Research Article

Factors Creating an Educational Atmosphere in Cyberspace: A Qualitative Study

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Abstract

Background: Because of the developments and advancements in information technology (IT), unparalleled opportunities have been provided in electronic arenas; among them, electronic learning (e-learning) systems have brought attention to the facilitation of education. Since educational environment is a factor influencing the success of educational programs, the current study aims at evaluating the factors that create the educational atmosphere in cyberspace.

Methods: The current study employed a qualitative content analysis approach and a targeted sampling method. A total of 11 students and 13 faculty members were recruited by a semi-structured interview in 2015. The interviews were continued separately for both students and lecturers up to the saturation of sample size. After the interview data were qualitatively analyzed.

Results: After the data analysis, 685 codes were extracted out of the qualitative data, which were reevaluated in several stages and classified into 38 subcategories. Then, 13 categories and 6 domains (The status of virtual education, learner support, teaching skills, evaluation, professionalism and professional ethics, and self-efficacy) were created.

Conclusions: Since the educational environment is an inseparable part of a curriculum, the factors creating an educational atmosphere in cyberspace are critically important and necessary for the qualitative and quantitative evaluations of the curriculum and prediction of educational outcomes.

Keywords: Educational Atmosphere, Cyberspace, Qualitative Study, Content Analysis

1. Background

According to the definition from the Iranian technical standards committee, an electronic learning (e-learning) system is a type of educational technology that uses a web search engine as a tool to interact with other learners; such systems are used in order to facilitate the learning and teaching process (1). Today, e-learning was subjected to change in higher education while also changing the former concept of learning as a new model of modern education. E-learning development provides new virtual facilities for learning and can compensate for the weaknesses of traditional learning methods (2).

Some of the advantages e-learning compared with those of traditional learning are the learners' good control over educational contents, regulation of learning, time, place, and different learning styles. In addition, e-learning improves the quality of the availability of education materials by providing access to important e-learning databases (3, 4). In this regard, virtual learning environment were designed to promote education and learning. E-learning is becoming more prevalent every day through advancements in technology that provides different educational tools and facilities and also makes educational materials, notifications, contacts, tasks, participation in discussions, teamwork, and quizzes more accessible (2).

In fact, the educational environment influences the success of curricula and its quality was introduced as a factor that affects the learning process and outcomes (5-7). The educational environment also affects personal behavior and its components are associated with academic achievement and satisfaction with educational courses (5). The educational atmosphere in the current study is the perception of students about such environment. The experience of students with regard to educational atmosphere is associated with their educational achievements alongside satisfaction and success. An evaluation of educational atmosphere depends on different components including faculty, students, admission policies, registration procedures, and environmental or physical elements (8).

Previous studies indicated a significant association between social, emotional, motivational aspects of educational environments, and some skills and abilities of medical students. In addition, the physical properties of educational environments influence the learning experience and educational achievements of the students (9). Another study provided a platform to understand the quality of e-learning courses; the quality of e-learning was accordingly associated with 6 interdependent and interrelated domains: curriculum design, educational designs, teaching and facilitating the process of education, learning experience, and course offerings (10). A study by Welch et al. indicated that matched students, self-esteem, motivation, and a feeling of belonging, as socio-physiological aspects, can affect the educational environment (11). Additionally, in a study by Chang et al. a new platform using supportive technology for a learning environment was provided for educational design and evaluation of learning environments; the platform included technical, content, cognitive, metacognitive, social, and emotional issues. Within each category, the study further discussed specific questions, including applicability in the technical aspect, relevance in the content category, research-oriented learning in the cognitive category, independence of students within metacognition, and supports by the lecturer in social dimension (12).

The learner support system, including cognitive, emotional, and systematic arenas, has great importance in cyberspace (13). Students feel more loneliness and have a lower feeling of belonging in cyberspace; this is the major reason that reduces the tendency of students to learn in such spaces (14). Hence, consulting and advising students on family, social, personal, and educational issues prevents their dropouts and academic failure (15). In addition, creating interactions is one of the most important indices in e-learning. Students need different types of interaction, including interaction with their peers and teachers (16). In this regard, teachers can promote students' motivation and learning; for example, they can start online classes or forums covering challenging issues and use the so-called warm-up method to promote their students' completion of their tasks (17).

Intellectual property rights, as well as cultural issues and social customs, are the other issues raised in cyberspaces (18). Different studies have shown that the learning environment is a changeable environment that can directly influence emotional and cognitive outcomes. In an educational space, the learner is in continuous interaction with a set of variables including teachers, peers, physical property, educational materials, etc., provided for different types of learners (19). Based on the findings from this type of study, the current study aimed at evaluating the factors that create an educational atmosphere in cyberspace.

2. Methods

The current study employed a directional, qualitative, and content analysis approach. The population under study included the students that entered in fall 2013 and 2014 in Medical library and Information sciences, E-learning planning in medical sciences, medical education, drug quality assurance, and master of public health (MPH) as well as the faculty members of Tehran University of Medical Sciences, Tehran, Iran, who taught at one of the affiliated virtual faculties. The inclusion criteria for the students were that they passed at least one semester in the virtual education system and had a willingness to participate in the study; the inclusion criteria for the faculty members were at least one year teaching experience in the virtual education system and a willingness to participate in the study.

After obtaining permission and explaining the study aims and objectives to the participants, a semi-structured interview was conducted and recorded. The individual interviews with students and lecturers were continued up to the saturation of sample size. In total, 11 students and 13 lecturers were recruited. Interviews were performed face-to-face at the appointed times, and each lasted an average of 30 minutes.

According to the objectives of the study, the interviews were started with the following questions: "In your opinion, what features of cyberspace make it suitable for learning? How should cyberspace be structured so that students feel comfortable with it? How should a lecturer behave in cyberspace so that students feel safe and comfortable? What are your experiences with learning in cyberspace?" Each interview was transcribed and codified. Data were codified in separate meaningful units ranging from 1 to 685 using the open coding method (20). First, interviews were transcribed, and then, data were expressed; both interviews and transcription were confidentially maintained by the author.

The content analysis introduction, data reduction, use of a classification system, modification of a data-based classification system, and reporting from qualitative data were used for qualitative data analysis according to Krippendorff's method (21). To analyze data, a sentence was first considered as an analytical unit, and similar texts and repetitions were removed to shrink the data. Then, the extracted codes were classified and categorized properly into subclasses. In the next step, modifications were performed, and some unnecessary and irrelevant codes were removed. In the final step, a report was set and the content of the categories was expressed.

In a qualitative study, the researcher should be assured of the credibility, confirmability, and transferability of the data (22). The data and findings of qualitative research should be acceptable; this is only possible via the collection of actual data, which can be met by data immersion. After data immersion„ two samples of data contents were given to two lecturers to codify the data; the codified data were then compared. In the next step, biases were found, and enough time was allocated for data analysis. In addition, a good relationship with an intimate and reliable atmosphere was fostered between the interviewer and subjects throughout the study; the participants were also assured of the confidentiality of their data and the inclusion criteria were set in such a way to enroll informed and experienced subjects. Then, the codes extracted from both interviews were given to the participants to be approved by them. The researcher, as an external evaluator, tried not to involve his opinions in the data analysis procedure. In addition, a detailed report from all study stages, including data collection, analysis, and content creation, was provided in order to validate the data. The researcher tried to increase the transferability and fitness of the data by providing accurate information about participants, the environment, and context of study.

3. Results

The 13 faculty members enrolled in the current study held academic rankings of assistant professor, associate professor, and professor; they were from the Social Medicine, Medical Education, E-learning Planning in Medical sciences, Medical library and Information sciences, English language, Information and Knowledge of science, pharmacoeconomics and pharmaceutical administration, and drug and food control departments. The 11 students who participated in the study were from E-learning planning in medical sciences, Medical Library and Information sciences, drug quality assurance, and master of public health, and they were in masters, PhD, and MPH programs.

After the analysis of interviews, 685 codes were extracted from the qualitative data and accordingly re-evaluated in several steps; overlapping contents were integrated and categorized into 38 subcategory. In the next step, codes were re-evaluated and, based on their similarities and repetitions, 13 Category and 6 domains (themes) were extracted, and a specific term was given to each theme. Domains, Category, and subcategory that resulted from the content analysis of interviews are shown in Table 1.

4. Discussion and Conclusion

The current study aimed to find factors that create an educational environment in cyberspace. The main identified components were the status of virtual learning, learners' support, teaching skills, evaluation, professionalism and professional ethics, and self-efficacy.

The status of virtual learning was the first component obtained in the current study, which mainly focused on the validity and value of virtual learning as well as the legal status of an institution of virtual education. To the authors' best knowledge, no study noted this component so far. Owing to the establishment of virtual learning places in Iran during the recent years, the legal status of such institutions is of great importance for the students. For instance, the students may want to know about the national and international validity and recognized qualification of a degree awarded from such places.

Supporting learners requires 3 classes of systemic, cognitive, and emotional supports (23); however, in studies by Fraser and Walker (24), and Clayton (25) only the support from the teacher was mentioned. In the suggested model, the student services processed in distance learning includes the following factors: environmental management, support and a feeling of belonging, consultation, educational support, teacher support, library services, and rehabilitation services (26). On the other hand, owing to the absence of or minimal face-to-face communication and lack of presence in the classroom, learner support in the virtual education system is of great importance.

Teaching skills also includes virtual teaching skills, and skills for preparing resources and contents. In a study by Trinidad et al. only the category of reliable learning was indicated in this component (27); in a study by Walker and Fraser, however, indices of interaction and cooperation of students as well as learning and learning activities were also included (24). Preparing contents, doing learning activities, and giving feedback timely and properly are among teachers' duties (16). Giving feedback is a very important factor in virtual education since it provides the teacher with the possibility to monitor and improve the performance of students (28). In addition, interaction is a key factor in e-learning. Students need different types of interaction including interaction with teachers and peers, as well as interaction with contents and references (16). Hence, different types of interaction such as internet forums, online classrooms, and so forth, seem necessary. "Different learning styles" is another important domain in this regard. Since the lecturer is in some sense an educational designer, he/she should consider the different interests of the students and provide educational content in various formats.

Evaluation, in fact, refers to the evaluation of students by the lecturer as well as the evaluation of the lecturer and the educational system by the students. Evaluation is an essential element in teaching and learning. In e-learning, the students are also evaluated by their teachers by means of different tests and given feedback on tasks and projects. The teacher may also ask students to evaluate themselves as well as their peers, which in turn promotes and increases interaction and cooperation among the students (29). Evaluation of educational services provided to the student is a domain in which admission, notification of provided services, and so forth, should be assessed regularly in order to give feedback to university authorities to address and overcome weaknesses and garner students' satisfaction.

Professionalism and professional ethics is a domain that includes two classes of respecting intellectual property rights and observing cultural issues and social customs in cyberspace. One of the greatest concerns in cyberspace is intellectual property rights. Hence, the copyright in uploading references and content should be obtained. In addition, respecting the privacy of other people, and being honest and loyal and respecting others' rights, are among other essential ethical codes. On the other hand, cultural, geographic, learner, sociopolitical, and legal and etiquette norms differences are among other ethical issues that should be considered in e-learning (18).

Self-efficacy includes the strengthening of learning abilities, problem solving, and side skills. In studies by Trinidad et al. (27) and Walker et al. (24), personal compliance and adaptability were introduced as a subclass for self-efficacy. Educational self-efficacy is the ability of people to believe in themselves in order to manage their own learning affairs (30). Self-efficacy in cyberspace includes the ability to use the computer, search on the Internet, and take part in synchronous and asynchronous interaction and communication in a learning management system (31). The responsibility of learning in cyberspaces lies with the student. Hence, a student could be successful in an educational environment that strengthens an individual's learning and problem solving skills, and also benefit from high self-efficacy.

To the authors' best knowledge, the teacher support, learning, and learning activities indices, including components of learner support and teaching skills that were indicated in other studies, correspond with the results of the current survey. However, none of the former studies indicated the important role of virtual education, evaluation, professionalism, and professional ethics, and no study included all of the mentioned components. Since significant development has been observed in technology, and such indices were created before the proliferation of

learning management systems (LMS) and mostly focused on distance learning and computer-based education, the applied concept of such indices were relevant to their existing applications. Therefore, it seems that the factors introduced in the current study can better help in the current evaluation of cyberspace. An additional recommendation is to develop a tool to evaluate the educational atmosphere in virtual learning environment to identify their strengths and weaknesses and take necessary actions in order to solve and correct the problems.

Supplementary Material

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

Acknowledgments

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Table 1. Domains, Classes, and Subclasses that Resulted from the Content Analysis of Interviews

Theme	Category	Subcategory
The status of virtual education	The status of the virtual university	The validity of virtual learning
		The legal status of the virtual university
		Accountability and accessibility of university authorities
		Properly notifying the students about the provided services
Learner support	Systemic support	Technical supports
		Transparency of administrative-educational processes
		Enough flexibility in educational-learning processes
		User-friendliness of the LMS*
		Holding academic workshops for different disciplines
		Ability to learn educational side skills such as propagation and work with various software
	Cognitive support	Having a proper virtual library
		Providing contents in different formats
		Accountability and availability of the lecturer
		Providing attractive and motivating contents and references
		Eliminating the feeling of isolation in cyberspace
		Supporting and encouraging top and weak students
	Emotional support	Providing consultation services in education, family, etc.
		Motivating the students
		Students' opinion poll
	Cyberspace teaching skills	Having specific and accessible lesson plans; using different interactive methods such as an internet forum, online classes, etc.
		Receiving feedback from lecturers and students
		Having adequate and updated scientific abilities
		Preparing references and contents

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