

Presenting the Professional Competency Model of Teachers in the E-Learning Environment of Primary Schools: A Qualitative Study

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ABSTRACT

Objective : Over time, there has been a transition from traditional learning environments to electronic learning environments. As a result, researchers have directed their attention towards examining the competencies of teachers in the e-learning setting. The aim of the present study was to develop a professional competence model that pertains to teachers functioning within the electronic learning environment of primary schools located in Qom.

Methods: A qualitative research approach was employed, specifically utilizing the phenomenological method. The targeted sample consisted of 12 experts in the field of primary education in Qom. Data analysis was conducted following the three steps of the phenomenological method. The instrument employed was a semi-structured survey.

Results: The findings revealed that the professional competency model for teachers in the e-learning environment comprised 47 primary codes, 17 subcategories, and 5 final categories. Consequently, a professional competence model for teachers in the e-learning environment was devised and presented, encompassing five dimensions: moral, educational, social, personal, and educational-occupational.

Conclusions: This model can be useful for future research and educational settings that share similar characteristics.

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Introduction

If in the past education was solely reliant on teachers, trainers, and books as the primary source of information, today the field of education has been introduced to new communication tools and environments. Recent advancements in the computer and information industry, along with the emergence of local, regional, and international information networks, particularly the Internet, multimedia, communication technologies, and new tools and methods, have presented challenges to the designers, planners, managers, and implementers of educational programs ([Kumar Basak et al., 2018](#)). The integration of new information technologies into educational institutions, ranging from schools to universities and even homes, has fundamentally altered the traditional dynamic between teachers and students. Consequently, traditional learning patterns have undergone a transformation, exposing users to an immense wealth of knowledge and information ([Niksirat, 2023](#)). In this context, the key concern is to develop a model that encompasses the desirable qualities of an effective teacher in the realm of electronic learning. If scholars in the fields of educational sciences, psychology, and educational management fail to establish a comprehensive model for teachers' competencies within the electronic learning space, it is only a matter of time before advanced electronic advancements in educational environments yield counterproductive outcomes. Instead of facilitating the teaching-learning process, these advancements may become obstacles in the path of education.

At present, educators have access to various electronic educational methods and are faced with an abundance of information that can enhance the electronic learning environment ([Haque et al., 2023](#)). On the other hand, there is a significant body of research dedicated to developing a competency model for teachers in non-electronic learning environments ([Bender et al., 2015](#); [Đurić & Stanojević, 2022](#)). Consequently, active educators in the new learning environment (i.e., the electronic learning environment) possess numerous methods for optimizing their performance, but lack a mechanism that enables the utilization of these methods for achieving excellence in the teaching-learning process. This issue is of great importance in the realm of education within the Iran, as failure to address it will only exacerbate the challenges within the educational environment. On January 30, 2020, the World Health Organization (WHO) declared the Covid-19 virus outbreak as an international emergency, and on March 11, 2020, it was classified as a pandemic ([Suryasa et al., 2021](#)). The implementation of quarantine measures in many countries throughout 2020 had an

immediate impact on people's behavior worldwide ([Ganesan et al., 2021](#)) and resulted in rapid transformations in the operations of various industries ([Pirouz et al., 2020](#)).

Among the most sensitive jobs was the job of teachers who did their educational activities at different levels of education ([Jacob, 2007](#)). The impossibility of continuing face-to-face teaching at different educational levels created a 180-degree transformation in the educational system within a few days ([Verma & Gustafsson, 2020](#)). More than 1.5 billion students from around the world were affected by school closures in the early stage of the Covid-19 pandemic in 2020, and distance (electronic) education was introduced for many students. About 94% of the world's student population and millions of teachers around the world were forced to use online equipment for teaching and learning in order to continue their educational and training activities ([Pokhrel & Chhetri, 2021](#)). At present (year 2023), the covid-19 disease has been completely contained thanks to public vaccination and the extraordinary situation of 2020 has turned into a normal situation, but it left a bitter experience with thousands of deaths around the world and made the world community realize Possible risks of future epidemics. Based on this, teaching in the electronic space is considered as a fundamental issue in the field of education, and competent teachers should be employed to work in this space.

Although many instructors have a bag of experience from their years of teaching, they have acquired these valuable skills and experiences based on educational practices in traditional teaching. Therefore, instructors need different types of competence in order to create more quality for e-learning courses ([Bangert & Easterby, 2008](#)). Electronic learning has emerged as a type of secondary education and has three categories of audience: learning at home; Schools that need a replacement when there is a crisis and difficulty so that education is not interrupted; and secondary schools, who want to provide educational courses using the Internet as a supplement. In the long term, there is an expectation that the gains of electronic learning will be more than what is interpreted as radical changes in the way of learning. Some experts believe that electronic learning may replace schools and all forms of classrooms ([Salmi et al., 2017](#)).

The review of the literature in this field confirms that the competences and effective actions of the teacher are considered the main factor in the quality of electronic learning. The competence and capability of the electronic teacher creates the necessary background for the development of the

relationship between the learner and the teacher. As a result, a competent electronic teacher is considered the key to success in the implementation of electronic learning, and they must have the necessary skills and experiences to effectively implement this type of blended learning ([Anderson, 2005](#)).

In a study conducted by [Salari Jaeni et al. \(2021\)](#), it was demonstrated that the components of the electronic professional learning environment can be prioritized as follows: organizational acceptance of technology, planning perspective, supportive-relational conditions, common ideal, dynamic database, technology-oriented learning, and supportive conditions. The structure of this learning environment is conducive to cooperative learning. Similarly, [Ahmadipour et al. \(2021\)](#) emphasized in their research on the model of professional qualifications of student teachers at Farhangian University in Bushehr province that professional qualification plays a crucial and irreplaceable role in transforming the educational system.

[Mirahmadi et al. \(2019\)](#) concluded in their research titled "Professional Learning Communities (PLC): A Critical Strategy for Improving Teachers' Self-Efficacy" that professional learning communities have a significant impact on teachers' self-efficacy in various aspects. Among the components of professional learning communities, the factors of "supporting conditions - relationships" and "supporting conditions - structures" have the greatest influence on teachers' sense of self-efficacy.

In his research, [Rezaai \(2019\)](#) acknowledged that mastery of subject knowledge and teaching methods is a distinct competence that deserves attention and appreciation from the early stages of teacher training. After the Islamic revolution and the redesigning of teacher training programs, there has been an increased emphasis on moral competence and the exemplary role of teachers. The rapid and intense developments in all aspects of human life, along with the existing competencies, make it essential for teachers to possess humanistic, metacognitive, and metacognitive skills.

[Tsarapkina et al. \(2021\)](#) reported in the results section of their study that the transformation of the educational environment through digital technologies has facilitated the emergence of new forms and methods of teachers' work. The exploration of new learning technologies in the digital educational environment serves as a motivating factor for teachers to enhance their professional activities. The authors developed several courses on a digital educational platform that can be

utilized by teachers from different disciplines. This article presents an analysis of the advantages and disadvantages of utilizing these digital resources. The survey conducted during the study revealed that the majority of teachers express satisfaction with their work in the college setting but highlight the inadequate availability of digital tools for educational activities. Additionally, almost two-thirds of the respondents strive to incorporate innovative educational aids into their teaching practices.

[Lui and Bonner \(2016\)](#) demonstrated in his research that e-learning has mitigated the obstacles linked to education in specific scenarios. E-learning possesses the capacity to enhance education and provide support. Unlike traditional learning, electronic learning lacks the structure, advantages, and disadvantages. Moreover, it presents a flexible approach from the instructors' standpoint. If the information and communication technology infrastructure is appropriate, it can enhance the circumstances of electronic education. Additionally, this system, via learning management, can be regarded as one of the prominent alternatives in the realm of education. E-learning, in this particular instance, has the potential to reshape the future preferences of the education market. This mode of learning is typically influenced by infrastructure.

Thus, drawing upon the conclusions of prior research and recognizing the significance of establishing a suitable framework for the professional competency of educators in the domain of e-learning, the present study has been conducted with the objective of identifying an appropriate model for the professional competency of teachers in a qualitative investigation. The provision of electronic learning is the focus of this research endeavor.

Materials and Methods

The current research was conducted qualitatively and phenomenologically. Below is a short description of the purpose and steps of the phenomenological method. Phenomenology is a method that tries to understand a special phenomenon by describing the experience, the conditions of that experience, and the people who live in those conditions. Paying attention to experience and its description is one of the main characteristics of phenomenological research. The process of qualitative analysis in phenomenology has been described using the coding method and based on the opinion of experts. The research population included all specialists of electronic learning

environments in elementary school. These specialists have the following conditions and characteristics:

1. They had at least 10 years of successful teaching and classroom management in the electronic learning environment at the elementary level and were recognized as experts in this field by the administrations of the education and training regions of Qom.
2. The educational qualifications of these specialists were masters and doctorates.
3. These specialists have experience in holding in-service classes in various learning environments, including electronic learning environments.
4. These experts have an ICDL certificate or have completed an electronic skills course in their studies.

The sample was selected based on the purposeful method and using the information received from the education departments of Qom city. The sample size of the qualitative part depends on the theoretical saturation of the concepts, and based on this, 12 experts from the three regions of Qom (4 East, 4 Central, and 4 West) entered the survey process. The specifications of the participating experts are presented in Table 1.

Table 1. Profile of experts participating in the research

| Id | Field of Study | Education level | Job | Genser | Age | E-instruction experience |
|-----------|------------------------|------------------------|---------------------|---------------|------------|---------------------------------|
| 1 | Educational technology | Doctorate | Teacher / professor | Male | 46 | 12 years |
| 2 | Educational technology | Doctorate | Teacher / professor | Male | 43 | 11 years |
| 3 | Education Management | Doctorate | Teacher | Female | 45 | 10 years |
| 4 | Education Management | Doctorate | Teacher | Female | 38 | 12 years |
| 5 | Education Management | Doctorate | Teacher / professor | Male | 44 | 12 years |
| 6 | Education Management | Doctorate | Teacher | Female | 41 | 10 years |
| 7 | Education Management | Doctorate | Teacher | Male | 39 | 10 years |
| 8 | Elementary Education | Masters | Teacher | Female | 34 | 10 years |
| 9 | Elementary Education | Masters | Teacher | Female | 38 | 12 years |
| 10 | Elementary Education | Masters | Teacher | Male | 42 | 11 years |
| 11 | Educational Psychology | Doctorate | Teacher / professor | Male | 45 | 14 years |
| 12 | Educational Psychology | Doctorate | Teacher / professor | Male | 34 | 12 years |

A semi-structured interview was used to collect data, and the opinions of the panel of experts were obtained through face-to-face questions. First, the interviews were conducted on paper and coding and data analysis were done based on open, central and selective coding. It was also tried to consider four criteria for measuring qualitative data and analyzing them, i.e. reliability, believability, verifiability and transferability. In this phase of the research, the researchers tried to carefully avoid any kind of bias in the data collection process. In order to verify the content, after categorizing the content, the researchers referred to the talks of experts several times. Also, in order to validate the data, after conducting the interviews and extracting the data and coding them, each person was again referred to and their agreement with the researcher's interpretation of the material was checked, and possible ambiguous materials were examined, and in this way, the confirmation and approval of the experts was obtained.

Results

The participants were 12 specialists in the field of elementary education specialists, each of whom had more than 10 years of work experience and worked in different areas of Qom city (4 people in the east, 4 people in the center, and 4 people in the west). These experts have provided their expert opinions based on the questions raised in the semi-structured interview to the interviewers of this research and finally, after open, central and selective coding, the general model of teachers' professional competencies in the electronic learning environment was obtained. To answer the research question, the interviews of experts were reviewed and the initial codes, which are the components of the model of teachers' professional competencies in the electronic learning environment, were extracted.

Based on this and in 12 interviews, 47 primary codes were extracted. Therefore, the experts participating in this research proposed 47 components to build a teacher's competency model in the e-learning environment. Based on the study of written sources in the field of teachers' professional competences in the electronic learning environment, the primary codes were classified into subclasses and final classes. Table 2 shows the relationship between primary codes, subclasses and final classes.

Table 2. Relationship between primary codes, subclasses and final classes

| Primary codes | Subcategories | Categories |
|---|---|-------------|
| Order at the beginning and end of classes | work commitment | Ethical |
| Preparation before the start of the class | | |
| Maximum effort in the direction of quality | | |
| Non-publishing of students' registered information | Adherence to the principle of confidentiality | |
| Providing evaluation results to the student | | |
| Proper coverage | Adherence to values | |
| Manners of speaking | | |
| Honoring celebrities in the field of education technology | | |
| Preference for group activities | The value of the group | Social |
| Friendly groupings during training | | |
| Creating homogeneous groups | | |
| Answering students' specialized questions | Support | |
| Effective communication with parents | | |
| Using the most up-to-date communication programs | Facilitation | |
| Choosing the right hardware | | |
| Choosing the right communication network | | |
| Asking information technology experts to improve the quality of the electronic learning environment | Communication with experts | |
| The presence of information technology experts in the classroom | | |
| Refer to books and websites of information technology specialists | | |
| Design assignments in different types of technology | Appropriate homework design | Educational |
| Using different sources in designing assignments | | |
| Assignment design with automatic and instant correction | | |
| Having a teaching schedule | Educational Planning | |
| Having a suitable lesson plan | | |

| | | |
|--|---|-----------------------|
| | | |
| Using student-centered educational strategies | Applying appropriate educational strategies | |
| Using strategies that the teacher considers to be facilitators | | |
| Using metacognitive strategies | | |
| Using appropriate colors and themes in content production | Expertise in content editing and presentation | |
| Choosing content suitable for students' cognitive level | | |
| Having knowledge of content production | | |
| Use the right software to provide content | | |
| Studying new theories of electronic learning | Using electronic learning theories | |
| Studying current scientific articles in the field of electronic learning environment | | |
| Integration of e-learning theories | | |
| Gender differences | Attention to individual differences | Individual |
| Difference in type of intelligence | | |
| The difference in intelligence | | |
| Playing fun audio-visual fables during breaks | Motivate students | |
| Using individual and group incentives appropriate to the electronic learning environment | | |
| Attention to the risk of emotional disorders | Attention to psychological injuries | |
| Attention to the risk of personality disorders | | |
| Continuous participation in the in-service class | Participation in in-service classes | Academic-professional |
| Participating in in-service exams for teachers | | |
| Participation in tests to improve the level of electronic literacy | Improving the scientific and academic level | |
| Studying in university environments | | |
| Obtaining scientific degrees in information technology fields | | |

According to Table 2, out of 47 primary codes, 17 subclasses and 5 final (main) classes were obtained. Based on this, the competency model of teachers in the e-learning environment is presented in Figure 1.

| | |
|------------------------------|---|
| Ethical | Work commitment |
| | Adherence to the principle of confidentiality |
| | Adherence to values |
| Social | The value of the group |
| | Support |
| | Facilitation |
| | Communication with experts |
| Educational | Appropriate homework design |
| | Educational Planning |
| | Applying appropriate educational strategies |
| | Expertise in content editing and presentation |
| | Using electronic learning theories |
| | Attention to individual differences |
| Individual | Motivate students |
| | Attention to psychological injuries |
| Academic-professional | Participation in in-service classes |
| | Improving the scientific and academic level |

Fig. 1. The model of teachers' professional competence in the e-learning environment

When we talk about a pattern, we mean an interconnected set that, although the components may not have a purposeful function individually, but together with the other components, they form a completely purposeful process. Here, the professional competency model of teachers is focused on the process that if teachers' pay attention to in the e-learning environment, they can significantly increase their capabilities, skills and overall performance. The present model in five different and of course interrelated dimensions paves the way for a teacher's specialized activities in the electronic classroom environment.

Discussion

In the present investigation, an endeavor was made to provide an elucidation regarding the characteristics that constitute an appropriate model for the professional competence of educators within the electronic learning milieu. To achieve this objective, specialists in primary education and educational technology were interviewed, resulting in the extraction of 47 primary codes from their interviews. These codes were regarded as partial components of the teachers' competence model in the electronic learning environment. In order to construct the classes and sub-classes of the model, assistance was sought from written research and scholarly sources. Utilizing 23 sources, a total of 17 sub-classes and 5 final classes were delineated for the research model. Consequently, the social dimension encompassed 4 subcategories, the educational dimension comprised 5 subcategories, the individual dimension contained 3 subcategories, the moral dimension consisted of 3 subcategories, and finally, the educational-occupational dimension comprised 2 subcategories. The findings obtained from the present study were in alignment with the research conducted by [Ahmadipour et al. \(2021\)](#), [Mirahmadi et al. \(2019\)](#), [Niksirat \(2023\)](#) and [Tsarapkina et al. \(2021\)](#).

For educators, professional competence within an e-learning environment denotes the necessity to not only possess the ability to utilize technology but also to consider its application within the realm of education and its potential impact on student learning in specific contexts ([Sanders & George, 2017](#)). Numerous researchers have explored the professional competence of teachers within the e-learning environment from diverse theoretical and methodological standpoints. The

findings reveal a gamut of shortcomings in the electronic professional competence of teachers operating at various levels within the educational system. Studies conducted within higher education research have shed light on these deficiencies in relation to the preparation of student teachers for teaching with digital technology ([Spante et al., 2018](#)). [Søby \(2015\)](#) posits that educational research has increasingly focused on e-competence, thus rendering it a common area of investigation within research and policy formulation. Based on this, it is evident that the professional competencies of teachers within the e-learning environment transcend a specific domain, necessitating exploration from various scientific fields.

Given that the current research was conducted in a qualitative manner, it is not feasible to extrapolate the findings to other samples. Consequently, it is recommended that future studies quantitatively examine the model presented in this study using alternative methods of validity measurement. Furthermore, researchers are advised to investigate the relationship between teachers' professional competencies within the e-learning environment and other educational and motivational structures within samples of teachers and students in forthcoming studies.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee of Islamic Azad University.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection and analysis. The author contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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