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Identification of e-Learning Components in General Offices of Environment of Northeast of Iran

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Abstract

Context: E-learning on how to deal with the environment has a significant impact on strengthening the environmental culture and achieving the goals of sustainable development. The current study aimed at identifying e-learning components in general offices of environment of Northeast of Iran.
Methods: The current qualitative study was conducted on 18 elite staff from general offices of environment of Northeast of Iran by purposive sampling until data saturation in 2016. Data were obtained through semi-structured interviews, the effective factors of e-learning components were identified, and then they were categorized and placed in the subtheme and main theme.
Results: The results of decoding and analyzing the content of the theme showed that the causative factors (design, implementation, evaluation, human factors, and management) and the underlying factors (learning culture, context, educational environment, and technology infrastructure) and environmental factors (structure and policies of education and technological culture) as factors influencing the identification of e-learning components by interviewees in the general offices of environment of Northeast of Iran.
Conclusions: The identification of the components of e-learning by environmental elites can lead to the localization of an e-learning model. Results of the current study indicated that more attention should be shifted by the general offices of environment from the traditional method to e-learning. Since the application of these methods can be considered as a learning complement by providing a positive experience and a long lasting and deep learning.

Keywords: Learning, Environment, Interview

1. Background

Education is the most fundamental method to protect the environment. It aims at finding the most suitable and best practices and methods to implement the contents, activities, and structures leading to promote the environmental awareness at the community level (1).

E-learning should be employed to promote the spirit of public participation to protect the environment, raise public awareness, and change beliefs and attitudes required in relation to environmental protection (2).

The employment of information and communication technology (ICT), especially virtual education, can solve many of the obstacles and problems of traditional teaching practices including the reduction of the hours of attendance at work and disrupting work schedules, and time and space constraints, and also paving the way for the emergence of new methods of e-learning for human resources (3).

In the meantime, educational organizations are trying to find suitable and effective ways to accelerate the process. The interaction between learners and phenomena is accomplished by self-learning through the rehabilitation of real experiences and technological prototyping (4).

In general, the goal of e-learning is to provide the same, free and searchable access to courses, create a uniform educational environment for different people at every place, and optimize the ways in which the content of the course material can be learned deeply (5).

Using e-learning in the field of the environment or any other educational field, learners around the world can communicate and discuss points through the network (6).

Electronic teaching in Iran is a new industry in teaching and distance education technology; however, institutions and teaching centers, especially universities, try to provide suitable patterns with educational and cultural structures in the field of electronic teaching (7).

The studies on online learning deal with factors such

as appropriate contents of online learning (8, 9), teaching strategies including learning control and feedback (10, 11), and technical support (12, 13). According to the theoretical fundamentals, three categories including 1, content-related factors; 2, feedback-related factors; and 3, service-related factors may influence the users' ease of learning (14).

The lack of human resources and equipment, the failure of managers and staff to enter this area, and the lack of educational follow-up and evaluation criteria are among the most important barriers faced by organizations to use virtual education (15).

Passing through the industrial age to the information age obliges the organizations to change step-by-step and in line with society, the governmental offices are not exceptions. In this age, knowledge and learning are distributed and it can happen synchronously and asynchronously (16).

Khoshnoodifar et al. (17) studied the role of ICT in the process of environmental education. According to the findings of the study on the effect of e-learning on increasing the efficiency and impact of environmental education, it is essential to develop the environmental education using new technologies through e-learning.

Bagheri Majd et al. (18) studied and designed the pedagogical readiness model in the virtual education system. Results indicated that factors such method of designing, analysis of goals, media analysis, learner analysis and content analysis, principles, technology, evaluation tools, and virtual quality should be presented in the findings as a descriptive model.

Capacho (19) presented a model of learning process in the electronic space in Turkey. The results indicated that to create a model in the electronic environment, electronic activities are needed.

Arkorfoul et al. (20) investigated the role of e-learning in progress and rejection of it in Ghana. The results indicated that the topic of using modern ICTs is very important in higher education institutions.

Madar et al. (21) provided a model to implement e-learning. The results indicated that e-learning is effective with the use of information technology (IT) in teaching and learning. In their article, they used the funnel model to provide a solution to solve the problems of implementing e-learning in higher education institutions. This model avoids jeopardizing educational quality.

Regarding the stated issues, the current study aimed at identifying the components of e-learning in the NOCs of the entire country?

2. Methods

The current qualitative study with content analysis methodology was conducted in general offices of environment of Northeast of Iran. The subjects were selected in a purposeful manner and the participants were invited. Interview questions were answered in the form of responses based on the interview guide. If needed, explorations were provided to resolve ambiguities and deepen the responses. The analysis was started after the first interview, and the coding and categorization tasks were started after four interviews. This helped the researchers to design other questions and direct the study path; 22 e-learning elites were selected through purposeful sampling; 18 subjects went through the semi-structured interviews. Regarding the observance of ethics in research, the objectives and method of the study were explained to the subjects and they were assured about the confidentiality of information and their identity as well. These interviews were in terms of knowledge, work experience, managerial competence, and cooperation in the research fields and they were conducted until data saturation. In addition, four subjects were not interviewed due to their unwillingness.

Qualitative content analysis method was used to analyze the data. In this method systematic categorization process, codes and classes are directly extracted from the raw data.

In this method, the primary codes are extracted from the semantic units, and then the codes are divided into subthemes based on the similarities and differences and then the subthemes are divided into abstract classes and key concepts.

Therefore, the main concept of meaningful sentences was extracted in code form, and the code categorization was started. The codes with the same concept were categorized and named together. With each new interview, new themes could be revised, even merged or new classes created. Then, with the supervision of an experienced observer in the analysis of qualitative data, the categorization and naming the themes were reviewed. By forming the categorization, the main themes of the study were extracted and relationships between classes were identified (22).

To obtain the validity of the study- the accuracy of the findings from the viewpoint of the researcher-it was reviewed by six e-learning elites, supervisors, and consultants.

3. Results

In the current study, 18 environmental elites (six from general offices of environment of North Khorasan province, six from general offices of environment of Razavi

Khorasan province, and six from general offices of environment of South Khorasan province) were recruited, three were female and 15 male. Their age range was 28 to 48 years and their work experiences were 15 to 28 years.

Interviewee No. 1) to identify the components of e-learning, a need assessment at the level of the general office is needed. The appropriate infrastructures such as the Internet, computer, etc., should be provided, then appropriate educational content should be provided in cooperation with the faculty members and environmental elites with sufficient knowledge in this field; the staff's e-literacy and motivation should be increased; the contribution of management in terms of creating e-learning is the key to success of the project (Ms. T, 45 years old).

This interviewee refers to the causal factors (training needs, content creation, employee motivation, management contribution) and underlying factors (IT infrastructures such as the internet)

(Interviewee No. 2). To identify the components of e-learning, policy-making at the macro level in the ministry is required. The training policies of the general offices are provided by the ministries. Management as the person implementing this policy cooperates with the personnel; the staff's electronic literacy should be increased by sending them to informatics classes; IT infrastructure (software and hardware) should be created; educational content should be designed to fulfill the needs of all personnel (Mr. P, 35 years).

This interviewee referred to the causal factors (management contribution, motivation, training needs, content creation) and underlying factors (technological infrastructures such as the Internet, hardware and software) and environmental factors (educational policy) (Interviewee No. 3). To identify the components of e-learning, an operational team should be formed to implement the objectives of the management of the General Office; technological infrastructures and educational content are the basic needs that should be met to assess the educational needs; educational policy-making at the ministry level should be communique in order to be operational; the staff should pass computer and internet training courses; an e-learning culture should be created in the departments and managers should provide the staff with mental and financial incentives; the experiences of staff with the related backgrounds should be used, and university professors should provide educational and teaching content; basic tools for e-learning should be provided such as computers and the internet, and training on how to use chat rooms and videoconferencing (Mr. S, 43 years).

This interviewee referred to the causal factors (contribution of management team, educational needs assessment, creation of educational content, use of elites for teaching, financial incentives, e-literacy of staff) and underlying factors (e-learning culture, creation of a suitable platform for the development of e-learning, IT infrastructure) and environmental factors (e-learning policy from high levels, technology acceptance in an organization, technology use culture).

After conducting the interviews, in the open coding phase, they were categorized in a row in terms of examination, conceptualization, categorization, and then by similarity, conceptual relation, and common characteristics. The number of obtained codes was defined as initial conceptual statements based on the supplementary file Appendix 1. In the coding phase, 93 initial conceptual statements were identified.

Regarding the phase-by-phase analysis, it should be noted that first, by separating the text of the interview into message elements inside the lines or paragraphs, attempts were made to extract the codes, and in the next phase, the concepts were placed in the form of larger themes according to Table 1.

In the second phase, which is axial coding, the themes are categorized in the form of large writings according to Table 2.

4. Discussion and Conclusion

The current study mainly aimed at identifying the factors affecting e-learning components in general offices of environment of Northeast of Iran. Based on the results of the interviews, 93 preliminary statements were identified. Then, in the coding step, seven main categories and 42 subcategories were obtained. The components of e-learning included causal factors, underlying factors, and environmental factors

One of the components of causal factors was, design, implementation and evaluation. In this regard, the results of the current study were consistent with those of Bagheri Majd et al. (18), dealing with exploratory and content analysis of factors such as learner design and analysis. The results of the analysis of the content of the interviews on the causal factors such as the design of the site and the page, content design, design of the diagram, etc., were described as identifiers of the e-learning components and were consistent with the above study results.

Another component of causal factors was human factors. In this regard, the results of the current study were consistent with those of the castles (23) reporting that the motivation of users was an important factor in e-learning. In this regard, the results of the current study were also consistent with those of Al-Shboul (24) stating that e-learning affected learners improvement and training the new methods of information management. Also,

Table 1. The Axial Coding Phase: 7 Main Theme Propositions and 42 Subthemes

Dimensions	Components	Secondary Concepts
Causal factors	Design, implementation and evaluation	Teaching method and educational method
		Content production
		Training needs assessment
		Designing and managing educational interactions
		Mediator design and valuation management
	Human factors	Attitude, knowledge, and ability
		Human factors including teachers and staff, managers, and specialist personnel
		Teaching skills and experience in e-learning system
		Motivation and human communications
		Scientific motivation, employees desire in learning, motivation of the system's employees
		Organizational support, management, and leadership
	Management	Organizational support and protection, services, financial, moral, educational and technical support (hardware and software), online and offline resources, consulting services for employees
		Organizational factors: administrative affairs, educational affairs, educational, and organizational affairs
		Personnel management and leadership, management team, process management, content, maintenance and distribution, management stability, and emphasis on processes and systems
Underlying factors	Learning culture	Beliefs, values, and norms among employees
		Learning experiences of staff members in the organization
		A model of shared thoughts and beliefs to achieve e-learning
		Behavior formation and evaluation of employee learning
	Substance and training environment	Requirements for e-Learning in the organization training system
		Preparation required for the instructors, structure, employees and apace, cultural and social context.
		Considering conditions, requirements and different features of each organization, differences of goals and expectations in the organizations
	Technology infrastructure	Requirements to establish e-learning with the quality of telecommunications infrastructure
		Broadband and high speed internet, internet penetration, hardware, software (movies, sounds, texts, etc.)
		Infrastructure for interacting via the internet, the necessary data bases for electronic learning
		Strong tools and abilities to completely eliminate physical presence such as information board
Environmental factors	Educational policies	Use the experiences of other organizations
		The formation of a virtual consortium
		Long-term investment in e-learning organizations
		Specialized oversight of the organization, technological culture, accepting technology in one country and a true understanding of teaching and the need for it
		Conservation educational organizations for technology entry
		Internet application culture and IT
		Attitude of authorities towards the internet

in this context, the results of the current study were consistent with those of Holder (25), Ivankova and Stick (26), and Muller (27) stating that inability to use internet and manage files was one of the causes that the users left e-learning environment.

Also, the results of the study by Shaeidi (28) were not consistent with those of the current study, since they believed that virtual employees that are far from each other should share specific features to be affected by a virtual environment. But, the current study stated that scientific motivation and the passion for learning were features created in users that can motivate, communicate, and use other users' experiences without requiring specific features in e-learning environments.

One of the components of the causal factors was management. In this regard, the results of the current study were consistent with those of Eke (29) arguing the tendency to e-learning through e-learning and its usefulness.

One of the components of the underlying factors, the context, and training environment was the technology infrastructure. In this regard, the results of the current study were consistent with the those of Khoshnoodifar et al. (17), Madar and Willis (21), Capachu (19), and Arkorfoul et al. (20), stating that ICT played an important role in achiev-

Table 2. The Results of the Content Analysis of Interviews and Open Coding, the Concepts, and Sub-theme in the Creation of Education

The Main Concept	Concepts
Causal factors	Website and page design, content design, diagram design, availability, usability test
	Training needs assessment
	Learning assessment, evaluation of learning, and teaching environment
	The main human factors include instructors and staff, managers, and personnel
	Teaching skills and experiences in the e-Learning system
	Motivation and human communication
	Scientific motivation, willingness to teach employees, motivation of the system's employees
	E-learning and interest in research and extracurricular activities
	Compilations of e-learning content
	Maintaining e-learning content
	Resource support
	Online support
	Resources
Underlying factors	Social and political influence, cultural diversity, geographic variation, inclusive diversity, etiquette, and legal issues
	Management affairs, scientific affairs, and employee services
	Readiness for the instructors, employees and space, and cultural and social context
	Considering conditions, different requirements and facilities of each organization, differences of goals, and expectations from organizations
	Requirements and facilities for e-learning with high quality telecommunication infrastructure
	Bandwidth and high speed internet, internet penetration, hardware, and software (movies, sounds, texts, etc.)
	Online databases for e-learning.
	Strong tools and abilities to completely remove physical presence such as bulletin board
Environmental factors	Content analysis, audience analysis, goal analysis, media analysis, organizing the methods, infrastructure planning, hardware and software

ing e-learning goals. Also, the results of the current study were consistent with those of Pigliapoco and Bogliolo (30) and Bocchi et al. (31) stating that the quality of technology, internet, and the scientific environment in which the user operates significantly contribute to effective learning. Also consistent with lip Sam's (32) studies, who stated that e-learning is included of a broad range of strategies and technologies, including the use of video conferencing, educational CD, and live correspondence.

Results of the study by Ashna et al. (33) were not consistent with those of the current study, since they believed that it was not possible to interact with friends and get help when faced with potential problems in e-learning. But, the current study stated that a pattern of common ideas and beliefs for e-learning is created between learners.

One of the components of environmental factors, educational policies, was technology acceptance. In this regard, the results of the current study were consistent with those of the study by Sun et al. (34) stating that e-learning fails unless factors such as technology and the environment in which the user works are properly provided.

Similarly, results of the studies by Ruiz et al. (35), Tutunea et al. (36), and Vaughan et al. (37) were not consistent with those of the current study; since they believed that e-learning should be applied complementary with other methods, but educational policies in the current study recommend the application of e-learning. The explosion of information and the development of communications in this age range created a huge transformation in organizations, and traditional education alone does not meet the needs of organizations in this fast-paced era.

Therefore, according to the results of interviews with environmental elites and the consistency of this research with some of the other researchers, it can be said that identifying the components of e-learning in Northeast general offices of environment of Iran depends on the correct identification of the causal, underlying, and environmental factors in these offices.

Elaboration of codified and defined e-learning programs for the environment and the employment of e-

learning tools such as computers, the internet, multimedia discs, electronic publications, electronic newsletters, or the formation of electronic classes and distance learning, self-study etc., can significantly contribute to the educational objectives of the environmental education, but this approach only depends on the ability of employees to use the electronic tools and the staff familiarity with computer and its related issues, the capacity of communications and telecommunication infrastructures, changing the attitudes of different people in the cultural, social and economic fields to use the internet. Therefore, the implementation of such programs requires the complete elimination of deficiencies. The current study had some limitations. The difficulty to access the managers to conduct interviews, given that the current study was conducted in three general environmental offices of the provinces: Khorasan Razavi, North Khorasan, and South Khorasan provinces. Most of the studies on e-learning are conducted at universities, and few studies are conducted in governmental organizations; therefore, the current study encountered limitations in using information. There are no institutes in the country to provide the results of researches of government organizations that successfully implement e-learning and had the necessary educational standards of the Ministry of Science. Based on the limitations, some suggestions were made; given the fact that the current study was conducted at the three general offices of the environment, it is recommended that other more comprehensive studies be conducted in this field to achieve a comprehensive e-learning model nationwide. Cultural setting should prepared for e-learning workshops, seminars should be held on e-learning in the organization for the staff, senior executives of organizations should develop effective visions and strategies and implement e-learning based on human resource education and developmental strategies.

Since no studies were conducted nationwide on the application of e-learning in the governmental organizations and offices, the current study was the first in the field of environmental offices in the Northeast of the country.

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

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Footnotes

Authors' Contribution: Study concept, design, and critical revision of the manuscript for important intellectual content were developed by the authors who participated through the overall process.

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