

# Requirements of Employing Digital Skills Based on the Professional Standards for Teachers in the Kingdom of Saudi Arabia from the Point of View of General Education Teachers in Bisha City

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Received: 7 Jan. 2023, Revised: 10 May 2023, Accepted: 12 May 2023

Published online: 1 Sep. 2023

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**Abstract:** This study aimed to identify the requirements for using digital skills based on professional standards for teachers in the Kingdom of Saudi Arabia, from the perspective of general education teachers in Bisha City. The researchers conducted a survey of 371 male and female teachers randomly selected from all grades for the academic year 2022-2023G. The study found that the requirements for using digital skills had a high-level evaluation, while the field related to the standard of digital skills that can be applied based on professional standards had an average evaluation. The study also found statistically significant differences in responses to the first and fourth fields, attributed to gender, academic qualification, and training courses in education technologies. Based on these results, the study recommends the development of a tool to measure digital skills and the creation of a proposed framework to improve teaching performance based on professional standards. The study also recommends the development of mechanisms and standards to regulate workflow in schools and the preparation of a guide book on digital skills and professional standards for teachers.

**Keywords:** Digital skills; professional standards for teachers; difficulties to employ digital skills; general education.

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## 1 Introduction

In today's fast-paced world, rapid advancements in technology and science have led to significant developments and transformations in various aspects of life. However, this has also resulted in a range of challenges for the educational system [Gaheen et al. (2021)]. As a result, educators and specialists have been working to design an educational system that caters to the demands and challenges of the digital age, aiming to create an effective and interactive learning environment that fosters the development of digital skills for teachers, students, and all staff involved in education [Eleraky (2017)]. The teacher plays a crucial role in the education process, as they have a significant impact on students and the achievement of educational objectives. An efficient teacher is capable of transferring culture to future generations, developing social reality, and achieving educational goals. A competent teacher is a critical element in the success of any educational approach, linking topics, enriching study materials with thoughts and experiences, and forming scientific thinking habits [Mahmoud (2016)].

To ensure that students are prepared for digital learning, teachers must be equipped with the necessary skills and competencies. Enhancing the teacher's technological proficiency and digital skills is essential to improve their performance and promote the educational process. Clear educational visions and strategies are needed to define the role of the teacher and their responsibilities. Educators have emphasized the active role of teachers in creating opportunities for students to develop creativity, thinking skills, and self-confidence through the use of technology. In order to achieve this, teachers should be proficient in managing digital education, applying modern teaching strategies that support

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technology, and effectively using smart devices and engaging with the educational community. In the modern era, digital or electronic learning has become a vital means of integrating diverse information and data within educational environments. This approach is crucial for optimal utilization of resources, including physical goods, knowledge, and services. The societies of today rely heavily on digital learning to fulfill individual needs, improve quality of life, and keep pace with the technological advancements and cognitive revolution in various domains [Abra (2020)]. According to a study by [Ahmed (2022)], the COVID-19 pandemic has created an urgent need for electronic education and virtual classes, resulting in the emergence of the term "Digital Teacher." The Digital Teacher is similar to the robot Sophia and aims to guide students in achieving educational goals through electronic education tools and distance learning. To acquire digital skills, training courses are necessary to transfer knowledge and skills from the digital teacher to students and enhance their contribution to the educational process. Various virtual conferences and meetings, such as "The International Conference for Education Evaluation and Improving Learning Results in Saudi Arabia," "The UNESCO Conference for Digital Learning: Innovative Distance Learning Solutions to Build Back More Efficiently," and "The International Conference for the Future of Digital Learning in The Arab World" have been held to address distance learning and digital skills training during the pandemic. These conferences recommended promoting digital culture and utilizing virtual electronic platforms to enhance the success of the educational process [Abdelfattah (2017)].

In Saudi Arabia, distance education has been successful due to its rapid transition to electronic platforms during the COVID-19 pandemic. The Ain educational channels broadcast educational lessons and have archived materials on YouTube, with over 61 million views, while the Unified Education System has had 19 million visits. The Ain Enriching Channel and University Education recorded 4 million and 2 million educational sessions, respectively, and over 6 million panel discussions were held [The Saudi Press Agency(2020)]. Recognizing the teacher as a fundamental element in the educational process, efforts are made to prepare and develop them occupationally. This is given high priority as it pertains to the upbringing and education of individuals, leading to a better future for both the citizen and the country [Al-Sameih (2017)].

Developing digital skills is an essential component of teacher education in response to modern education methods. Professional standards for teachers encompass a wide range of skills, including the ability to effectively use modern technologies in the educational process. These standards provide the foundation for initiatives related to the profession of education, such as preparation programs for teachers, employment selection, professional tests, and continuous evaluation of performance. Additionally, professional standards support the evaluation of school performance and contribute to achieving set objectives through curricula development processes [Education and Training Evaluation Authority(2019)].

## 2 Theoretical Context and Previous Studies

### 2.1 The digital skills of teachers

The current era is marked by continuous changes, an increasing amount of information, and accelerating knowledge, technology, and cognitive developments in all fields of life. Those in charge of the educational learning process must keep pace with these changes by providing individuals with methods of achieving development, progress, and coping with current developments without stoppage. These infinite changes require developing the capabilities of teachers, their knowledge, and skills according to the latest updates. This cannot be fulfilled unless the teacher has the eagerness to seek and acquire knowledge, the desire for innovation, and offering the best. Thus, a change in digital learning skills, which are considered among the most important future skills, has occurred after the world has become full of technology and the internet. The lifestyle has turned into being based on technology in all fields, such as health, marketing, literature, and others. This change has been reflected in the field of education, whether at the level of theory or application [Al-Iraqi (2014)].

Recently, modern types of means and technologies have appeared and are increasingly employed in the teaching and learning process inside and outside the classroom. This necessitates the teacher to be familiar with these means and technologies, know their types, have the skills to use them, and to appropriately employ them in their lessons in a way that is consistent with the elements of the educational process and achieves its objectives. Digital skills have been defined as those skills that benefit the teacher in their quest to obtain, transfer and disseminate knowledge by taking advantage of computerized services to create and use the content of text, audio, images, and video clips via the internet, and the use of Microsoft Office as one of the essential tools for data processing [Al-Shahwan & Al-Nuaimi (2019)].

The digital teacher is the one who can explore the tools, necessary skills for work, adapt to the digital age, and offer their students an education according to these skills that enable them to innovate and create. This enhances applying modern learning methods such as flipped classrooms, learning based on projects and self-learning, and accordingly prepares students for success in their practical life. Teaching students to effectively use technology helps achieve success

in post-secondary stage education, the global economic workplace, and building skills by setting a plan to develop teachers' efficiency, including multi-programs for training teachers, identifying and cost monitoring for building a digital infrastructure, and also training teachers to use new technologies of digital educational materials via the internet.

### 3 The role of the digital teacher in the educational process:

1. Preparing and selecting appropriate educational means for his lessons and using them according to the educational principles.
2. Blending available modern technologies into his lessons to activate the learning process and linking it to reality.
3. Keeping students aware of the importance of other sources of knowledge related to the curriculum and guiding them to where they can find it.
4. Keeping students accustomed to the use of learning technologies and means and urge them to self-learn through them.
5. Keeping available means and technologies protected and instruct students about that.
6. Following security and safety precautions on using educational means, devices and materials.
7. Taking into account the controls, professional and ethical standards on dealing with computer and information technologies and similar.
8. Developing the digital skills of the teacher as one of distance education requirements. [Almikhlafi & Alarfaj (2018)]

### 4 The importance of digital skills:

Due to the consecutive rapid developments of technology in the digital age, it was inevitable that the traditional roles of the teacher, which focused on memorization and indoctrination, to be changed into modern ones that suit the changes of the digital age, the needs and requirements of distance education. The roles of the teacher imposed by the digital age are limited to being the explainer using modern means of technology e.g., the internet and different technologies for presenting and explaining the lessons [Ali (2019)]. [Derbel (2016)] confirms that there is a strong tendency to identify the basic requirements of the digital skills of the teacher and how to enhance them in his preparation and training. This is not only limited to the advanced economy that has a history in rooting and using information and communication technology in education, but it also extends to developing countries as well. In a recent survey about the importance of continuous professional development of the teacher, the European Corporation for Training confirms that information and communication technology skills of teaching are considered one of the most common activities of professional development [Brolpito (2018)].

### 5 The digital skills necessary for the teacher:

There are multi classifications of digital skills that the teacher has to develop to achieve the requirements of distance education. Amongst are:

1. "Regulation and administration" which include the following skills:
  - Knowing and understanding the legal and ethical issues related to information and communication technology.
  - Self-administration for continuous learning and blending modern technologies in teaching and learning processes.
  - Applying the advantages of information and communication technology on educational and administrative tasks.
2. "The use of information and communication technology" which includes the following skills:
  - Basic general knowledge related to information and communication technology.
  - Administrating basic functions of computers, communications and different operating systems.
  - Dealing with basic production tools such as (text processors – data schedules – presentations – and multimedia elements) [Rivera & Ramirez (2015)] effects.

#### 5.1 Requirements to develop the digital skills of a teacher:

A study conducted by McGarr and McDonagh [McGarr & McDonagh (2019)] confirmed that teachers require various prerequisites to develop digital skills. These prerequisites should be made available before and during service preparation, and teacher training programs should focus on providing the necessary digital skills for the educational process. Similarly, [Grand-Clement et al. (2017)] confirmed that the prerequisites for developing teachers' digital skills include preparation

for modern technology, which involves the cost of using international information networks, availability of computers and software, high levels of education and culture of both teachers and learners, electronic active interaction, identification of necessary skills, psychological preparation, adaptation to digital learning requirements, and acceptance of them.

[[Ibrahim \(2020\)](#)] investigated the requirements, challenges, and necessary technological skills for basic education teachers to transition to digital learning. The study identified that establishing a school digital vision, providing a digital team, and designing smart applications are the most important requirements for digital conversion. The most commonly used technological means in schools are computer laboratories and multimedia rooms. Collaborative learning and group tasks were identified as the most important technological skills for teachers. The research sample expressed interest in using educational platforms and commonly used WhatsApp and Facebook groups to interact with students. The lack of internet access in classrooms was found to be the biggest challenge. The study recommends distance-training courses to develop teachers' skills in digital learning.

[[Al-Saadi \(2021\)](#)] studied the readiness for digital learning in Jordan during COVID-19 pandemic, from the perspective of school teachers in northern Jordan. The study identified the appropriateness of digital learning curricula, availability of digital infrastructure, and the effect of abilities and skills of students and teachers, while considering the differences in perceptions attributed to gender, academic qualification, and experience. The study population was male and female teachers from government schools affiliated with educational directorates in the Qasaba Irbid District, with a sample size of 274 individuals. The results showed an intermediate degree of agreement, with the arithmetic mean ranging between 3.26-4.37 for the study fields. The study recommended holding workshops and training courses for teachers and students to use computers and the internet efficiently and effectively in dealing with digital learning requirements and strategies.

The study of [[Ahmed \(2022\)](#)] aimed to assess the level of digital learning skills and twenty-first century skills among social studies teachers in grade two during the Covid-19 pandemic, and to determine if there were any significant differences in responses based on gender, experience, academic qualification, or the number of technological courses. The study sample consisted of 450 social studies teachers, and the results showed poor digital learning skills and average twenty-first century skills. There was no significant difference based on gender or qualification, but there was a significant difference based on experience and the number of technological courses. The study recommended spreading digital culture and developing a comprehensive plan for twenty-first century skills.

[[Pérez-Jorge et al. \(2020\)](#)] examined the perception of in-training teachers for early childhood education regarding the use of information and communication technology, and the policies established by the government of the Canary Islands for resources, materials, and training. The study included 110 participants, and the results showed agreement regarding the quality and quantity of training, but limited interest in continuous training. [[Nadolska & Konovalenko \(2019\)](#)] conducted a study on developing informational knowledge and digital skills of foreign language teachers in Ukraine. The study shared the results of an action research project and presented opportunities for developing digital skills during pre-service teachers' training. [[Serezhkina \(2021\)](#)] analyzed the digital skills of Russian university teachers a year after the spread of Covid-19. The study sample consisted of Russian teachers, and the results showed an average level of digital knowledge and expertise in using technology in the educational process. The study emphasized the importance of professional development for teachers and self-education to improve digital illiteracy.

[[Rubach & Lazarides \(2021\)](#)] developed and validated an instrument to measure teachers' basic beliefs in the competence of information and communication technology (ICT) in the classroom, identifying six dimensions of basic beliefs through a survey of 372 German teachers. [[Hasan \(2021\)](#)] highlighted the importance of digital reading in enabling student-teachers to develop skills in contemporary learning technologies and identified challenges such as limited digital literacy skills among students, emphasizing the need for continuous learning and self-accreditation methods to develop digital skills in the educational process. As previously discussed, the development of teachers' digital skills is a crucial area of focus in professional development due to the increasing use of technology and distance learning methods in education. Despite variations in identifying necessary digital skills, the emphasis is on the ability to effectively utilize technology and its applications in distance education. It is essential for teachers to continuously develop their digital skills to keep up with the rapid pace of technological advancements. Proficiency in information digital skills is a key requirement for success in the field of information. Studies on twenty-first century skills have demonstrated that digital skills develop in a sequential manner, with information digital skills serving as the foundation for future skills. As such, teachers must acquire and possess the ability to pass on these skills to future generations.

[[Saikkonen & Kaarakainen \(2021\)](#)] conducted a study to investigate the predictors of digital information skills among Finnish teachers, specifically examining the impact of sociodemographic factors and available resources. The study utilized data from a survey of 4988 teachers and a performance test, and employed multiple regression analysis to analyze the correlation between prediction variables. Results indicated that digital activity and age were the strongest predictors of teachers' information digital skills, with an inverse relationship between the two. Digital self-competence and in-training service were also found to be significant predictors, highlighting the importance of available resources in skill development. The authors recommend targeted interventions based on these findings, and suggest further research to build upon the results.

[[Abo Naji et al. \(2021\)](#)] aimed to develop the digital educational material production skills of primary stage teachers in a study involving 15 teachers from a primary school in Al-Quosia, Assiut. The researchers used a blended learning strategy in their training program, which included a list of producing digital educational materials, a training program based on blended learning, a scenario of the educational channel, and various guides and evaluation tools. The study found that the use of blended learning led to an increase in cognitive and performance achievement among the teachers, and the researchers recommend the use of blended learning to develop digital educational material production skills.

[[Alshreif & Alswat \(2021\)](#)] investigated the relationship between female physics teachers' digital skills and the efficiency of using smart classes. They surveyed 75 teachers from government schools in Al-Taif city and found that using smart classes improved teaching efficiency in several areas. The study also revealed a positive correlation between teaching efficiency with virtual classes and digital skills. The researchers suggested that additional training courses could improve planning, design, and development efficiency.

[[Alharbi & Alawad \(2022\)](#)] proposed a framework to enhance the teaching performance of computer and information technology teachers at the secondary stage based on professional standards. A descriptive survey approach and observation card were used to assess the availability of teaching performance standards for 26 teachers in Al-Qasim, Saudi Arabia. The results indicated medium availability of standards for units planning and study activities, weak availability of standards for creating interactive learning and student supportive environments, and weak availability of standards for evaluating students' performance.

## 6 Professional standards for teachers

Comprehensive reviews of the entire educational system in the Arab World are necessary for education reform, with the participation of both official and civil-society institutions. These reviews should prioritize the development of teacher performance based on strict professional standards, in order to achieve qualitative progress in education. The Ministry of Education in the Kingdom of Saudi Arabia is committed to advancing and developing education in line with current trends and technological developments. The educational system aims to contribute to economic growth, equip future generations with knowledge and skills, foster creativity, innovation, and talent development, build character, enhance the role of teachers, and raise their qualifications. Professional standards and pathways for teachers, school leaders, supervisors, educational guides, trainers, and the educational professional license system have been prepared to achieve this vision. The Education and Training Evaluation Authority (2019) emphasizes the Kingdom's commitment to developing job standards for every educational path, monitoring, evaluating, and improving education outcomes, enhancing the teacher's role, raising their qualifications, and monitoring progress in this matter.

## 7 Professional standards of teachers in the Kingdom of Saudi Arabia Professional standards

They are the group of rules that identify the quality of work in a profession. Who identifies these standards? Those who are responsible for regulating the profession, those who have experience and responsibility such as government official authorities and unions. When we talk about professional standards for teachers, we mean the group of methods, followed trends and applications that the teacher care about in his work and his relationship with the student. These standards include many fields among them: the knowledge that the teacher should have to establish his skills later. As a result of what is mentioned before, occurred the trends and values that the teacher influence on his students.

In the Kingdom of Saudi Arabia, Evaluation and Training Authority identified and developed these criteria relevant to the teacher based on scientific research and the best local and international practices in this field that revealed the most successful methods to improve education and its outcomes by raising the quality of the teachers' performance and their efficiency as they have the greatest impact on students' learning. The criteria were based on the real class practices which proved its effectiveness to improve learning outcomes. It used the latest programs and criteria of global professional development for teachers.

These standards focus on performance tasks and outputs expected to be mastered by graduates nominated to join the teaching profession and in-service teachers. They also focus on the student being the axis of the educational process [[Education and Training Evaluation Authority\(2019\)](#)].

The Evaluation Authority has identified the professional standards of the teacher in the Kingdom of Saudi Arabia as following:

- Commitment to moderate Islamic value and enhance the national identity and profession ethics.
- Continuous professional development.
- Professional interaction with educationists and society.
- Familiarity with linguistic, quantitative and digital skills.

- Familiarity with the student and how he learns.
- Familiarity with the specialization content and ways of teaching it.
- Familiarity with general teaching methods.
- Planning and implementing study units.
- Creating interactive and supportive learning environments for the student.
- Evaluating student's performance [Education and Training Evaluation Authority(2019)].

The Authority for Developing Teaching Profession in Palestine identified some professional standards for teachers in three main fields from which multiple standards are emerged as follows:

### 7.1 *The first field: knowledge and understanding and branching out of it:*

- Have knowledge of the Palestinian curriculum of philosophy, its objectives and broad lines. Have knowledge and understanding of the study content of the stage he is teaching and methods to enrich it.
- Have knowledge and understanding of students' methods of learning according to their abilities and developmental characteristics.
- Have knowledge and understanding of how to teach specialization according to the students' abilities and needs.
- Have knowledge and understanding of the vertical and horizontal education requirements specialization.
- Have knowledge and understanding how to link specialization to different topics and fields in an integrated way within multiple contexts.
- Have knowledge and understanding of the bases of educational measurements and evaluation.
- Have knowledge about the students' circumstances; in all their forms and ways to deal with.

### 7.2 *The second field: professional skills:*

There are many professional skills for teachers that have been developed to meet the needs of digital learning, and they include the following:

- Clear educational plans and objectives putting into consideration individual differences among students.
- Provide safe learning educational environment that is supportive to the process of learning and teaching.
- Provide an educational atmosphere distinguished with flexibility, innovation and continuous stimulation of critical thinking and creativity.
- Employ educational resources, learning means and the learning educational process.
- Link the teacher's topic of specialization with different topics and a social context related to the student's life and reality.
- Facilitate learning and teaching processes to enable students to build, assess and overthink knowledge in different ways.
- Continuously employ educational evaluations of all kinds as an essential part of learning and teaching process.
- Evaluate the performance of his educational practices in accordance with the feedback received from relevant human elements.
- Employ contact and communication with learning and teaching process.
- Employ information and communication technology (ICT) in the educational learning process.

### 7.3 *The third field: professional trends and values:*

- To commit to facilitating learning process for all students.
- To commit to help students to show their different abilities and talents to enhance their self-confidence.
- To reflect subjectively and collectively on the professional practices and evaluate them to meet the professional needs.
- To commit to collaboration and communication with relevant persons to develop the quality of education (Education Profession Development Authority – 2012,10)

## 8 Knowledge standards:

Those standards include the teacher's cognition and awareness of the following: General goals of the curriculum, his own philosophy, planning rules, the content of the study materials which he /she will teach and explain to students, methods

of teaching students according to age group, varying degree of their comprehension, methods of teaching sessions, existing pedagogical fundamentals and rules together with educational bases, grammar rules of the students' and the population's native language where the educational system exists, information technology, new tools and technological methods, different circumstances of students and suitable ways to deal with .

## 9 Standards of skills:

It is to provide educational plans applicable in the environment of education. Providing a safe educational environment serving the goals of the educational process, flexibility to introduce the educational material to students using innovative means stimulating the student to understand and learn. Using different educational methods during classes that makes the educational process comprehensive with methods and tools. Linking different classes and explanations with the students' actual life that will help them remember knowledge and understand it as quick as possible. Activating communication with students through their participations and providing their opinions and observations in addition to enhancing communication and dialogue among students themselves. Using information technology and other different technologies in the field of science.

## 10 Standards of values and trends:

In order to improve the quality of education, it is important to engage with all stakeholders in the education process, such as educational supervisors, policymakers, and parents. A crucial aspect of the educational community is the release of a new list of teaching positions and teacher ranks, which are divided into four levels: assistant teacher, practicing teacher, advanced teacher, and expert teacher. Specific criteria and conditions are established for each rank to determine eligibility for promotion [Aldolaihan (2019)]. Several studies have been conducted in the education field with the aim of enhancing teachers' professional skills.

For instance, [Al-Momani & Al-Saaida (2019)] conducted a descriptive study to identify the professional standards of professional education teachers in the Governorate of "A'gloon". The study found that, from the perspective of both teachers and their managers, professional standards related to planning, lesson preparation, teaching, activities, educational tools, classroom management, and evaluation were available at a high level.

In another study, [Aldahshan & Mahmoud (2021)] aimed to develop proposed visualizations for professional development programs for teachers based on the requirements of the fourth industrial revolution. The study used a descriptive approach and surveyed 710 teachers in Assiut governorate, finding that the requirements for developing professional development programs for teachers were highly important in terms of the objectives, content, and methods of professional development. There were no statistically significant differences in the opinions of the sample individuals based on gender, except for the importance of understanding multiculturalism, where male teachers showed higher significance levels.

In a study conducted by [Ibrahim & Alsawafi (2021)], the authors aimed to identify professional standards for teachers of talented students in schools in the United States of America and examine the potential to apply them in the Sultanate of Oman. The study used a descriptive approach and analyzed documents, revealing that the United States had specialized professional standards for teachers of talented students, whereas Oman had general standards for teacher development. Similarly, in another study conducted by [Ibrahim & Alreyamy (2022)] to identify professional standards for teachers in African countries and assess their applicability in Oman. The authors used a descriptive approach and content analysis of documents to find that Oman needs specialized professional standards for teachers. They suggested that Oman could benefit from the experiences of some African countries in curriculum design, teaching strategies, communication and information technology, evaluation, collaboration with various stakeholders, professional growth, ethics, and dealing with special needs students.

[Alqarni et al. (2022)] surveyed 62 computer science teachers in Bisha Governorate, Saudi Arabia, to determine their professional growth needs based on professional standards. The study found that the most important need for professional growth was the field of professional practice, with a focus on training in teaching planning, curriculum standards, learners' characteristics, and evaluation data. The study recommended revising training programs to better match teachers' needs. In a related study, Al-Shahrani [Alshahrani (2022)] investigated the impact of a proposed training program based on professional standards on the teaching performance of 22 science teachers at the preparatory stage in Abha City. The study found statistically significant improvements in teaching performance after the training program was implemented.

[Taha (2022)] designed a proposed distance-training program to develop specialty professional standards for Arabic language teachers. The study applied a questionnaire to a random sample of 423 Arabic teachers and 30 Arabic supervisors of the intermediate and secondary stages, using both descriptive and constructive approaches. Results

showed that the capability of Arabic language teachers to meet the necessary professional standards was intermediate (mean=1.62). However, the study found that the training needs for Arabic language teachers were high from their point of view (mean=2.40) and that of supervisors (mean=2.65). A proposed perception of a distance-training program was developed, and training courses based on educational and professional standards were recommended, along with evaluating performance based on necessary specialty professional license.

[Al-Shrury & Al-Saleh (2022)] surveyed 65 English language teachers from public schools in Saudi Arabia to evaluate their professional development needs based on professional standards. The study found that teachers were interested in official and non-official professional development activities, but time constraints were a hindrance. The study concluded that providing standards for professional teachers could improve their competency. [Shaukat & Chowdhury (2020)] qualitative study assessed teacher educators' knowledge and perceptions of the Enhancement of Teachers Education in Pakistan project. The study found that while the professional standards were viewed as suitable for guiding principles and providing a framework for effective teaching practices, implementing them faced various challenges. [Hasan (2021)] study examined digital reading and its role in student-teachers' professional development. The study found that digital reading was essential for staying updated in their field, adopting self-learning methods, and developing technological skills applicable to the educational process.

Among the most important difficulties and challenges that impede the student-teacher from digital reading is the unavailability of the internet for many of them where they live or at his place of study at his faculty, discouraging him on digital reading to make it a main source to obtain knowledge and development of skills, in addition to the weakness of his skills to use sources of digital reading.

Benefits from previous studies have been used in the following:

- Identifying and formulating the study problem accurately through the study results and recommendations.
- Identifying many important references, enriching and supporting the theoretical framework of the current study, and obtaining enough theoretical feedback about the subject matter.
- Preparing and building the study tool (survey) and investigate its integrity.
- Comparing results of the current study with the results of some previous relevant studies.

## 11 The study problem

The development of the digital skills of teachers is one of the professional development requirements especially in the digital age. "Digital skills" is one of the most modern important fields nowadays because of the great development in both electronic and distance education. Digital skills have varied, but they focus in their employment on educational technological applications of different fields.

Although the Ministry of Education has made efforts to improve the digital learning skills of teachers, the rapid transition to distance education has faced several difficulties, including weak internet connectivity, limited digital skills of students, and insufficient training for teachers to effectively use technology in the classroom [Zurban (2020)]. Various conferences have recommended integrating digital and technological skills into the educational process. For instance, [Shatnawy (2017)] study presented at "The Third International Conference for Electronic Publishing" emphasized the need to strengthen the digital skills of teachers and students in electronic learning, increase awareness of its importance, and take advantage of benefits such as time-saving, quick access to information, accuracy, and cost-effectiveness. Additionally, [Abdelfattah (2017)] recommended intensifying technology training courses for learners and integrating technology into teaching and learning processes during "The Eighth Conference for Saudi Association of Libraries and Information."

From all above mentioned, we conclude the dire need to develop the digital skills out from training of teachers and raising their competency of digital learning skills in line with the professional standards based on technological updates to cope with rapid progress.

Accordingly, the current study sought to identify the requirements for employing digital skills based on the professional standards of teachers in the Kingdom of Saudi Arabia from the point of view of general education teachers and answer the following main question:

**What are the requirements for the employment of digital skills based on the professional standards of teachers in the Kingdom of Saudi Arabia from the point of view of general education teachers?**

The following questions branch out from it:

### 11.1 The study questions

- What are the requirements for the employment of digital skills based on the professional standards of teachers in the Kingdom of Saudi Arabia?



- What are the digital skills that can be applied based on the professional standards of teachers in the Kingdom of Saudi Arabia?
- What are the professional standards of teachers in the Kingdom of Saudi Arabia?
- What are the difficulties that face the employment of digital skills based on the professional standards of teachers in the Kingdom of Saudi Arabia?
- Are there statistically significant differences at the significance level ( $\alpha = 0.05$ ) in the point of views of general education teachers regarding their response to the study tool attributed to the study variants:(gender, academic qualification, training courses)?

## 11.2 Study hypotheses

The study tried to verify the integration of the following hypothesis “there are no statistically significant differences at the significance level ( $\alpha = 0.05$ ) attributed to the study variants:(gender, academic qualification, training courses) from the point of views of general education teachers.

## 11.3 The study objectives:

- Identify are the requirements for the employment of digital skills based on the professional standards of teachers in the Kingdom of Saudi Arabia.
- Identify the digital skills that can be applied based on the professional standards of teachers in the Kingdom of Saudi Arabia.
- Identify the professional standards of teachers in the Kingdom of Saudi Arabia.
- Revealing the difficulties that face the employment of digital skills based on the professional standards of teachers in the Kingdom of Saudi Arabia.
- Identifying the statistically significant differences at the significance level (0.05) among general education teachers that can be attributed to the study variants:(academic qualification, years of experience, general specialization, training courses).

## 11.4 The importance of the study

### 11.4.1 The theoretical importance

1. Identify are the requirements for the employment of digital skills based on the professional standards for teachers in the Kingdom of Saudi Arabia.
2. Enriching the Arab libraries in general and the libraries in the Kingdom of Saudi Arabia in specific with references on digital learning.
3. This study might be useful for higher- studies students and researchers to conduct similar studies in other educational stages.
4. This study might be useful to recognize the training that general education teachers need to be able to gain digital skills and employ them for the success of the educational process.
5. The current study might help to develop teacher s’ preparation programs in the Kingdom of Saudi Arabia in line with the world professional skills and suits the current age and the rapid digital progress.

### 11.4.2 The applied importance

The importance of the current study lies in dealing with the digital skills and professional standards for teachers in the Kingdom of Saudi Arabia which helps persons in charge to identify the degree of the digital skills that the teachers have and employing them according to the professional standards for teachers that allow them to identify the positives and difficulties of the employment of these skills and ways to deal with, and direct the attention of the officials in the Ministry of Education to identify the needs necessary to improve the skills and competences of the teachers, face the challenges in order to activate the skills of digital learning and fulfill the professional standards for teachers.

#### 11.4.3 The following individuals can benefit from this study:

- Teachers of general education stages: as the study aims at identifying the requirements to employ the digital skills based on the professional standards for teachers in the Kingdom of Saudi Arabia from the point of view of general education teachers.
- Curricula and teaching methods developers: through inserting digital skills in the general education curricula and improve the educational environment.
- Those in charge of developing the skills of the teacher: to use technology and computer programs design.
- New teachers: to spread the culture of digital learning and pay attention to it.
- Researchers: from the teaching staff and students of higher-studies as: they can depend on the study and benefit from the research tool used in the study; open the way for researchers to conduct more studies about employing the requirements of digital skills for teachers based on other standards.

#### 11.5 Study methodology:

The analytical descriptive approach was used. The descriptive approach is based on studying the phenomenon within its current status by accurately describing it that can be expressed quantitatively and qualitatively. The quantitative expression gives a digital description through clarifying the amount of this phenomenon and the degree of its relationship with other phenomena. The qualitative expression describes the phenomenon and clarifies its characteristics. The analytical approach was used as well as it depends on analyzing data and revealing the relationship among its different dimensions ([Melhem (2016)] -page 352).

#### 11.6 Research community and sample:

The study community consisted of all teachers of general education of all stages in Bisha City for the academic year 1443-1444 A.H. corresponding to 2022-2023 G. The community consisted of (10179) teachers affiliated to Bisha Educational Directorate according to the statistics given to the researchers during the referred academic year. The study sample consisted of (371) teacher who were simply and randomly selected.

### 12 Study materials and tools:

#### (1) List of requirements to employ digital skills based on professional standards for teachers in Kingdom of Saudi Arabia

It was tailored based on the accessed prior studies, references and resources relevant to teachers' digital skills and professional standards to make the perfect use therefrom in making the list. Therefore, it was drafted to include teachers' digital skills and the requirements to employ digital skills based on professional standards for teachers, in addition to identifying professional standards and the major difficulties that could face such employment.

Based upon the foregoing, the list was reviewed by (11) experts in curriculum and teaching methodology including specialists in educational technologies in Saudi universities, to give their views in terms of whether if it covers the requirements of digital skills, and if it is suitable for teachers and professional standards, besides to edit, add or eliminate any of it from their perspective. Accordingly, the final version of the list includes (59) statements.

#### (2) Survey for the requirements to employ digital skills based on professional standards for teachers in the Kingdom of Saudi Arabia:

Survey construction: Teachers' digital skills, the requirements to employ them, identifying professional standards for teachers and the major difficulties they could face are listed, after viewing the relevant educational literature and a number of surveys of the requirements to employ digital skills and how they can be met based on professional standards for teachers, and find out the difficulties and challenges they could face. Likert scale was employed to estimate the degree of the study sample responses to each statement (Strongly agree, Agree, neither agree nor disagree, Disagree, strongly disagree) to give their views on the requirements to employ digital skills based on professional standards for teachers.

Grading the scale items: Strongly agree (5), Agree (4), Neither agree nor disagree (3), Disagree (2), Strongly disagree (1).

To achieve the study's objectives, the researchers designed the study tool (Survey) through referring to the theoretical literature and prior studies relevant to the subject such as [Aldahshan & Mahmoud (2021), Hasan (2021), Alqarni & Alkahtani (2021), Abo Naji et al. (2021), Al-Shrury & Al-Saleh (2022), Al-Momani & Al-Saaida (2019)]. The initial form of survey was reviewed by a group of arbitrators and experts in Saudi universities, and every specialist in the subject matter, to give their views in each clause in terms of: Belonging each clause to an area, the clarity of clauses, language and drafting integrity, interrelation, sequence and logical progression of clauses, eliminate the irrelevant clauses, and edit others, therefore, some clauses were adjusted and others were correctly drafted.

After collecting the suggestions and views of arbitrators on the areas of the survey and the clauses therein, some clauses were paraphrased, others were adjusted, or eliminated based on the suggestions and views of arbitrators.

### 13 The final form of survey includes the following sections:

Part one of the survey includes personal and demographic variables of the studied group such as gender, academic qualification, specialization and number of training courses in educational technologies.

Part two of the survey covers the requirements to employ digital skills (11 clauses).

Part three of the survey covers the digital skills (11 clauses).

Part four of the survey covers the professional standards for teachers. And divided into: **First area: Professional values and responsibilities.** First standard: Upholding ethical values, strengthen the national identity and respect cultural diversity (3 clauses), Second standard: Continues professional development (One clause), Third standard: Professional interaction with education specialists and society (2 clauses). **Second area: Professional knowledge.** Fourth standard: Possessing linguistic skills and quantitative skills (3 clauses), Fifth standard: Knowing the learners and how they can learn (3 clauses) Sixth standard: Knowing the subject matter and its teaching methodology (One clause), Seventh standard: Knowing general teaching methodology (One clause). **Third area: Professional practice.** Eighth standard: Planning and implementing teaching methods (3 clauses), Ninth standard: Creating interactive and supportive learning environment for learners (3 clauses), Tenth standard: Evaluation (3 clauses).

Part five of the survey covers the difficulties of digital skills employment (14 clauses).

Every clause has responses for the studied group based on Likert scale on five alternative levels as following: Strongly agree (5), Agree (4), Neither agree nor disagree (3), Disagree (2), Strongly disagree (1).

The study tool was applied on a pilot studied group of (30) teachers other than the main studied group, to validate the integrity and constancy of the study tool statistically.

### 14 Validity of the study tool:

The integrity of the study tool has been subjected to two types of validations: Face Validity and Construct Validity, as follows:

#### 15 First: Face Validity

The initial form of the survey was reviewed by a group of expert and specialist arbitrators from teaching staff members in Saudi and Arab university. The arbitrators' feedback was taken into consideration, clauses that received approval rate of (90%) or higher are kept, and the survey was updated to its final form accordingly.

#### 16 Second: Construct Validity

To assure the construct validity by internal consistency method, the survey was applied on a pilot studied group of (30) teachers other than the main studied group, then Pearson correlation coefficient was calculated between the performance on a clause and overall grade of the area of each clause. Table 1 shows the values of Pearson correlation coefficients and the statistical significance for each one: As can be noted from Table 1, values of Pearson correlation coefficients for each clause and overall grade were ranging from (0.45 – 0.98), and all values were at significance level of ( $\alpha = 0.05$ ), which indicates a high degree of internal consistency integrity and its applicability on the main studied group.

**Table 1:** Pearson correlation coefficient between clauses and the overall grade.

Clause	Correlation Coefficient	Significance Level	Clause	Correlation Coefficient	Significance Level	Clause	Correlation Coefficient	Significance Level
Theme 1: Requirements of digital skills (11 clauses)			Theme 2: Digital skills (11 clauses)			Theme 4: Difficulties of digital skills employment (14 clauses)		
1	0.55	0.002**	12	0.60	0.00**	46	0.54	0.002**
2	0.78	0.00**	13	0.84	0.00**	47	0.69	0.00**
3	0.60	0.00**	14	0.56	0.00**	48	0.66	0.00**
4	0.83	0.00**	15	0.56	0.00**	49	0.98	0.00**
5	0.82	0.00**	16	0.78	0.00**	50	0.94	0.00**
6	0.80	0.00**	17	0.78	0.00**	51	0.74	0.00**
7	0.68	0.00**	18	0.78	0.00**	52	0.94	0.00**
8	0.62	0.00**	19	0.56	0.001**	53	0.91	0.00**
9	0.67	0.00**	20	0.78	0.00**	54	0.91	0.00**
10	0.78	0.00**	21	0.98	0.00**	55	0.68	0.00**
11	0.69	0.00**	22	0.78	0.00**	56	0.45	0.01**
Theme 3: Professional standards for teachers (23 clauses)						57	0.82	0.01**
23	0.66	0.00**	35	0.98	0.00**	58	0.60	0.00**
24	0.68	0.00**	36	0.79	0.00**	59	0.82	0.00**
25	0.68	0.00**	37	0.79	0.00**			
26	0.79	0.00**	38	0.79	0.00**			
27	0.84	0.00**	39	0.88	0.00**			
28	0.78	0.00**	40	0.54	0.002**			
29	0.79	0.00**	41	0.54	0.002**			
30	0.72	0.00**	42	0.98	0.00**			
31	0.82	0.00**	43	0.98	0.00**			
32	0.83	0.00**	44	0.69	0.00**			
33	0.46	0.01**	45	0.79	0.00**			
34	0.55	0.002**						

\*\* That means: At statistical significance level equal ( $0.05 = \alpha$ )

## 17 The consistency of the study tool (Survey)

To validate the consistency of the study tool (Survey), the constant factor was calculated using Cronbach's coefficient alpha. Table 2 shows the results of the analysis

**Table 2:** Cronbach's coefficient alpha of the comprehensive survey and its areas

Main and subthemes of the survey	Cronbach's coefficient alpha
Theme 1: Difficulties of digital skills employment (11 clauses).	0.940
Theme 2: Digital skills (11 clauses)	0.920
Theme 3: Professional standards for teachers (23 clauses )	0.890
Theme 4: Difficulties of digital skills employment (14 clauses).	0.930
The comprehensive tool (59 clause)	0.950

Table 2 shows that the value of the above Cronbach's coefficient alpha for the themes was ranging from (0.890 – 0.940), and Cronbach's coefficient alpha for the comprehensive tool was (0.950), therefore, It can be said that through the calculated constant factors, all themes in the survey have a high-degree of consistency, whereas all values are higher than the usual limit (0.70) [Pallant (2005)], and thus, these values indicate that the study tool has an acceptable constant factors, which makes the study tool suitable to apply on the final studied group to achieve the study goals.

### 18 Collecting data:

The final form of survey was distributed on the studied group. After collecting surveys, each clause therein received a grade to be statistically processed. A standard was set to assess each grade of the study tool clauses, as Table (3) shows:

**Table 3:** The statistical standard to explain the means and its estimates

Mean	Grade
1:00- Less than 2.33	Low
2.33- Less than 3.67	Moderate
3.67-5: 00	High

### 19 Result of the study:

*Results relevant to the first study question and discussions thereon: What are the requirements to employ digital skills based on professional standards for teachers in Kingdom of Saudi Arabia?*

To answer this questions, arithmetic mean, standard deviations and ranks of the clauses that belong to the theme of digital skills employment. As Table (4) shows.

**Table 4:** Arithmetic mean, standard deviations and ranks of the studied group responses on the requirements of digital skills employment.

Rank	Clause No.	Clause	Mean	Standard deviation	Grade
8	1	Technology knowledge sufficiency for teacher	3.58	0.74	Moderate
5	2	Activate modern strategies of distance education	3.83	0.75	High
5	3	Flexibility in emergency educational situations because technology is the core of digital education	3.83	0.76	High
7	4	Integrate active e-learning strategies such as: educational games, simulation, flipped classroom, mind e-maps, online knowledge journeys and digital stories	3.69	0.89	High
8	5	The teacher is a digital interlocutor who uses email, education platforms and social media	3.58	1.02	Moderate
7	6	The ability to create a digital and judge the quality of digital information	3.69	0.93	High
2	7	The teacher is a digital citizen who interacts online in a legally and socially-responsible way	3.99	0.83	High
3	8	Relying on higher-order thinking skills	3.91	0.84	High
4	9	Focus on discussing, problem solving and investigation when employing digital skills	3.89	0.82	High
6	10	Effective e-communication with administration, students and parents efficiently	3.73	1.06	High
1	11	Possessing organization and management skills	4.01	0.78	High
The comprehensive theme			3.79	0.65	High

As can be noted from Table (1), the values arithmetic means for this area was ranging from (3.58-4.01) with standard deviations from (0.74-1.06). Clause (11) "Possessing organization and management skills" ranked first with arithmetic

mean of (01.4) and standard deviation of (78.0), with a high-degree of assessment. Clause (7) "The teacher is a digital citizen who interacts online in a legally and socially-responsible way" ranked second with arithmetic mean of (99.3) and standard deviation of (0.83) with a high-degree of assessment. Clauses (1) and (5) ranked last, clause (1) "Technology knowledge sufficiency for teacher" with arithmetic mean of (3.58) and standard deviation of (0.74) with a moderate degree of assessment, clause (5) "The teacher is a digital interlocutor who uses email, education platforms and social media" with arithmetic mean of (3.58) and standard deviation of (1.02) with a moderate degree of assessment. The whole area received arithmetic mean of (3.79) with standard deviation of (0.65) with high a high-degree of assessment. This result indicated that the requirements to employ digital skills based on professional standards for teachers in Kingdom of Saudi Arabia received a high-degree of assessment. This result can be explained based on possessing organization and management skills for general education teachers, plus higher-order thinking skills and their focus on discussion, problem solving and investigation when employing digital skills. The results of this study partly agree with the study conducted by [Al-Momani & Al-Saaida (2019)] that showed a significant number of professional standards that vocational education teachers possess from their point of view and their directors in planning and preparing lessons, also in teaching with a high degree, activities and educational material with a high degree, class management with a high degree and assessment with a high degree. The results also agree with the study conducted by Ibrahim and others [Ibrahim & Alsawafi (2021)], [Assalahi (2021)] and [Shaukat & Chowdhury (2020)].

## 20 Results relevant to the second study question and discussions thereon:

### *(2) Survey for the requirements to employ digital skills based on professional standards for teachers in Kingdom of Saudi Arabia?*

Arithmetic means, standard deviations and ranks of the clauses that belong to the theme of digital skills. As Table (5) shows.

As can be noted from Table 5, the values arithmetic means for this area was ranging from (3.00-3.81) with standard deviations from (0.87-1.14). Clause (9) "employing some technology tools that helps in collaborative e-learning" ranked first: (Cloud storage tools as Google Drive-Education management systems as Microsoft Teams and Madrasty)" arithmetic mean of (3.81) and standard deviation of (0.96), with a high-degree of assessment. Clause (1) "Employing e-learning designing software such as : PowerPoint-Wordwall-Learning Apps.org- Tiny Tap-Make It- Kahoot-Quzi-StoryboradThat" ranked second with arithmetic mean of (3.77) and standard deviation of (0.87) with a high-degree of assessment. Clause (5) "Making perfect use of simulation and virtual reality software such as thing link" ranked last with arithmetic mean of (3.00) and standard deviation of (1.14) with a high-degree of assessment.

The whole area received arithmetic mean of (3.38) with standard deviation of (0.82) with moderate grade of assessment. This result indicated that the level of digital skills that can be employed based on professional standards for teachers in Kingdom of Saudi Arabia received a moderate degree of assessment.

This moderate degree can be explained as a difficulty for some teachers to understand blended learning and how to apply programmed e-learning, and a difficulty to employ Learning Content Management System LMS, also a difficulty in activating Nearpod application in preparing educational content and assessment, a difficulty to apply collaborative e-learning strategy as well (ECL).

The results of this study partly agree with the results of Hasan's 2021 study that highlighted the existence of several challenges that impede the student teacher's path toward digital reading: The lack of internet connection for a lot of students and no internet networks in their campus, they also agree with the results of the study conducted by [Alshreif & Alswat (2021)]. [Serezhkina (2021)] study showed that teachers have a mid-level digital knowledge. The results of this study partly disagree with the study conducted by [Al-Shrury & Al-Saleh (2022)], that showed a high level of digital administration practice for public primary schools' principals in Skaka.

*Results relevant to the third study question and discussions thereon: What are the professional standards for teachers in the Kingdom of Saudi Arabia?*

Arithmetic means, standard deviations and ranks of the clauses that belong to the theme of professional standards for teachers. As Table (20) shows.

**Table 5:** Arithmetic mean, standard deviations and ranks of the studied group responses on digital skills.

Rank	Clause No.	Clause	Mean	Standard deviation	Grade
2	1	Employing e-learning designing software such as: PowerPoint-Wordwall -Learning Apps.org-Tiny Tap-Make It- Kahoot-Quzi-StoryboradThat	3.77	0.87	High
8	2	Activate applications that support creating e-maps: Such as -Simple mind- Mind Node	3.25	0.95	Moderate
7	3	Using software and applications that support virtual journeys strategy such as: Zoom-Go to meeting Teams-Webex meet- Skype	3.28	1.09	Moderate
10	4	Using software that helps design digital stories, such as: Photo Story-Powtoon GoAnimate	3.15	1.05	Moderate
11	5	Making perfect use of simulation and virtual reality software such as Thing Link	3.00	1.14	Moderate
9	6	Activate Nearpod application in preparing educational content and assessment	3.16	1.11	Moderate
5	7	Applying electronic collaborative learning strategy (ECL)	3.34	1.01	Moderate
6	8	Employing Learning Content Management System LMS	3.33	1.08	Moderate
1	9	Employing some technical tools that helps in collaborative e-learning: (cloud storage tools such as Google Drive- Learning Management Systems such as Microsoft Teams and Madrasty platform).	3.81	0.96	High
3	10	Applying programmed e-learning	3.61	1.03	Moderate
4	11	Activate collaborative learning online through WordPress, open web editors such as Google web, and social media such as	3.52	1.09	Moderat
The comprehensive theme			3.38	0.82	Moderate

**Table 6:** Arithmetic mean, standard deviations and ranks of the studied group responses on professional standards for teachers.

Rank	Clause No.	Clause	Mean	Standard deviation	Grade
<b>First area: Professional values and responsibilities</b>					
First standard: Upholding ethical values, strengthen the national identity and respect cultural diversity					
1	1	professional development for teachers based on the deep understanding and analysis of professional standards and paths for teachers.	4.61	0.60	High
3	2	Keen to build positive relations with learners, parents and professional society	4.29	0.68	High
6	3	Applying regulations and polices of education	4.17	0.70	High

<b>Second standard: Continues professional development</b>					
5	4	Developing the continues professional development according to the needs based on professional standards for teachers	4.19	0.94	
<b>Third standard: Professional interaction with education specialists and society</b>					
2	5	Teachers build efficient relations with parents	4.32	0.58	High
4	6	Teachers interacts with colleagues in professional learning societies and involve them in the responsibility of education	4.21	0.70	High
<b>Overall performance of first area</b>			4.30	0.54	High
<b>Second area: Professional knowledge</b>					
<b>Fourth standard: Possessing linguistic skills and quantitative skills</b>					
2	1	Teachers' proficiency in Arabic language skills	4.14	0.67	High
4	2	Knowing the structure of numbers, calculations, and the concepts and methods of assessment	4.09	0.75	High
2	3	Ability to collect and analyze data, explain the results in educational process	4.14	0.78	High
<b>Fifth standard: Knowing the learners and how they can learn</b>					
6	4	Teachers' awareness of the characteristics of students' growth and their impact on education	3.93	0.87	High
5	5	Consider the individual differences and provide educational opportunities that meet the different needs	3.95	0.80	High
3	6	Taking care of special needs or talents	4.12	0.67	High
<b>Sixth standard: Knowing the subject matter and its teaching methodolog</b>					
1	7	Teachers' knowledge of their subject matter, its updates and teaching methodology	4.21	0.65	High
<b>Seventh standard: Knowing general teaching methodology</b>					
4	8	Teachers' knowledge of the general inputs of teaching and how to employ educational technologies in teaching	4.04	0.81	High
<b>Overall performance of second area</b>			4.08	0.53	High
<b>Third area: Professional practice.</b>					
<b>Eighth standard: Planning and implementing teaching methods</b>					
7	1	Teachers plan learning process in accordance with the characteristics of learners	4.04	0.98	High
7	2	Design educational programs involve activities that achieve learning objectives, develop thinking and trigger motivation	4.04	0.85	High
5	3	Employing learning sources and educational technologies to enhance active interaction that includes values and skills	4.10	0.98	High



<b>Ninth standard: Creating interactive and supportive learning environment for learners</b>					
1	4	Creating interactive learning environment	4.25	0.72	High
3	5	Manage positive behavior to set up systems for classroom learning environment	4.14	0.68	High
6	6	Optimal investment of learning time	4.01	0.71	High
<b>Tenth standard: Assessment</b>					
8	7	The teacher plans assessment and prepare the relevant assessment tools associated to curriculum standards	3.94	0.96	High
2	8	Employing the assessment results to observe the educational growth of learners	4.23	0.71	High
4	9	Developing education and learning processes and communicating with parents	4.13	0.68	High
<b>Overall performance of third area</b>			4.10	0.61	High
<b>Overall performance of professional standards for teachers</b>			4.14	0.51	High

As can be noted from Table 20, the values arithmetic means for first area "Professional values and responsibilities" was ranging from (4.17-4.61) with standard deviations from (0.58-0.94). The whole area received arithmetic mean of (4.30) with standard deviation of (0.54) with high a high-degree of assessment. This result indicated that the professional standards for teachers in the Kingdom of Saudi Arabia in terms of "Professional values and responsibilities" received a high-degree of assessment.

The values of arithmetic mean for second area "Professional knowledge" was ranging from (3.93-4.21) with standard deviations of (0.65-0.87). The whole area received arithmetic mean of (4.08) with standard deviation of (0.53) with high a high-degree of assessment. This result indicated that the professional standards for teachers in the Kingdom of Saudi Arabia in terms of "Professional knowledge" received a high-degree of assessment.

In terms of third area "Professional practice", the values of arithmetic means were ranging from (3.94-4.25) with standard deviations of (0.68-0.96). The whole area received arithmetic mean of (4.10) with standard deviation of (0.61) with high a high-degree of assessment. This result indicated that the professional standards for teachers in the Kingdom of Saudi Arabia in terms of "Professional practice" received a high-degree of assessment.

The total arithmetic mean was equal (4.14) with standard deviation of (0.51) with a high-degree of assessment. This result indicated that the levels of professional standards for teachers in the Kingdom of Saudi Arabia received a high-degree of assessment.

This result can be explained considering programs for professional development for teachers based on the deep understanding and analysis of professional standards and paths for teachers, in which teachers interacts with colleagues in professional learning societies and involve them in the responsibility of education, besides early planning by general education teachers regarding different assessment methods and tools, employing the assessment results to observe the educational growth of learners, and continuous communication with parents.

The results of this study agree with the study conducted by [Ibrahim & Alsawafi (2021)], that showed general standards for teachers in Oman under school performance developing system. as [Assalahi (2021)] study showed, teachers were very interested in official and non-official professional development activities. And as [Shaukat & Chowdhury (2020)] showed, all teachers believe that professional standards was suitable as a set of guidelines that summarize some professional knowledge, but the results of this study partly disagree with the study conducted by [Ibrahim & Alsawafi (2021)] that showed the need of specialized professional standards for teachers in Oman.

*Results relevant to the fourth study question and discussions thereon: What are the difficulties that face employing digital skills based on professional standards for teachers in Kingdom of Saudi Arabia?*

Arithmetic means, standard deviations and ranks of the clauses that belong to the theme of the difficulties that face employing digital skills. As Table 7 shows.

As can be noted from Table 7, the values arithmetic means was ranging from (3.35-4.23) with standard deviations from (0.75-1.32). Clause (5), the highest difficulty, "Difficulty of completing homework assignments online and sending them

**Table 7:** Arithmetic mean, standard deviations and ranks of the studied group responses on the difficulties that face employing digital skills.

Rank	Clause No.	Clause	Mean	Standard deviation	Grade
2	1	Insufficiency of Learning Resource Centre in some schools	4.07	0.75	High
4	2	Weakness and interruption of internet services in school	4.00	0.75	High
5	3	Weak responses in some software such as (Microsoft Teams)	3.93	1.00	High
3	4	Insufficient class time when employing digital skills	4.04	0.88	High
1	5	Difficulty of completing homework assignments online and sending them to teachers by students	4.23	0.86	High
9	6	Difficulty of assessing the students' performance compared to traditional education	3.70	1.05	High
10	7	Requires a significant amount of human resources training	3.69	1.07	High
11	8	Absence of full control on the class in e-learning	3.67	1.32	High
13	9	Lack of skills and expertise necessary for e-learning and its rapid updates	3.58	1.18	Moderate
7	10	The lack of proper methods to electronically introduce the regular curriculum	3.81	1.00	High
14	11	Decreased interaction between students and the teacher comparing to traditional education	3.35	1.10	Moderate
8	12	Difficulty to employ it in some subjects such as physical education, drawing and computer	3.78	0.90	Moderate
12	13	Unclear standards of electronic assignments assessment and grading	3.66	0.89	Moderate
6	14	Insufficient time for electronic assignments	3.82	0.97	High
<b>The comprehensive theme</b>			3.81	0.69	High

to teachers by students” ranked first with arithmetic mean of (4.23) and standard deviation of (0.86), with a high-degree of assessment, Clause (1) ”Insufficiency of Learning Resource Centre in some schools” ranked second with arithmetic mean of (4.07) and standard deviation of (0.75) with a high-degree of assessment.

Clause (11) ”Decreased interaction between students and the teacher comparing to traditional education” was the lowest difficulty with arithmetic mean of (3.35) and standard deviation of (1.10) with a moderate degree of assessment.

The total arithmetic mean was equal (3.81) with standard deviation of (0.69) with a high-degree of assessment. This result indicated the existence of several difficulties that face digital skills employment based on professional standards for teachers in Kingdom of Saudi Arabia, as it received a high-degree of assessment.

This result can be explained considering the challenges that face general education teachers regarding digital transformation such as the lack of internet connection in some classes, insufficient skills and experiences necessary for e-learning and the absence of interest in continuous information technology and communications training for general education teachers. The results of this study agree with the study conducted by [Serezhkina (2021)] which showed that some teachers have a mid-level digital knowledge. And the study conducted by [Al-Saadi (2021)], which showed that teachers have a moderate degree in terms of readiness to digital education, which in turn increase the difficulties that face employing digital skills for teachers in work environment. And the study conducted by [Ibrahim (2020)], which showed that the most significant challenge that face elementary education teachers in digital transformation is the lack of internet connection in classes.

Results relevant to the fifth study question and discussions thereon: Are there any differences with a statistical significance level equal ( $0.05 = \alpha$ ) among the views of general education teachers about their responses on the study tool according to the study variables: (Gender, academic qualification and training courses)?

### 20.1 Results based on variables: Gender

To answer this questions, arithmetic means and standard deviations for the clauses were calculated, and to demonstrate statistical differences between arithmetic means, a t-test known as Independent Sample t-test was used on two independent studied groups. As Table 8 shows:

**Table 8:** Arithmetic means, standard deviations and (t-test) for the studied group responses based on gender.

Area/Domain	Gender	Number of studies group members	Mean	Standard deviation	T Value	Degrees of freedom	Significance Level
First area: Requirements of digital skills employment	Male	67	3.95	0.59	2.18	368	0.03**
	Female	303	3.76	0.66			
Second area: Digital skills	Male	67	3.24	0.75	1.52	368	0.131
	Female	303	3.41	0.84			
Third area: Professional standards for teachers	Male	67	4.05	0.23	1.70	368	0.09
	Female	303	4.16	0.55			
Fourth area: Difficulties of digital skills employment	Male	67	4.00	0.48	2.60	368	0.01**
	Female	303	3.76	0.72			

\*\* That means: At statistical significance level equal ( $0.05 = \alpha$ )

As can be noted in Table 8 there are differences at statistical significance level equal ( $\alpha = 0.05$ ) among the views of general education teachers about their responses on first area "Requirements of digital skills employment" and fourth area "Difficulties of digital skills employment" based on gender variable, whereas (T) values at statistical significance level equal ( $\alpha = 0.05$ ), with a higher value for male teachers, whereas the arithmetic mean of their responses to the two areas were higher than the responses of female teachers. There is no difference at statistical significance for areas (digital skills and professional standards for teachers) based on gender, as the proximity of the arithmetic means values indicates.

### 20.2 Results based on variables: Academic qualification

The values of arithmetic means and standard deviations for the clauses were calculated, and to demonstrate statistical differences between arithmetic means, a t-test known as Independent Sample t-test was used on two independent studied groups. As Table 9 shows

As can be noted in Table 9 there are differences at statistical significance level equal ( $\alpha = 0.05$ ) among the views of general education teachers about their responses on first area "Requirements of digital skills employment" and fourth area "Difficulties of digital skills employment" based on gender variable, whereas (T) values at statistical significance level equal ( $\alpha = 0.05$ ), the difference was in favor of Master's degree holders, whereas the arithmetic mean of their responses to the two areas were higher than the responses of Bachelor degree holders.

The results of this study partly agree with the study conducted by [Alshreif & Alswat (2021)] that highlighted the differences at statistical significance among physics teachers' responses on digital skills are based on the academic qualification variable in favor of Master's degree holder. There is no difference at statistical significance for areas (digital skills and professional standards for teachers) based on academic qualification, as the proximity of the arithmetic means values indicates.

The results of this study partly disagree with the study conducted by [Aldahshan & Mahmoud (2021)], that highlighted the differences with statistical significance among the means of teachers' responses to the importance degree of the requirements necessary for developing professional development programs were higher for high school teachers based on education grade, and higher for Master's degree and PHD holders based on academic qualification variable.

**Table 9:** Arithmetic means, standard deviations and (t-test) for the studied group responses based on academic qualification

Area/Domain	Academic qualification	Number of studies group members	Mean	Standard deviation	T Value	Degrees of freedom	Significance Level
First area: Requirements of digital skills employment	Bachelor	292	3.76	0.67	2.15	369	0.03 **
	Master's degree	79	3.93	0.58			
Second area: Digital skills	Bachelor	292	3.36	0.79	1.18	369	0.24
	Master's degree	79	3.48	0.94			
Third area: Professional standards for teachers	Bachelor	292	4.14	0.46	0.41	369	0.68
	Master's degree	79	4.16	0.66			
Fourth area: Difficulties of digital skills employment	Bachelor	292	3.72	0.70	4.62	369	0.00 **
	Master's degree	79	4.12	0.56			

\*\* That means: At a statistical significance level equal ( $0.05 = \alpha$ )

### 20.3 Results based on variables: Training courses in educational technologies

The values of arithmetic means and standard deviations for the clauses were calculated, and to demonstrate statistical differences between arithmetic means, a t-test known as was used on two independent studied groups. As Table 10 shows:

**Table 10:** Arithmetic means, standard deviations and (t-test) for the studied group responses based on the variable training courses in educational technologies

Area/Domain	Training courses in educational technologies	Number of studies group members	Mean	Standard deviation	T Value	Degrees of freedom	Significance Level
First area: Requirements of digital skills employment	Less than 5	198	3.77	0.59	0.68	369	0.49
	More than 5	173	3.82	0.71			
Second area: Digital skills	Less than 5	198	3.32	0.74	1.54	369	0.12
	More than 5	173	3.45	0.91			
Third area: Professional standards for teachers	Less than 5	198	4.03	0.57	4.86	369	0.00 **
	More than 5	173	4.28	0.40			
Fourth area: of difficulties employment	Less than 5	198	3.74	0.64	2.13	369	0.03 **
	More than 5	173	3.89	0.74			

\*\* That means: At a statistical significance level equal ( $0.05 = \alpha$ )

As can be noted in Table 10 there are differences at statistical significance level equal ( $\alpha = 0.05$ ) among the views of general education teachers about their responses on third area "Professional standards for teachers" and fourth area "Difficulties of digital skills employment" based on training courses variable, whereas (T) values at statistical significance level equal ( $\alpha = 0.05$ ), with a higher value for training courses in educational technologies, whereas the arithmetic mean of their responses to the two areas were higher than the responses of female teachers.

There is no difference at statistical significance for areas (Requirements of digital skills employment and digital skills) based on training courses variable, as the proximity of the arithmetic means values indicates.

The results of this study partly agree with the study conducted by [Alqarni & Alkahtani (2021)] that highlighted the absence of differences at statistical significance among the studied group responses to human, administrative and technical obstacles based on specialization variable and the number of professional development programs through online platforms and qualification.

## 21 Conclusion and recommendations:

This study aimed to identify the requirements of employing digital skills based on the professional standards for teachers in the Kingdom of Saudi Arabia, from the perspective of general education teachers in Bisha City. The results of the study showed that the field related to the requirements of employing digital skills had a high-level evaluation, while the field related to the standard of digital skills had an average evaluation. The study also found statistically significant differences in the point of views of general education teachers, attributed to gender, academic qualification, and training courses in education technologies. Based on result of the study, the following recommendations and suggestions were received:

- Working on reducing the difficulties of digital skills employment specially "the difficulty of completing homework assignments online and sending them to teachers by students", and "Insufficiency of Learning Resource Centre in some schools", this could be achieved through developing mechanisms and standards to organize the workflow in schools that face such difficulties.
- bringing out a guideline to be distributed to general education teachers dealing with digital skills and professional standards for teachers.
- Studying of the requirements of digital skills employment in the light of the different standards of evaluating the performance of teachers in the Kingdom of Saudi Arabia according to teachers of education perspective in different grade levels, and conducting a comparative study for different academic years.
- Establishing a tool to measure the digital skills of general education teachers with psychometric properties that can be generalized and used in future studies and research.
- Develop a suggested framework to develop and improve teaching performance for general education teachers based on professional standards.

## Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

## Acknowledgment

The authors extend their appreciation to the Deanship of Scientific Research, University of Bisha, Saudi Arabia for funding this research through Promising Program under Grant Number (UB- Promising - 3-1443).

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