Doi: 10.30473/IDEJ.2023.65511.1126 **ISSN:** 2588-4476

Iranian Distance Education Journal

Vol. 4, No. 2, (New Series) Summer-Autumn 2022 (P 58-69), Payame Noor University

Original Article

Designing a learning model using structuralism approach in a blended learning environment in high school

Maryam Bostan Pira [1]*, Forozan Zarabian [2], Nasim Saeid [3] ,Ahmad Rastegar[4],Mozhgan Heidari[5]

1.Instructor, Department of Educational Sciences, Payame Noor University(PNU), Kerman, Iran
2. Assistant Professor, Department of Educational Sciences, Payame Noor University(PNU), Tehran, Iran
3. Assistant Professor, Department of Educational Sciences, Payame Noor University(PNU), Kerman, Iran
4. Associate Professor, Department of Educational Sciences, Payame Noor University(PNU), Tehran, Iran
5. Assistant Professor, Department of Educational Sciences, Payame Noor University(PNU), Tehran, Iran

Received: 2022/06/22 **Accepted:** 2022/10/22

Abstract

The main goal of the current research was to design a learning model using the characteristic of the structural approach in a blended learning environment in high school. This research is practical and theoretical in terms of purpose, and a qualitative and quantitative sequential mixed research method has been used. To do this research, the first question of the research was answered by studying and reviewing the available texts, documents and written sources and using the literature and research background and scientific sources. To answer the second question, Meyering and Delphi content analysis technique was used. In the first stage, the answer to the second question was obtained by using the qualitative study method, the content analysis technique of Meyering, and the desired components were extracted and used as a complement to the Delphi method. In the second stage, a panel of participants was formed using the snowball sampling technique, and the relevant experts were selected, and after presenting various questionnaires and conducting interviews, the desired components and indicators were selected and confirmed by the experts. Next, to answer the third question of the research, in order to validate the designed model, the Reigeluth questionnaire and Cronbach's alpha were applied to measure its reliability.

Also, Kendall's coefficient of concordance was used to determine the level of consensus in the Delphi method. In order to check the content validity, the index model (CVI) was used and to determine its general suitability, (S-CVI) applied, and finally, based on the results and taking into consideration the corrections and suggestions of the professors, the final model was designed and approved.

Keywords

Blended learning, electronic education, traditional education, distance education, Structuralism.

Introduction

The beginning of the third millennium has been called the age of knowledge and the age of information explosion. Education for a long period of time had mainly devoted its activities to the transfer of information and increasing the students' reserves, feels a bigger mission in this era, and that is the answer to the basic question of whether the common educational methods meet the needs of the students in the new century? Otherwise, what changes are needed so that the education system can be considered an efficient system (1). During the past decades, new methods and models for education have emerged, which are very effective and efficient compared to traditional methods of education, and they leave a very good impact on the development of thinking and the creative spirit of the learner (2). Now in the 21st century, the use of educational technology at the school level has increased the interest and motivation of students to learn and

*Corresponding Author: bostan@pnu.ac.ir

anything at any time and place that is convenient, technology makes it possible to provide education in different places for people and ensure their access to educational materials. Due to the problems, limitations and weaknesses of traditional and electronic education in most educational centers, a trend towards education with a combined approach has been created (4).Some of the most important advantages of e-learning are providing a spontaneous, flexible, accessible learning process, saving money, time and other resources, comprehensive focus on learning along with his more active participation in the learning process, easier content management, the possibility of using measurement methods. It is a more diverse method to measure the progress and overall success in learning (5). Although the advantages of e-learning are more than its disadvantages, such trainings cannot simply replace traditional trainings. Because traditional education also has certain advantages, such as the presence of a teacher for better learning the content and encouraging learning, establishing a connection between the past and present experiences of learners, and receiving feedback from others (6). However, since both types of education have their own advantages and disadvantages, many educational experts try to combine different methods, because they believe that blended learning is an effective approach to solving problems.

Blended learning is an educational method that combines digital technology and media with teacher-centered classrooms, giving high school students more flexibility to personalize their learning experience. On the one hand, with its focus on the harmony and balance of the educational system (traditional and electronic), and on the other hand, by combining the vertical (deepening learning) and horizontal (tools and technology) dimensions of education, blended education increases the quality of learning, reduces educational costs and time by 50%, improves educational outcomes by 10%, enhances accountability and social cooperation, confidence and intrinsic motivation of the learners, boosts flexibility in the time and place of education, enriches the learners' experiences in the educational environment, and promotes student satisfaction.(2).Blended learning as a strategy can improve the students' learning and interaction as well as their accessibility and flexibility in content production and presentation and can also institutionalize organizational requirements and commitments in the teaching-learning process (7). It appears that blended learning, which has the advantages of both teaching approaches (traditional and electronic), is an effective approach for increasing the effectiveness of learning and ease of access to educational materials. Also, by providing different learning opportunities, blended learning not only boosts the attractiveness of education, but also facilitates proper attention to learners' individual differences, because not all people learn in the same way, and using various methods thus appears essential for education. (1).The concept of learning begins with the idea that learning is not an incidental event that occurs at a particular moment; rather, it is a continuous process. Blended learning offers a variety of benefits because it uses various learning tools. Learning in certain ways limits the richness of learning programs and the amount of knowledge transfer. One of the basic issues in achieving curriculum goals at each educational level is to answer the basic question of how the content should be taught to enable the accomplishment of the goals. Accordingly, determining the teaching methods and teaching-learning strategies is one of the main pillars in the achievement of goals. (8).

Based on the structuralism theory, knowledge is built by the individual, and knowledge production is a continuous process that organizes people's individual experiences of the world. Structuralists equate learning with the creation of meaning from experience. Structuralism is a model created to describe learning. This model states that students learn when they are active in the learning process. Learning is a process of understanding; it does not take place through transmission, but through the interpretation of findings. The interpretation of findings is supported through educational methods that make students discuss each other's theories (1). Today, in the era of information technology, teachers in high school, interested in the teaching profession look for new ideas and ways to make learning attractive for the learners. The challenge that teachers

face is how to apply new theories and good ideas. That is, how to apply new ideas to different learning strategies so that they can be used in classrooms to achieve the set educational goals. This can only be done by creating a suitable environment that offers freedom of action to the teachers so that they can employ appropriate strategies in different situations, such as using traditional education, e-learning, or a combination of both, depending on the situation (9). In the research conducted in the field of combined education and its various dimensions, researchers have achieved significant results.

In a research that was conducted with the aim of investigating the challenges, patterns and solutions of the development of combined education by (10), they stated that blended learning tries to improve the quality and quantitative development of educational activities by using various tools and advanced technology. In a research entitled "Challenges and Opportunities of Blended Learning in the Age of Corona" from the Point of View of teachers in Isfahan, which was conducted by (6), The researcher came to the conclusion that due to the Corona crisis, most of the teachers cannot completely solve the educational needs with a face-to-face approach or with a completely online approach and basically, in order to achieve the desired results, part of the content of the course should be presented with a face-to-face approach and the other part should be presented virtually. In a research, Sharfi et al. (1) have designed and developed a curriculum model with a combined education approach in high school. In a research titled blended learning and its role in learning development, which was conducted by Taghipour et al (11), The researchers came to the conclusion that blended learning is a convergence of virtual education approach and face-to-face learning, as a new paradigm in modern education.

In order to carry out this research, the key elements of the combined education curriculum have been determined by using the theoretical foundations of research and learning theories and the characteristics of the main elements of the curriculum, purpose, content, teaching and evaluation methods.Blended learning as a new mechanism and based on the diversity of learning methods emphasizes that by using various tools and advanced technology, it tries to improve the quality of educational activities and fill the existing gap (10). This is possible through the use of combined education at the high school. The requirement to update knowledge and information necessitated the design of a learning model using the structuralism approach at high school in order to improve the level of education and quality of students' learning according to the individual characteristics of the learners of this level. This research was carried out in order to fulfill this goal. Therefore, in this research, we are trying to answer the following questions:

- How is the design of the learning model using the characteristic of the structuralism approach in blended learning environment in high school?
- What are the factors and components affecting the learning pattern using the structuralism approach in the blended learning environment at high school?
- Is the learning model using the structuralism approach in the blended learning environment valid according to experts?

Methods

In the present research, based on the objective, it has been conducted using a qualitative and quantitative sequential mixed research method. In this research, since the goal is to design a learning model using the structuralism approach in a blended learning environment in high school, the researcher in the qualitative part of the research is based on the documentary analytical approach, by studying and reviewing existing texts, documents and written sources and using literature. And the background of the research, scientific sources and available documents in the investigated field addressed the first question of the research. In order to answer the second question of the research, by using the analytical description of the research conducted in various domestic and foreign databases, articles and treatises that existed in the field of blended learning, virtual social networks, philosophical foundations, and electronic learning were selected.

The results of this search were first examined based on the title and abstract of the articles and 217 relevant articles were selected. In the next step, the full text of these articles was reviewed, and 72 were selected according to the research criteria. Then, the text of these articles was fully examined, and the desired categories were extracted using the qualitative study method and Meyering's content analysis method, after extracting the elements and components, a panel of experts was formed with professors of philosophy of education, curriculum planning, and distance education planning. At this stage, key informants and experts in this field were identified and briefed on the study objectives and then asked to participate in the study. A total of 15 experts were selected to carry out the research steps, and after preparing the initial questionnaire extracted from the qualitative step of the research, the questionnaire was sent to the experts to offer their feedback. After collecting the interview answers and presenting the open-ended questions and based on Meyering's content analysis of the first stage, 240 items were identified.

In the next stage, after collecting the answers, the information obtained in the previous stages was used to develop the questionnaire of this step. In the second phase of the Delphi technique, the participants received a new questionnaire that contained items identified in the previous stages. At this stage, the participants prioritized and ranked the obtained components. At the end of this stage, the items on which the experts agreed and those on which they disagreed were disclosed. After collecting these comments, the priorities were determined and sent to individuals in the third round of Delphi. A consensus then began to form at this stage. The panel of experts identified 34 of the items they deemed highly effective. Finally, the elements and components were identified based on this questionnaire.

To answer the third question of the research, in order to validate the designed model, the Reigeluth questionnaire and Cronbach's alpha were used to measure its reliability. In the quantitative part of the research, the methods used for data analysis include: average, standard deviation, tables and graphs.

Results

Based on the findings and after studying and reviewing the studies in the first part, the layers extracted from Mayring's analysis were extracted, including a layer of conceptual elements (organizational dimension, educational philosophy, needs assessment, and objectives), analytical elements (audience analysis, content analysis and presentation, and analysis of the environment and media used), executive elements (design, producers, learning and teaching), environmental elements (interaction and communication) support elements (support, management system, evaluation, educational justice, organizing, motivating, learner characteristic analysis, teaching and learning management, and constructive environment).

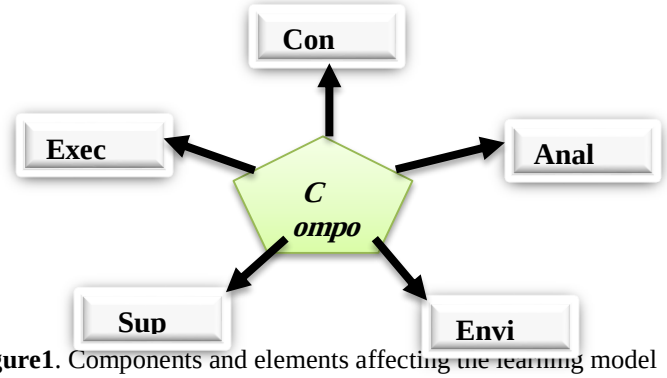


Figure1. Components and elements affecting the learning model

At this stage, the layers extracted from Meyering's analysis, including layers of conceptual, analytical, executive, environmental, and support elements, and their sub-components were

presented in the form of interviews. Meanwhile, some members of the expert panel proposed that all the components be classified and presented in the four layers of conceptual, analytical, executive, and support elements. Evidently, the components related to environmental elements were incorporated within the other elements in the final questionnaire. In the fifth stage, as already noted, each member of the panel received the questionnaire from this stage in the form of more general components proposed. At this point, they were asked to reconsider their judgment of the issues raised or to state their reasons for disagreement. This step allowed the panel members to clearly explain their information and judgment on the issues under discussion. A slight increase in consensus is expected in this stage compared to the previous one and the categories were re-challenged by the open-ended questions at the end of the questionnaire.

Table 1. The components extracted for using the structuralism approach in a blended learning environment

Layers and Main Elements	Components	Items
Conceptual elements	Organizational dimension	Educational affairs Student services
	Educational philosophy	Identify ideals, set general objectives, analyze the curriculum Educational framework appropriate for high school
	Needs assessment	Content analysis or needs assessment and analysis of existing digital resources Occupational needs assessment as appropriate for high school
	Objectives	Determining educational goals as appropriate for high school Conforming to the objective setting model of the national curriculum as appropriate for high school
Analytical elements	Audience analysis	Learner characteristic analysis, prior learning, prerequisite learning, and informational, cognitive and effective skills
	Content analysis and presentation	Balance in program implementation according to the objective areas appropriate for high school Organization in accordance with the education time and national professional competence levels
	Analysis of the environment and media used	Access to computers and communication networks Using platforms to share resources and materials
Executive elements	Design Producers	Designing for educational models Producers of educational materials and software
	Learning and teaching	Well-timed learning Congruence of the teaching-learning strategies with educational goals as appropriate for high school Congruence of the teaching method with the content and subject of the lesson as appropriate for high school Congruence of the teaching-learning activities with the trainees' characteristics, including age, interests, learning capabilities, and the offered course being appropriate for high school Use of learning methods (role play, case study, and simulation)
	Interaction and communication	Effective communication between the teacher and learners
Support elements	Support	The support environment (how to use facilities and tools, learner support in the process of learning how to use hardware, software, and the network)

Management system	Education management system (registration, educational affairs, educational content management, etc.)
Evaluation	Self-assessment, peer evaluation, and evaluation with various tools such as various written, oral, and practical tests, a personal judgment checklist, peers' verbal opinions, etc.
Educational Justice	Ability to use experienced professors and teachers for larger numbers of people Emphasis on processes and systems instead of on individuals
Organizing	Time and place of education Attendance
Motivating	External motivation (encouragement, persuasion, explaining objectives of the lesson, and giving motivation) Providing stimuli (designing questions, stories, experiments, and discussion plan)
Learner characteristic analysis	Determining the demographic characteristics (age, sex, etc.) appropriate for high school
Teaching and learning management	Class atmosphere Participation and interaction with the learner
Constructive environment	Defining and creating case projects

A blended learning model with specific dimensions was ultimately developed (Table 1). To validate the learning model by the structuralism approach in a blended learning environment based on theoretical foundations, the research background and feedback from educational design experts, its reliability was assessed by Cronbach's alpha using the Reigeluth (2013) questionnaire. This model was evaluated by experts using the mentioned questionnaire. As the questionnaire was scored based on a Likert scale, the minimum score for every criterion was 1 and the maximum 5. The results showed that the mean of all the criteria was higher than 3. The Content Validity Index (CVI) and Scale Content Validity Index (S-CVI) were used to evaluate the content validity of the proposed model. The results showed that this number is above 0.79 for all the model criteria and it can therefore be concluded that the proposed model has a good content validity. In other words, the mean of all the content validity indices (CVI) was divided by the total number of criteria. The results showed that the overall fit of the model was 0.93. Therefore, since the proposed number is higher than the minimum best fit (0.80), it can be concluded that experts have evaluated this learning model based on a structuralism approach in a blended learning suitable.

Maximum	Minimum	Standard deviation	Average	Items	Components
٨	٦	٠,٥٠٧	٠,٧٦٢	Educational affairs	Organizational dimension
٩	٦	٠,٣٠٢	٠,٧١٣	Student services	
٩	٥	٠,٤٣٥	٠,٧٦٥	Identify ideals, set general objectives, analyze the curriculum	Educational philosophy
٨	٦	٠,٦١٥	٠,٧٣٥	Educational framework appropriate for high school	
٨	٥	٠,٣٣٨	٠,٧٢٥	Content analysis or needs assessment and analysis of existing digital resources	Needs assessment
٩	٦	٠,٦٤٢	٠,٧٣٦	Occupational needs assessment	

Maximum	Minimum	Standard deviation	Average	Items	Components
				as appropriate for high school	
٨	٥	٠,٥٠٣	٠,٧٨٥	Determining educational goals as appropriate for high school	Objectives
٨	٥	٠,٤٣٦	٠,٨١٥	Conforming to the objective setting model of the national curriculum as appropriate for high school	
٩	٦	٠,٣٠٨	٠,٨٤٥	Learner characteristic analysis, prior learning, prerequisite learning, and informational, cognitive and effective skills	Audience analysis
٩	٦	٠,٥٣٥	٠,٧٦٤	Balance in program implementation according to the objective areas appropriate for high school	Content analysis and presentation
	٥	٠,٤١١	٠,٧١٧	Organization in accordance with the education time and national professional competence levels	
٨	٥	٠,٨٣٥	٠,٧٢٣	Access to computers and communication networks	Analysis of the environment and media used
٩	٥	٠,٦٣٨	٠,٨٢٣	Using platforms to share resources and materials	
٨	٥	٠,٥٣٧	٠,٨٦٣	Designing for educational models	Design
٩	٥	٠,٦١٢	٠,٧٢٦	Producers of educational materials and software	Producers
٩	٦	٠,٨٣١	٠,٧٦١	Well-timed learning	Learning and teaching
٩	٥	٠,٤١٩	٠,٧٥٩	Congruence of the teaching-learning strategies with educational goals as appropriate for high school	
٩	٦	٠,٤٠٥	٠,٨٦٩	Congruence of the teaching method with the content and subject of the lesson as appropriate for high school	
٩	٥	٠,٣٦٧	٠,٩١٥	Congruence of the teaching-learning activities with the trainees' characteristics, including age, interests, learning capabilities, and the offered course being appropriate for high school	
٨	٥	٠,٥٢٣	٠,٧٢٥	Use of learning methods (role play, case study, and simulation)	
٨	٥	٠,٣٤٨	٠,٧٦٣	Effective communication between the teacher and learners	Interaction and communication
٨	٦	٠,٥٢٤	٠,٧٩٣	The support environment (how	Support

Maximum	Minimum	Standard deviation	Average	Items	Components
				to use facilities and tools, learner support in the process of learning how to use hardware, software, and the network)	
٩	٥	٠,٤١٤	٠,٧٨٥	Education management system (registration, educational affairs, educational content management, etc.)	Management system
٩	٦	٠,٧٢٥	٠,٧٨٢	Self-assessment, peer evaluation, and evaluation with various tools such as various written, oral, and practical tests, a personal judgment checklist, peers' verbal opinions, etc.	Evaluation
٨	٥	٠,٤٢٥	٠,٧٢٤	Ability to use experienced professors and teachers for larger numbers of people	Educational Justice
٩	٦	٠,٣٧٢	٠,٧٠٥	Emphasis on processes and systems instead of on individuals	
٨	٥	٠,٦٢٣	٠,٧١٣	Time and place of education	Organizing
٩	٦	٠,٤٨٩	٠,٧٤٥	Attendance	

With the dramatic growth of technology, especially after the advent of virtual social networks, the old theories no longer meet the needs of such developments, and distance education needs its own learning principles and theories to become a new educational system. These theories must explain the complexities of learning and meet the learning needs in the information era. Moreover, some believe that in recent decades, despite the emergence and development of new technologies, our distance education system has maintained the same old educational methods and has not been able to adapt to the features of today's advanced and changing world.

The qualitative content analysis of articles and documents on the educational design of virtual education courses and the Delphi method based on the opinion of experts in the relevant educational system shows that many studies have emphasized the framework of mental and educational philosophy in designing educational courses based on virtual education environments and have referred to them as a fundamental step of educational design based on a blended learning environment (9, 17, 18). Consistent with the findings of this study, items related to the organizational dimension (educational affairs, student services), educational philosophy (identifying ideals, setting general objectives, analyzing the curriculum, setting behavioral goals appropriate for high school, and educational framework appropriate for high school), needs assessment (content analysis or needs assessment and analysis of existing digital resources, and occupational needs assessment appropriate for high school), and objectives (determining educational objectives appropriate for high school, and corresponding to the objective-setting model of the national curriculum appropriate for high school) were approved. This consistency indicates the validity of the study and the importance of the identified elements. In addition, an educational designer must be able to first identify issues well in real-world situations, which are sometimes complex, and then, if necessary, establish an educational plan. This important step is possible in light of a correct understanding of the system and its related components. Analysis as a dynamic process helps the educational designer learn the needs of the organization and design with a thorough understanding of the educational needs in accordance with other components,

such as the educational subject and audience .Qualitative content analysis of articles and documents on educational design based on blended learning environments and the Delphi method obtained by the experts' survey also showed that, like many educational design models, educational analysis has been proposed as one of the basic steps of designing education based on virtual social networks. Nonetheless, the different nature of education based on virtual social networks requires different educational analysis processes (12). mentioned structural and organizational barriers and non-compliance of the existing curriculum with information and communication technology as problems of virtual education based on social networks. In this regard and in line with these results, audience analysis (learner characteristics analysis, prior learning, prerequisite learning, and information, cognitive and effective skills), content analysis and presentation (compatibility of the program implementation with its domains, congruence of the objectives with the high school level of education, organization in tune with the education time and professional competence levels), analysis of the environment and media used (access to computers and communication networks, and using platforms to share resources and materials) were approved in the present study. In addition, these results are consistent with the results of a study by Qalandari.(5)who introduced the technology factor as one of the priorities of education. Considering the consistency of the cited studies with the present findings, it appears that the appropriate and expert-approved use of virtual education can both improve the quality of education and provide the basis for rapid content delivery. Nevertheless, the issue of educational justice should also be considered and access to cyberspace and technology should be provided for all learners.

In design, the execution element refers to events that focus on how to make the curriculum operational. (1) The educational design process based on a blended learning environment includes dimensions such as technology, design, interaction and communication, and materials and tools suitable for the educational-communication environment, which are expressed as the executive elements. In this research, items related to design (designing for educational models), producers (producers of educational materials and software), learning and teaching (well-timed learning, the congruence of teaching-learning strategies with educational goals appropriate for high school, the congruence of the teaching method with the content and subject of the lesson as befitting high school, the congruence of teaching-learning activities with the trainees' characteristics, including age, interests, learning capabilities, and the offered course being appropriate for high school), the use of learning methods (role play, case study, and simulation) were approved, which is in line with the results of the study by (10). According to these results and their consistency with the findings of previous studies, it can be argued that learning and the educational process have the highest efficiency if the characteristics and needs of the learners are taken into consideration. In this regard, it appears that an initial general needs assessment and identification of the challenges and facilitators can be helpful.

After implementing an educational model in the cyberspace, especially virtual social networks, the biggest concern was network-based services or educational maintenance and support. Training an experienced and specialized team with appropriate features that can respond to problems and ambiguities by creating trust and peace of mind for the learners is one of the programs that are always considered by educational designers. The qualitative content analysis of articles and documents on educational design based on blended learning environments and the Delphi method obtained by the experts' survey also showed support services as one of the main stages of the life cycle of the developed model and a consistent link to the audience and implementers of the relevant educational design model. The number and variety of learners in terms of general and specific characteristics, geographical dispersion, etc., has made the support elements one of the most important solutions and components of the educational design model based on the blended learning environment. In this regard and in line with these results (2) showed that students' satisfaction is significantly higher with the blended learning approach than with the other

methods. Despite the consistency of the results, it should be emphasized that the blended approach requires special training for teachers and their familiarity with the blended approach and its characteristics.

The present study is an applied research on blended learning, but its results should be interpreted considering the limitations. Security issues and internet filtering and the little research conducted in Iran on education in blended learning environments were among the limitations of the present study.

Conclusion

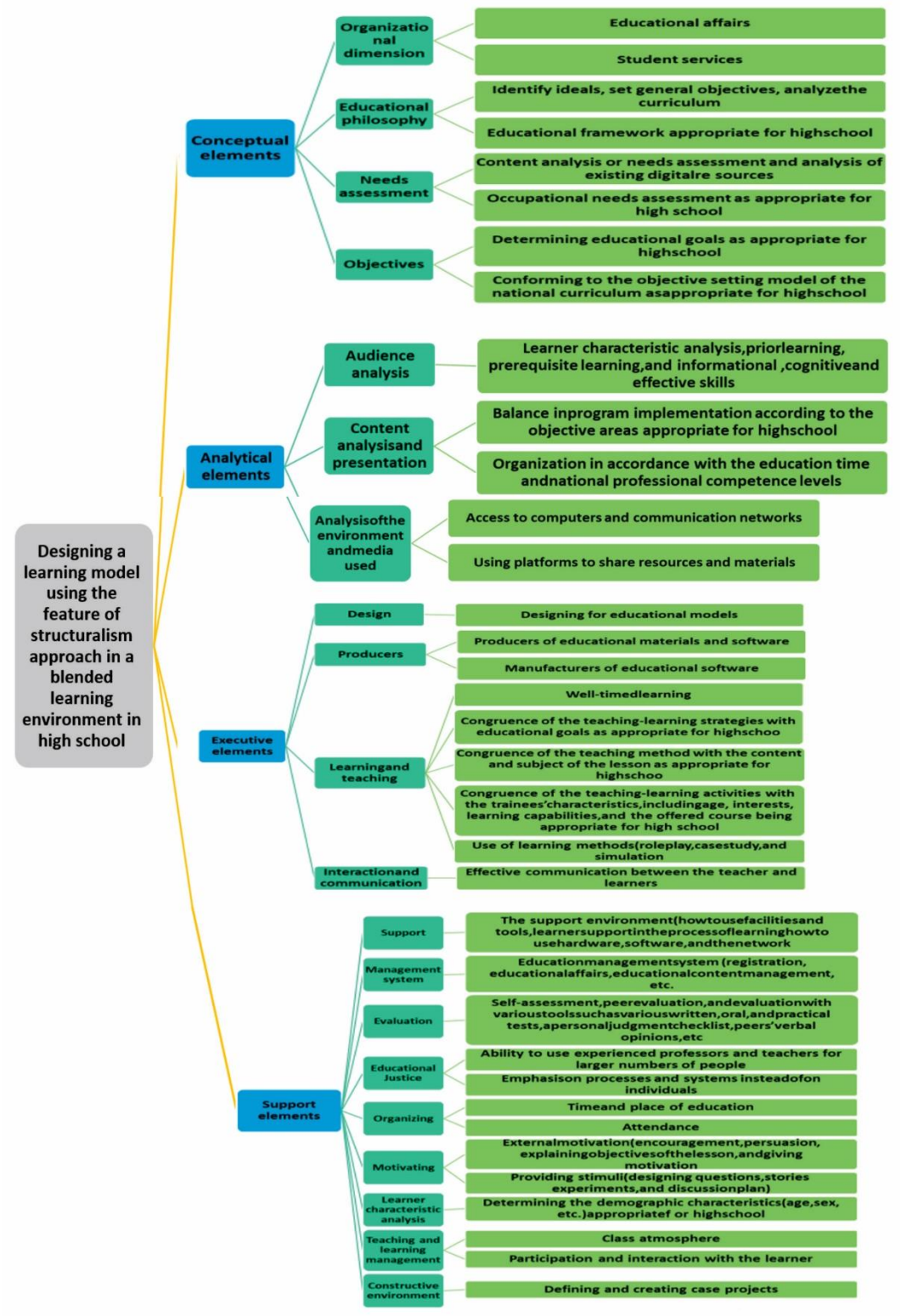
In this research, the main goal of the researcher was to design a learning model using the structuralism approach in a blended learning environment at high school, and what components and indicators does the model have and is it valid according to experts? In this context, questions were raised, including:

1-How is the design of the learning model using the feature of the structuralism approach in the combined learning environment in high school? The simultaneous use of the advantages of electronic and traditional education and in general the use of blended learning environments in all levels of education, especially in the high school, can be considered as a strong tool to create an educational environment with the support of the structuralism approach with emphasis on inclusive activeness in learning. The results of this research are in line with the opinion (13) . According to him, blended learning can increase accessibility and flexibility for learners and improve the level of active learning, which is one of the points emphasized by structuralism in teaching and learning. The desired model should be flexible and determined based on individual differences, needs and interests of learners. In a blended learning environment in high schools, students can get opportunities to interact, communicate, collaborate and participate in learning. Because in this form of education, students are considered as an active element, and if high school teachers and students accept the combined approach and implement it with the belief in the results of the implementation, we will have more effective formal education that will act as a driving factor to help students better participate and meet their needs in the advanced world of knowledge and information.

2-The second research question: What are the factors and components affecting the learning pattern using the structuralism approach in the blended learning environment? At this stage of the research, due to the existing rich literature, the desired components were extracted using the qualitative study method of Meyering 's content analysis technique, and finally 4 layers were confirmed: conceptual elements, analytical elements, executive elements, and supporting elements, which in the end the designed pattern will be presented below.

3- .The third question of the research: Is the designed model valid according to experts? In this research, Kendall's coordination coefficient was used to determine the level of consensus among the members of the expert panel. The fact that the number of members of the expert panel was more than 10 people is quite significant from Kendall's coefficient. Also, in order to validate the designed model, the Reigeluth questionnaire was used and to measure its reliability, Cronbach's alpha was used, and the validity rate of the questionnaire was calculated as 0.851 and its reliability rate was calculated as 0.878. Also, in order to check the validity of the proposed model, the content validity index (CVI) and its general appropriateness (S-CVI) were used. And finally, the researcher's desired model was based on the indicators and components approved by the respected specialists in the question section. The second research was presented as follows.

Learning model using structuralism approach in a blended learning environment in high school



References

[1] Sharfi S, Hassanzadeh S, Zohur arvandeh T. Designing and compiling a curriculum

model with the approach of combined education at high school. Journal of Educational Sciences and Counseling 1399 ; 13.
[2] Sadeghi Tabar P, Shariatmadari M. Design and validation of the continuing education model of the medical society based on blended learning. Scientific-Research Quarterly in Educational and Virtual Learning 1399 ; 1.
[3] Mahmoudi M. Blended learning and its role in the development of learning. Journal of Studies and Research in Behavioral Sciences 1398; 1.
[4] Palmer E, Lomer S, Bashliyska I. Overcoming barriers to student engagement with Active blended Lerning. Interim repent 2017.
[5] Qalandari M. Reflections on blended learning and education management: a qualitative study from the point of view of the push-pull migration model of teaching styles in the corona pandemic. New Research Approaches Quarterly in Management Sciences 1401; 31.
[6] Jozi Najafabadi B. Challenges and opportunities of learning in the age of Corona from the perspective of Isfahan teachers. Journal of Psychological Studies and Educational Sciences 1400; 4.
[7] Abbasi Z. Investigating the key success factors of Persian language e-learning courses for foreigners from the perspective of course instructors. Education Technology 2019; 13.
[8] Moghadam A, Noorabadi S, Kermani, H, et al. Challenges, patterns and solutions for the development of combined education. New Achievements in Humanities Studies Magazine 1401 ;47.
[9] Farahani I, Laeer S, Farahani S, Schwender H, Laven A. Blended learning: improving the diabetes mellitus counseling skills of German pharmacy students. Currents in Pharmacy Teaching and Learning 2020.
[10] Taghipour K, Mahmoudi M. Blended learning and its role in the development of learning. Journal of Studies and Research in Behavioral Sciences 1398; 1.
[11] Alsalhi NR, Eltahir ME, Al-Qatawneh S. The effect of blended learning on the achievement of ninth grade students in science and their attitudes towards its use 2019; 5(9).
[12] Zarei A, Javaheri Daneshmand M, Sheikhi AA. Identifying effective factors and barriers to the use of e-learning to increase the mental health of primary school students in Karaj (a qualitative study). Education Technology. 2019;13(3):773-783.
[13] Russel W, Hatzipanagos, et al. Blended learning: bringing the idea to life and what does it mean for faculty and administrators? In Handbook of Research on Technology-Centric Strategies for Higher Education Administration.