

دوفصلنامه ایرانی آموزش از دور

سال هفتم، شماره دوم، تابستان و پاییز ۱۴۰۴ (۹۲-۷۹)
DOI: 10.30473/idej.2025.73582.1226

«مقاله پژوهشی»

مطالعه ترکیبی بر مولفه‌های موثر بر کیفیت برنامه درسی در نظام آموزش از راه دور

انور شاهمحمدی^{۱*}، عابدین دارابی عمارتی^۲ 

چکیده

هدف این پژوهش شناسایی و رتبه‌بندی مولفه‌های موثر بر کیفیت عناصر برنامه درسی در نظام آموزش از راه دور بود. در این پژوهش از نظر گردآوری داده‌ها از ترکیب روش‌های کیفی و کمی یعنی روش آمیخته استفاده شد. در این بخش میدان تحقیق را کلیه اعضای هیئت علمی دانشگاه پیام نور استان کردستان بودند. از روش نمونه‌گیری گلوله برفی، ملاکی و هدفمند استفاده شد و حجم نمونه تا رسیدن به اشباع نظری ادامه داشت که در نهایت با ۱۰ نفر از آنها مصاحبه نیمه‌ساختاریافته به عمل آمد. در بخش کمی نیز جامعه آماری به‌صورت در دسترس در نظر گرفته شد. داده‌های حاصل از مصاحبه‌های بخش کیفی مبنای برای پرسشنامه محقق ساخته قرار گرفت که در نهایت پرسشنامه‌ای مبتنی بر عناصر چهارگانه برنامه درسی در قالب ۱۸ گویه تهیه و تنظیم گردید. روایی بخش کیفی با استفاده از بررسی مجدد به وسیله محقق و در بخش کمی بر اساس تایید نظر صاحب‌نظران انجام شد. برای تحلیل داده در بخش کیفی از تحلیل مضمون و در بخش کمی از روش ویکور فازی استفاده گردید. نتایج در بخش کیفی منجر به شناسایی ۱۸ مضمون پایه در ۴ مضمون سازمان‌دهنده شامل (اهداف، محتوای، روش‌های آموزش و ارزشیابی) و در نهایت ۱ مضمون فراگیر تحت عنوان (مولفه‌های موثر بر کیفیت برنامه درسی در نظام آموزش از راه دور) شد. در بخش کمی نیز نتایج نشان داد که مولفه‌های شکل‌گیری مناسب هدف‌های آموزشی و رفتاری بر اساس مباحث درسی و بازخورد فوری شیوه‌های ارزشیابی به ترتیب بیشتر و کمترین اهمیت را از بین مولفه موثر بر کیفیت برنامه درسی در این نوع نظام آموزشی را در نظر متخصصان به خود اختصاص دادند. بر این اساس پیشنهاد می‌شود دست‌اندرکاران نظام آموزش از راه دور در تنظیم برنامه‌های درسی این نوع نظام آموزشی به مولفه‌های احصاء شده از یافته‌های این تحقیق توجه بیشتری مبذول دارند.

واژه‌های کلیدی

عناصر برنامه درسی، نظام آموزش از راه دور، مطالعه ترکیبی، آموزش عالی.

۱. استادیار گروه علوم تربیتی، دانشگاه پیام نور، تهران، ایران.
۲. گروه علوم تربیتی، دانشگاه پیام نور، تهران، ایران.

نویسنده مسئول:

انور شاهمحمدی

رایانامه: anvar1354@pnu.ac.ir

تاریخ دریافت: ۱۴۰۳/۱۱/۰۷

تاریخ پذیرش: ۱۴۰۴/۰۶/۱۵

استناد به این مقاله:

شاهمحمدی، انور و دارابی عمارتی، عابدین (۱۴۰۴). مطالعه ترکیبی بر مولفه‌های موثر بر کیفیت برنامه درسی در نظام آموزش از راه دور. دوفصلنامه ایرانی آموزش از دور، ۶ (۹۲-۷۹). DOI: 10.30473/idej.2025.73582.1226



ORIGINAL ARTICLE

Mixed-methods study on the factors influencing curriculum quality in the distance education system

Anvar Shahmohammadi^{1*} , Abedin Darabi Emiratis² 

1. Assistant professor Department of Educational Paym Noor University, Tehran, Iran.

2. Department of Educational Paym Noor University, Tehran, Iran.

Correspondence
Anvar Shahmohammadi
Email: anvar1354@pnu.ac.ir

Received: 26 Jan 2025

Accepted: 06 Sep 2025

How to cite

Shahmohammadi, N. & Darabi Emiratis, A. (2025). Mixed-methods study on the factors influencing curriculum quality in the distance education system. Iranian Distance Education Journal, 7(2), 79-92. (DOI: [10.30473/idej.2025.73582.1226](https://doi.org/10.30473/idej.2025.73582.1226))

ABSTRACT

The purpose of this study was to identify and rank the components affecting the quality of curriculum elements in the distance education system. The research design was mixed-method (qualitative and quantitative). Participants in the qualitative phase included 10 faculty members from Payame Noor University in Kermanshah and Kurdistan provinces. The sampling method was purposive, of the snowball type. The data collection tool in the qualitative section was a semi-structured interview. The data obtained from the interviews were analyzed using thematic analysis, and methods such as (participant feedback, external observer, transferability, and dependability) were used for data validation. In the quantitative section, the statistical population was considered to be readily available. The data collection tool in the quantitative section was a researcher-made questionnaire based on the four elements of the curriculum, prepared and organized into 18 items. Validity in the quantitative section was ensured based on the confirmation of experts' opinions. The fuzzy VIKOR method was used for data analysis in the quantitative section. The results in the qualitative section showed that 18 basic themes were grouped into 4 organizing themes including (Goals, Content, Teaching Methods, and Evaluation), and finally 1 overarching theme titled (Components Affecting the Quality of Curriculum in the Distance Education System). In the quantitative section, the results showed that the components of appropriate formation of educational and behavioral goals based on course discussions, attainability of educational and course goals, division of educational content into introductory, main, and concluding discussions, attention to self-instructional content, existence and use of up-to-date educational models in teaching, existence and use of up-to-date technology in teaching, existence of compatibility between evaluation methods and other curriculum elements, and immediate feedback of evaluation methods, respectively, held the most and least importance among the components affecting the quality of the curriculum in this type of educational system according to experts. Based on this, it is suggested that stakeholders in the distance education system pay more attention to the components extracted from the findings of this research when setting the curricula for this type of educational system.

KEYWORDS

Curriculum elements, Distance education system, Mixed-methods study, Higher education.

Introduction

Recently, developments and challenges such as the trend of globalization, the knowledge-based economy, the quantitative increase in students and the reduction of their per capita budget, as well as increased competition among higher education institutions nationally and internationally, and the demand for greater accountability, have increased attention to the quality of higher education (Moslehi & Alidoust ghahfarrokhi, 2022). Today, quality enhancement and assurance are necessities for university systems worldwide. This is only possible through evaluation aimed at understanding the current situation and identifying needs and problems on one hand, and identifying desirable standards on the other (Shahmohammadi & Azizi, 2021). Quality is a complex, dynamic, and multidimensional concept, the definition of which is often dependent on a set of social, economic, cultural, and political factors and conditions (Khatebi et al, 2010). In various institutions, it is viewed from two different dimensions: one as internal quality evaluation and the second as external quality evaluation. Internal quality assessment refers to examining the desirability and status of the elements and components of the educational system in order to achieve assumed and specific goals, and external quality assessment refers to the extent of achieving specific goals considering the available resources (human, financial, and material) for higher education institutions (Torkzadeh et al, 2019).

The development and survival of higher education, besides infrastructural factors and budget, depend on the quality of their curriculum, and the manner of curriculum design plays an important role in student learning (Saraji et al, 2008). Curriculum design refers to the constituent elements of the curriculum and the nature of the relationships between them.

There is no consensus among experts regarding the multiplicity of its elements; scholars such as Tyler consider it to include four elements, Hilda Taba eight elements, and Frances Klein nine elements (Roshanialibenese et al, 2022). Distance education systems, as a subset of higher education systems, must also pay sufficient attention to curriculum quality, in addition to infrastructural factors, for their development and survival. This is because the method of curriculum design plays an important role in student learning, and the successful implementation of the distance education system is highly dependent on the curriculum and the elements designed within it (Jafari Sani et al, 2022). The results of numerous studies have shown that pedagogical aspects have been neglected in the design and development of the curriculum for distance education systems, while improving the quality of learning in distance education requires systematic curriculum design that demonstrates the relationship between curriculum elements and how they are integrated with technological capabilities (Kazemi Gharajeh & Amin Khandaghi, 2014). Therefore, if there is a lack of necessary internal consistency and homogeneity in the curriculum of educational systems, it will not lead to the required effectiveness (Saraji et al, 2008). Although the results of studies conducted in this area show that the quality of curriculum elements in the distance education system in higher education is moderate. However, this superiority does not indicate a very favorable situation for these elements in our country, as it is only slightly above average and far from the desired level of sufficiency (Javadani & Anarinejad, 2018).

Distance education, which is nowadays also referred to as e-learning and virtual education (Ramkumar & Vinayagamoorthy, 2020), is the newest form of education, defined as a

combination of information and communication technologies used in the educational process, generally but not exclusively conducted via the internet. Activities in this learning method are carried out online and can be used synchronously or asynchronously by participants (Dias et al, 2020). Therefore, there is no doubt that increasing the capabilities of distance higher education and the possibility of achieving its goals through this method depend on considering its multiple dimensions and aspects and paying attention to the influential factors in this educational approach (Shahmohammadi et al, 2018). The decrease in population growth rate, and consequently, the decrease in the growth rate of young people eligible for university education, along with increased competition among universities and various educational institutions to attract students, have generally caused universities to prioritize achieving quality. Under such circumstances, distance education systems, in order to provide quality educational services to diverse groups of applicants, are compelled to focus on the quality of effective elements in education so that they can establish a position for themselves in the field of education and increasingly facilitate the attraction of prospective students and ultimately gain their satisfaction (Malekzadeh et al, 2019). Concurrent with the development of the distance education system in universities and higher education institutions in Iran, the issue of quality assessment in this educational system has attracted the attention of various researchers, and efforts were made to examine studies that reveal the explicit and implicit angles of the dimensions and components related to curriculum elements within the distance education system.

Sato et al (2024) in a study titled "Navigating the New Normal: Adapting Online and Distance Education in the Post-Pandemic Era for

Innovation in Goals" emphasized content, teaching methods, and evaluation methods. Drozdova, Gosova (2020) in a research titled "Modern E-learning Technologies and Evaluation of Their Effectiveness" addressed the characteristics of objective and precise evaluation for analyzing course quality. Yildiz & İşman (2016) in a study titled "Content Quality in Distance Education" focused on easy comprehension, interaction with educational media, alignment with goals, and suitability for the learning environment. Mohammadi et al (2024) in their study titled "Assessing the Status of Virtual Learning Environment for Medical Students at Mashhad University of Medical Sciences using the DELES Questionnaire" emphasized active learning in this educational environment. Montaseri et al (2024) in a research titled "Evaluating the Effectiveness of Scenario-Based Education in Two Methods: Face-to-Face and Blended on Student Learning" showed that blended learning has increased learner learning. Zahed Babelan et al (2023) in a study titled "Evaluating the Quality of E-learning in the Higher Education System using the Helm Evaluation Model during the Corona Pandemic" showed that the content quality component had the greatest impact on the quality of education. Javadi & Nori (2022) in their study titled "Identifying and Explaining Factors Affecting Clinical Education in Distance Education for Medical Students during the Corona Pandemic" showed that using conventional educational models in the virtual environment increases the quality of education. Roshanialibenese et al (2022) in their study titled "Designing the Curriculum of Iran's Virtual Education System Based on Kline's Nine-Step Model at Shahid Beheshti University" showed that the attainability of educational and curricular goals, the suitability of teaching

methods and technology used in this type of educational system, attention to selecting teaching methods in the distance learning environment for group learning, the existence of alignment between evaluation methods and educational and curricular goals, and the explicit statement of scoring methods and principles are effective in designing the curriculum of Iran's virtual education system. Shahmohammadi & Azizi (2021), in a study titled "Identification, Analysis, and Prioritization of Effective Indicators on Quality in the Distance Education System: The Case of Payame Noor University," emphasized educational materials and content, and teaching methods and approaches, as two of the seven effective dimensions influencing the quality of this educational system. Ohani Zonouz (2020), in a research titled "Designing an Appropriate Model for Evaluating the Quality of Electronic Curriculum in the Country's Higher Education," showed that the application of evaluation factors, attention to the quality and accessibility of course content, curriculum design, and attention to educational objectives are necessary when designing this model. Barari et al (2019), in their study titled "Evaluation of High-Level Learning Objectives in E-Learning Environments: Standards and Indicators," considered attention to Bloom's and Anderson's taxonomy when preparing educational objectives.

Abbasi Kasani & Shams (2019) in a study titled "Research Synthesis of Key Success Factors for E-Learning: Presenting a Model" listed the characteristics of good content as being up-to-date, understandable, comprehensive, accurate, and needs-appropriate. Yaseni & Taban (2019) in their study titled "Studying the Effectiveness of Virtual Education Courses from the Perspective of Professors and Students of Tehran University" showed that course content, attention to teaching-learning activities, and the organization of educational materials were

effective, respectively, in the quality of this educational system. Najafi et al (2015) in a study titled "Evaluating the Quality of Educational Programs at Payame Noor University of Qom based on the (NADE-TDEC) Model" showed that attention to the components of content design and course materials was emphasized in the quality of educational programs. Akbari Bourang et al (2015) in a study titled "Designing and Validating a Quality Virtual Teaching Model in Iran's Higher Education System" showed that teaching-learning activity or the implementation of teaching can be presented in three stages: design, implementation, and evaluation, and these three stages are not separate but interact with each other.

A review of the results of conducted studies reveals this gap: the elements and factors introduced in the field of distance education curriculum indicate that every researcher and expert in this area has emphasized various dimensions and multiple elements from different angles and with various approaches, and in this regard, they have also proposed models. On the other hand, methodologically, previous research has used various methods to gather individuals' viewpoints, but they have not utilized the Fuzzy VIKOR approach in examining these elements. In this research, considering that the pedagogical dimension is common to most models, frameworks, and studies discussed in the field of distance education and is usually considered curriculum elements, the elements of objective, content and learning materials, teaching-learning strategies, and evaluation have been considered as the curriculum elements of distance education. Accordingly, the present research aims to identify and rank the components affecting the quality of these elements in the distance education system using the Fuzzy VIKOR technique and seeks to answer the following questions:

1- What are the dimensions and components affecting the quality of the curriculum in the distance education system?

2- Based on experts' opinions, what is the level of importance of these dimensions and components regarding the quality of the curriculum in the distance education system?

Method

The research design used was a combination of qualitative and quantitative methods, i.e., a mixed-methods approach. In mixed research, the researcher attempts to integrate qualitative and quantitative data to provide a better understanding of the research problem. The research method in the qualitative section was thematic analysis, and in the quantitative section, it was the Fuzzy VIKOR method. In this study, the research field included all faculty members of Payame Noor University in Kermanshah and Kurdistan provinces. Snowball, criterion, and purposive sampling methods were used to determine the sample size, and the sample size continued until theoretical saturation was reached, resulting in semi-structured interviews with 10 individuals. In the quantitative section, the statistical population was considered to be readily available (convenience sampling). The data obtained from the qualitative interviews formed the basis for the researcher-made questionnaire in the quantitative section, which ultimately led to the preparation and compilation of a questionnaire based on the four curriculum elements in the form of 18 items. The validity of the qualitative section was ensured using researcher re-examination, and in the quantitative section, using the CVR index based on the experts' opinions, it was calculated to be 91% for the factors. The Fuzzy VIKOR method was used for data analysis. This technique, introduced by Chen & Wang (2009), is applied

to rank and select a set of options and determine compatible solutions for a problem with different criteria to achieve optimal solutions for decision-making. This approach includes the following steps:

1. Creating the decision matrix; the structure of this matrix is as follows:

$$D = \begin{matrix} A_1 \\ A_2 \\ \vdots \\ A_m \end{matrix} \begin{pmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1} & x_{m2} & \dots & x_{mn} \end{pmatrix}$$

In this matrix, indicates option i , indicates the index m , and indicates the value, the option based on index i .

2. Non-dimensional scaling of the decision-making matrix using the relationship:

$$f_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^m x_{ij}^2}}$$

3. Calculating the positive and negative ideal value of each indicator, according to the standardized matrix D ,

Positive Ideal Solution $f^+ = \{f_1^+, f_2^+, f_3^+, \dots, f_n^+\}$ is the negative ideal solution $f^- = \{f_1^-, f_2^-, f_3^-, \dots, f_n^-\}$ positive and negative solutions are also calculated using the relations below.

$$f_j^+ = \max_j m_{ij}$$

$$f_j^- = \min_j m_{ij}$$

Determining the interval between (a_1, a_2, a_3) and (b_1, b_2, b_3) using the following relation:

$$D(\tilde{a}, \tilde{b}) = \frac{\sqrt{3}}{3} \sqrt{(a_1 - b_1)^2 + (a_2 - b_2)^2 + (a_3 - b_3)^2}$$

4. In this step S_i, R_i, Q_i It is calculated from the following relationships that in this relation S_i and R_i respectively as the optimal and undesirable values of each of the options and W_j as the weight of each of the criteria.

$$S_j = \sum_{j=1}^n w_j \frac{D(f_j^+, m_{ij})}{D(f_j^+, f_j^-)}$$

$$R_j = \max_j \left[W_j \frac{D(f_j^+, m_{ij})}{D(f_j^+, f_j^-)} \right]$$

$$Q_i = v \frac{(S_i - S^-)}{(S^+ - S^-)} + (1 - v) \frac{(R_i - R^-)}{(R^+ - R^-)}$$

In the above relationship, Q_i is the value of the Vicor index for option i, and $S^+ = \max_i S_i, S^- = \min_i S_i, R^+ = \max_i R_i$ and $R^- = \min_i R_i$ and v

is the maximum group desirability that is usually considered equal to 5%.

5. Ranking the options: According to the Vikor method, the options with the lowest Q are the best options.

Accordingly, first, a list of effective components in the quality of the curriculum elements of the distance education system was prepared to prepare the final questionnaire, then with the opinion of the study members, the number was reduced to 18 components by eliminating the overlapping items, and the final questionnaire was provided to the sample members to rank the components with a fuzzy approach and extraction. These people expressed their opinions in the form of fuzzy numbers (Table 1).

Table 1. Fuzzy judgments used in this study

Verbal phrase	Very little	Low	Medium	a lot	very much
Fuzzy Numbers	(0.0.0.25)	(0.0.25.0.5)	(0.25.0.5.0.75)	(0.5.0.75.1)	(0.75.1.1)

(Chen & Wang, 2009)

In the following, the fuzzy Vicor steps include identifying the factors affecting the quality of curriculum elements in the distance higher education system, determining the questions based on the extracted factors, polling experts to determine the key factors, collecting quantitative data of the effective factors, entering the data in Excel, preparing the data for entering the FCMapper software, analyzing the data obtained from FCMapper, entering the data obtained from FCMapper into the Ucinet software and scenario making, and Finally, fuzzy cognitive maps were determined and presented.

Results

In response to the research question, what are the dimensions and components affecting the quality of the curriculum in the distance education system from the perspective of experts? After analyzing the semi-structured interviews, the findings of the data were analyzed based on open, axial, and selective coding, which led to the identification of 1 main category, 4 axial categories, and 18 components extracted from the text of the interviews. The results of which are shown in Table No 2.

Table 2. Results of the main category, subcategories, and items extracted from the interview text

Core Category	Subcategories	statements extracted from the interview text
Components Affecting Curriculum Quality in the Distance Education System	Goals	Achievability of educational and curricular goals, alignment of goals with learners' interests and needs, proper formation of goals
	Content	Dividing content into introductory, main, and concluding topics, the content being up-to-date, comprehensive, accurate, and understandable, attention to the self-study nature of the content, attention to the suitability of the content and educational materials for the training course, suitability of the content to the interests and needs of the learners
	Training Methods	Existence and use of up-to-date educational models in teaching, alignment between teaching methods and educational content, materials, and media, existence and use of up-to-date technology in teaching, attention to active learning in teaching, attention to selecting teaching methods for group learning in the remote learning environment, use of blended and learner-centered teaching methods
	Evaluation	Attention to learners' self-assessment, alignment between assessment methods with other curriculum elements, explicit statement of assessment methods and principles, immediate feedback on assessment methods

Based on the foregoing and by following the steps of the Fuzzy VIKOR method, the normalized decision matrix was obtained as follows.

Table 3. Normalized Decision-making Matrix

components	Expert 1	Expert 2		Expert 10
1	(0, 0/707, 1/414)	(0, 0, 0/707)		(0, 0/152, 0/305)
2	(0/132, 1/414, 2/121)	(0, 0, 0/707)		(0/152, 0/305, 0/457)
⋮	⋮	⋮		
18	(0, 0/707, 1/414)	(0, 0, 0/707)		(0/152, 0/305, 0/457)

In the next step, the values of the positive and negative ideal solution of f^+ and f^- were

calculated, the results of which are given in the table below.

Table 4. Positive and Negative Ideal Solution

	f^+	f^-
Expert 1	(0/132, 1/414, 2/121)	(0, 0, 0/707)
Expert 2	(0.144, 0/535, 2/121)	(0, 0, 0/707)
Expert 3	(0/152, 0/305, 0/457)	(0, 0, 0/152)

In the fuzzy Vikor method, the options are ranked based on the value of Q and the option with the minimum value of Q is selected as the

best option, the results are given in the table below.

Table 5. Ranked Components

Row	Items	Value Q	Rating
1	Attainability of educational and curricular goals	0/02436415	2
2	Aligning the goals with the interests and needs of the learners	0/75981203	12
3	Up-to-date, comprehensive, accurate and understandable content	0/73159464	11
4	Dividing the content into introductory, main and final topics	0/02715227	3
5	Proper formation of goals	0	1
6	Paying attention to the content being self-taught	0/5763481	4
7	Paying attention to the appropriateness of educational content and materials with the training course	0/84951227	16
8	Tailoring the content to the interests and needs of the learners	0/57921045	10
9	The existence and use of up-to-date educational models in education	0/08664574	5
10	The Compatibility between Educational Methods and Educational Content and Materials and Media	0/86498441	17
11	The existence and use of up-to-date technology and technology in education.	0/09115483	6
12	Attention to Active Learning in Education	0/81684172	15
13	Paying attention to the choice of teaching method in the distance learning environment to group learning	0/77592138	13
14	Using blended and learner-centered teaching methods	0/51013471	9
15	Paying attention to learners' self-assessment	0/77912036	14
16	Compatibility between evaluation methods and other elements of the curriculum	0/42368547	7
17	Explicitly state the methods and principles of evaluation	0/89015342	18
18	Immediate feedback on evaluation methods	0/47356401	8

Table No. 6 shows the ranked components from the experts' point of view based on the fuzzy Vikor approach. Since the first five to eight factors are usually considered as the most influential factors or have a higher priority (Mir Gafouri, 2016). Accordingly, the items of appropriate formation of goals, the attainability of educational and curricular goals, the division of educational content into introductory, main and final topics, attention to self-learning and active learning of the content, the existence and use of up-to-date educational models in the

distance education system, the existence and use of up-to-date technology and technology in education, the existence of a proportion between evaluation methods and other elements of the curriculum, and attention to conventional models in evaluation are among the elements of the curriculum, respectively. According to experts, they have the greatest effect on the quality of the curriculum in this type of educational system. These factors are described in the table below.

Table 6. *The most effective components*

Value Q	Items	Rating
0	Proper formation of goals	1
0/02436415	Attainability of educational and curricular goals	2
0/02715227	Dividing the educational content into introductory, main and final topics	3
0/05763481	Paying attention to self-learning	4
0/08664574	The existence and use of up-to-date educational models in the distance education system	5
0/09115483	The existence and use of up-to-date technology and technology in education	6
0/42368547	Compatibility between evaluation methods and other elements of the curriculum	7
0/47356401	Immediate feedback on evaluation methods	8

Conclusion

In today's world, educational systems face challenges to meet the needs of industry and society. One of them is improving the quality of education. Therefore, this research is in line with improving the quality of the curriculum elements of the distance education system, which has been done by reviewing the opinions of experts, the most important factors affecting the improvement of the quality of the curriculum elements of this type of educational system have been identified and examined. In this study, in order to rank and the importance of the factors affecting the improvement of the quality of the curriculum elements of the distance education system, the integrated approach of VIKOR was used. The results of this study showed that from the experts' point of view, the components of the attainability of educational and curricular goals, the suitability of the goals with the interests and needs of the learners, the appropriate formation of goals, the division of the content into the beginning, main and final topics, up-to-date, comprehensive, accurate and understandable of the content, attention to the self-learning of the content, attention to the appropriateness of the content and educational materials with the educational course, the suitability of the content with the interests and needs of the learners, the

existence and use of up-to-date educational models in education, Proportionality between educational methods and educational content and materials and media, attention to active learning in education, existence and use of up-to-date technology and technology in education, attention to the choice of teaching method in the distance learning environment to group learning, the use of blended and learner-centered teaching methods, the existence of proportionality between evaluation methods and other elements of the curriculum, attention to learners' self-evaluation, explicit expression of evaluation methods and principles, immediate feedback of evaluation methods, in the quality of elements The curriculum of the distance education system is important and effective. These results are consistent with the findings of Sato et al (2024), Derzoa & Gavaso (2020), Mohammadi et al (2024), Montaseri et al (2023), Bablan et al (2022), Javadi & Nori (2021), Ravshahni et al (2021), Ohani Zonouz (2020), Shahmohammadi & Azizi (2021), Barari et al (2019), Abbasi Kasani & Shams (2019), Yaseni & Taban (2014), Jafari et al (2014), and Akbari Bourang (2016).

The findings of the research in ranking the components affecting the quality of the curriculum in the distance education system using the fuzzy Vikor technique from the

experts' point of view show that the appropriate formation of educational and behavioral goals based on the curriculum topics and the achievability of educational and curricular goals has been the first and second priority. In explaining these findings, it can be stated that according to experts, curriculum design is related to determining the elements of the curriculum, so in choosing and determining educational and curricular goals, it is necessary to pay attention to the needs of learners and the community whose lives are somehow affected by the curriculum. If there is no effective and appropriate mechanism for estimating expectations, it is more likely that the curriculum will be sterile in achieving the desired goals. Because achieving the goals of the curriculum depends on how to choose and determine the educational goals on which the effectiveness of the other elements of the curriculum depends. These results are in line with the findings of Sato et al (2024), Derzoa & Gavaso (2021), Ohani Zonouz (2020), Ravshani (2021), Barari et al (2019), Abbasi Kasani & Shams (2019).

The findings regarding the prioritization of curriculum elements in the distance education system from the experts' point of view showed that the content of the curriculum of the distance education system should be selected based on the criterion of dividing the educational content into the beginning, main and final topics, paying attention to the content being self-taught, which were placed in the third and fourth priorities. Then, in setting the content, paying attention to up-to-date knowledge, paying attention to the appropriateness of the content and educational materials with the educational course with the selected facts, concepts, and principles, should be organized according to the multimedia and hypermedia capabilities that help to deeply understand, motivate the learner, and build knowledge in the learner. These findings are in

line with the findings of Bablan et al (2023), Shamohammadi et al (2018), Abbasi Kasani & Shams (2019), and Jafari et al (2014).

The use of up-to-date educational models in the distance education system, the existence and use of up-to-date technology and technology in education are other findings of this research that are placed in the fifth and sixth priority. Teaching methods are closely related to educational goals and content. In order to achieve the educational goals, each educational system in general and distance education systems in particular have specific methods to guide their activities, including the use of up-to-date educational methods in this educational system. These results are consistent with the findings of Sato et al (2024), Motseri et al (2023), Javadi & Nori (2022), Roshanialibenese et al (2022), Ohani Zonouz (2020), Shahmohammadi & Azizi (2021), Barari et al (2019), Abbasi Kasani & Shams (2019), Yaseni & Taban (2019), and Akbari Bourang (2016).

The compatibility between evaluation methods and other elements of the curriculum and paying attention to immediate feedback of evaluation methods are other findings of this research, which are ranked seventh and eighth. These results indicate that it is necessary to pay attention to the importance of evaluation in the field of distance education. Evaluation is the basis of effectiveness in education because education achieves the goal and benefits from the effective feature when the set of activities as a mechanism provides feedback in case of violation of the desired path. This practice plays a special role in correcting the anomalies in education. Doing evaluation in itself does not lead us to the destination, but there are a set of principles that should be considered in doing it. Evaluation of learners' learnings in the distance curriculum is based on a set of principles that include the appropriateness between assessment tools and

tasks with learning goals, considering evaluation strategies as part of learning experiences, using multiple strategies and tools for evaluation, continuous monitoring of the quality of evaluation strategies, and implementing evaluation with the aim of providing feedback and improvement in learning. However, evaluation, as its definition suggests, does not end with these cases. It is necessary to interpret its results in terms of criteria in order to become the basis for carrying out an action plan in order to optimize education and programming. Therefore, scoring and evaluation policies should be clearly described and related for all activities and assignments of the course, which was also emphasized by Sato et al (2024), Derzoo & Gavaso (2020), Ravshahni et al (2021), and Ohani Zonouz (2020).

ICT changes have led to a change in the way of teaching and learning, which is one of the results of challenging and improving the curriculum elements of the distance education system. In the present study, 18 factors affecting the quality of the four dimensions of goals, content, training and evaluation methods were identified and ranked. Therefore, the distance higher education system needs to pay attention to these elements in order to improve the quality of these elements and provide the reasons for doing so in order to improve the efficiency of this type of educational system. Therefore, it is suggested to those involved in the distance education system, in setting the curricula of this type of educational system, paying more attention to the appropriate formation of goals in a clear and precise manner, providing up-to-date educational content in accordance with the needs of individuals and society, using up-to-date educational models in the distance education system, and using evaluation methods in accordance with other elements of the curriculum.

Resources

- Abbasi Kasani, H. Shams, Gh. R. (2019). A research synthesis of critical success factors of e-learning: A model development. *Technology of Education Journal (TEJ)*, 13(10:25-39. (in Persian). <https://doi.org/10.22061/jte.2018.3061.1777>.
- Ahangari, M., torkzadeh, J., Mohammadi, M., marzoghi, R., hashemi, S. (2019). Identifying the Components of Evaluating the Internal Effectiveness for Academic E-courses. *Qualitative Study. ihej* , 11 (1): 125-159. (in Persian). <http://ihej.ir/article-1-1315-fa.html>.
- Akbari Bourang, M., Ajam, A. A., Ja'fari Saani, H., Saberi, R., & Shokouhi Fard, H. (2016). Designing and Validating Quality Virtual Teaching Model in Higher Education System of Iran. *Qualitative Research in Curriculum*, 1(2), 73-106. <https://doi.org/10.22054/qric.2016.7036>. (in Persian).
- Barari, N., Alami, F., Rezaeizadah, M., Khorasani, A. (2019). Evaluating the Goals of High Levels of Learning in E-Learning Environments (Standards & Endicators). *Journal of Instructoin and Evaluation*, 45(12), 111-132. (in Persian). <https://doi.org/10.30495/jinev.2019.665920>.
- Chen, L. Y., Wang, T. C. (2009). Optimizing Partners Choice in IS/IT out Sourcing Projects: The Strategic Decision of Fuzzy VIKOR. *International Journal Production Economics*. 120(2), 233-242.
- Devi, K. (2011). Extension of VIKOR method in intuitionistic fuzzy environment for robot selection, *Expert Systems with Applications*, 38(14), 63-68.
- Dias, C., André J., dos Santos E., Caldas, H., Brienze, S., Lima A., & Fucuta, P. (2020). Blended learning methods in specialization graduate courses improve the knowledge gain metric. *Journal of Education and Training Studies*, 8(3), 1-9.
- Drozдова, A. A., & Guseva, A. I. (2017). Modern Technologies of E-learning and its Evaluation of Efficiency. *Procedia-Social and Behavioral Sciences*, 237, 1032-1038.
- Jafari Sani, H., Saeedi Rezvani, M., Zarei Tochini, M., Pakmehr, H. (2013). Key Features of E-Learning-Based Curriculum in Higher Education. *Journal of the Higher Education Association of Iran*, 5 (2), 164-187.(in Persian). <http://ihej.ir/article-1-609-fa.html>.
- Javadani, M., Anarinejad, A., (2018). Evaluating the quality of e-learning curriculum elements in Iranian higher education, *Journal of Curriculum Research*, 8 (1), 104-122. (in Persian). <https://doi.org/10.22099/jcr.2018.4951>.
- Javadi, Z., Nouri Hasan, K. (2022). Identifying and Explaining effective factors on Clinical Education of

- Medical Students in Virtual Education: Corona Pandemic. *Res Med Edu*, 14 (2): 38-47. <http://rme.gums.ac.ir/article-1-1150-fa.html>. (in Persian).
- Kazemi Gharajeh, M. Amin Khandaghi, M. (2014). Evaluating the Quality of E-Content from Viewpoints of Students of Mashhad University of Medical Sciences. *Journal of Information and Communication Technology in Educational Sciences* 4, 4(16), 75-93. https://ictedu.sari.iau.ir/article_641354.html?lang=en. (In Persian).
- Khatebi, A., Sajadi, N., & Saefnabi, J. (2010). Studying the quality of educational services at the Faculty of Physical Education, University of Tehran from the perspective of undergraduate students. *Journal of Sport Management Studies*, 8(9), 77-94. [In Persian]. https://smrj.ssrc.ac.ir/issue_91_95.html
- Malekzadeh, S. Navehebrahim, A. Abdollahi, B. Zamahani, M. (2019). Designing the Model of Promotion of Educational Brand of Payame Noor University. *Quarterly Journal of Research in School and Virtual Learning*, 6(4), 61-74. https://etl.journals.pnu.ac.ir/article_5794.html?lang=en. (In Persian).
- Mir Gafouri, S. H. Shabani, A. Mohammadi. Kh. Mansouri, S. Abadi, M. (2016). Identification and Ranking of Effective Factors Which Optimize Qualities of Educational Services Using Combined Approaches of Fuzzy VIKOR and Interpretive Structural Modeling (ISM). *Journal of Instruction and Evaluation*, 9 (34), 13-33. https://jinev.tabriz.iau.ir/article_523158.html?lang=fa. (In Persian).
- Mohammadi, M., Khadem-Rezaian, M., yousefi, M., Alinezhad Namaghi, M. (2024). Evaluation of Virtual Learning Environment of Medical Students Using Distance Education Learning Environment Survey Questionnaire at Mashhad University of Medical Sciences. *Res Med Edu*, 16 (1), 74-83. <http://rme.gums.ac.ir/article-1-1332-fa.html>. (In Persian).
- Montaseri, M. A., Badiyepymaiejahromi, Z., Shadfard, Z., Pishgar, Z., Taghizadeganazadeh, M. (2024). Evaluating the Effectiveness of Scenario-Based Training through Face-To-Face and Blended Methods on Learning of Operating Room Students. *Res Med Edu*, 15 (4): 32-41. <http://rme.gums.ac.ir/article-1-1337-fa.html>. (in Persian).
- Moslehi, L. Alidoust ghahfarrokhi, E. (2022). Identifying and Prioritizing Factors Affecting the Quality of E-learning of Physical Education Students During the Outbreak of Covid-19 Pandemic. *The Quarterly Journal of Research and Planning in Higher Education*, 28(4): 201-217. <https://doi.org/10.22034/irphe.2022.705236>. (In Persian).
- Najafi, H. Sobhaninejad, M. Jafari Harandi, R. (2015). The Quality Evaluation of Educational Programs in Qom Payam-e Noor University, Based on the NADE-TDEC model. *Educational Measurement and Evaluation Studies*, 5(10), 89-107. https://jresearch.sanjesh.org/article_18825.html?lang=en. (in Persian).
- Ohani Zonouz, V. (2020). Designing Quality Evaluation Model in the Electronic Curriculum in Higher Education. *Education Strategies in Medical Sciences (ESMS)*, 15(4), 389-400. (in Persian). <http://edcbmj.ir/article-1-2972-fa.html> (in Persian)
- Ramkumar, P., & Vinayagamoorthy, P. (2020). Role of academic libraries in e-learning. *Science, Technology and Development*, 9(2), 1-9.
- Roshanialibenese, H., fathi vajargah, K., Khorasani, A. (2022). Curriculum Design of Iran's Virtual Education System Based on Klein's Nine Model at Shahid Beheshti University in the 2013-2014 Academic Year; Obstacles and challenges. *Educ Strategy Med Sci*, 15 (4): 309-318. (in Persian). <http://edcbmj.ir/article-1-2778-fa.html>.
- Saraji, F., Attaran, M., Ali, A. M. (2008). Characteristics of Iranian Virtual Universities Curriculum Design and Its Comparison with the Virtual University Curriculum Design Guide Model. *Quarterly Journal of Research and Planning in Higher Education*, 14(4): 97-118. (in Persian). <https://www.sid.ir/paper/68091/fa>.
- Sato, S. N., Condes Moreno, E., Rubio-Zarapuz, A., Dalamitros, A. A., Yañez-Sepulveda, R., Tornero-Aguilera, J. F., Clemente-Suárez, V. J. (2024). Navigating the New Normal: Adapting Online and Distance Learning in the Post-Pandemic Era. *Educ. Sci*, 14(19), 1-25. <https://doi.org/10.3390/>
- Shahmohammadi, A. Azizi, N. (2021). Developing a Model for the Distance Education System as a Teaching Organization Based on Grounded Theory. *Journal of Iranian Higher Education*, 13(4) 86-112. (in Persian). <http://ihej.ir/article-1-1417-fa.html>
- Shahmohammadi, A., Taghipour, A., Azizi, N., and Ebrahimzadeh, I. (2018). A Critical Reflection of the Appraisal Indicators of Distance Education Systems: A Meta-Synthesis. *Interdisciplinary Journal of Virtual Learning in Medical*, 9(2), 1-9.
- Torkzadeh, J., Ahangari, M., Mohammadi, M., Marzoghi, R., & Hashemi, S. (2019). Identifying the components of evaluating the internal effectiveness for academic e-courses: qualitative study. *Journal of Iranian Higher Education*, 11(1), 125-159. [In Persian]. <http://ihej.ir/article-1-1315-fa.html>
- Yaseni, A. Taban, M. (2019). Studying the effectiveness of virtual education courses from the perspectives of professors and students (Case study:

- University of Tehran). *Quarterly Journal of the Iranian Higher Education Association*, 7 (4), 175-198. (in Persian). <https://ihej.ir/article-1-731-fa.html>.
- Yildiz, P. İşman, A. (2016). Quality Content in Distance Education. *Universal Journal of Educational Research*, 4(12), 2857-2862. <https://doi.org/10.13189/ujer.2016.041220>.
- Zahed Babelan A, Mehravar S, Kazami S, Javidpour M. (2023). Evaluating the Quality of Electronic Education in the Higher Education System Using the HELAM Evaluation Model. *Res Med Edu*, 15 (1): 13-21. (in Persian). <http://rme.gums.ac.ir/article-1-1277-fa.html>.