluation:**

When dealing with teachers' technological competencies, the aspect of curriculum and evaluation includes the sub-competencies related to curriculum standards and how teachers integrate the use of information and communication technologies in the curriculum (Zervas et al., 2014, 173).

Curriculum and evaluation is considered one of the most important aspects of teachers' technological competencies; And there are a number of skills included within this aspect: The most prominent of these skills is the skill of curriculum standards analysis; Another skill that falls under this category is the skill of identifying how to use information and communication technologies to support the achievement and meeting of required standards (Baiden, 2020, 22).

- **Pedagogical methods:**

Teachers should use information and communication technologies to improve teaching and learning methods; In view of this, they must acquire skills, and finally, apply an alternative student-centered teaching strategy in order to solve problems in a collaborative manner (Knyazeva, 2021, 6).

The application of pedagogical methods also involves the use of educational technologies to support or guide teaching activities in order to help students acquire knowledge about subject matter content; It also includes the use of educational technologies in collaborative, project-based learning scenarios to enhance students' thinking and social interaction skills, in order to help students understand processes, concepts, and skills and then use them to solve problems (Zervas et al., 2015, 192).

- **Applying Digital Skills:**

The skills of applying educational technology tools and concepts (i.e. digital skills) represent the ability of teachers to make the learning process easy and fast in order to develop the recipient’s knowledge; This is not limited to the use of technology, as these skills also involve the ability to deal with more than one element, such as classroom, teachers and content

management, and designing tools using instructional design models. (Bu Hamad, 2019, p. 156)

Applying digital skills also includes the skill of identifying the functions performed by physical technical components (i.e. devices and equipment); Applying digital skills also includes the skill of identifying and using computer programs commonly used to enhance productivity, in addition to the ability to use them. (Baiden, 2020, 22).

It also involves integrating technology into tasks associated with both collaboration with other teachers and planning; The most prominent forms of applying digital skills include the use of email, social media, word processing programs (such as Microsoft Word), and presentation building programs (such as Microsoft PowerPoint) (Knyazeva, 2021, 7).

- **Organization and Management:**

The field of organization and management includes a number of sub-competencies for teachers; These competencies relate to the use of equipment and communication technologies across several different levels, such as the level of the class as a whole, the small learning group level, and the individual student level (Zervas et al., 2014, 173).

Organization and management involves organizing technical equipment and devices in the classroom or school laboratory in order to use educational scenarios supported by e-learning environments; Organization and management also include the appropriate use of e-learning environments to enhance teaching activities, by enhancing the level of student engagement in them (Zervas et al., 2015, 193).

- **Teacher Professional Learning:**

Teacher professional learning involves their use of ICT and web-based resources to support their professional growth (Biden, 2020, 22; Zervas et al., 2014, 173).

There are several skills that fall within the field of teacher professional learning, which include the following (Zervas et al., 2015, 193):

1. Using educational technologies to support the acquisition of knowledge about subject matter content and pedagogical knowledge in order to improve the quality of teaching practices.
2. Continuous improvement and reflection on the use of technologies in the educational process, in order to promote innovation and development.

From the above, it is clear that the technological competencies that teachers must acquire include several aspects of the teacher's work and the educational process. By acquiring and developing these competencies, the teacher can keep pace with the changes taking place in the field of educational work and effectively contribute to improving the quality of the educational process. Therefore, it can be said that providing teachers with technological competencies has become a necessity and not just an addition to the teacher's professional capabilities and competencies.

Types of digital skills of teachers:

Digital skills are a set of abilities required to use digital devices, such as computers, smartphones, tablets, etc., as well as applications and communication networks to access and manage information. Digital skills play a leading role in distance education practices (Kwaah et al., 2022 , 3).

There are many different definitions regarding what constitutes digital skills for teachers. Although there is a lot of research on digital skills in education, there is confusion between basic digital skills for ordinary citizens and digital skills for teachers; This may happen because digital skills for teachers include a wide range of knowledge and skills related to digital technologies and their application in teaching practice, but digital skills for teachers include the skills of teachers to use digital technologies to search for, evaluate, and use educational materials on the internet (Perifanou et a., 2021, 239-240).

The main types of digital skills that teachers are required to have in the reality of contemporary educational work are briefly discussed below; These skills include online searching, setting tests, managing tasks and projects, creating visual and interactive educational content, organizing e-learning environments, and evaluating e-content.

- **Online Searching:**

Online searching skills are among the most important skills that a teacher must have in order to be able to use the computer and the Internet in professional activities as well as in other contexts (i.e. contexts outside the classroom); This skill helps the teacher prepare lessons, and it is linked to a number of important related activities, such as developing new educational resources (Hinostroza et al., 2016, 1598).

The skill online searching is more than just collecting information; The application of these skills involves the application of a number of other

accompanying sub-processes, such as posing a question or problem that represents the guiding basis for the search process, exploring available information, refining the question, collecting and evaluating, synthesizing and using information (van Dijk & van Deursen, 2014, 27-28).

- **Setting Tests:**

Designing and building tests is a science and an art that requires teachers to acquire the basic concepts and principles of educational measurement. Tests help diagnose many educational phenomena and determine the success of the methods and means used by the teacher. Therefore, the teacher's work cannot be separated from the tests in any way, therefore, the teacher must know how to design tests, correct them, and analyze their results. (Maamari, 2018, p. 595)

One of the basic tasks that the teacher must be able to perform is to set tests and apply exercises with students. It is important for the teacher to have the ability to deal with various tools for setting tests based on the Internet, which allow the possibility of setting different types of simple tests, such as tests with short questions and multiple choice questions. The teacher may also sometimes have to set tests and exercises across multiple electronic platforms (Laato et al., 2022, 1).

It is also important that the teacher has the ability to use adaptive techniques in designing and constructing tests; The value and importance of this lies in the fact that these technologies make it possible to design the content of tests in accordance with the level, knowledge and abilities of each student, and thus these technologies help building more accurate, diverse, flexible and detailed tests for all students throughout the learning process (Phan et al., 2019, 43).

- **Managing Tasks and Projects:**

By having the skill of managing tasks, the teacher can make effective use of technological learning systems, because technology makes it possible to manage various tasks effectively (Yadav, 2022, 36); Task management skill is also linked to the ability to use learning management systems; These systems facilitate and enhance e-learning by supporting the management of learning, administrative, and communication tasks necessary for the educational course or educational institution (Armstrong, 2020, 34).

It is also important for the teacher to have project management skills, as these skills help the teacher to apply learning activities in project-based learning platforms, especially learning management platforms. The teacher

must have the ability to implement the stages of managing learning projects, which include the planning stage, the launching and implementation stage, and the reporting and reflection stage (Meng et al., 2023, 19).

- **Creating Visual and Interactive Educational Content:**

One of the important digital skills that a teacher must have is the skill of creating graphic and visual representations of educational content and scientific research. There are several computer programs that can be used for this purpose, such as Microsoft PowerPoint, which is used to create visual materials, and Microsoft Excel, which is used to create illustrative figures. There are many other programs that a teacher can use to generate and create visual content, such as Google Data Studio, Power BI, Infogram, and Prezi (Voronin et al., 2021, 4).

In addition to the skill of creating visual contents, as part of his teaching competencies, the teacher must have the ability to create interactive and innovative learning contents and present them in the classroom (Ciptro et al., 2021, 4); Given the importance of the skill of creating interactive content, it is important to provide teachers with training opportunities that allow them to speak and discuss with experts in the field of information technology and specialists in the field of digital technology (Fox, 2022, 22).

- **Organizing E-learning Environments:**

Teachers play an essential role in organizing digital media-based learning environments; Using digital media, the teacher can expand the possibilities and horizons of teaching and learning; However, it is important to point out that organizing digital or electronic learning environments does not change the nature of teachers roles, but rather leads to enlarging the sizes of those roles, meaning that implementing the organization of digital learning environments is accompanied by challenges and difficulties, especially for teachers (Liu, 2019, 9-10). .

Another prominent digital skill for a teacher is the ability to manage smart training systems, which has gained great importance as a means of promoting independent learning among students; The teacher must be able to structure learning in these systems so that it is compatible with the student's learning pace as well as his self-control skills and digital competencies. In order for the teaching process under these systems to be effective, it is very important that the teacher manages the educational environment effectively (Yaraş, 2021, 576-577).

- **Evaluating E-content:**

It is important for the teacher to have the ability to evaluate the content and components of e-learning systems, such as distance learning systems and learning management systems; In order for the evaluation to be integrated, the teacher must evaluate aspects such as the design of educational courses, the selection of educational resources, the methodology used in the e-learning system, and the training provided to teachers on using the software components of the e-learning system in-use (Cantabella et al., 2020, 88).

The importance of the skill of evaluating electronic content is not limited to just judging the quality of educational content, but it is useful in selecting educational content as well. It is important that the teacher possesses the knowledge and skills that enable him to evaluate the available e-learning systems and choose what is appropriate for students; Therefore, it is important to train teachers so that they can prepare and select educational contents that may provide students with authentic and compelling learning experiences (Teo & Wong, 2013, 88).

From the above, it can be said that teachers need to possess many complex and interconnected digital skills so that they can adapt to the contemporary reality of the field of educational work, which is characterized by the increasing penetration of information and communication technologies into all aspects of the educational process. Therefore, any efforts to improve the quality and efficiency of the educational process must not overlook the importance of providing teachers with the necessary digital skills that were addressed in this discussion.

Obstacles to teachers' acquisition of technological competencies:

Although technologies have many advantages, they also have disadvantages that hinder teachers' acquisition of technological competencies; Among these disadvantages is the need for these technologies to establish an advanced technological infrastructure that includes devices, laboratories, and Internet connection lines, and to provide intensive training for teachers. (Al-Ballah, 2015, p. 84)

There can be two types of obstacles that impact teachers' acquisition of technological competencies and their use in learning environments: first-order barriers include those that are external to teachers, including equipment, time, training, and support; On the other hand, there are second-order barriers that are internal to the teacher and include teachers' self-efficacy, cognitive beliefs, pedagogical beliefs, and the perceived value of

technology in the teaching and learning processes (Bahcivan et al., 2019, 579).

Other problems surrounding teachers' acquisition of technological competencies include the lack of clear and detailed plans to integrate modern technologies into the educational process, interest in providing the latest technologies and software but without attention to training members of the educational system on how to use them, and failure to conduct assessment studies from time to time to ensure the extent to which goals are achieved. (Al-Fatli, 2021, p. 54)

Despite the many obstacles to providing teachers with the technological competencies necessary to ensure that their practices are compatible with the needs of the educational process, these obstacles can generally be classified under three main categories, which are material obstacles, human (administrative) obstacles, and technical obstacles. Some of the most prominent of these obstacles are discussed below.

- **Material obstacles:**

Among the main material obstacles surrounding teachers' acquisition of technological competencies are the lack of equipping schools with the necessary modern tools and devices, the lack of financial resources, poor cooperation between schools in exchanging experiences and knowledge in the field of e-learning, poor availability of electronic textbooks, and the lack of awareness of school administrations of the effectiveness of e-learning (Al-Ghamdi et al., 2021, p. 35; Al-Fatli, 2021, p. 52)

Barakat et al. (2019, pp. 202-203) pointed to a number of other material obstacles surrounding teachers' acquisition of technological competencies, such as the inadequacy of the classroom environment and its components, the prevailing educational system not allowing the use of e-learning, and the lack of internet service in schools.

Among the most prominent material obstacles hindering the development of teachers' technological competencies is the inadequacy of the necessary infrastructure, the most important components of which are difficulties in accessing the Internet; In addition to this, there are other related material problems, such as insufficient training opportunities and insufficient technological devices available (Rana et al., 2018, 162).

There are several aspects to the problem of the lack of internet infrastructure, which is necessary to develop teachers' technological

competencies. The most prominent aspects include the following (Izhar et al., 2022, 2):

1. Problems surrounding the quality of the infrastructure itself.
2. Limited internet bandwidth.
3. Unstable Internet access.

- **Human (administrative) obstacles:**

One of the most prominent obstacles that hinder the development of teachers' technological competencies is their lack of basic digital skills for using information and communication technologies in teaching. This problem may lead to teachers feeling fear of change and their refusal to develop their technological competencies. In addition, there are many teachers who are not comfortable with the idea of using technology in teaching, besides having perceptions that students have more knowledge about how to use information and communication technologies (Prieto et al., 2020, 2).

Teachers may also face difficulties in switching from the traditional teaching method to a modern method, in addition to students' resistance to modern learning styles and their lack of interaction with them. (Qahwan, 2014, p. 43).

Among the administrative human obstacles that hinder the acquisition and development of technological competencies among teachers are the challenges of time management, which may prevent teachers from adopting information and communication technologies in teaching. In many cases, there is poor scheduling and weak cooperation between departments within the school, which undermines the possibility of integrating educational technologies and enhancing the technological competencies of teachers (Osei et al., 2014, 393).

- **Technical obstacles:**

The technical obstacles that hinder teachers from acquiring technological competencies include poor technological infrastructure, technical problems that result from connection interruptions, lack of specialized technicians in the field of computers and the internet, and lack of technical support teams in schools. (Al-Ballah, 2015, p. 137)

Another prominent obstacle surrounding teachers' acquisition of technological competencies in teaching is that the relevant training programs focus on technical matters without addressing practical matters or providing training in educational digital skills necessary for teaching and

learning processes. These digital skills include using digital technologies for communication, collaboration and professional development; building and sharing digital resources; managing and organizing the use of digital technologies in teaching and learning; using digital technologies and strategies to improve assessment; promoting inclusion; personalizing learning experiences; promoting effective student engagement; enabling students to use technology responsibly and creatively in order to obtain information, generate content, and solve problems (Demeshkant, 2020, 3176).

There is another complex problem surrounding the activation and enhancement of technological competencies in teaching. Technology-based teaching practices are often designed and integrated so that they are identical copies of traditional teaching practices, but with the use of digital devices instead of paper textbooks, and this does not lead to the development of teachers' technological competencies (Rana et al., 2018, 162).

From the above, it is clear that the obstacles to teachers' acquisition of technological competencies stem to a great extent from the difficulties rooted in the effort to effectively integrate information and communication technologies into the educational process at school. These technologies are characterized by their high financial costs; the necessity of having appropriate administrative systems, readiness among teachers, and meeting all relevant technical requirements. And since information and communication technologies are constantly evolving, these obstacles are expected to become more complex over time.

Requirements for teachers to acquire technological competencies in light of the digital skills diploma:

The success of efforts to provide teachers with technological competencies is linked to providing a set of necessary requirements, including human, material, organizational and programming requirements, and it is important that this be accompanied by the development of a comprehensive, integrated strategic program for process re-engineering. (Muslim, 2015, p. 218-219)

The necessary requirements for providing teachers with technological competencies vary, in light of the standards of the digital skills diploma. The requirements for acquiring technological competencies fall under a number of main categories, which include material requirements, human

(administrative) requirements, and technical requirements. These requirements are highlighted below.

- **Material requirements:**

Important material requirements to facilitate teachers' acquisition of technological competencies include creating appropriate educational environments, performing continuous maintenance on the devices used, using educational methods and devices that suit the characteristics of learners, and taking into account security and safety elements when using learning technologies in different learning environments. (Hilal et al., 2019, p. 10)

Developing teachers' technological competencies requires providing in-service training to teachers in order to develop their pedagogical and technological competencies. In order to achieve the best possible results in this regard, training opportunities must be provided to all teachers regardless of the nature of the subjects they teach or the number of years of experience they have in the field of educational work (Kazu & Erten, 2014, 134).

Other material requirements within the framework of efforts to provide teachers with technological competencies include the provision of computers and their accessories, the availability of appropriate training halls to train teachers on the application of e-learning, the availability of internal and external connectivity networks, the provision of high-speed internet networks, and the software necessary to operate the devices and to design and manage e-learning systems and electronic libraries. (Al-Ballah, 2015, p. 108)

The ability of teachers to acquire technological competencies and use them in teaching and learning activities depends on various factors, and internet connection is one of the main factors that can enable teachers to communicate across different networks and participate in self-learning, and thus they can search for and share educational materials, which can be used to enhance their knowledge, competencies and skills; In addition to the need to organize training programs to enhance teachers' technological competencies, adequate resources and updated infrastructure for the effective integration of technology into educational practices (Kalinga & Ndibalema, 2023, 2).

Of course, continuity in providing teachers with the necessary technological competencies cannot be achieved without continuous modernization of the school's technological infrastructure; It is important to update this infrastructure according to the latest developments and changes

in information and communication technologies, and it is important to inform teachers about this; And also, updated technological technologies must be integrated into the educational content and pedagogical competencies that the teachers have (Kazu & Erten, 2014, 134).

- **Human (administrative) requirements:**

Technological competencies include more than just knowing how to use devices and applications, which are closely related to ICT-based communication skills as well as information management skills; Besides, the reasonable and healthy use of ICT requires special knowledge and attitudes regarding legal and ethical aspects, privacy and security, as well as an understanding of the role of ICT in society and a balanced attitude towards technology (Alnasib, 2023, 98).

In order to provide the teacher with technological competencies, it is important for the teacher to have basic knowledge about a number of important aspects, such as educational technology innovations, the use of the internet and search engines, dealing with educational software, converting educational material into simplified electronic lessons, enhancing students' knowledge of technology, and urging students to developing technology skills and use online means of communication. (Suleiman, 2022, p. 342)

Educational policy makers play an important role in meeting the necessary requirements to enhance teachers' technological competencies and integrate technology into the educational process; As it is the responsibility of policymakers to develop legislation that provides frameworks for allocating adequate resources to support the enhancement of technological competencies and the integration of technology into schools (Al-Ajmi, 2022, 6).

In order to provide teachers with the technological competencies necessary to use information and communication technologies in the educational process, it is not enough to simply organize workshops and training courses to improve the pedagogical use of technology in education, but it is also important to adopt policies and practices that are concerned with more than just providing teachers with digital skills and using them and using technology as a tool; methods must be found to develop interpretive and creative abilities and integrate them into teacher training programs (Demeshkant, 2020, 3177).

- **Technical requirements:**

In order to work on providing teachers with technological competencies, it is important to provide technological means and easy access for teachers to them, to help teachers by professionals to use technology skillfully and to benefit from it as much as possible, and to continuously evaluate the effectiveness of the technology used and keep pace with continuous development. (Abdul Rahman, 2019, p. 26)

In order to be able to effectively provide teachers with technological competencies, it is important in the digital skills diploma program to integrate digital technologies into training activities; This means preparing teachers to use a variety of digital methods in their work; And it is very important that this is not limited to just providing teachers with technical skills, such as using an interactive whiteboard, laptops, or tablets, rather, teachers' awareness about the purposes of using modern technology in education must also be enhanced (Demeshkant, 2020, 3176).

Enhancing teachers' technological competencies also depends on enriching computer laboratories with interactive and visually attractive educational materials, as well as encouraging teachers to give students the freedom to determine the appropriate pace for them in learning how to use digital devices, and encouraging them to create a friendly classroom atmosphere that provides students with more opportunities for peer support and dialogue; Through this, it is possible to enhance the existing teaching efficiency, the technological competence of teachers, and also improve the learning performance of students (Rana et al., 2018, 162).

From the above, it can be said that the various requirements for enhancing technological competencies revolve largely around providing the material and technical capabilities necessary to build and then enhance the technological competencies of teachers. Perhaps this is due to the importance of having basic technological infrastructure so that growth and development of these competencies can occur in the first place. Of course, in any effort to enhance teachers' technological competencies, it is important to have awareness that the contexts of technology-based education are radically different from the contexts of education based on traditional methods.

The role of the digital skills diploma programin the development of teachers' technological competencies:

Digital skills diploma programs assume an important role in developing teachers' technological competencies; It contributes to changing the nature of the teacher's role from being merely a prompter in the educational process to a qualified teacher trained to deal with technological innovations (Hashem et al., 2018, p. 307)

The significance of the digital skills diploma program in developing teachers' technological competencies stems from its important role in making technology a valuable addition to the educational process, because simply adding and introducing technology does not lead to educational change or developments; The effective digital skills diploma program is distinguished by its keenness to encourage teachers to innovate and rethink of their educational practices and change their teaching strategies; Effective digital skills diploma programs are usually designed with evidence-based methodologies, so these programs can effectively develop teachers' technology competencies (Sarango-Lapo et al., 2017, 1007).

When organizing a digital skills diploma program, it is important to look at the levels of technological competencies and choose the applicable training courses accordingly. For example, it is best to offer short-term training courses for teachers with technology competency levels ranging from beginner to expert levels; As for long-term training courses, they are more useful in increasing the percentage of teachers who have the highest levels of technological competencies (Leoste et al., 2022, 8-9).

From the above, it becomes clear that the Digital Skills Diploma Program plays a very important role in developing and enhancing the technological competencies of teachers, because these programs seek to provide teachers with technological competencies in accordance with the latest developments in the field of educational technologies. However, in order for these programs to be able to achieve their desired goals, it is necessary to constantly update the design of these programs in order to keep them in line with developments in the field of educational work and also the change in the nature of the needs of trainee teachers.

Previous studies:

First: Arabic studies:

Bassiouni's study (2021) aimed to investigate the extent of the availability of competencies necessary to use digital learning innovations in teaching among middle school science teachers in Bisha Governorate. The study population consisted of middle school science teachers in Bisha Governorate, and the sample included (160) teachers, and the study relied on the descriptive analytical approach as its method, and used the questionnaire as the study instrument. The study reached many findings, the most important of which are: arriving at a list of the competencies necessary to use digital learning innovations in teaching, and that these competencies were generally available with an average degree, in addition to the statistically significant differences in the views of the study sample on all axes, according to variables of: academic qualification and training courses in the field of computers.

Hassan's study (2020) dealt with investigating the impact of a program in technological competencies based on digital learning objects to develop their production and use in teaching geography to general diploma students. The study population consisted of general diploma students, and the sample included (40) male and female students. The study used the descriptive experimental approach as its method, and it used the achievement test and a product evaluation card as the study instrument. The study reached many findings, the most important of which are: There are statistically significant differences between the average scores of the experimental and control groups and the criterion was 80% test in the results of applying the product evaluation card for the skills of producing digital learning objects as a whole and for each skill, in favor of the experimental group; there is a statistically significant difference between the average scores of students in the pre- and post-measurement of the achievement test in favor of the post-measurement; and there is also a clear and tangible improvement among general diploma students in the cognitive aspects of the skills of producing and using digital learning objects.

Al-Qaraawi's study (2019) also sought to investigate the technological competencies necessary for middle and high school teachers to activate the use of the interactive whiteboard within the classroom. The study population consisted of all teachers in Al Forsan National Schools for Girls in the city of Riyadh, and the sample included (40) teachers. The study relied on the descriptive approach, and used the smart board as a study instrument. The

study reached many findings, the most important of which are: that the respondents have three competencies related to designing and activating the use of the interactive whiteboard within the classroom to a high degree, in addition to allocating moral incentives to the teacher who uses the interactive whiteboard in teaching, and the design of modern buildings for educational institutions in accordance with the requirements for displaying and using the interactive whiteboard within the classroom.

Al-Zahrani's study (2019) investigated the educational technology competencies of physical education teachers in Al-Baha region and the extent of its use in the education process through: technological knowledge, effective use of technological techniques, and the design and production of educational materials. The study population consisted of all staff of the General Administration of Education in the Al-Baha region; and the sample included (57) trainers. The study relied on the descriptive analytical approach as its method, and used the questionnaire as a study instrument. The study reached many findings, the most important of which are: The degree of technological knowledge competencies among physical education teachers in Al-Baha region was average, and the most widely used of these competencies in the teaching process, is preparing and planning the lesson using one of the means of educational technology; There are also differences and interactive effects between physical education teachers in Al-Baha region in employing technology according to teaching experience; In addition, the degree of competencies in the effective use of technological techniques among the physical education teachers in Al-Baha region had an average degree, and the most widely used of these competencies in the education process is the use of a word processor and texts to prepare the lesson.

Al-Aklabi's study (2017) monitored the reality of educational technology for student teachers at the College of Education at Shaqra University in the Kingdom of Saudi Arabia, and developed a list to define the educational technology competencies that must be available to student teachers at the College of Education, Shaqra University. The study population consisted of all staff in the College of Education at Shaqra University in the Kingdom of Saudi Arabia; and the sample included (208) trainees. The study relied on the descriptive approach as its method, and used a questionnaire, training needs scale, and personal interviews as the study instrument. The study reached many findings, the most important of which are: There is a clear deficiency in the planning process for training programs held for in-service teachers; The lack of clarity in the objectives of

in-service training programs for teachers, mentors, and those in charge of training; In addition to the low level of preparation of trainers carrying out teacher training tasks.

Second: foreign studies:

The study by (Demissie et al., 2022) examined teachers' digital competencies and the integration of technology into education. The study population consisted of general education teachers up to the twelfth grade, directors, and coordinators of educational centers in (15) rural and urban schools located in the Wolayta region, Ethiopia; The study sample included (371) teachers and (30) directors and coordinators of educational centers. The study relied on a cross-sectional exploratory approach, and data was collected through a questionnaire and an interview. The findings of the study included the following: high levels of content competencies, pedagogical competencies, and pedagogical content competencies among teachers; There is a strong positive correlation between the areas of knowledge (technology – content – pedagogical methods – interaction) and the application of the "Technological Educational Knowledge Content" (TPACK framework).

Kibici's study (2022) addressed music teachers' perceptions of technological competencies. The study population consisted of all secondary school music teachers working in the Central Anatolia region, in the provinces of Konya, Ankara, Karaman, Aksaray, Nida, Nevsehir, and Kirsehir; and the study sample included (231) teachers. The study relied on the descriptive approach, and data was collected through a questionnaire. The findings of the study included the following: The technological competencies of the study sample members were at an (average) level; There are statistically significant differences between the members of the study sample in terms of the level of technological competencies according to the gender variable, in favor of males; The level of technological competency was also very low among employees in public schools and those over 50 years of age.

The study by (Mutohari et al., 2021) measured the level of technological competencies (awareness – know-how – ability – creativity – criticism) among professional teachers. The study population consisted of all teachers working in (6) vocational secondary schools located in the city of Yogyakarta, Indonesia; The study sample included (50) teachers. The study relied on the quantitative approach, and data was collected through a questionnaire. The findings of the study included the following: The levels

of technological competencies among the study sample members were (83.08%) for technological awareness, (66.32%) for technological know-how, (39.28%) for technological ability, (21.92%) for technological creativity, and (20.84%) for technology criticism; The use of digital technologies was (low) among the study sample members.

Mohalik's study (2019) addressed the levels of digital skills and their uses among secondary school teachers. The study population consisted of all trainee teachers at Utkal University, Odisha, India; The study sample included (170) teachers. The study relied on the descriptive approach, and data was collected through a questionnaire. The findings of the study included the following: Most of the study sample members had the skills of changing the lighting and contrast on the computer screen, enlarging, reducing and moving windows, and using search commands to find files and install programs; More than 50% of the sample lacked knowledge about learning management systems, virtual worlds, podcast platforms, and web design applications; About 70% of the sample members were aware of storing video files in cameras, managing junk mail, and updating the username and password; Less than 50% of the sample had knowledge about voice typing and cybersecurity; Most of the study sample members reported using group mail and WhatsApp for academic work; and only 20% of the sample reported that they used PowerPoint presentations in the classroom, built digital educational materials, and provided feedback to students.

The study by (Cantú-Ballesteros et al., 2017) aimed to determine the levels of digital capabilities among elementary school teachers and their relationship to some social demographic factors. The study population consisted of all fifth-grade and sixth-grade teachers in (32) schools located in the cities of Obregon and Navojoa, in the state of Sonora, Mexico; The study sample included (88) teachers; The study relied on a cross-sectional survey approach, and data was collected via a questionnaire. The findings of the study included the following: (65.9%) of the teachers had an overall (average) level of digital capabilities; There were statistically significant differences among the respondents in the level of digital capabilities according to the age variable, in favor of younger teachers (24-36 years).

Study hypotheses:

- There is no degree of availability of the acquired technological culture competencies, competencies of planning and design of the learning environment, competencies of using educational technology applications, competencies of using educational

equipment, and technological assessment competencies among teachers of Medina educational district according to the digital skills diploma.

- There are no statistically significant difference, at the level of (0.05), in the responses about the degree of availability of the technological competencies acquired by the teachers of Medina educational district according to the digital skills diploma according to the variables (gender – academic qualification – years of experience).

Study methodology:

Study approach:

In order to achieve the objectives of the study; The researcher used the descriptive analytical method: "The descriptive method is concerned with collecting, classifying and categorizing data and facts, with the aim of extracting significant conclusions, and then arriving at generalizations regarding the phenomenon under study."

The study population and sample:

The current study population includes all teachers in the Medina Educational District, and their number is (...) male and female; The study sample included (110) male and female teachers who were randomly selected to represent the study population.

Characteristics of the study sample:

Frequencies and percentages were calculated for the respondents according to (gender – academic qualification – years of experience).

1- Distribution of respondents by gender:

Table (1) Distribution of respondents according to gender

s	Gender	Frequency	Percentage
1	Male	79	71.8%
2	Female	31	28.2%
Total		110	100.0%

Table (1) shows that (71.8%) of the respondents are male, while (28.2%) of the respondents are female.

2- Distribution of respondents according to academic qualification:

Table (2) Distribution of respondents according to academic qualification

s	Academic qualification	Frequency	Percentage
1	Bachelor's degree	100	90.9**%**
2	Post-graduate (diploma – Master's degree)	8	7.3**%**
3	PhD	2	1.8**%**
Total		110	**100.0%**

Table (2) shows that (90.9%) of the respondents hold a bachelor's degree, while (7.3%) hold a postgraduate qualification (diploma - master's degree), and (1.8%) have a PhD.

3- Distribution of sample members according to number of years of experience:

Table (3) Distribution of sample members according to years of experience

s	Years of experience	Frequency	Percentage
1	Less than 5 years	31	28.2**%**
2	From 5 to less than 10 years	37	33.6**%**
3	10 years or more	42	38.2**%**
Total		110	**100.0%**

Table (3) shows that (28.2%) of the respondents have experience for a period of less than 5 years, while (33.6%) have experience ranging from 5 years to less than 10 years, and (38.2%) have experience for a period of 10 years or more.

Study instrument:

After reviewing the educational literature and previous studies related to the study topic, the researcher built and developed a questionnaire with the aim of investigating the degree of availability of technological competencies acquired by teachers in the Medina Educational District according to the Digital Skills Diploma.

Description of the study instrument (questionnaire):

The questionnaire in its final form contained two main parts:

The first part: includes the primary data of the respondents, which are (gender – academic qualification – years of experience).

The second part: includes the questionnaire's axes. The final version of the questionnaire consisted of (50) statements distributed over five axes:

The first axis: "Technological culture competencies" and consists of (10) statements.

The second axis: "Competencies for planning and designing the learning environment" and consists of (10) statements.

The third axis: "Competencies in using educational technology applications" and consists of (10) statements.

The fourth axis: "Competencies in using educational equipment" and consists of (10) statements.

The fifth axis: "Technological assessment competencies" and consists of (10) statements.

A five-point Likert scale (strongly agree – agree – neutral – disagree – strongly disagree) was used to investigate the degree of availability of technological competencies acquired by teachers in the Medina Educational District according to the digital skills diploma.

Validity of the study instrument:

1) **Validity of internal consistency of the instrument:**

a) **Validity of internal consistency of the axes:**

The validity of the internal consistency was calculated according to the responses of the sample members, by calculating the Pearson correlation coefficient between the scores of each statement and the total score of the axis to which the statement belongs, according to the responses of the pilot sample, n = (30), as its results are shown in Table (4):

Table (4) Pearson correlation coefficients between the scores of each statement and the total score of the axis to which it belongs

The first axis: "Technological culture competencies"					
Item no.	**Correlation coefficient**	**Item no.**	**Correlation coefficient**	**Item no.**	**Correlation coefficient**
1	.654**	5	.668**	9	.797**
2	.418*	6	.706**	10	.447*
3	.624**	7	.683**		
4	.683**	8	.652**		
The second axis: "Competencies for planning and designing the learning environment"					
1	.653**	5	.646**	9	.797**
2	.388*	6	.720**	10	.448*
3	.624**	7	.711**		

4	.732**	8	.624**		
The third axis: "Competencies in using educational technology applications"					
1	.625**	5	.641**	9	.777**
2	.399*	6	.683**	10	.417*
3	.599**	7	.631**		
4	.721**	8	.630**		
The fourth axis: "Competencies in using educational equipment"					
1	.655**	5	.601**	9	.780**
2	.419*	6	.663**	10	.433*
3	.619**	7	.635**		
4	.668**	8	.634**		
The fifth axis: "Technological assessment competencies"					
1	.722**	5	.663**	9	.754**
2	.558**	6	.672**	10	.492**
3	.725**	7	.607**		
4	.786**	8	.640**		

**** Statistically significant at the significance level (0.01)**

***Statistically significant at the significance level (0.05)**

Table (4) shows that the correlation coefficients of the statements with the total score of the axis to which the statement belongs were all statistically significant at the level of (0.01), and all the values of the correlation coefficients were high values, as they ranged in the first axis: "Technological culture competencies" between (.418*-.797**), in the second axis: "Competencies for planning and designing the learning environment" the correlation coefficients ranged between (.388*-.797**); While the correlation coefficients in the third axis: "Competencies in using educational technology applications" ranged between (.399*-.777**), and in the fourth axis: "Competencies in using educational technology equipment" ranged between (.419*-.780**), and in the fifth axis: "Technological assessment competencies," they ranged between (.492**-.786**), which indicates a high degree of internal consistency validity for the questionnaire's axis statements.

b) General construct validity of the questionnaire's axes:

The construct validity of the questionnaire's axes was verified by finding correlation coefficients between the total score for each axis and the total score of the questionnaire, and the results are shown in the following table:

Table (5) Correlation coefficients between the total score for each axis and the total score for the questionnaire axes

s	Axis	Correlation coefficient
1	The first axis: "Technological culture competencies"	.956**
2	The second axis: "Competencies for planning and designing the learning environment"	.950**
3	The third axis: "Competencies in using educational technology applications"	.988**
4	The fourth axis: "Competencies in using educational equipment"	.981**
5	The fifth axis: "Technological assessment competencies"	.867**

**** Statistically significant at the significance level (0.01)**

Table (5) shows that the values of the correlation coefficients for the questionnaire's axes with the total score of the questionnaire were high, ranging between (.950**-.988**), and all of them were statistically significant at the significance level (0.01); Which indicates a high degree of construct validity for the questionnaire's axes.

Table (6) Cronbach's alpha reliability coefficients for the questionnaire axes

s	Axis	Number of items	Cronbach's alpha coefficient
1	The first axis: "Technological culture competencies"	10	.976
2	The second axis: "Competencies for planning and designing the learning environment"	10	.977
3	The third axis: "Competencies in using educational technology applications"	10	.972
4	The fourth axis: "Competencies in using educational equipment"	10	.972
5	The fifth axis: "Technological assessment competencies"	10	.990
Total		50	.980

Table (6) shows that the values of the reliability coefficients for the questionnaire axes were high, as these values ranged between (.972-.990) and the value of the overall reliability coefficient for the questionnaire axes reached (.980); These values indicate the applicability of the questionnaire and the reliability of its results.

Presentation and discussion of the study findings:

First hypothesis:

"What is the degree of availability of the acquired technological culture competencies, competencies of planning and design of the learning environment, competencies of using educational technology applications, competencies of using educational equipment, and technological assessment competencies among teachers of Medina educational district according to the digital skills diploma?"

To answer this hypothesis, the arithmetic mean and standard deviation were calculated for each axis of the questionnaire, then those dimensions were arranged in descending order based on the arithmetic mean, as the results of Table (7) show:

Table (7) Degree of availability of technological competencies acquired by teachers in the Medina Educational District according to the Digital Skills Diploma

s	Dimension	Mean	Standard deviation	Order	Response degree
1	The first axis: "Technological culture competencies"	4.34	.456	1	Very high
2	The second axis: "Competencies for planning and designing the learning environment"	4.33	.455	2	Very high
3	The third axis: "Competencies in using educational technology applications"	4.17	.550	3	High
5	The fifth axis: "Technological assessment competencies"	4.12	.496	4	High
4	The fourth axis: "Competencies in using educational equipment"	4.09	.448	5	High
Total score of the questionnaire		4.21	.396	---	Very high

Table (7) shows that the degree of availability of technological competencies acquired by teachers in the Medina Educational District according to the Digital Skills Diploma from the point of view of the respondents was (very high), as the overall mean of the questionnaire was (4.21) with a standard deviation of (. 396); The standard deviations of the questionnaire's axes ranged between (.448-.550), which are low values. This demonstrates the homogeneity of respondents' opinions on these topics.

The first axis was ranked first: “Technological Culture Competencies” with a mean of (4.34) and a standard deviation of (.456), followed in second place by the second axis: “Competencies for planning and designing the learning environment” with a mean of (4.33) and a standard deviation. reached (.455), followed in third place by the third axis: “Competencies in using educational technology applications” with a mean of (4.17), and a standard deviation of (.550); In fourth place was the fifth axis: “Technological assessment competencies” with a mean of (4.12) and a standard deviation of (.496). While the fourth axis came in last place: “Competencies in using educational technology equipment,” with a mean of (4.09) and a standard deviation of (.448).

The researcher believes that the first axis: “Technological culture competencies” ranked first with a very high response degree among the questionnaire’s axes, because most of the teachers in the sample are convinced of the need to increase their digital culture and acquire the necessary skills to increase their ability to use modern educational software and methods that have proven effective in the educational process and helpful in improving its outcomes, which made it the first concern of most of the study’s sample of teachers to develop and enhance their technological culture with regard to the pedagogical and teaching process.

This finding is consistent with what was indicated by the study by (Mutohari et al., 2021), which showed that the levels of technological competencies among the respondents were (83.08%) in terms of technological awareness.

While this finding disagrees with what was indicated by the result of Bassiouni’s study (2021), which concluded that these competencies were generally available to an average degree.

The researcher also believes that the fourth axis: “Competencies in using educational technology equipment” ranked last due to the presence of some obstacles that prevent some teachers from being able to use educational technology applications in the manner required to achieve the maximum benefit from these applications in the educational process.

This finding disagrees with the findings of the study of (Cantú-Ballesteros et al., 2017), which confirmed that (65.9%) of teachers had an overall (average) level of digital capabilities.

Second hypothesis:

There are no statistically significant difference, at the level of (0.05), in the responses about the degree of availability of the technological competencies acquired by the teachers of Medina educational district according to the digital skills diploma according to the variables (gender – academic qualification – years of experience).

First: Differences according to the gender variable:

To reveal the statistically significant differences at the significance level (0.05) regarding the questionnaire axes and the total score according to the (gender) variable, the researcher applied the "Independent Samples Test" t-test to clarify the significance of the differences in the responses to items according to the gender variable, as shown in the table (8).

Table (8) Results of the "Independent Samples Test" for the differences in the responses to items on the questionnaire axes and the total score according to the gender variable

Axis	Gender	s	Mean	Standard deviation	df	"t" value	Significance	Significance level
The first axis: "Technological culture competencies"	Male	79	4.4076	.39052	108	2.507	.014	Significant at > 0.05
	Female	31	4.1710	.56344				
The second axis: "Competencies for planning and designing the learning environment"	Male	79	4.4190	.41327	108	3.272	.001	Significant at > 0.05
	Female	31	4.1161	.49268				
The third axis: "Competencies in using educational technology applications"	Male	79	4.2772	.50762	108	3.417	.001	Significant at > 0.05
	Female	31	3.8968	.56891				
The fourth axis: "Competencies in using educational equipment"	Male	79	4.1620	.44529	108	2.547	.012	Significant at > 0.05
	Female	31	3.9258	.41711				
The fifth axis: "Technological assessment competencies"	Male	79	4.2380	.46611	108	4.279	.000	Significant at > 0.05
	Female	31	3.8194	.44976				
Total score	Male	79	4.3008	.38972	108	3.996	.000	Significant at > 0.05
	Female	31	3.9858	.32105				

Results of table (8) show that there are statistically significant differences at the level of (0.05) in the opinions of respondents about the total score of the questionnaire according to the gender variable in favor of females.

The researcher believes that this finding may be due to the fact that most of the female teachers in the sample are somewhat more keen than the males to develop their digital capabilities in the educational process with the aim of proving themselves and emphasizing the important role of the female teacher, which is no less than that of the male teachers, and their keenness to benefit from previous personal experiences or the experiences in which other teachers in the Medina Educational District or elsewhere have succeeded; Which made the difference between their responses and those of male teachers.

This finding disagrees with what was indicated by the finding of the (Kibici, 2022) study, which found that there were statistically significant differences between the respondents in terms of the level of technological competencies according to gender variable, in favor of males.

Second: Differences according to the academic qualification variable

Table (9) Results of the "One Way Anova" for the differences in the responses on the study axes according to the academic qualification variable

Axis		Sum of squares	df	Mean square	(f)	Significance level
The first axis: "Technological culture competencies"	Between groups	1.035	2	.517	2.559	.482
	Within groups	21.631	107	.202	---	
	Total	22.666	109	---	---	
The second axis: "Competencies for planning and designing the learning environment"	Between groups	1.262	2	.631	3.157	.407
	Within groups	21.384	107	.200	---	
	Total	22.646	109	---	---	
The third axis: "Competencies in using educational technology applications"	Between groups	.866	2	.433	1.440	.241
	Within groups	32.165	107	.301	---	
	Total	33.031	109	---	---	
The fourth axis: "Competencies in using educational	Between groups	.597	2	.298	1.497	.228
	Within groups	21.331	107	.199	---	

Axis		Sum of squares	df	Mean square	(f)	Significance level
The first axis: "Technological culture competencies"	Between groups	1.035	2	.517	2.559	.482
	Within groups	21.631	107	.202	---	
	Total	22.666	109	---	---	
The second axis: "Competencies for planning and designing the learning environment"	Between groups	1.262	2	.631	3.157	.407
	Within groups	21.384	107	.200	---	
	Total	22.646	109	---	---	
equipment"	Total	21.928	109	---	---	
The fifth axis: "Technological assessment competencies"	Between groups	.277	2	.139	.557	.575
	Within groups	26.639	107	.249	---	
	Total	26.916	109	---	---	
Total score	Between groups	.388	2	.194	1.240	.294
	Within groups	16.759	107	.157	---	
	Total	17.147	109	---	---	

Table (9) shows that there are no statistically significant differences at the level (0.05) in the opinions of respondents regarding the questionnaire's axes and their overall score according to the academic qualification variable.

The researcher believes that this finding may be due to the increased interaction between most of the male and female teachers in the school community, the scientific seminars and periodic workshops held by the Medina Educational District, and the frequent effective communication between teachers with the aim of gaining experiences and sharing knowledge to enhance their technological competencies, which contributed to their close responses regarding the questionnaire's axes and their overall score, despite the difference in academic qualifications.

This result finding disagree with the finding of Bassiouni's study (2021), which found that there were statistically significant differences in the views of the respondents in all axes according to the academic qualification variable.

Third: Differences according to the variable of years of experience:

Table (10): Results of the "One Way Anova" for the differences in the answers of the respondents on the study axes according to the years of experience variable

Axis		Sum of squares	df	Mean square	(f)	Significance level
The first axis: "Technological culture competencies"	Between groups	.094	2	.047	.222	.801
	Within groups	22.572	107	.211	--	
	Total	22.666	109	--	--	
The second axis: "Competencies for planning and designing the learning environment"	Between groups	1.333	2	.667	3.347	.039
	Within groups	21.312	107	.199	--	
	Total	22.646	109	--	--	
The third axis: "Competencies in using educational technology applications"	Between groups	1.603	2	.801	2.728	.070
	Within groups	31.428	107	.294	--	
	Total	33.031	109	--	--	
The fourth axis: "Competencies in using educational equipment"	Between groups	1.410	2	.705	3.675	.029
	Within groups	20.518	107	.192	--	
	Total	21.928	109	--	--	
The fifth axis: "Technological assessment competencies"	Between groups	3.370	2	1.685	7.658	.001
	Within groups	23.546	107	.220	--	
	Total	26.916	109	--	--	
Total score	Between groups	.646	2	.323	2.093	.128
	Within groups	16.502	107	.154	--	
	Total	17.147	109	--	--	

Table (10) shows that there are statistically significant differences at the level (0.05) in the opinions of respondents regarding the second, fourth, and fifth axes according to the years of experience variable.

To determine the differences in the opinions of respondents regarding the questionnaire axes and the total score according to the years of experience variable in favor of which category of the variable, the Kruskal-Wallis Test was used, and the test results were as follows:

Table (11) Results of the "Analysis" (Kruskal-Wallis Test) to determine the direction of differences in the responses on the questionnaire axes and the total score according to the years of experience variable

Axis	Years of experience	No.	Average rank	Chi square	df	Significance level
The second axis: "Competencies for planning and designing the learning environment"	Less than 5 years	31	48.50	.495	2	.781
	From 5 years to less than 10 years	37	66.24			
	10 years or more	42	51.20			
	Total	110				
The fourth axis: "Competencies in using educational equipment"	Less than 5 years	31	43.24	3.586	2	.166
	From 5 years to less than 10 years	37	63.27			
	10 years or more	42	57.70			
	Total	110				
The fifth axis: "Technological assessment competencies"	Less than 5 years	31	41.68	3.993	2	.136
	From 5 years to less than 10 years	37	61.68			
	10 years or more	42	60.26			
	Total	110				

Table 11 shows that:

- There are statistically significant differences at the level (0.05) in the opinions of respondents on the second axis: "Competencies for planning and designing the learning environment" according to the years of experience variable in favor of those with experience for a period from 5 years to less than 10 years, with an average rank value of (66.24).
- There are statistically significant differences at the level of significance (0.05) in the opinions of respondents on the fourth axis: "Competencies in using educational technology equipment" according to the years of experience variable in favor of those with experience for a period from 5 years to less than 10 years, with an average rank value of (63.27).
- There are statistically significant differences at the significance level (0.05) in the opinions of respondents on the fifth axis:

"Technological assessment competencies" according to the years of experience variable in favor of those with experience for a period from 5 years to less than 10 years, with an average rank value of (61.68).

The researcher believes that this finding may be due to the fact that male and female teachers whose experience ranges from 5 to 10 years are more familiar with modern teaching methods that rely on harnessing educational techniques, means and software in the educational process than those with less than 5 years of experience as a result of their lack of practice or those with 10 years or more of experience as a result of resistance of some of them to the technological change taking place in the educational process in public education schools in Medina, they also achieved a great deal of knowledge through sharing it with teachers with more than 10 years of experience; This increased their ability to combine the latest teaching methods based on the use of educational technologies in addition to experience at the same time, and thus there was a difference between the responses of the sample members and their peers with more or less experience.

This finding is consistent with the findings of the study of (Cantú-Ballesteros et al., 2017), which found that there are statistically significant differences among the responses in the level of digital capabilities in terms of the age variable, which is directly related to experience, in favor of younger teachers (24-36 years old).

Summary of findings:

- The degree of availability of technological competencies acquired by teachers in the Medina Educational District according to the Digital Skills Diploma from the point of view of the respondents was (very high).
- The first axis came in first place: "Technological Culture Competencies" with a mean of (4.34) and a standard deviation of (.456), followed in second place by the second axis: "Competencies of Planning and Designing the Learning Environment" with a mean of (4.33) and a standard deviation. reached (.455), followed in third place by the third axis: "Competencies in using educational technology applications" with a mean of (4.17), and a standard deviation of (.550); In fourth place was the fifth axis: "Technological assessment competencies"

with a mean of (4.12) and a standard deviation of (.496). While the fourth axis came in last place: "Competencies in using educational technology equipment," with a mean of (4.09) and a standard deviation of (.448).

- There are statistically significant differences at the level (0.05) in the opinions of respondents about the total score of the questionnaire according to the gender variable in favor of females.
- There are no statistically significant differences at the level (0.05) in the opinions of respondents on the questionnaire's axes and their overall score according to the academic qualification variable.
- There are statistically significant differences at the level (0.05) in the opinions of respondents on the second, fourth and fifth axes according to the years of experience variable in favor of teachers with experience from (5 to 10) years.

Study recommendations:

- The need to be familiar with everything related to educational technology applications in the teaching process, including electronic tests and the use of digital educational means.
- The need to conduct mutual visits between teachers in the Medina Educational District and other educational districts to exchange experiences and make the most of the distinguished teachers who possess technological competencies.
- The need to encourage all public education teachers in the Kingdom to develop their digital competencies pre- and in-service, and to provide continuous follow-up from school principals and educational supervisors to develop their technological competencies.
- The need to seek the assistance of distinguished staff who possess a great deal of technological competencies and to exchange their previous experiences with their new colleagues during service.
- The need to attract experts in the use of educational technologies from professionals and qualified staff to conduct strategic anslysis of the obstacles that prevent some teachers from possessing technological competencies, studying them and benefiting from them.

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