A Model of E-learning Readiness of Universities in the Face of Covid 19 Disease (Case: University of Tehran)

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Abstract

The present study aimed at designing a model for e-learning readiness of the University of Tehran in the face of Covid 19 disease. This study was an applied study and was done through a phenomenological method. An open answer questionnaire was distributed among 603 faculty members in 36 faculties of University of Tehran through sending e-mails and also by voice and video calls. Its reliability and validity were calculated by 3 measures and through review by the participants. A model consisting of 8 sub-elements with inductive content analysis and open coding and main categorization was introduced: Development of teaching-learning processes, time management, enrichment of educational content, continuity of education, establishment of educational justice, promotion of social responsibility of the university, continuation and development of e-learning and teaching, improving classroom supervision and evaluation. In other words, the development of e-learning as a new approach in higher education requires the creation of 4 socio-cultural readiness, pedagogical readiness, organizational readiness and technological readiness in conjunction with the revised Bloom model; The combination of these elements in the current situation of universities can be considered as a strategy for learning that is necessary for the continuous improvement of e-learning during the outbreak of Covid 19 pandemic. Therefore, the suggestions of this research can be applied to universities.

Keywords: Covid 19 disease, University of Tehran, E-learning model.

Introduction

The sudden outbreak of the fatal disease known as COVID-19 sent shockwaves across the world, posing significant challenges to education

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systems worldwide. Overnight, teachers had to adapt to online teaching as universities and higher education institutions, including those in Iran, were temporarily shut down (Dhawan, 2020). As a result, approximately 1.5 billion learners globally lost access to physical classrooms. In response to this crisis, many countries, including Iran, recognized the need for electronic learning systems as a viable solution. While the shift to electronic learning systems can be seen as a threat to higher education, it also presents an opportunity in the wake of the fourth industrial revolution and the digital transformation of societies, including universities. Embracing this shift under the current circumstances can pave the way for a successful digital transformation.

The COVID-19 pandemic has significantly influenced people's approach to education, leading to a greater acceptance of e-learning (Dhawan, 2020) and modern learning techniques (Dewan et al., 2019) in educational institutions. While opinions on the effectiveness of these teaching methods vary (Torrau, 2020; Dron, 2018), it is evident that teachers adopting innovative approaches play a vital role in driving transformation.

These novel teaching methods foster innovation and facilitate the integration of new tools and technologies, empowering students to take a more active role in their learning. Additionally, they promote network literacy and provide access to a wealth of free resources. Furthermore, such approaches create pathways for collaborative learning experiences and offer opportunities for professional development (Paskevicius & Irvine, 2019).

E-learning is a learner-centered concept in the context of technology-based education. Tavangarian et al. (2004) describe e-learning as a collection of educational supports that utilize electronic tools to facilitate teaching and learning processes. The aim is to build knowledge based on personal experiences, practice, and the learner's existing knowledge. However, the acquisition of knowledge through e-learning may vary in its depth and extent.

Given the current conditions brought about by the COVID-19 pandemic, Bloom's revised taxonomy emerges as a valuable tool to enhance the quality of e-learning models. Researchers (Castleberry & Brandt, 2016; Köğce et al., 2009; Hubalovsky et al., 2019) have widely adopted Bloom's revised taxonomy to assess and validate the achievement of learning objectives in various stages of the learning process.

The research on e-learning environments reveals different perspectives, particularly in terms of assessment. Several studies have examined learning environments and their assessment, exploring areas such as designing smart learning environments connected to the internet of things (Freigang et al., 2018), distinguishing between smart and non-smart learning environments

and analyzing their dynamic and structural elements (Dron, 2018), investigating the integration of smart tools into learning and teaching in universities (Al-Hamad et al., 2020), and exploring assessment approaches in educational contexts, focusing on the features and benefits of new tools used in learning and the outcomes of employing these approaches (Martens et al., 2019).

The study conducted by Wang & Wu (2008) investigated the impact of effective and timely feedback in e-learning environments, concluding that students who received such feedback demonstrated better performance and higher-quality outcomes. Emphasizing the importance of assessing student learning impact during the learning process (Wang et al., 2019), the research highlights the need for a framework to evaluate and improve e-learning environments systematically. The literature on smart learning environments emphasizes the development of constructs like user-centered design, educational diversity, mixed learning spaces, and facilitation of mixed or blended learning (Freigang et al., 2018).

A smart learning environment comprises smart components (both human and non-human) that cater to individual characteristics and address weaknesses in the learning process through interventions, similar to how physical environment issues are resolved (Dron, 2018). To better understand student behaviors, more refined methods can be utilized in model development (Wang et al., 2019). Consequently, the aim of the present study is to create a comprehensive model for e-learning environments, specifically tailored to support the academic community during the COVID-19 pandemic. The study's focus is on developing a preliminary model for university e-learning systems that higher education institutions can adopt during the current crisis.

Given the challenges of assessing developments during crises, the research adopts a functionalist approach and a new interpretive-symbolic paradigm as part of its methodology. The applied nature of the study allows for predicting expectations and making informed decisions for institutions implementing e-learning processes. Additionally, the research contributes to existing knowledge by providing a more complete and systematic understanding of e-learning readiness. The target audience includes the entire academic community in higher education institutions, making the theoretical and practical solutions relevant and applicable in these settings. Ultimately, the main objective of the article is to propose a model for the E-learning readiness of the University of Tehran in response to the challenges posed by the Covid-19 pandemic.

Methodology

The main objective of the present study is to gain insight into first-hand experiences related to e-learning during the COVID-19 pandemic. To achieve this, a phenomenological approach is used, and interviews are conducted to capture the participants' perspectives without any interpretation or adjustments. The method employed here aims to maintain objectivity, as themes are selected based on what interviewees express during the interviews. This approach ensures that the study is grounded in the participants' authentic viewpoints.

A comprehensive set of data is gathered from 603 interviews, forming a large set of experimental data unique to this study. Personal interpretations and fact-based inductions are then utilized to construct knowledge about e-learning under the current pandemic conditions. This forms the basis for an interpretive paradigm, wherein these interpretations are transformed into a structured framework obtained through interviews with faculty members at the University of Tehran (UT).

Given that the study aims to propose a model for college e-learning strategy during the COVID-19 outbreak, and considering that the UT and other universities worldwide have not previously encountered a pandemic of this scale, interviews serve as a means to identify and discover key components for this model. As emphasized by Bloch (1996: 323), in social research, interviews play a crucial role as a language of dialogue, offering an essential tool for social analysis and providing insights into daily lives and various social and cultural aspects of individuals and society. In this context, the present study employs open coding and categorization techniques to comprehensively explain the issues at hand and develop the proposed model for e-learning in response to the pandemic.

According to Patton (2002), sampling in qualitative research requires the researcher to collect information from as many sources as possible. In this study, the model emerges based on the data presented and the number of interviews conducted. To gather the necessary data, invitations were emailed to all faculty members of UT colleges (n=2000). The invitations were sent to various faculties and departments, including Entrepreneurship, Law and Political Science, Literature and Humanities, Engineering, Economics, Foreign Language and Literature, Agriculture and Natural Resources, Graduate College of Environment, Physical Education, Theology and Islamic Knowledge, Islamic Thinking and Teachings, Social Science, Psychology and Educational Science, Geography, Modern Science and Technology, Veterinary Medicine, Management, Physics, World Studies, Fine Arts, Architecture, Institute of Biochemistry and Biophysics (IBB), Chemical Engineering, Electrical and Computer Engineering, Mechanical

Engineering, Industrial Engineering, Mine Engineering, Geology, Mathematics, Statistics and Computer Science, Surveying Engineering, Caspian College of Engineering, Campus of Science, Farabi Campus, Abu-Reyhan Campus, and Kish International Campus.

A total of 603 faculty members from the mentioned departments and faculties participated in the interviews. Prior to the interviews, the participants completed an informed consent form and a demographic questionnaire. The structured interviews were then conducted through voice calls, video calls, and emails (for collecting remarks and comments). Each interview lasted approximately 20 minutes and mainly centered on the question: "Which e-learning components do you think are important for UT during the COVID-19 pandemic?"

Findings

Based on the findings obtained from the interviews, data analysis revealed four major overlapping themes, listed below in order of their importance: 1) Sociocultural Readiness 2) Pedagogical Readiness 3) Organizational Readiness 4) Technological Readiness.

Main components	Subcomponents	Source
Sociocultural Readiness	enhancing social responsibility in university	The preventing the Outbreak of COVID19
		The implementation of quarantine protocols
		The safeguarding psychological health of the society at the time of crisis
		Meeting the requirements for remote work
		The setting culture for remote work
		To turn national and international threats into constructive opportunities
		the reduced energy consumption
		Reduced pollution and better protection of the environment
		The openness to the culture of e-learning and e-teaching
	establishing educational justice	To lift spatial and temporal restrictions
		The possibility of equal access to educational content
		The less expensive access to education
Pedagogical Readiness	developing learning-teaching processes	To present topics, questions, and assignments in an integrated manner over an interactive system
		The potential, diverse applications of stored knowledge
		The increased diversity of the ways students can be engaged in learning
		The question/answer processes
		The improved processes used in Q/A sessions
		The enhanced learning by reviewing and replaying the videos from e-learning classes
		The systematic access to educational content
		The Student-teacher networking over communication channels

		The systematic documentation and storing of educational content
	enriching educational content	The sharing of additional and diverse educational content
		The simultaneous use of different sources while teaching
		The ongoing process of interactive updating of educational content
		The interactive reviewing and monitoring of educational content
		The diversity in the methods of teaching and knowledge transfer
	continuity of learning	The continuity of learning and teaching in the time of crisis
		The continuous process of learning and teaching on holidays
		Facilitating the organization of makeup/remedial classes under normal conditions
		The maintaining fast and flexible connections with students
Organizational Readiness	continuation and development of e-learning	Improving and enhancing the existing infrastructure based on the feedbacks
		The enhanced e-learning for teachers
		The enhanced e-learning skills among students
		The motivation and increased belief in information and communication technologies
		The reinforcement of autonomy and self-paced learning among learners
	time management	The saving transportation time
		The flexible timing of e-learning classes
		Focused, briefed teaching
		The possibility of re-accessing recorded content at a convenient time
		The turning in assignments online and on time by students
	improved assessment and supervision over the class	The continuously monitor and assess the classes by universities
		The conducting self-assessments by reviewing the content by teachers
		The possibility of automatic roll call
		Enhanced assessment of teachers
		The improved process of evaluating and rating students
Technological Readiness	hardware	The reinforcement of the tools and resources needed for teaching in e-learning classes
		The offering aids to students with financial hardship in order to help them buy smart phones or laptops
	software	To develop educational multimedia content for each course
		To have a platform which allows teachers to upload multimedia content
		The increased speed of presenting and communicating educational content.
		The diversity in multimedia content
		The possibility to record

Discussion

The closure of Iranian universities and higher education institutions due to the COVID-19 pandemic in March 2020 presented an opportunity to reassess the significance of investing in e-learning systems to address the digital gap more effectively and professionally. The 10 components identified here were drawn from the experiences of the University of Tehran's academic community during this challenging time. These components encompass various aspects that contribute to a successful e-learning strategy:

1. Systematizing student-teacher networks and learning factors, including content and tools.
2. Implementing time management strategies to minimize unnecessary transportation and prioritize learning while containing the virus.
3. Enriching educational content with multimedia resources and designing up-to-date learning environments.
4. Ensuring continuous learning and providing resources for infected individuals.
5. Promoting educational justice through mobile learning opportunities.
6. Enhancing the university's social responsibility by supporting health-related protocols.
7. Cultivating a cultural atmosphere that fosters e-learning.
8. Prioritizing hardware and software requirements.
9. Improving personal skills and addressing epistemological concerns related to e-learning environments.
10. Enhancing assessment and supervision in the virtual classroom.

By focusing on these factors, a robust strategy for learning during the COVID-19 pandemic can be developed. The synergy among the four fundamental elements - sociocultural readiness, pedagogical readiness, organizational readiness, and technological readiness - is crucial in effectively addressing this crisis. This requires the widespread adoption of modern digital technologies across the entire university to meet the new requirements. Consequently, the COVID-19 pandemic can serve as an opportunity for universities to rethink their approaches, engage in strategic planning, and move towards a digital transformation that embraces e-learning as a central pillar of education.

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