Identifying and Prioritizing Factors Affecting the Quality of E-learning of Physical Education Students During the Outbreak of Covid-19 Pandemic

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Abstract

The growing demand for E-learning in higher education has made concerns about the quality of distance learning as one of the most important global issues. This is especially true during the outbreak of the Covid-19 pandemic, where E-learning was an important resource for continuing educational activities. Therefore, the purpose of this study was to identify and prioritize the factors affecting the quality of E-learning of physical education students. The present research is applied in terms of purpose, was descriptive in terms of type and was a survey in terms of data collection method. A researcher-made questionnaire was used to collect data. The face and content validity of the questionnaire assessed and confirm by instructors aware of the field of research and reliability through Cronbach's alpha test. Confirmatory factor analysis was used to confirm the construct validity of the questionnaire. The statistical population of the study included undergraduate students of the University of Tehran majoring in Physical Education who passed their theoretical and practical courses virtually in the first semester of the 2020- 01 academic years. The sample size was estimated to be 248 based on Krejcie and Morgan Table. In order to analyze the data, one sample t test and Friedman test were used. Prioritization of indicators showed that among the five indicators of instructor's characteristics, technical characteristics of the educational system, content, evaluation and feedback, student characteristics and support, instructor's characteristics index is the most important indicator affecting quality of theoretical and practical E-learning courses. This matter indicates that the need for special attention by educational administrators in selecting qualified instructors with skills and experience in the field of E-learning.

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Introduction

Over the last two decades, several developments and challenges have arisen in the field of higher education. These include the process of globalization, the emergence of a knowledge-centered economy, a rise in the number of students, a decrease in their per capita budget, and increased competition between institutions at both national and international levels, with a focus on the quality of higher education (Hatami, Mohammadi & Eshaghi, 2011). Simultaneously, advancements in technology have revolutionized the delivery of education, leading to the emergence of new forms of learning such as E-learning, online learning, virtual learning, and Internet learning (Ramkumar & Vinayagamoorthy, 2020). However, the outbreak of the COVID-19 virus in September 2019 has further accelerated the adoption of E-learning, as educational institutions have had to adapt to the specific conditions created by the pandemic (Alqahtani & Rajkhan, 2020).

E-learning refers to the utilization of information and communication technologies in the educational process, typically over the Internet, and activities are conducted online, either synchronously or asynchronously by the participants (Dias et al., 2020). While attention to E-learning and its application in education over the past years has mainly focused on theoretical courses, practical courses have not received much attention due to the role of equipment, facilities, and the need for student presence in the field for educational efficiency (Kirbas, 2020). However, with the outbreak of COVID-19 and the obligation of universities to hold all courses, both theoretical and practical, including practical courses in the field of physical education, many universities have started offering distance learning to students. The implementation of online education in practical physical education courses faces several challenges that can affect the quality of education, as online education in practical courses differs significantly from face-to-face instruction (Goad, Towner, Jones & Bulger, 2019).

Zhu & Wang (2021) argue that online physical education teaching has unique advantages but also obvious disadvantages. As such, special preparation is required for communication and sports practice in online physical education classes, and it is essential to analyze the perceptions of both students and teachers regarding online education in sports activities to ensure educational quality (Jumareng et al., 2021). In a study conducted by Kirbas (2020) on the situation of virtual teaching of practical physical education courses in Turkey during the COVID-19 outbreak, it was found that 79% of academics did not believe practical courses should be taught through distance

education, while 52% believed that all theoretical courses could be taught through distance education.

It is important to acknowledge that E-learning is still a new and developing phenomenon in most countries worldwide, and as with any emerging phenomenon, there are doubts and challenges associated with its implementation, despite the benefits and opportunities it provides. Therefore, a precise, systematic, and scientifically based framework is necessary to address the complex problems associated with this type of learning system. An essential aspect is the analysis of the factors that affect the quality of education, through scientific studies, the identification and determination of characteristics and standards, and the implementation of intelligent and realistic policies. The identification of quality from the perspective of end-users is crucial in understanding the quality of the information system, and in virtual learning, the student is the primary user of the learning system. Furthermore, the research background highlights the lack of comprehensive studies in both theoretical and practical courses in the field of E-learning in physical education. Therefore, this study aims to identify the factors that affect the quality of E-learning in both practical and theoretical units and prioritize these factors based on the perspectives of physical education students.

Methodology

The present study employs an applied research method, specifically a descriptive survey approach for data collection. The study's statistical population comprised all undergraduate students in the field of physical education who completed their theoretical and practical courses virtually in the first semester of the academic year 1400-99 at the University of Tehran. The population size was 700 students, and a sample size of 248 respondents was determined using the Krejcie and Morgan Table. Stratified random sampling based on the semester of university entrance was employed as the sampling method. Confirmatory factor analysis was used to evaluate and validate the questionnaire structure with input from physical education faculty members who had experience in virtual teaching of theoretical and practical units. Reliability of the questionnaire was assessed through the application of Cronbach's alpha. The collected data was analyzed using One sample t-test and Friedman test.

Findings

Confirmatory factor analysis was employed to assess the construct validity of the questionnaire. Items with factor loads less than 0.3 were excluded, and the

model was re-run in the software. The final results of the confirmatory factor analysis of the factors influencing the quality of E-learning are presented in Table 1.

Table 1 - Classification of components based on the results of factor analysis

Symbol	Component	Factor load
Student characteristics		
A1	student's ability to use technological tools such as computers and the Internet	0/567
A2	Positive learner attitude towards E-learning	0/642
A3	Responsibility and commitment to learning	0/780
A4	Communication skills in virtual space (oral and written (skills	0/625
teacher Features		
B1	Skills in teaching in electronic courses	0/721
B2	Variety in teaching methods in E-learning environment	0/368
B3	Timely response to learners' questions and needs	0/493
B4	Scientific level (theoretical courses) and practical skills (practical courses) of the teacher in the desired field and course	0/625
B5	Instructor communication skills in E-learning	0/554
Technical features of the educational system		
C1	The degree of interactivity of the system for communication between teacher and student	0/312
C2	Ease of use of E-learning system	0/428
C3	Providing multimedia facilities and new technologies in presenting content	0/721
C4	Providing guidance in different parts of the system	0/329
C5	Speed of access to the system	0/711
C6	The attractiveness and beauty of the system environment	0/323
Educational content		
D1	Logical organization of resources and materials	0/429
D2	Proportion of content with course objectives in E-learning method	0/614
D3	High quality content in terms of comprehensiveness and up-to-datedness	0/464
D4	Proper timing of content and assignments	0/538
Evaluation and feedback		
E1	Existence of clear scoring criteria for learners	0/719
E2	continuous assessment of learning level of learners	0/641
E3	Design and provide individual and group feedback	0/326
E4	Variety in assessment methods of students	0/560
Support		
F1	Continuous evaluation of professors and educational services	0/455
F2	Providing information and guidance services by the teaching staff of University	0/620
F3	Providing facilities for access to information resources and databases by University	0/381
F4	Needs assessment of students in E-learning courses	0/489

In the test model, two components, namely "system security" and "the degree of personalization of the educational system", which belonged to the

technical characteristics of the educational system, were eliminated from the model due to a factor load of less than 0.3. To assess the importance of factors influencing the quality of E-learning, a one-sample t-test was conducted with an average value of 3. The results indicated that the scores in both theoretical and practical courses were significantly higher than the average value. As a result, all components were included in the prioritization process using the Friedman test. The findings of prioritizing the indicators that affect the quality of E-learning from the students' perspective in the theoretical courses section are presented in Table 2.

Table 2- Results of prioritization of indicators affecting the quality of E-learning in theoretical courses

Indicator	Average	Rank	X^2	df	sig
Student characteristic	3/15	4	78/459	5	0/001
teacher Features	4/13	1			
Technical features of the educational system	4/09	2			
Educational content	3/93	3			
Evaluation and feedback	2/25	5			
Support	2/75	6			

Based on the findings presented in Table 1, the "Teacher Characteristics" indicator ranked first with an average rank of 4.13, while the "Support" indicator ranked last with an average rank of 2.75. Furthermore, the results of prioritizing the indicators that affect the quality of E-learning in the practical courses section are presented in Table 3.

Table 3- Results of prioritization of indicators affecting the quality of E-learning in practical courses

indicator	Average	Rank	X^2	df	Sig
Student characteristics	3/81	3	158/29	5	0/001
teacher Features	4/20	1			
Technical features of the educational system	4/12	2			
Educational content	3/44	4			
Evaluation and feedback	3/25	5			
Support	2/70	6			

Conclusion

The rapid advancement of technology has led to an increasing trend of distance education, which provides learning opportunities to students across diverse geographical locations. Consequently, it is imperative for educational administrators to focus on improving the quality of virtual learning courses. The research findings indicate that "teacher characteristics" is the most important indicator that affects the quality of E-learning in both theoretical and practical courses. Moreover, two of the other five indicators, namely "educational content" and "evaluation and feedback", are somewhat related to the teacher's role. For instance, the teacher prepares the educational content, and students are evaluated throughout the semester and at its end by the teacher. These findings underscore the crucial role of instructors in enhancing the quality of E-learning.

Given the significance of teachers' role in E-learning, it is recommended that managers and planners in the field of university education should assess the educational needs of teachers to identify the necessary skills required to enhance the teaching-learning process. The information obtained from the needs assessment process can be utilized to provide in-service courses for faculty members and instructors, or to develop a framework for evaluating them. This proactive approach will enable the educational administrators to improve the skills of teachers in teaching theoretical and practical units in the field of physical education.

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