

## DIGITAL DIDACTIC COMPETENCIES OF PROSPECTIVE TEACHERS IN ARABIAN COUNTRIES

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### ABSTRACT

**Objectives:** This research aimed to identify the reality of digital didactic competencies of preserve teachers in different Arab teacher education systems in the Arabian context.

**Method:** The researchers followed the descriptive and analytical approach to identify the reality of preserve teachers' mastery of digital didactic competencies. The research utilized a questionnaire that was validated and used for the purpose of the research; it consisted of five areas and 50 items. Participants of the research were 530 teachers from the Arabian educational contexts.

**Results and Discussion:** Results of the research showed that three areas of digital competencies were reported to be Mid (AI for lesson planning 1.68, AI for classroom management 1.77, and AI for assessment of learning 1.82). Results also showed that AI for Conducting a Lesson (2.80) was reported to be High, while AI for Methodology (1.29) was reported to be low. Based on the obtained results, the study recommends integrating various digital competencies-oriented models in pre-service teacher education programs in the Arabian context.

**Research Implications:** Extensive decisions related to curriculum reform and syllabus-oriented practices are recommended to fulfill the indulgence of pedagogical digital literacies in the Arabian educational contexts.

**Originality/Value:** The study highlighted the need to integrate further pedagogical digital competencies components in pre-service teacher education programs due to the age requirements. Teacher education institutes in the Arab world place a greater emphasis on "digital pedagogy" than they did on imparting specific knowledge that students would eventually be expected to apply.

**Keywords:** digital, didactic, competencies, teachers sustainable, development, sustainable development goals (SDGs).

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## 1 INTRODUCTION

Teacher education programs bridge the gap between national and international visions and challenges. Countries all over the world follow educational patterns and models for their prospective teachers within these frames. Many Arabian teacher education visions call for preparing teachers for interdisciplinary and competencies-based education that achieves sustainability. Part of this vision is the competencies-based education in different educational settings.

Defining the term competency was viewed by Buharkova & Gorshkova (2007) as a term used extensively by different people in different contexts; hence, it is defined in different ways. Further, "Teacher education and job performance are two contexts in which this term is used; requirements of a "competency-based" teacher education and include the knowledge, skills and values a teacher-trainee must demonstrate for successful completion of a teacher education program" (p.1). Thus, competencies are observed skills-based evidence compared to competences that refer to the theoretical realizations and cognitive frameworks.

Haggag (2018) viewed "competency" to include the "competence" in teaching since they are interrelated and refer to "mastery or skill" but in different contexts. Although interchangeable, the term competence refers to the cognition "knowledge" that we have in mind, while competency refers to the ability to perform tasks. In his study, he discussed implementing a European document (European Portfolio of Student Teachers of Language EPOSTL) as a self-assessment tool. The portfolio is used with the aim of assessing the key teaching competencies of pre-service English language teachers during the teaching practice or the practicum. The study examines key 5 descriptors of didactic competencies in the EPOSTL which reported the development in the participants' competencies.



Karimi (2014) views the didactic competencies "as an integration of professional knowledge, skills and attitudes to enable (teachers) to do their roles and effectively influence the students' learning process" (p.3). He argues that there are three main competencies in literature; the first is professional attitudes, second are the didactic competencies and finally subject matter competences. He further argues that teaching competencies are results of integration between knowledge, skills and attitudes. In her study, Paisi (2014) examined the didactic competences of primary schools' teachers. These competencies include specialty competencies (such as familiarity with the scientific content), psycho-pedagogic competencies (as recognizing students' profile) and socio-managerial competences (such as students' organization and group cooperation).

Competencies have distinctive characteristics as discussed by Nessipbayeva (2012). Some characteristics of a competency "are as follows: 1. A competency consists of one or more skills whose mastery would enable the attainment of the competency. 2. A competency is linked to all three of the domains (knowledge, skills and attitude". 3. Possessing a performance dimension, competencies are observable and demonstrable. 4. they are also measurable" (149).

Technology and Artificial Intelligence use in educational contexts has largely affected the current and future practices of teachers of pre-service teachers (Zhang, e al., 2023). Further, they confirmed that "there has been a significant increase in the utilization of artificial intelligence (AI)-based educational applications in education" (p.1). Their perceptions and views may have an impact on the learning outcomes of their future students.

Similarly, Ajlouni (1997) early investigated the list of computer competencies for use in the training of preservice teachers. All respondents thought the ability to initialize and format diskettes, make backups of files and disks, and operate a mouse or trackball; the ability to set up and print; and the ability to load a program from a diskette and save it were the most important competencies. Computer programming competencies were rated as least important.



In this view, Alamri & Alfayez (2023) investigated how preservice teachers observe and analyze their competencies through self-reflection and video-learning community strategies and how self-recorded videos influence their microteaching experience. The results indicated that the use of self-recorded videos can influence the microteaching experience and help identify development gaps, analyze weaknesses and strengths, and reflect upon them. The results also showed that preservice teachers hold positive perceptions and experiences of self-recorded videos to improve their Saudi National Professional Teaching Standards competencies via self-reflection and video learning community.

Karami-Akkary (2019) evaluated teacher professional learning in the Arab region within specific highlights. These highlights guide the view about teacher education competencies. The highlights included that Teachers showed varying growth in knowledge, skills and attitudes. Further, Professional learning of knowledge, skills and attitudes did not develop linearly. Professional learning is influenced by the socio-cultural conditions of its context. Compartmentalized and linear evaluation does not capture the complexity of learning. Ongoing monitoring and evaluation respond to teachers' conditions and needs. The above conclusions may guide the pedagogical approaches in pre-service education programs in the Arab world.

The need to identify the digital gap in the Arab world and the World was early discussed by Teniou & Dehane (2019) . In their paper, they discussed the digital gap or digital divide. it focus to understand the digital gap in the world in general and in the Arab world in particular. It aimed to measure the digital divide in the Arab world using the developed ICT Index that published by the International Telecommunication Union (ITU). Results showed that the results show that: the digital gap is one of the most important challenges in the Arab countries; digital competence is a requirement of the digital economy, and its absence widens the digital divide; and the digital divide between developed and Arab countries is widening, and therefore strategies must be developed. The present research discussed this digital gap from a pedagogical view.

Therefore, this research aimed to identify the reality of preservice teachers' mastery of digital didactic competencies in different Arabian



contexts for better decision-making practices that are related to their future profession.

## 1.1 PROBLEM AND ITS SIGNIFICANCE

Identifying the reality of digital competencies-oriented practices may enhance the quality of educational decisions and future practices and policies of the educational systems. The need to identify the digital component in the Arabian and world education system has been highlighted by various studies (e.g. Nessipbayeva, 2023, Teniou & Dehane, 2019; Haggag, 2018; Lim, 2007). This study discussed the area of digital competencies from a different view, it aimed to investigate the reality of didactic digital literacies in pre-service teacher education programs. It also aimed to identify the key didactic digital competencies of pre-service teachers in different Arabian educational contexts.

Thus, the present research is thought to be significant due to the following considerations:

1. It highlights the reality of digital competencies in different pre-service teacher educational programs in the Arabian context;
2. The interdisciplinary nature of the research may integrate the virtues of both digital technology and educational paradigms;
3. Decision makers in the Arab world may consider the implications and insights in the research for future decisions;
4. This research is an attempt to call for reform in teacher education programs in the light of current technological advancements;
5. It identifies the reality of different digital competencies' areas in the Arabian context of teacher education.

## 1.2 QUESTIONS OF THE RESEARCH

1. What are the different digital competencies to develop in the Arabian context of pre-service teacher education?



2. What are the means differences between the different areas of digital competencies in the Arabian pre-service teacher education programs?

### 1.3 OBJECTIVES OF THE RESEARCH

The research aimed to the following:

1. Identifying the key the different digital competencies to develop in the Arabian context of pre-service teacher education;
2. Comparing between the different areas of digital competencies in pre-service teacher education programs in the Arabian context.

### 1.4 DESIGN

This research follows the descriptive analytical design. It implements a questionnaire that includes (5) areas of didactic digital competencies (50 items). It was applied over (530) participants in EFL teacher education programs in various Arabian contexts.

### 1.5 PARTICIPANTS

Pre-service teachers participated in the research are enrolled in different Arabian teacher education programs. Using convenience sampling, we surveyed (562) pre-service teachers during the academic year (2023-2024) in different Arabian contexts. After explaining the purpose of the research, the questionnaires were distributed, and the participants were asked to complete the questionnaire independently. In the research, (32) incomplete questionnaires were considered to have insincere responses through the first coding process and excluded from the research, and (530) questionnaires were selected as the final valid sample for data processing.



## 1.6 DELIMITATIONS

The present research was delimited to only five areas of didactic digital competencies. These areas are AI for lesson planning, AI for classroom management, AI for assessment of learning, AI for Assessment of Learning, and AI for Methodology. These competencies were validated by the jury and reported to be valid for experimentation. The research was also delimited to the Arabian pre-service teacher education context as these contexts follow similar sequence in the process of teacher education instruction and assessment.

## 1.7 INSTRUMENT OF THE RESEARCH

The research utilized Large Language Models (LLMs) questionnaire; the questionnaire aimed to identify 12 areas of LLMs that can be used in EFL teacher education programs. These areas are AI for lesson planning, AI for classroom management, AI for assessment of learning, AI for Assessment of Learning, and AI for Methodology. The questionnaire was validated statistically in terms of validity and reliability. The following table shows the reliability value of the questionnaire.

**Table 1**

*Reliability Statistics*

Number of Total Areas	Cronbach's Alpha
5	.816

The obtained  $r$  value (.816) shows a high reliability value for the questionnaire and its items. Content validation was run through a jury of experts who recommended adapting and correcting some items to reach its final valid form with (5) main areas of didactic digital competencies that can be appropriate for the purpose of the research.

Content validity of the questionnaire was calculated by jury validation who recommended language and pedagogical comments to the competencies. Other comments included the layout of the questionnaire. Further, an internal



consistency was statistically calculated as the following table (2) shows Pearson internal consistency levels.

**Table 2**

*Descriptive Statistics*

No	Areas of Digital Competencies	Correlation
1	AI for Lesson Planning	0.536
2	AI for Conducting a Lesson	0.428
3	AI for Methodology	0.672
4	AI for Classroom Management	0.790
5	AI for Assessment of Learning	0.678

The above table (2) shows the correlation between the 5 areas of the digital competencies in the questionnaire and their total score. The obtained values vary between (0.428) to (0.790); this shows strong positive correlation and internal consistency between the different items of the questionnaire, and thus its validity and usefulness to achieve its aims.

## 2 RESULTS

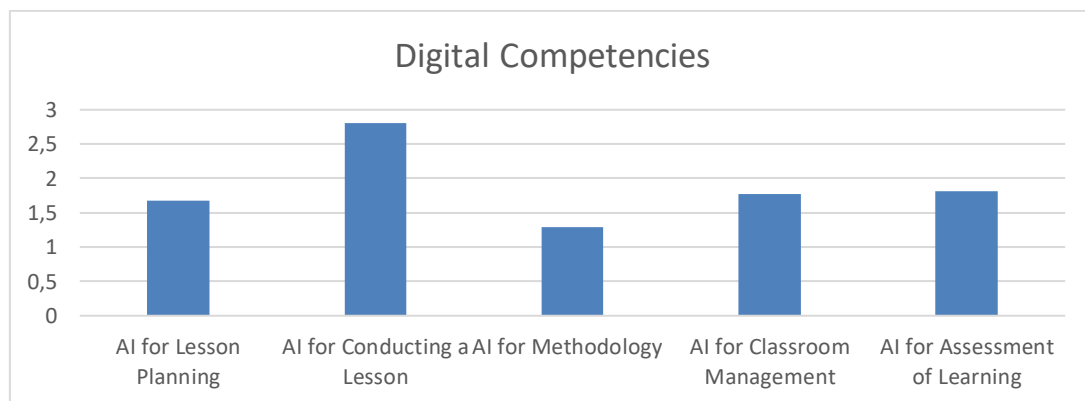
Using SPSS statistical analysis, the obtained quantitative results verified the questions of the research. The following table (1) shows the statistics of the areas, means, standard deviations, and the degree of each of the 5 digital competencies' areas of the questionnaire.



**Table 3**
*Descriptive Statistics*

Digital Competencies	N	Mean	Std. Deviation	Degree
AI for Lesson Planning	530	1.68	.624	Mid
AI for Conducting a Lesson	530	2.80	.752	High
AI for Methodology	530	1.29	.519	Low
AI for Classroom Management	530	1.77	.647	Mid
AI for Assessment of Learning	530	1.82	.683	Mid
Valid N (listwise)	530			

According to table (3) results, means of three digital competencies were reported to be (Mid) these areas were (AI for lesson planning 1.68, AI for classroom management 1.77, and AI for assessment of learning 1.82). AI for Assessment of Learning (2.80) was reported to be (High), while AI for Methodology (1.29) was reported to be low. The following figure (2) shows the percent in each area as reported by the participants.

**Figure 1**
*Percents of total digital competencies' areas*


The above table clearly shows that using AI for conducting a lesson is higher than the other four areas where the methodology oriented digital competencies come the least. The following discussion contextualizes these obtained results in the light of related studies.



### 3 DISCUSSION & IMPLICATIONS

The obtained results from the questionnaire highlighted five didactic digital competencies: AI for lesson planning, AI for classroom management, AI for assessment of learning, AI for Assessment of Learning, and AI for Methodology.

The obtained results are consistent with many studies that highlighted the didactic digital competencies and their roles in pre-service teacher education programs (e.g. Haseski, 2019; Haggag, 2018; Mohamed *et al.*, 2021; Ahmed, 2014). Some previous studies agreed that there is a need for teaching and learning in higher education to employ artificial intelligence techniques to catch up with the technological revolution, as emphasized by (Haseski, 2019; Hinojo-Lucena, *et al.*, 2019; and Popenici & Kerr, 2017).

For instance, Ahmed, (2014) emphasized that teacher preparation institutions should employ the standards of the National Council for Accreditation of Teacher Preparation Programs (NCATE), which include the performance of graduates, their mastery of the specialized aspect, the ability to teach effectively and professionally, and the ability to design an appropriate learning environment that makes the learner the focus the educational process, employing learning techniques and working to integrate them effectively in teaching.

These results are also consistent with the study by Bennet (2000) that stressed the view that to keep pace with technological changes in society, the teacher education programs of all levels in a country must be planned in such a way the teachers produced by these programs are broadly educated, scientific minded, uncompromising on quality, innovative, courageous but sympathetic towards students. Similarly, it agrees with Evans (2007) who stated that focusing pedagogical levels the educators are encouraged to see that their practices are being facilitated through electronic communication globally. Further, he believed that teachers may reach students anywhere in the world with direct or indirect communication methods, and they can use these universal resources to support and improve their own instruction.



Results of the study are different from the results of a study by Haseski (2019) which found that student teachers have different orientations about digital and artificial intelligence competencies, as they feel negative feelings towards it, and do not want to live using artificial intelligence where human feelings disappear. They are also consistent with Ahmed's *et al.* (2021) which aimed to identify the reality of using Artificial Intelligence techniques in teacher preparation programs in the light of the opinions of faculty members.

The obtained results from the five areas of the research highlighted the need to integrate technology and AI applications in various teacher education settings related to the areas of lesson planning, classroom management, assessment of learning, conducting lessons, and Methodology. These results are consistent with other results by (Russell et al. 2003; Lim 2007). These results emphasized the urgent need to expand the integration of modern technology for developing pedagogical oriented competencies of the teachers at their pre-service education context.

The highest result obtained from the participants was in the conducting lessons area. This result came first due to different considerations in the Arabian context. The first is the expansion in using platforms in universities and higher education. The second is the effect of post-pandemic era that highlight resulted the use of technology. These conclusions agree with ALESCO (2021) that conducted a survey in different Arab world educational systems to investigate the effect of corona pandemic on the different Arabian educational systems. Surprisingly, results showed that alternative methods of learning, such as online educational platforms, are not available for all students, especially those from low- and middle-income countries who have less opportunities to access distance education, to make up for lost learning, and to attend schools having sufficient resources to ensure a proper learning process and an adequate educational attainment. These considerations pushed for better practices in teacher education programs in the Arabian context.

Implications of the research can be utilized at both Arab and international levels. As to the Arabian context, these results provide a framework for the prevailing digital competencies in the Arab world to consider. It also compared the degrees of importance to the prospective



teachers which may result in adaptations in their future programs. Internationally, this study is an indicator for the prevailing digital competencies to be effectively used in similar teacher education programs.

#### 4 CONCLUSION

The level of teacher education preparation has altered dramatically in recent years. The study highlighted the need to integrate further pedagogical digital competencies components in pre-service teacher education programs due to the age requirements. Teacher education institutes in the Arab world place a greater emphasis on "digital pedagogy" than they did on imparting specific knowledge that students would eventually be expected to apply. The research investigated the reality of pre-service teachers' mastery of digital competencies related to pedagogy. The results showed the mastery of these competencies with different levels range from low to high. Extensive decisions related to curriculum reform and syllabus-oriented practices are recommended to fulfill the indulgence of pedagogical digital literacies in the Arabian educational contexts.



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