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Teaching Skills According to the Requirements of Education in the Digital Age

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Abstract:

This study aimed to identify the teaching skills required by students of the Institute of Physical Education and Sports in the digital age, in accordance with the educational needs of the time. To achieve this, the researchers employed a descriptive methodology. The study sample consisted of 26 students: third-year undergraduate, second-year master's, and second-year doctoral students. The research instrument was a teaching skills scale consisting of 26 items. The validity and reliability of the instrument were confirmed. After administering the scale to the research sample to obtain their responses, the data were compiled and statistically analyzed using the SPSS statistical software. The researchers arrived at several key findings, including:

- Identifying the nature and structure of the list of teaching skills required by students in the digital age. The researchers developed the study instrument based on this list.
- The degree to which university students utilize teaching methods in the digital age depends on their academic level and specialization.
- Statistically significant differences were found in the students' teaching skills, according to the requirements of digital education, based on their academic level, with doctoral students demonstrating higher skill levels.

Keywords: *Teaching skills; digital education.*

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1-Introduction:

Modern education has sought to redesign the educational structure to make it more adaptive and flexible, driven by rapidly changing priorities, and training educators to adapt to these changes. There has been much emphasis placed on teacher training and preparation, understanding that the modern world has shifting requirements and that it is now a teacher's responsibility to adapt to their role as well. That being said, teachers are not only responsible for passing down knowledge, but they also serve as ambassadors for their culture and are advocates of change, innovation, and development. They also play a crucial role in preparing future generations and guiding them, which is a lot of responsibility on their shoulders; hence, the educational process does not hold much value if the teacher is incompetent and not prepared to handle their obligations. Moreover, the personality of the teacher, their motivation, their mastery of their subject, and their ability to create an appropriate educational environment depend on the training programs they receive to acquire teaching skills. (Fakhr al-Din al-Qala & Younes Nasser, 2004, p. 31).

There is no doubt that changes in teaching methods and educational objectives are closely linked to changes in society, which in turn reflect on the educational system. The growing social demand for education as a result of population growth, large amounts of knowledge, rapid technology development, and the scientific progress made throughout history, and the various development projects are all factors that have an impact on the education system. Therefore, these systems must expand to meet such changes and requirements. On top of that, one of the major areas to consider in terms of achieving the intended changes to the education system for the purpose of improving society as a whole is teacher training and preparation. A competent teacher is the one who is able to achieve the educational goals of their society effectively and proficiently. If a nation aspires to develop all facets of society in a holistic manner, teachers will need to demonstrate a variety of skills that are critical for achieving success in this regard. These skills include the ability to effectively plan, assess learning, implement modern and effective teaching methods, and manage their classroom environments effectively (Al-Ghazaywat, 2000, p. 56).

Furthermore, the advancement of technology and the internet in modern times has revolutionized our lives globally and connected the world as one village. This development has caused massive changes to personal life and society as a whole, especially our educational systems; as such, teaching has progressed away from traditional face-to-face instruction and moved to digital

methods. As a result, it has necessitated and imposed a number of requirements on educational administrations, teachers, and students to adjust to these changes.

2. Statement of the Problem

In light of the progressions taking place in the field of education worldwide, the integration of modern technology has become a central priority in the advancement of educational institutions of all types, especially in the training and formation of university students. Many specialists in physical education argue that those responsible for teaching physical education at universities in general, and at institutes of physical education and sport in particular, must possess a set of fundamental teaching skills that enable them to perform their roles efficiently and effectively. Inevitably, possessing teaching skills will develop teachers' abilities, enrich their experience, and help them achieve educational goals within a framework that facilitates meeting their needs. Consequently, identifying the extent to which they possess these skills is extremely important, as it will help to identify their strengths so that they can be reinforced, as well as their weaknesses so that they can be corrected, and then developed and improved, which will enhance and develop those teaching skills and techniques. For that reason, these instructional skills will enhance students' overall knowledge and enrich their academic performance.

From this regard, the present study seeks to address the following research questions:

- To what extent are university students willing to use educational tools and mechanisms in the digital age?
- Are there statistically significant differences between students in the level of acquisition of teaching skills according to the requirements of digital education?

3. Objectives of the Study

- To identify the degree to which university students make use of educational tools and mechanisms in the digital era.
- To examine differences in students' teaching skills in light of the requirements of digital education according to the variable of academic level.
- To respond to recent trends that call for increased attention to the quality of university education at both the Arab and international levels.

4. Operational Definitions of Key Concepts

1. Teaching Skills: A set of abilities and skills necessary for a graduate student to succeed in performing their tasks. In this study, they are operationalized



through the level of responses obtained on the teaching skills scale applied in the research.

2. Digital Education: Refers to a form of learning that relies on modern technologies such as computers, communication networks, software, and other technological tools that support students in acquiring scientific knowledge.

5. Review of Related Studies

1. Teaching Competencies Among Female Teachers of the Lower Secondary Stage in Private Schools According to Academic Qualification, Years of Experience, and Specialization. Qasim Mohammad Khazali and Abd Al-Latif Momani (2010)

In this study, the researchers investigated the extent to which lower primary school teachers in private schools associated with the Ministry of Education in the First Irbid Region in Jordan possess teaching competencies from their own perspectives in light to academic qualification, years of experience, and specialization. The researchers used a descriptive research design and selected a random sample of 30 private schools, which represented approximately 0.54% of the population, with 168 teachers chosen from each school. Furthermore, specific instruments were designed to measure the teaching competencies of the sample. The findings of the study were as follows:

- The teaching competencies necessary for teachers in the lower elementary stage, which should be used as criteria for competent teachers, were grouped into three main areas: planning, implementation, and assessment.
- The study highlighted the importance of teachers having the basic competencies needed to carry out the teaching-learning process in the best possible way.
- The study concluded that planning, implementation, and assessment skills are important because teachers are leaders and guides in the educational process, as these skills enable them to choose the best teaching methods, manage the classroom, and know what to do in class to achieve the desired educational goals.

2. The Degree of Internet Use in the Educational Process Among Secondary School Students in the Northern Jordan Valley and Their Attitudes Toward It Al-Zuhair, Oumayma Mousa Ahmad (2011)

This study examined the degree of students' use of the internet in the educational process. The results showed that the surveyed students use the internet moderately for education, with variations according to gender and grade

level. Additionally, the findings reveal that students have a moderately positive attitude toward learning through the internet.

Therefore, this study is consistent with our study on the educational process and the use of the internet as a means of learning and teaching, but differs in many aspects, most notably educational competencies, as well as the study population, the environment studied, and the objectives of the research.

6. Background of the Study

The competency and performance based education movement arose from a set of beliefs implying that the traditional academic curricula (specialized or pedagogical) alone do not guarantee that teachers acquire and master teaching skills. Moreover, the greatest success in learning and teaching occurs when the learners clearly understand what is expected or required of them and when the objectives of programs and activities are directed toward achieving and mastering these skills. In addition, teaching and learning become more effective when differences among students in interests, abilities, and needs are recognized. Also, active participation by students in classroom activities enhances the overall learning experience, as well as immediate feedback concerning student performance results in more efficient learning (Suhaila Mohsen Kazem Al-Fatlawi, 2004, pp. 24–25).

It should be noted that these assumptions are the result of shortcomings observed in the preparation and training of teachers in the traditional system, which focused on high academic achievement at the expense of practical application with high skill, and with minimal effort, cost, and time during the educational process. As a consequence, the idea of teaching reemerged, dating back to the work of Franklin Bobbitt (1918) on the curriculum. Bobbitt believed that educational programs that are designed to assist students in the analysis of the activities they perform and in understanding how those activities affect their ability to perform were crucial for the success of any educational institution (Ghazi Muflih, 1988, p. 68).

Furthermore, this idea has attracted the attention of many educators and those interested in teacher preparation and training, especially since it emerged at a point in time when the educational philosophies guiding teacher education programs were characterized by a lack of clarity with respect to the intended outcomes. Clifford D. Foster (1975) describes such programs as aiming to teach everything about something, and something about everything (Tawfiq Mar'i, 1983, p. 37). Regarding this situation, efforts have been made to reconsider approaches to teacher evaluation, with an increased focus on teaching practices and actual performance in teaching situations related to the educational and learning process. This began in the 1950s, when programs were created in order to prepare teachers based on what was believed to be the combination of attributes and characteristics of successful teachers. Research in this period



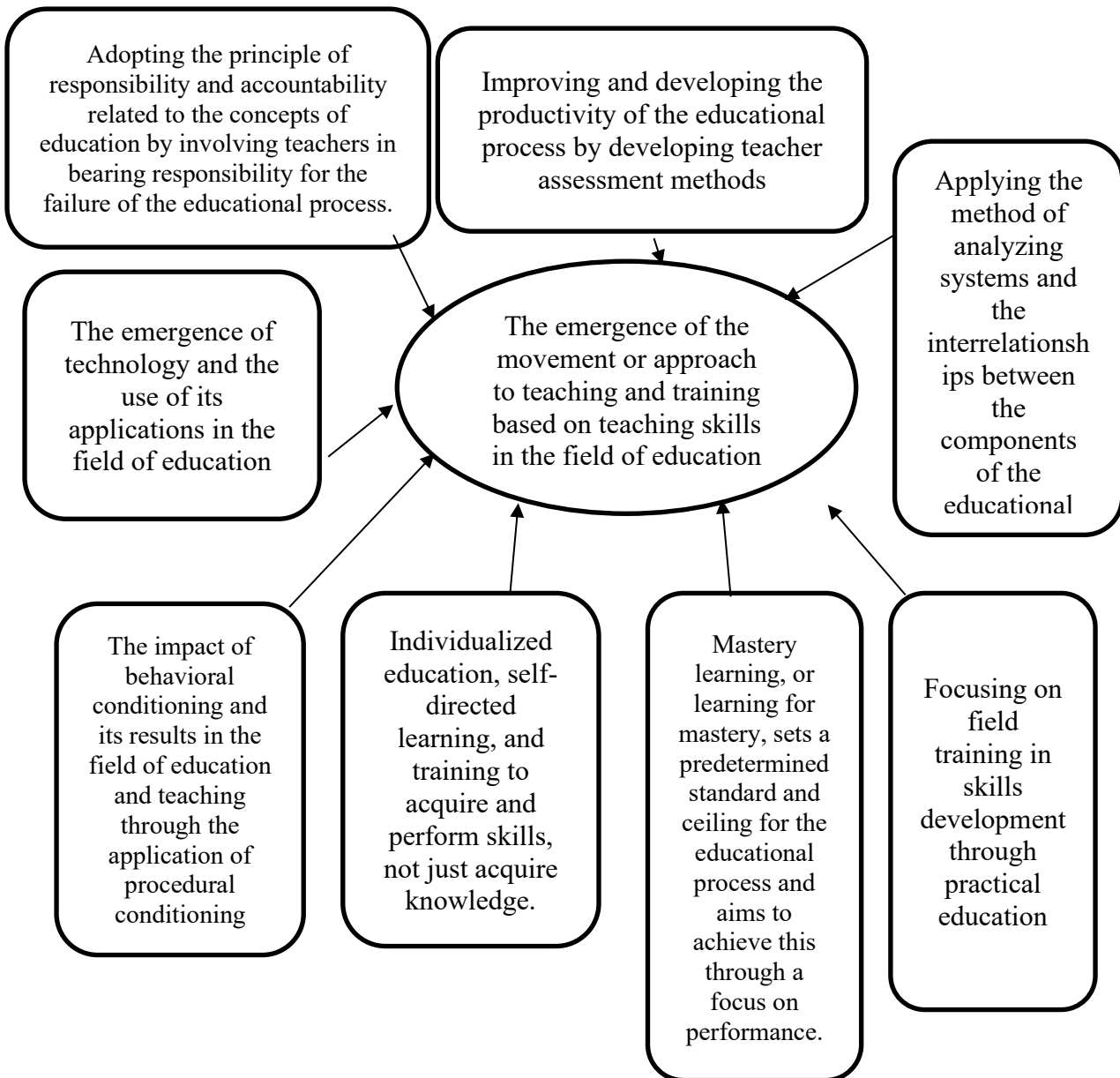
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sought to pinpoint the various types of traits that define effective teachers. Many of the traits identified had similarities, but at times these traits had differences in their definitions based upon the researcher's theoretical perspective of teacher effectiveness, the grades taught by the teacher, or the methods utilized to evaluate these characteristics from the point of view of supervisors or learners themselves, as they are the focus of the educational process in modern education.

This competency-based approach emerged as a curve that coincided with several contributing factors, as mentioned by Tawfiq Mar'i (1983) as the adoption of competency starting with knowledge and the emergence of the accountability movement with the skills-based certification systems, as well as the use of technological developments, especially in relation to educational technology, and the movement to define goals in the form of observable and measurable behavioral educational outcomes. In addition, the approach was shaped by the emergence of mastery learning, with the experimentation movement linked to the systematic and rapid changes in society. These developments prompted a major shift in the definition of education, transitioning away from an emphasis on the delivery of content to an emphasis on the competencies demonstrated by teachers. This was accompanied by the emergence of the fieldwork-based education movement, which allows student teachers to observe educational situations in schools and practice the teaching process itself. It was also influenced by the educational reinforcement movement and behavioral trends (procedural conditioning), as well as by the systems approach, because performance is nothing more than the output of the system, whereas learning constitutes one of its key inputs. Accordingly, this approach places strong emphasis on job-oriented training and in-service professional development. The most significant of these contributing factors can be summarized in the following diagram:

Figure (1)

The Most Significant Factors Contributing to the Emergence of the Competency-based Teaching and Training Movement Focused on Teaching Skills





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The diagram above shows the major contributing factors to the emergence of the educational movement based on teaching skills. This movement eventually developed into an instructional strategy to be used in effective and successful teaching/learning situations that will produce the maximum possible results at minimum effort, cost, and time. The key advantages built into these programs are primarily responsible for this effectiveness.

6.1 Education in the Digital Era

Before we start addressing education in the digital age, it is first worth mentioning that even though the term ‘digital age’ is now common and has been used and cited often in many different academic fields, the researcher did not find any citation of this term in contemporary dictionaries or most encyclopedia entries. Rather, this term appears to be largely used in blogs, websites, or any other digital sources, including online dictionaries such as Your Dictionary, which defines the digital age as:

The period beginning around 1970, with the emergence and spread of the personal computer, during which the ability to transfer information freely and rapidly became available, extending to the present era, characterized by widespread access to the internet and email. (Your Dictionary, 2018)

According to Abd Al-Latif Al-Soufi (2007), the Digital Age is defined by the way in which computers and new technologies are positively impacting different parts of life, such as culture, science, administration, etc. The term refers to life on the Internet and the World Wide Web, where there is an increased use of these technologies in all aspects of life, including work, school, home, and university (p. 55).

Furthermore, the Digital Age is also about the increasing dominance of present-day digital technologies compared to traditional means of communication, processing information, and exchanging information. Its characteristics include many of the advantages of digital technologies, such as speed, accuracy, reduced physical distance, and no geographical boundaries (Jaafar Hassan Jassim, 2012, p. 277).

Because of the many technological developments that have been integrated into educational processes in recent decades, for example, the Internet, computer software, and artificial intelligence tools, people and societies now have greater access to information and can process more than they ever have before (Al-Saeed Mabrouk Ibrahim, 2012, p. 132). Consequently, sources of information and learning environments have multiplied, leading to a profound transformation in the field of education.

6.2 Digital Learning

The concept of digital learning is linked to the use of information and communication technologies, such as computers, mobile devices, and smartphones, and the adoption of various software programs for managing digital learning systems (OECD, Paris, 2005, pp. 11–12). With the growth of Internet usage, the term Digital Learning is now also applied to using technologies to identify and understand how learners collect information and research, as well as how they communicate with others across the world (Nejat Al-Juboury, 2018). However, digital learning has been utilized to facilitate and encourage education through the use of computers and communication technologies. It includes four categories (Research and Consulting Institute, 1426, pp. 47-48):

a) Knowledge Databases: Although knowledge databases are not a means of training, they are the primary tool in digital education, as they are considered a special type of database used for knowledge management.

b) Online Support: Online support is another type of support that operates like a knowledge database but is delivered via forums, discussion forums, chat rooms, online bulletin boards, email, and other forms of communication tools. This form of e-learning gives learners an opportunity to ask specific questions and receive answers from instructors almost immediately.

c) Asynchronous Learning: It is based on the idea of learning through self-paced means based upon the learner's capacities and abilities to absorb information and use various networks. Asynchronous learning also includes ways to communicate with teachers through live bulletin boards, online discussion groups, and email. Some asynchronous learning programs are integrated and contain all support elements, where the program is linked to all necessary reference materials without the need for direct contact with a teacher.

d) Synchronous Learning: It requires the direct presence of a faculty member, in which each user logs into the site after registering in advance. After logging in, they interact directly with the instructors and other specialists. This training takes some time, with the semester lasting a few weeks, months, or years, and is conducted through the use of websites (Al-Gharib Zahir, 2010, p. 18).

6.3 Requirements of Digital Education

In order to effectively implement digital learning, several requirements must be met. These requirements include various mechanisms and technologies necessary for successful application and can generally be classified into direct and indirect requirements, as outlined by Alaa Bin Mohammed Al-Mousawi (2008, pp. 8–12).

1. Direct Requirements

- Providing computers for teachers, students, classrooms, and laboratories, along with access to different types of networks.



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- Providing classroom management systems and supportive software tools for learning resources.
- Establishing systems for the rapid creation and management of interactive educational content (Rapid LCMS).
- Providing an interactive e-Learning Dynamic Board and a specialized educational portal that operates via the Internet or via the school's internal LAN computer network.
- Ensuring access to Digital Learning Resources and the necessary tools for their effective use.
- Establishing direct electronic connectivity systems between universities, schools, educational administrations, and supervisory authorities.

2. Indirect Requirements

- The need for the relevant departments in the Ministry of Education to adopt a clear strategy for the application of digital education tools and to develop regulations and legislation governing the standard requirements in the digital education implementation program.
- Providing continuous training programs for teachers, administrators, and all personnel involved in the educational environment to ensure optimal use and implementation of digital education technology systems.
- Preparing and training students to interact effectively with e-learning technologies.
- Providing digital educational resources integrated within digital learning systems, as well as subscriptions to electronic libraries.
- Developing systems and software that meet the needs of students with special educational requirements.
- Educating all members of the education departments on the need to use digital education systems in line with the proposed implementation program.

6.4 Transition to Digital Learning

Developing countries have begun facing new challenges in light of the concept of globalization and the growing importance of knowledge and information (Tariq Mahmoud Abbas, 2007, p. 54). The ability of human beings to rely exclusively on their cognitive abilities for managing their daily lives is quickly being outstripped by the impact of technology on enhancing human cognitive capacity relative to time, space, and strength. Therefore, the teaching profession must seriously consider cognitive growth and computer technology, and pay more attention to developing students' abilities to quickly collect, evaluate, organize, and interpret information, in addition to teaching them to use technology that is fast and accurate in processing data. Without this serious

approach, we will continue to offer our students outdated curricula in schools (Safaa Youssef Al-Aassar, 1998, pp. 193-196).

Meanwhile, developed countries are striving to invest in technology to improve the educational process, despite the high financial costs. In 2007, the Norwegian government decided to provide secondary school students with free digital educational materials. Also, the Ministry of Education and Scientific Research allocated €5.46 million to support and develop national digital education (OECD, 2009, p. 101).

Based on this, it can be said that there are several motives that can be considered justifications for introducing information and computer technology into educational and training institutions at all levels, including:

The Expansion of Educational Materials: Computers are the most suitable means of addressing this phenomenon, given their high storage capacity and retrieval speed.

Limitations of Traditional Methods: Books and visual educational programs do not allow for interaction with students, whereas computers have features such as animated graphics and instant evaluation, giving them a distinctive role.

Simulation: It is possible to simulate how the internal organs of the human body work, display the structure of the heart, and represent dangerous chemical reactions on the computer, while ensuring the safety of students.

The Widespread Presence of Computers in all Aspects of Life: Schools need to equip students with the necessary experiences they are likely to encounter in their future professional lives, while minimizing exposure to experiences that may be irrelevant.

Positive Interaction and Increased Learning Effectiveness: Computers stimulate students' desire and excitement, as widely acknowledged by computer users, and increase students' ability to understand, comprehend, analyze, and synthesize, thereby increasing the effectiveness of education (Fahima Al-Hadi Al-Shakshouki, 2006, pp. 12-15).

In addition to the above, the advantages of digital education can be further illustrated when compared to traditional education, as shown in Table 1 (Mohannad Anwar Al-Shuboul & Rabhi Mustafa Alyan, 2014, pp. 174–177).



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Table 1

Comparison Between Traditional Education and Digital Education

Traditional Education	Digital Education
Relies on a traditional educational culture that focuses on the transmission and reception of knowledge, with the teacher as the central figure in the learning process.	Relies on a digital culture that emphasizes knowledge construction and supports self-directed, interactive learning, where the learner plays an active role.
Does not require high costs in terms of technical infrastructure, training, or acquiring digital competencies for teachers and students.	Requires substantial financial investment to provide appropriate technical infrastructure, including computer systems, software design, and training for teachers and students to acquire technological skills.
Students are received at the same place and time, with communication between teachers and students limited to scheduled class sessions, which may not be convenient for all learners.	Not restricted by time or place, communication between teachers and students can occur at any time and from anywhere through technological tools such as email, chat rooms, and other digital platforms.
The teacher's role is primarily that of a transmitter and source of knowledge.	The teacher's role focuses on guidance, supervision, advice, and support, acting as a facilitator of the learning process.
Educational content is presented in printed form, often lacking technical accuracy, and remains unchanged for long periods.	Educational content is delivered through electronic curricula that stimulate motivation and learning engagement, incorporating multimedia elements (text, images, audio) and allowing for continuous updating.
Registration, administration, follow-up, and certificate issuance are conducted manually and face-to-face.	Registration, administration, follow-up, assignments, assessments, and certification are carried out electronically and remotely.

Accommodates a limited number of learners worldwide and is restricted to specific times and locations.	Enables access for an unlimited number of learners from different countries and geographical locations.
Contributes primarily to the accumulation of humanistic and social knowledge and reinforces educational values.	Contributes to the accumulation of technological expertise and enhances adaptability to rapid technical and technological developments.
The shortage of qualified lecturers affects the quality of education, limiting the number of learners who can benefit from distinguished teachers.	The shortage of qualified teachers does not significantly affect learning, as qualified educators can reach a large number of learners simultaneously.

7. Research Methodology

Scientific research is characterized by a variety of methodologies. The methodology is seen as “the clear and straight path” (Al-Suwaisi Abdelrahman, 1996, p. 76). Choosing the appropriate methodology is an important stage in the scientific research process, as it determines how data and information about the subject under study will be collected. Therefore, the study methodology is directly related to the subject of the study. Based on the subject of the present study, which addresses an educational, psychological, and social phenomenon as it exists in its current context, and aims to explore its dimensions and identify relationships among its components. Hence, the descriptive method was adopted due to its suitability for the nature and objectives of the study.

8. Research Population

For research to be valid and achievable, it is necessary to clearly outline the population under investigation and specify the criteria used to delimit it (Maurice A., 1996, p. 299). In this study, the research population consists of all Third-year Bachelor's students, Second-year Master's students, and Second-year Doctoral students specializing in Physical Education and Sports at the Institute of Physical Education and Sports at the University of Chlef. According to the statistics for the academic year (2017–2018) obtained from the institute administration, the total population is approximately 237 students, distributed as shown in Table 02.



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Table 2

Distribution of the Research Population

Academic Level	Number of Students
Bachelor's	67
Master's	162
Doctorate	08
Total	237

8.1 Research Sample

A sample is defined as “a small portion of the research population selected either systematically or randomly, through which the characteristics, variables, and conditions of the original population can be induced.” (Hassan Mohamed Al-Hassan, 1994, p. 49). Moreover, the researchers attempted to select a sample for this study that would be more representative of the original population. Additionally, the sample was selected randomly because this is the simplest method of selection and because it gives equal opportunities to all members of the population. The research sample consisted of 38 male and female students, distributed as shown in the following table:

Table 3

Distribution of the Research Sample

Academic Level	Number of Students
Bachelor's	15
Master's	15
Doctorate	08
Total	38

9. Research Instruments

The research tool is the only means by which the researcher can address the problem posed in the study, verify the hypotheses formulated in the research project, and assist in gathering information, data, and facts from the field on the

subject of the study. (Hassan Mohamed Al-Hassan, 1994, p. 65). The process of selecting the appropriate measurement tools is considered one of the most important steps in any scientific research, and these tools must be consistent with the research objective. The researchers employed the Teaching Skills Scale prepared by Firas Akram Salim, with modifications by the researchers, in order to test the study's hypotheses and answer the research questions.

9.1 Psychometric Properties of the Instrument

Scientific research is primarily evaluated based on the quality of the tool used before studying its results. In fact, these results are only acceptable or valid if the tool used is appropriate (Angers, 2006, p. 286). In order to verify this, we will examine the scientific conditions of the tool.

Reliability of the Scale

Moqqadam Abdelhafid defines test reliability as “the degree of stability of a given phenomenon across different occasions, and it is also expressed as the degree of accuracy or consistency of the results when the test is administered to the same sample on two different occasions” (Moqaddam Abdelhafid, 1993, p. 152). Additionally, the reliability coefficient of the scale was previously calculated in a foreign context using Cronbach’s Alpha, where all obtained coefficients were satisfactory, indicating that the scale is reliable and suitable for use. To determine the reliability of the scale in the current study context, the researchers employed the following method:

- **Test-Retest Method**

The final version of the scale was given to a pilot group taken from the research population, but not from the larger main sample of the study. The pilot group consisted of 20 male and female students from the Department of Physical and Sports Education of the University of Chlef. Two weeks after the first test, the same test was later reapplied to the same sample under the same conditions. After collecting the data, Pearson’s correlation coefficient was calculated to assess the stability of the scale. The results are presented in Table 04.

Table 4

Pearson Correlation Coefficients for the Teaching Skills Scale and Overall Reliability

Scale Dimensions	Reliability Coefficient
First Dimension	0.910
Second Dimension	0.882
Third Dimension	0.899
Total Score	0.901

The table above shows that Pearson's correlation coefficients range between (0.882) and (0.910) for the three dimensions of the teaching skills scale, while the total score for the scale was (0.901), all of which are significant at the 0.05 level, confirming that the scale has a high degree of reliability across the various dimensions as well as the overall score of the scale.

Validity of the Scale

The validity of the scale was assessed using the following methods:

- **Face Validity (Expert Judgement)**

Initially, the scale contained 49 items representing three axes. The scale was presented to a group of experts and specialists in Education and Sports Psychology for the purpose of identifying the validity of the items in terms of wording, appropriateness, and alternatives. A ratio of 75% agreement among the experts was adopted for the acceptance and adoption of the items in the scale (Al-Obaidi, 2004, p. 39). On that basis, a number of changes were made in light of the experts' opinions, including the removal of some items whose content was not relevant to the dimension, the modification of some phrases, and the transfer of others to another dimension within the specific axes of the scale as indicators for measuring teaching skills. The final scale consisted of 26 items. The following table shows the dimensions of the scale in its final form:

Table 5

Final Dimensions and Items of the Teaching Skills Scale

Scale Dimensions	Number of Items
Planning	08
Instructional Media	08
Evaluation	10
Total	26

- **Intrinsic Validity**

Intrinsic validity was calculated as the square root of the reliability coefficient and was found to be **0.949**, indicating a high level of validity for the study instrument.

10. Statistical Methods Used

The following statistical techniques were employed for data analysis:

- Arithmetic mean.
- Standard deviation.
- Frequencies and percentages.
- One-way Analysis of Variance (ANOVA) is used to detect differences between groups.
- Pearson's correlation coefficient is used to examine the relationships between variables.

Note: Statistical processing was conducted using the Statistical Package for the Social Sciences (SPSS, Version 17).

11. Presentation and Discussion of the Findings

11.1 Presentation and Discussion of the First Hypothesis Results

In this section, we will attempt to identify the extent to which university students use digital teaching tools by presenting and analyzing the data obtained.

- **The Degree to which Students Rely on Digital Education Devices and Technologies**



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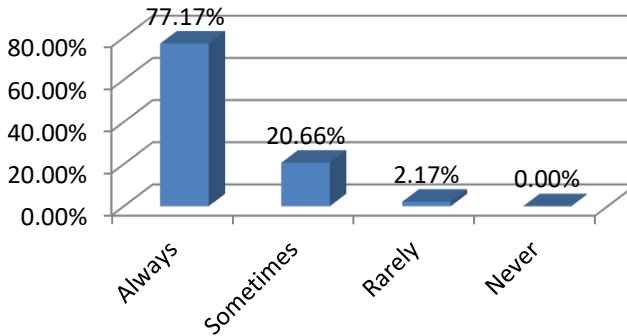
Table 6

Degree of Reliance on Digital Teaching Tools

Options	Frequency	Percentage
Always	71	77.17%
Sometimes	19	20.66%
Rarely	02	02.17%
Never	0	00.00%
Total	92	100%

Figure 2

Degree of Reliance on Digital Teaching Tools



From the results in Table 6 and Figure 2, we can see that all students, without exception, use digital devices and technologies for learning, but to varying degrees. The majority of them use them regularly, at a rate of 77.17%. Meanwhile, 20.66% of students use these devices occasionally, and only 2.17% reported that they rarely use them, which suggests that these students may rely on other methods for learning.

➤ Areas of Digital Learning for Students

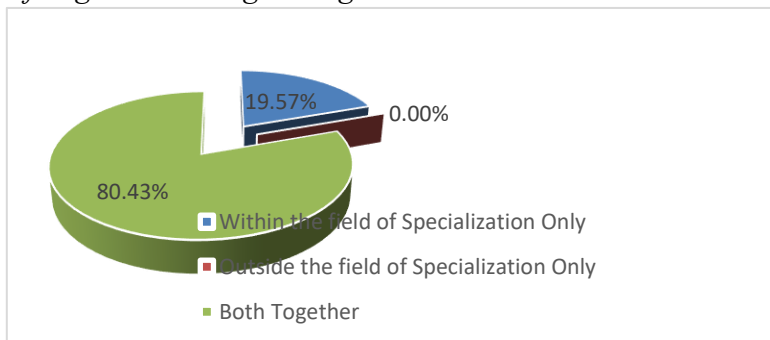
Table 7

Domains of Digital Learning among Students

Options	Frequency	Percentage
Within the field of Specialization Only	18	19.57%
Outside the field of Specialization Only	0	0%
Both Together	74	80.43%
Total	92	100%

Figure 7

Domains of Digital Learning among Students



From the results in Table 7, shown in Figure 3, it is notable that the largest percentage of students relies on digital methods of learning both within and outside their field of study, at 80.43%. This may be with the aim of expanding their knowledge and investing in this new form of learning. On the other hand, 19.57% learn digitally only within their field of study, which may be for the purpose of strengthening their academic competence. This may also be due to the unavailability of printed resources in some scientific fields, which makes students accept this form of learning. It is also noticeable that the percentage of those who learn outside their field of specialization is completely negligible. This is logical, as it is inconceivable that a university student would read and learn digitally outside their field of specialization. Reading and researching outside the field of specialization may not appeal to students, unless it leads them from learning within their field to acquiring knowledge and information outside their field, as it is indicated in the table showing the highest percentage.

➤ **Devices Used by Students**

Table 8

Devices Used by Students

Options	Frequency	Percentage
Desktop Computer	32	22.07%
Laptop Computer	81	55.86%
Digital Tablets	12	08.28%
E-book Reader	01	00.69%
Smartphones	19	13.10%
Total	145	100%

Based on the results presented in Table 08, it is clear that the majority of students depend on laptop computers for learning and knowledge acquisition,



accounting for 55.86% of the total responses. This can be attributed to the widespread availability of laptops in recent years, as well as their suitability for learning, reading, and academic research, in addition to their portability and ease of use. The second highest percentage reported was the use of Desktop Computers, with 22.07% of the sample reporting it. This could be because they were the first computing devices introduced to society and are available in many places. While 13.10% of students use smartphones, which is a relatively small percentage compared to the widespread use of various types of smartphones in the Algerian market, as well as digital tablets, which represent only 8.28%.

However, the lowest in terms of devices used by students is estimated at 0.69%, which represents e-book readers, a device designed for reading books in digital form. This means that this device is unknown in Algerian universities and is not available, and there is almost no culture of using it or awareness of its existence.

➤ **The Degree to which Students Rely on Digital Sources and Information Vs. Printed Sources**

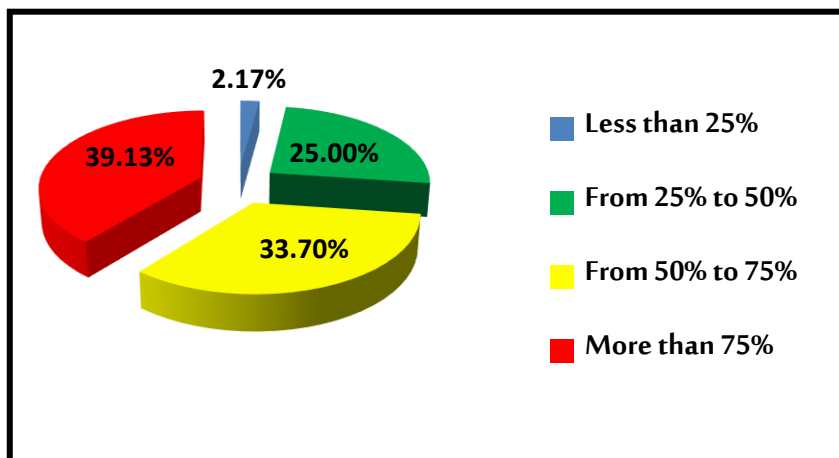
Table 9

Students' Reliance on Digital Sources and Information

Options	Frequency	Percentage
Less than 25%	02	02.17%
From 25% to 50%	23	25%
From 50% to 75%	31	33.70
More than 75%	36	39.13
Total	92	100%

Figure 5

Students' Reliance on Digital Sources and Information



The results presented in Table 9 and illustrated in Figure 4 show the percentage of students who rely on digital sources versus printed sources. We observe that 39.13% of the sample depends on digital sources at a rate exceeding 75%, while 33.70% of students report using digital sources at a rate ranging between 50% and 75% compared to printed materials. Meanwhile, 25% of students state that their reliance on digital sources ranges between 25% and 50%. The lowest proportion is estimated at 02.17%, representing students who rely on digital sources at a rate of less than 25%.

These results show us that there is a strong tendency among students toward the use of digital information sources in their educational lives, with more than two-thirds of the sample relying on digital sources to a greater extent than printed sources. This popularity may be due to the widespread use of these sources in recent years, along with their ease of access and remote use, and other features that distinguish them from their traditional printed counterparts.

Moreover, it appears that all students, without exception, accept the use of digital tools and devices for learning, but the degree of their acceptance varies among them. The majority of students (77.17%) engage in digital learning on a regular basis. Their use of digital learning tools generally occurs both within and outside their field of specialization, with a greater emphasis on learning within the specialization itself in order to achieve better academic performance. As for the devices used, most students use laptops (55.81%) because they have them and are accustomed to using them. Meanwhile, the percentage of those who use e-book readers is almost insignificant, estimated at 0.69%, even though these readers are specifically designed for reading and browsing books and are easy on the eyes and body.

Because of that, it can be said that this hypothesis has been proven to some extent, as the results of the study show that most students rely on learning aids and tools regularly, at a rate of 77.17%. The study also showed that 80.43% of



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students learn digitally both within and outside their academic disciplines, with most students relying on digital sources more than 75% of the time compared to traditional sources.

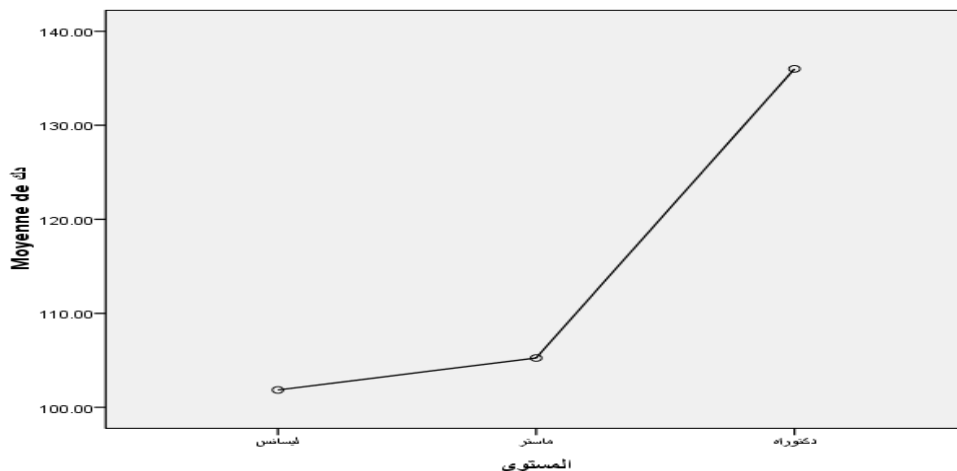
11.2 Presentation and Discussion of the Results of the Second Hypothesis

This section aims to identify the differences among students in the level of acquisition of teaching skills according to the requirements of digital education, based on the variable of academic level (LMD system).

Table 10
One-Way Analysis of Variance (ANOVA) for the Degree of Acquisition of Teaching Skills According to the Requirements of Digital Education Based on Academic Level

Source of Variance	Sum of Squares	Degree of Freedom (df)	Mean Square	F value	Sig.	Sig nif ica nc e Le vel	Interpret
Between Groups	4597.62	2	2298.81	45.60	0.00	0.05	Statistical Significan
Within Groups	2268.35	45	50.40				

Figure 6
One-Way Analysis of Variance (ANOVA) for the Degree of Acquisition of Teaching Skills According to the Requirements of Digital Education Based on Academic Level



The results show that the sum of squares between groups is 4597.62, with a mean square value of 2298.81 at 2 degrees of freedom. Meanwhile, the sum of squares within groups was 2268.35, with a mean square value of 50.40 at 45 degrees of freedom, and the calculated F value was 45.60. Since its sig value was (0.000), which is smaller than the significance level (0.05), it is significant, and the value obtained indicates that the differences between teaching skills at the academic level are positive. Therefore, these findings indicate that there are statistically significant differences in the degree of acquisition of teaching skills according to the requirements of digital education based on the variable of academic level (L.M.D system).

Table 11

Direction of Significant Differences According to Academic Level (L.M.D.)

Variable	Level	Mean Difference	Standard Error	Significance Level	Interpretation
Teaching Skills	M	-3.40	3.29	0.59	Significant
	D	-34.15	4.36	0.00	
	L	3.40	3.29	0.59	Significant
	D	-30.75	4.36	0.00	
	M	30.75	4.36	0.00	Significant
	L	30.75	4.36	0.00	

From the findings shown in Table 11, it is noted that the significance of the differences between the significance levels for the master's and doctoral degrees reached 0.59 for the master's degree, while for the doctoral degree it reached 0.00. This indicates that there are statistically significant differences between the teaching skills scale scores in favor of the doctorate. Similarly, the



significance of the differences between the significance level values for the License students and doctorate degrees reached 0.59 for the bachelors, while at the doctorate level it reached 0.00. This indicates that there are statistically significant differences between the teaching skills scale scores in favor of the doctorate. As for the master's and bachelor's degrees, the value reached 0.00 for the master's degree, which is the same value as for the bachelor's degree.

It is clear from this that the teaching skills required of Physical Education and Sports teachers in accordance with the requirements of education in the digital age vary from one level to another; the higher the level, the greater the degree to which students acquire teaching skills. This confirms that the level of training plays a crucial role in developing teaching skills within the context of the digital era. Therefore, based on what has been discussed, the second hypothesis which states that there are statistically significant differences between students in the degree of acquisition of teaching skills according to the requirements of digital education based on the academic level variable (LMD), is proven correct.

The conclusions of this hypothesis indicate that the officials need to place greater emphasis on continuous training and professional development in the digital era, as it has become an urgent necessity to develop teachers' performance. Such training should be aligned with teachers' needs and the continuously changing demands of the educational field. Needless to say, weak teaching performance may negatively affect students' academic achievement and contribute to feelings of insecurity and pessimism regarding their future.

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