

Organizing the Phenomenon of Distance Education in the Field of Architecture

Hashem Hashemnazhad, Seyed Bager Hosseini and Mohandes Vahid Vaziri
Department of the Architecture, University of Science and Technology, Tehran, Iran

Abstract: Efforts to get rid of the scientific gap between the developed and industrialized countries and the developing countries are one of the development plans which has occupied the minds and ideas of the politicians and planners of the developing countries. Therefore, expanding the higher education is considered to be one of the top priorities of these countries. Overabundance of information and progress in the field of communication technology demands developing and implementing new solutions and methods for expanding and improving education especially in technical, professional and higher education fields by the scientific policy makers and educational decision makers because at the beginning of the third millennia, an educational system is accepted by the academic and research community which is able to provide access to the information for all continuously. On the one hand, the young make up of the country's population and on the other hand, the need for employing a continuous and lifelong education, intensifies the need for giving priority to distance education using the new technologies. Since Iran has a large skilled manpower resources and compared to the other countries in the region has made more noticeable advances in the field of communication and information technology, she can not only set forth a considerable amount of effort toward developing higher education within the country but also take the leadership role in distance education within the region. Distance education is a fairly new educational system which different countries depending on their geographical, cultural and social positions have benefited from it at different academic fields and levels. The quality of education and level of learning of the students in distance education versus that of the students in the traditional education system, especially in the practical and practical-theoretical fields such as architecture is one of the most important issues of concern and discussion among the supporters of this new method of education. This study compares the level of learning of the students of architecture within the on-sight and distance educational systems in their major courses. This study is a semi-experimental research. The population which has been studied includes the students of architecture in associate and bachelor level program of the University of Mohaggeg in Ardebil during the academic years of 1386-87 and 1385-86. The collected data is the result of the qualitative-quantitative assessment of these students in their academic courses and comparison of their level of learning with one another.

Key words: Distance education, traditional education, self teaching, independent learning, architecture, educational programming, open university, closed university, dispersed learning, shared massification

INTRODUCTION

Considering the young make up of Iran's population, change of the perception of the people compared to the past two decades and some socio-cultural considerations, the need for paying attention to education and developing the skilled and expert manpower in certain academic fields at the universities is more obvious. It is clear that the traditional universities and higher education institutes, especially in fields of study such as architecture education due to lack of enough experts and instructors can not supply the demand of the country's need and/or the desire of the many students who want to study in these fields. As it is known, during the last three

decades the traditional system has not been able to meet >15% of the country's need therefore, alongside the traditional system of education, the necessity of using open learning system and benefiting from the educational technology in order to increase the capacity and better use of educational resources and expert instructors is totally felt. Study of the history of education shows that lack of enough expert manpower as a problem, did exist in the today's developed countries and in dealing with this problem, the open learning system based on technology in comparison with the traditional learning system, presents more practical, trustworthy and economical solutions. This new method due to its specific characteristics, especially its coverage capability can be

an effective and complimentary factor in supplying the demand of the society for expert manpower. The vast and continuous flow of the information in today's world inevitably but gradually is turning us into a global society, a world in which most of the areas in it is connected to one another via electronic communication devices.

The trend of globalization can be defined as unrestricted movement of people from one part of the world to another part of the globe, free transference of natural resources, capital, information and international education (Srivastava and Reddy, 1999). One of the consequences of the trend of globalization is change of traditional models and introduction of new systems which may even be based on the traditional ones.

In this day and age, people and the organizations which are involved in education must understand and accept the fact that no nation can isolate and lock itself behind closed borders and guarantee her survival, continuity and progress. Instead, they need to join the international community and become an active member of the global society. Due to the special attributes of the open-learning system and distance education and industrialization of learning in this system, the need which was mentioned above is more felt here than any other place especially, in the field of architecture education because of the role of the information and communication in it.

Distance education is a new system and an added resource alongside the traditional education which possesses special characteristics such as separation of the instructor and the student both from physical and time aspects, indirect relationship between the teacher and the student and the students having more control over the phenomenon of learning than it is possible in the traditional systems of education (Sherry, 1996). Even though, in various countries in the world depending on their geographical, cultural and social settings this system of education has been used and implemented from the elementary to higher education in different fields of study in the field of architecture education it has often posed the educational planners and the programmers with serious challenges. The nature of the academic courses, the way the various elements of education interact with one another, the type of the media and the vessels of delivery and the vast amount of technology which are used are a few of the factors which are effective in the quality of the education provided in this system of education. Capability of this system of education in providing a viable and effective form of education in most of the theoretical fields is crystal clear but its ability to do the same in the practical academic fields such as

architecture education which learning practical skills and solving mathematical problems is a must, faces lack of clarity as far as the quality of the education of the students is concerned. Assessment of the level of learning of the students, study of the role of the self-education and independent study in education along with comparing them with the traditional system is a few of the most important issues which this study aims to find answers to them.

Distance education in architecture education due to its unique nature, possesses the capability of quantitative and qualitative progress in different places and times and in different levels of education. Therefore, higher education in architecture education, developing and expanding the education of the students and the educators on a large scale and turning to distance education can be considered by the planners in different universities.

Nowadays, even among the developing countries, very few countries can be found which are not employing the distance education in order to meet some of their educational needs, despite the fact that employing this type of educational system is fairly new in fields such as architecture education and art. Of course, the developed countries are not exception to this issue besides this system of education is serving those who for many reasons do not wish to or can not benefit from the traditional system of education (Daniel, 1993). Now a days, distance education by using various media vessels has revolutionized the structural format of the traditional education and has changed the relationship of the teacher and the student which posed an obstacle for massification of education. It has shifted the numbers equation between the students and the instructors toward the students.

Definition of distance education: The concepts of correspondence education, open-education, semi conventional education, independent study and self-education, open learning system, tele-course and finally distance education are similar terminologies which are often interchangeably used and discussed in educational and cultural circles of different societies and have a vast range of definitions and explanations. The above phrases, all refer to the forms of education in which there is no need for the instructor to be present in a classroom. Even though, these terms are not the same but they are not totally unrelated to one another. Among these terms, the term distance education is considered to express the definition of education without presence of the teacher. Mckenzi, Post Gate and Soupham commonly say that the term free is opposite of the term limited and includes the omitting of the limitations, developing and

enriching the domains of activities and learning experiences as educational experiences and is considered to be the symbol of the change in the relationship between the student and the teacher (Farahani, 1380). Zigerell defines telecourse as follow: a learning system for learners who use video programs, text books, study guides, practice exercises and other educational tools which may include phone communication, mail and possibly virtual face to face meetings of the teacher and the student for learning and educating themselves. Fizli defines distance education as follow: Distance education is learning in a location away from the instructor (Kazemi, 1380) and in continuation he has further defined distance education simply as the education which takes place outside of the educational institution (Agazadeh, 1371). Javier Graph writes as follow on this subject: distance education in contrast with the traditional education is not placing one person in front of many, it is using the media. As the result of this, the education triangle, instructor, student and the blackboard) gets dismantled (Kazemi, 1380).

It is observed that in the definitions given above separation of the teacher from the student and flexibility of the student in adjusting with the curriculum and the location of the class is being pointed at Keegan (1980) talks about distance education as being a method of education in which the student is responsible for learning the course material and the student and the teacher in their educational relationship have no need for a face to face encounter.

Zamani and Mogadessi calls distance education a formal way of learning in which most of the education takes place when the teacher and the student are distant from one another. Holumberg defines distance education as a term which is used to describe different methods of teaching and learning in which the education does not directly takes place under the guidance of a teacher at a certain location and time but it benefits from an organized plan and an organization which does the planning (Holmberg, 1990).

In St.-Pierre (1998) opinion, distance education is an indirect method of education which is based on geographical and emotional separation of the student and the instructor from one another and the relationship between the teacher and the pupil (s) is based on the laws of technology in which learning is placed somewhere between total support by the instructor and total lack of support by the instructor. Garrison states that basically any description of distance education starts with understanding and familiarity with the separation of the teacher and the student as a vital characteristic of the distance education (Garrison, 1987). Zamani and

Mogadessi consider distance education as type of communication method that uses media for the purpose of organized and systematic learning in which the instructor and the student are away from one another.

In open learning system the term learning is mentioned as self-making and self-teaching (Seif, 1371). This term or word foretells of the change in the traditional relationship between the student and the instructor. With a little bit of deep thinking, one may define the term open as follow: creating flexible learning opportunities for the individuals who lack access to the universities (traditional system), ample opportunities and have time and location limitations.

Looking at the meanings of the terms open and learning and the definitions provided by Holmberg (1990), Keegan (1980) for distance education whenever teaching and learning take place in a certain location and time, it is called face-to-face education or learning but whenever one or both of these conditions are not there we are dealing with distance education. Even though traditional education system is considered to be an ideal form for the architecture education, if we are unable to place the teacher and the student in one location at the same time, we must look for another solution.

In such a case, the best solution is employing distance education. In the distance education system, one or many aspects of the known traditional education is not deleted whereas in this system the teaching responsibilities, educational guidance, counseling, orientation and guidance of the student and assessment can be done totally and completely and even sometimes in comparison with the traditional system of education due to concentrated assessment, overseeing and maintaining the minimum quality can be much more useful and efficient.

History of distance education in the world: Distance education formally appeared in the former Soviet Union, Sweden and the Great Britain in mid 19th century. Even though, back then small and big institutions were designated for this type of education, it lacked the kind of concentration which is witnessing in this type of education these days.

About 100 years ago, the first institutions of the type which we now have started their operations but the turning point in the history of the distance education until 1969 in which the open university of England started using powerful media such as radio and television and gained the capability of large scale distance education (Farireh, 1358). Large scale expansion of distance education using the technology in the field of communication started about 30 years ago. Since that

date, the transportation networks, telephone lines, radio and television stations, communication networks and in parallel with them the skills of distance education has developed all over the world. The evolutionary stages of distance education can be categorized as follow in the 1st stage of this type of educations were offered in the form of correspondence education which is still common.

The characteristics of the 2nd stage of development in distance education in 1960s and 70s was its dependence on radio and television which were supported by correspondence education and printed texts. The 3rd stage of the evolutionary trend in distance education is distinguished by teleconference which was made possible by the advanced achieved in video-computer technology. Presently, this technology economically is accessible by the majority of the people in the world. Currently we are between the second and the 4th stage of the development of distance education. Distance education, now is relying on the new advances in telecommunication and computers. Its distinguished characteristic is employing the least amount of distance educational material with the support of computerized multimedia teleconference, computer networks which make it possible to teach many at the same time in all corners of the world.

Specific characteristics of distance education: Based on what is already discussed in the traditional teacher-centered education, the educational activities are the responsibility of the teacher and the students play the role of the receivers of the knowledge whereas, in distance education, the responsibility of learning is that of the student and presence of a middleman in transferring the educational message from the instructor to the mass of students gives certain specific characteristics to this system of education.

Delling considers paying more attention to individual education, Nilipour (1371) considers self-education, Hari and Magnusjohn consider independent study to be important specific characteristics of this system of education. Farahani (1380) and St.-Pierre (1998) believe that the main characteristic of distance education system is guided and purposeful educational communication which shows the existence of a two way and continuous relationship between the instructor and the student mass. Grider and Garman find the specific characteristic of the distance education in its curriculum planning. They believe that many studies have showed its curriculum planning to be its unique and trademark characteristic (St.-Pierre, 1998; Keegan, 1980). According to Holmberg (1990) describe the specific characteristics of the distance education system which based on the mentioned opinions

and beliefs, this description seems to be more thorough. Keegan believes that distance education contains six characteristics which are as follow:

- Separation of the teacher and the student (teacher and the one who is being thought)
- Major role of the educational organization in the phenomenon of teaching and learning instead of the individual
- Using new technologies as educational tools
- Providing two way communication line between the teacher and the learner by using the existing technology
- Lack of existence of group learning classes and emphasis on individual learning and education
- Individualized learning (major part of learning takes place in an environment other than the formal learning environment at a location and a time which is decided by the learner)

Hosseini talks about the advantages of distance education as follow: based on the studies which have been conducted by Rumble (1988), Zohoor and Alimohammadi (1993) and Hosseini (1380), distance education can be an answer to many shortcomings of the traditional education system and provides the opportunity of getting a higher education for people in all of the countries of the world (Hosseini, 1380). Zargham (1371) mentions that one of the reasons which the third world countries are moving more and more toward the distance education system is that it is more economical. He mentions the other advantages as follow:

- Providing an opportunity to continue one's education in any place in the country
- Providing an opportunity to continue their education for the government employees, housewives and other people whom it is not possible for them to continue their education within the traditional education system
- Eliminating the problem of distance, transportation and educational space
- Higher flexibility of the distance education institutes compared to the traditional educational institutes
- Maintaining the customary social, cultural and economical system of the citizens

Zohoor and Alimohammadi (1993) counts the advantages of establishing the distance education universities as follow:

- Elevating the cultural and scientific level of the country
- Admission of more students

- Decrease of the expenses per capita
- Reduction of moving and relocation among the students
- Time and location flexibility
- Less need for full time professors
- Possibility of having a business venture alongside the educational activity

According to Rezaie (1380) the advantages of distance education are as follow:

- Wide range of coverage (Great coverage)
- Flexibility
- Less need for full time instructors
- Possibility of education for the government employees while they are still employed
- Less expense per capita for the student compared to the traditional education system

According to Zamani and Mogadessi, the advantages of distance education using computers are as follow:

- It provides the chance for team work for the students
- It makes interaction between the instructor and the student possible
- It reduces the wasted time which is spent by the student for getting a response from the instructor
- It provides immediate access to the references and the data banks
- It speeds up and facilitates sending the required homework to the instructors by the students
- The possibility of loading and saving the information from the network on a diskette exists
- Testing in this system is done via a computer
- The time of the connection is flexible

And according to him the disadvantages of using computers in distance education includes the following:

- Lack of a face to face relationship between the student and the instructor in a way that the student in some courses which are offered by a computer does not see the instructor until the end of the course. As the result of this, the emotional bond between the student and the instructor is noticeably reduced
- Lack of the possibility of benefiting from the messages which are conveyed by body language and plays an important role in education such as facial expressions, laughter, change of the intonation of the voice, hand gestures
- Lack of feedback

Carrey writes on the advantages of communication via computer as follow:

- Possibility of synchronous connection which liberates the users from the time and the place limitations
- It provides communication line between the instructors, students, curriculum planners and other members of the society
- It reduces the separation feeling between the students and provides the opportunity for shared learning and education

Considering the statements and the opinions which have been offered, it may be possible to list the characteristics such as separation of the instructor and the student providing a two way connection between the learner and the teacher by using technology in order to improve the quality of education, individualizing learning, massification of education, flexibility of education as far as time and the place are concerned and reduction of interaction time between the learner with the teacher and the other learner.

Learning level of the students of architecture education in distance education System: Even though many of the students, instructors and others especially in architecture education believe that the distance education compared with the traditional education is second in importance (Moore, 1986, 1987), the results of some studies has shown that distance education not only has the capability of massification of education but also it provides the opportunity for the vast majority of people to receive higher education.

If the planning of this system is designed and implemented with adherence to the principles of distance learning, it has an equal place, if not higher as the traditional education system. Moreover, Garrison (1987) believes that based on the results of some other studies, superiority of the quality of education in distance education system in some theoretical academic fields compared with other methods of education at university level can be pointed out and even if such a superiority does not exist at least equality of this system is defendable.

McFarland (1996) has compared the grades of the midterm exams of physical education major students in the traditional system with those of physical education major students in the distance education system and has shown that the GPAs of the distance education system students have been higher than the GPAs of the students in the traditional education system. In a similar research, Farahani (1380) in a study has taken the final midterm

grade of the students of physical ducation major in a course in the traditional education system and has compared them with the final midterm grades of the physical education major students of the distance education system and has reached similar results to McFarland (1996). Therefore, paying attention to the experimental results in practical fields can provide the motivation for trying to do the same in architecture education.

The results of researches conducted by Stanbrough and Stinson (1998) on the capabilities of distance education shows that even in academic fields of study which have practical courses and the courses which require gaining special skills, distance education can be functional and be implemented. If they are designed and managed properly, good and acceptable results can be achieved. In another research which was conducted on the relationship between learning and distance education and traditional education, it is concluded that in adult education, if the sources and the references are put together properly, distance education may be equal in quality with traditional education and even sometimes since independent study and learn direct education forces the learner to think, it may be superior to traditional education (Gorbani, 1375).

Based on the conducted researches, it can be reasoned that the level of learning of the mass of the students in the distance education system which is designed according to the principles of learning, educational design and planned based on placing the student at its center and has enough resources and references along with proper media use is not at lower rank in comparison with the traditional system of education. Therefore, with such a background, it can be concluded that looking at it negatively before testing it in null and void.

There are two different points of view regarding distance education: The first point of view uses distance education as a complementary tool in education but the second one uses it for distributed learning.

Since usage of educational aid tools is more related to the traditional system of education in this research the emphasis and concentration has been on the second point of view and function which meets the need of today's society using it in distributed learning and by using the interactive education method, it was tried to provide the appropriate setting for education.

First, we provide a definition for distributed learning. The department of the scientific technology of the University of North Carolina has defined distributed learning as follow: distributed learning environment is an environment which is centered around the mass of students and in this environment by using different

technologies, the opportunity for interaction within a suitable frame of time and place is provided. This model is created based on specific technologies which must possess the economical aspects of the university education, open education system and distance education system (Farahani, 1380).

This aspect gives the instructor so much flexibility which he/she can take care of his/her students' different needs and maintain high quality and low cost while providing them with an effective education. Listro, one of the intellectuals and theoreticians of the new systems of education at the University Of Day Cane Of Australia states that many of the higher education institutes are actively perusing rebuilding the infrastructures, redesigning policies and organizing their communication systems so that they can maintain their competitive advantages in the information highways environment. He also reasons that the new paradigm which is taking form in higher education has the following characteristics (Table 1).

Lee Grou especially emphasizes that the new technological environment Makes access to education possible without paying any regard to geographical, ethnic and cultural limitations and this issue will weaken the theories on traditional classrooms very soon. Of course, Lee Grou is not alone on this opinion. Farahani (1380) has also reached the same conclusion.

Research goal: This research is conducted for the purpose of comparing the quality of learning of architecture education students within the distance education system and the traditional education system and study of the role of self-education and independent study in learning different academic subjects in the architecture education curriculum. In this research the two systems have been compared with one another in the following two stages:

- Overall quality and level of learning by the students within the two systems
- Quality and level of learning in the theoretical major courses and practical courses which are of art and science nature

Table 1: Characteristics of old and new paradigm

Old paradigm	New paradigm
Industrialized society	Information society
Less important technology	Multi-media center
One time education	Life-long education
Fixed academic curriculum	Open and flexible academic curriculum
Organization centered	Education centered
Concentrated	Shared
Localization	Global network

Considering the weakness and disabilities of the distance education system in teaching the practical courses which are mainly thought via printed media, the other goal of this research focuses on the ways that educational media can be employed in offering the information and increasing the quality of learning in architecture education.

MATERIALS AND METHODS

The research method, the population and the statistical sample, the tools used to gather the data and the method of data analysis is explained in this study. In order to the quality and the level of learning of the students in both systems, a semi-experimental method has been used.

Two groups included two groups, the experiment group, the students within the distance education system and the control group, the students within the traditional education system. The independent variable in this experiment was the distance education method which the subjects in the experiment group have been educated in this system of education. Dependent variable is chosen to be the level and the quality of learning of the students in both groups (Fig. 1).

To compare the level of learning in the subjects which can be assessed between the students within the two systems of education, the method of using a control group after the assessment has been used. After selecting the statistical sample population, first the proper arrangements have been made for the chosen course to be taught exactly in the same way in both systems (the text books of architecture education which their contents are according to the policies and regulations assigned by the supreme council of educational planning). The contents of the courses, test questions, length of the academic semester and the length of the implementation have been exactly the same and the only difference was the system of education.

Semi experimental method: From the education point of view, the students in the distance education system have studied on their own without relying on the instructor and only when it was necessary have attended classes so that they can clear up their problems with the segments of the course which they were having a difficult time with them. On the other hand, the students in the traditional system of education have attended classes and based on the traditional method of education, face to face have learned the subjects in the university classes where an instructor was present.

Statistical population, sample and the sampling method: Statistical population included all of the architecture education students who are attending the University of Mohaggeg Ardebil's associate and bachelor degree programs in the academic years of 85-86 and 86-87. The total number of the students was 202.

About 108 students attended the traditional education institution and 94 were benefiting from the distance education system. The selected sample included both systems of education in the form of 5 academic subjects during two semesters. Considering the size of the selected statistical population and the nature of the research, sampling was done in two stages, grouping and cluster forms.

Group sampling: In selection of the courses, grouping method was used. First, all the major courses based on their nature and content were placed in three groups, then from each group along with a practical course with general nature and content one course topic was selected which were as follow:

- Architecture theories (theoretical subjects which are of art nature) in bachelor degree program level
- The role of computers in architecture education (practical subjects with art nature) in bachelor degree program level

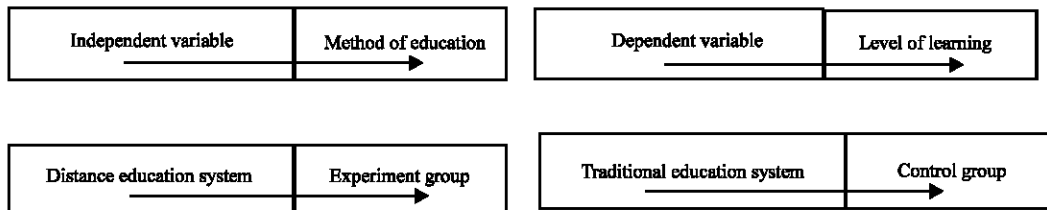


Fig. 1: A semi experimental method

- Geometry 2 and the science of building material (theoretical major courses with science nature) in associate degree program level
- Architectural design 2 in architecture education (practical major course with science nature) in bachelor degree program level

Cluster sampling: In this stage which is for the purpose of selecting different university academic courses, random cluster sampling has been done.

RESULTS AND DISCUSSION

The analysis provided in this research was done by using the SPSS program software and student t-test was conducted.

The research founding: In the report on the founding of the research first, the result of the assessment on the level of learning in both the traditional and the distance education system which was the main research goal was concentrated upon.

Then, the level of learning of the students in both systems in the theoretical major courses with art nature, the theoretical major courses science nature, the practical major courses with art and science nature and the practical courses with general nature was reported. In reporting the result of the research in each one of the groups, the level of the learning in different assessable courses was considered to be important.

Level of learning by the students in both education systems: The founding of this research shows that the level of learning of the students of architecture education in the traditional system compared to the distance education system is lower, $t = 2.72$ with meaningfulness compared to the students within the distance education system with GPA of 15.38 have done poorly of 0.165

(Table 2). As it is observed, the students within the traditional system of education with GPA of 14.57 compared to the students within the distance system with GPA of 15.38 have done poorly (Table 2).

The level of learning by the students in the theoretical major courses of art nature (study of the theories in architecture education): The statistical test shows that the architecture education students in the traditional education system compared to the ones in the distance education system had a lower level of learning in the theories of the architecture education course theoretical major course with art nature) and this difference from statistical point of view is meaningful (Table 3).

To test the level of learning of the architecture education students in the theoretical major courses of art nature, the theories of the architecture education course in two semesters was the sample in this research.

Level of learning of the students in the theoretical major courses with the science nature: The level of learning by the students of architecture education of traditional education system in the theoretical major courses with science nature compared to the level of learning by the students in the distance education system were lower. The statistical tests shows that the traditional education system’s students in comparison with the distance education system’s students have had lower level of learning in the theoretical major courses and this difference is meaningful from statistical point of view (Table 4).

In order to test the level of learning by the students of architecture education of both traditional and distance education systems in the theoretical major courses with science nature, two courses, identification of building materials and geometry 2 were the two samples in this research which the result of the tests in these two courses, separately are as follow:

Table 2: Comparison of the level of learning of the architecture education students within the traditional and the distance education systems

Groups	No. of the students	GPA	SD	Average error of mean	T	Degree of meaningfulness
Traditional system	108	14.57	2.11	0.12	2.74	0.165
Distance ed.system	94	15.38	2.32	0.16	2.74	0.165

Table 3: Comparison of the level of learning of the students in both the traditional and the distance education system in the theories of architecture education course

Groups	No. of the students	GPA	SD	Error of mean	T	Meaningfulness
Traditional	43	14.27	2.06	0.316	2.61	0.12
Distance	37	15.61	2.18	0.217	2.61	0.12

Table 4: Comparison of the level of learning of the students in the theoretical major courses with science nature

Groups	No. of the students	GPA	SD	Average error of mean	T	Meaningfulness
Traditional	42	14.08	2.16	0.32	5.21	0.092
Distance	36	14.99	3.05	0.12	5.21	0.092

Science of identifying building materials: The level of learning by the students within booth systems of education in the science of identifying building materials course does not show a meaningful difference (Table 5).

Geometry 2 courses: The level of learning in geometry 2 by the students in the traditional education system was lower from statistical point of view than the ones in the distance education system (Table 6).

Level of learning by the students in practical major course with the nature of art and science (architecture design 2): The statistical test shows that the students of architecture education in the traditional system of education have had a higher level of learning in architecture design 2 courses than the ones in the distance education system and this difference is statistically meaningful (Table 7). The results of this research has demonstrated that overall performance of the students within the distance education system, despite the fact that they have attended no classroom and have independently carried out their studies in comparison with the students within the traditional system of education has been better and their level of learning is higher. Based on the overall level of learning in the distance education system, the students within this system have performed at a higher level in the theoretical courses. Also in some theoretical courses of science nature, there wasn't any statistically meaningful difference between the members of two groups. Based on the finding of this research which is similar to the finding of the researches conducted by Garrison (1987), McFarland (1996) and Stanbrough and Stinson (1998), it can be concluded that the distance education system can be used as a new method in teaching the architecture education students but benefiting from this system in offering the theoretical courses with art and basic science nature and the practical courses with basic science and art

nature is different and the type, the method of implementation of the media and reduction of the face to face contact between the learner and the teacher is influenced by the nature and the difficulty level of different courses. Being content with the text books which lack the proper instructions for self-education in teaching the theoretical major courses with basic science content can not guarantee the quality of education in these courses. In order to maintain the quality of education, the books and the resources in these subjects while containing the required educational topics, it is better for them to use proper pictures and diagrams to elevate the quality of the texts designed for self education. In this research, it has been demonstrated that there is no meaningful difference in the level of learning within both systems of education in some major courses of basic science nature in which the educational sources have completed all of the design and planning processes, scientific editing, literature editing, educational design and has not been seen. The finding of this section of research is also similar to the finding of the researches conducted by Stanbrough and Stinson (1998). They in their research had shown that if the text book resources go through proper design process and the proper educational media which is compatible with the content of the course is used the level of learning by the students can at least be kept at the level of the traditional education system.

Of course, by studying the factors which affect the results of the assessment of the practical major courses which are of art and basic science nature such as architectural design, it may be possible to propose an effective and practical method for offering such courses in a more practical and beneficial manner. The factors such as the methods of learning used by the students, the technology by which these courses are presented to the learners and the capability of the instructor in utilizing the technology in teaching the courses can be studied.

Table 5: Comparison of the level of learning of the students in Science of identifying building materials course

Groups	No. of the students	GPA	SD	Average error of mean	T	Meaningfulness
Traditional	12	15.03	2.09	0.35	1.13	0.092
Distance	13	15.12	1.89	0.29	1.13	0.092

Table 6: Comparison of the level of learning by the students in geometry 2 course

Groups	No. of students	GPA	SD	Error of mean	T	Meaningfulness
Traditional	26	13.65	2.41	0.29	3.2	0.103
Distance	24	14.92	2.53	0.22	3.2	0.103

Table 7: Comparison of the level of learning in architecture design 2 courses by the students of architecture education in both of the traditional and the distance education systems

Groups	No. of students	GPA	SD	Error of mean	T	Meaningfulness
Traditional	23	16.03	1.71	0.030	1.02	0.073
Distance	21	15.66	2.03	0.280	1.02	0.073

Evolution of the distance education by using the state of the art communication technology is in dire need of fundamental changes in the role of the instructors in the distance education system. The researcher believes that the role of the instructor needs to change from the only source of knowledge and information to one of the knowledge sources which are accessible by the learners. In many cases, using computers in distance education in order to establish a face to face connection between the learner and the teacher in some practical courses such as architectural design is recommended and the importance of benefiting from this educational aid in architecture education is more so felt. However, there are problems in using computers in distance education such as lack of financial means and other limitations, creating a face to face education opportunity via computers is not possible for every single one of the students in distance education system. Anyhow to use computers efficiently in distance education requires analyzing and studying some of the methods of teaching and learning. In order to compare and study the effectiveness of architecture education through the traditional and distance education system, the first step is finding the most compatible method of providing architecture education through distance education system which can be gauged against the traditional education system. It is abundantly clear that employing the traditional education method can not take care of the needs of the distance education; therefore, using some of the methods of learning and teaching which are related to architecture education through the distance education, especially those which from both aspects of body and content have come close to education and can be beneficial in making the specialized learning in architecture education better are as follow:

Learner-centered education: It is difficult to precisely determine whether the learner centered instruction in distance education has taken place by the technology or by the instructor! The conducted research supports both points of view. In support of the first point of view, Moore has investigated the role of the changes in changing the education (Moore, 1986, 1987). According to Chandler (1993), many of the instructors in the distance education system claimed that they have employed the learner-centered methods in the distance education rather than the traditional methods and thus they have been more successful and effective and (Boston, 1992). Gunawardena (1995) observed that the designed educational models which are used for developing education in the traditional classrooms are not appropriate for designing distance education plans via computers. Educational designs in such an environment must include

sophisticated communication between the learning tasks, media intricacies and the processes of knowing the learners. Having a two way interactive communication systems provide an opportunity for the students to control the educational systems.

Gunawardena (1995) began designing and planning a student centered academic course by concentrating on the studies and the researches of the researchers in on the bachelor degree program. He found out that in order for him to involve the students and maximize interactivity, he needs to change his role from being a teacher in a classroom to a facilitator whose primary role is guiding and supporting the phenomenon of education. Burge and Howard (1990) believes that in the massification centered model of education, the learner is not considered to just a robot, instead, he/she is looked upon as a hard working human being who accepts the points of view has desires and makes decision. In such a system of education (learner-centered), it is important for the instructor to provide enough humane and other supports so that the learner could have the ability of controlling the learning experiences.

Interactivity and conversation centered education: Controversial questions such as the following questions come up in distance education: What type of interaction and in what level is effective on learning? How much time is needed for delayed and immediate interaction? What type of interaction does technology provide? Does the interaction achieved by technology worth its economical cost? Wagner observed that the theories on learning and education support interaction as an overall framework of learning. Kazemi (1380) reason that one of the special characteristics of an effective education is interaction.

Moore (1986, 1987) in his research has pointed out three types of interactions: Interaction between the learner and the content, interaction between the instructor and the student and interaction between the student with other students. Brookfield (1993) suggests a few points of view for facilitating the interaction between the mass of the students and the content especially when the students are adults. He believes that the learners can critically analyze the texts which they read by asking four types of questions. Methodology questions, experimental questions, communication questions and political questions. Brookfield (1993) says that encouraging the learners to ask these four types of questions during studying will enable them to think critically.

Hillman *et al.* (1994) reasons that beside the interactions in communication systems which employ state of the art technology, another type of interaction called interaction between the learner and the interface is

necessary. They are aware of the fact that one aspect of the distance education system which has been quiet a bit overlooked is the effect and influence of the technological devices on the interaction. The instructors and the learners have to interact with the technology and have to manipulate the devices in a way that those devices interact in the most effective way with the learners for establishing communication. Anyhow, in communication which uses the state of the art technology, the learner who does not have any skills in using these technologies must spend a lot of energy and time for learning how to use and interact with these devices, thus ending up with little to no time to concentrate on the content. To dispose of this problem, Hillman and others recommend three types of activities to the learners and the instructors: In class practice, explanation sessions, and offering mandatory courses on working with and using these technologies.

If the interactive educational technologies in architecture education are to provide an effective education, the instructors need to provide new models and programs for developing of technology-centered education. In order to be able to support learning at higher familiarity, analytic, combinational and assessment levels, the instructors are to be trained so that they can employ interactive solutions. These solutions need communication between the students, communication between the students and the instructors, classroom and group discussions, group projects and teaching by the people of group who are of the same age.

Social presence centered education: Dodd observed that success of distance education beside depending on skills such as classroom management, knowledge and ability to use the needed technology, depends on skills such as creating an intelligent and emotional social character from distance and also creating virtual populations from the learners.

Short *et al.* (1987), social presence is in interaction with the degree of participation of people in other words with the degree which an individual communicates with a computer as a real person. Short *et al.* (1987) point to the level and/or degree of the closeness of the media and the individual regarding the possibility of social presence of the communication media and say that this degree of closeness and friendliness depends on factors such as physical distance, eye contact, laughter and personal conversations. Hackman (1993) show that the friendliness and closeness of the instructor would lead to increased approval by the student and learning in video or television-classroom.

Moore (1987) on the inner feelings of the individuals

with regard to communication via computers shows that non-verbal communication in comparison with the face to face communication with regard to the sight of social presence is lower. Anyhow, large scale researches on communication via computers often shows more positive communication behaviors and development of online populations and close friendships. The conducted research claims that the computer users have developed ability of lost signs of non-verbal, body language, expression via writing. The researches show that social presence is an influential factor in development and effectiveness of both traditional and distance education. With the help of the communication technologies are used to non-verbal signs, body language such as giving feed back in the form of smile, shaking the hands or the head and offering solutions and guidance regarding the corrections on the architectural designs in their teachings. When they are using long distance voice communication devices or computers to establish communication with their students, the instructors are not able to use the body language as easily.

These instructors must adjust themselves with these long distance communication tools and develop their revolutionary skills in order to be able to make the social presence of their students possible. Basically, it is the skills and techniques which necessarily influence the understanding of the student on interaction and social presence not the communication devices.

Shared learning centered education: Before the appearance of the communication technologies which would be able to make a two way interaction possible, shared learning and group work among the mass of the students in distance education was considered difficult and sometimes impossible.

The researches show that team work increases the student's motivation and approval. Gunawardena (1995) observed that the instructors, who use computers as a communication device in educating their students must learn skills in order to be able to teach because teaching through this media requires a change in role from the giver of information to an active colleague and conversation partner. In other words, in a computer dominated communication environment, the instructor is a facilitator of group communication, organizer of group learning projects and activities and a constant advisor.

Offering a multimedia model in architecture education: Based on the challenges, this model with the goal of minimizing reduction in the quality of education and the least amount of interaction between the educational factor

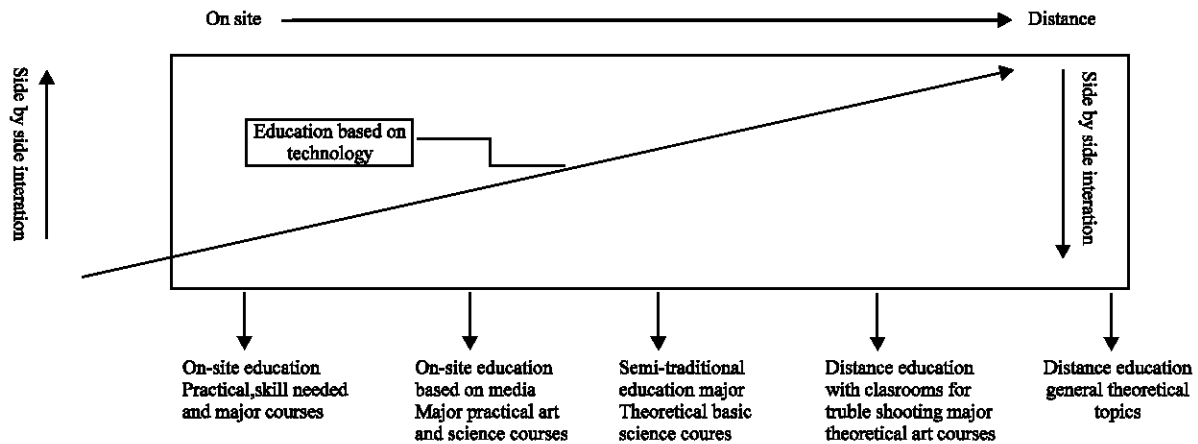


Fig. 2: The amount of on site classes, benefiting from educational media and the level of interaction

and more attention to the humane and emotional environment has been discussed in an educational environment which is based on technology. In this method in which a special value is placed on feed back, bettering the topics as far as their content and organization is concerned and making them compatible with the styles of learning of the students is responsibility of the instructor. Moreover, this is a vital and important factor in education which can be implemented by the programs using examples and related pictures which are appropriate for the time in teaching theoretical subjects and with the knowledge on the abilities of the students and attention to the educational feed back, help make the learning environment more active (Fig. 2).

CONCLUSION

It can be concluded that the distance education system possesses the needed criteria and capability for offering the theoretical-major courses in the field of architecture education but it is not enough to just rely and solely depend on the educational media which only offers the content of the text-books to maintain the high quality of learning among the students and in teaching some courses, other forms of educational media must be used so that a more dependable and useful form of the relationship between the learner and the instructor can be established. The relationship between the students and the instructor via educational media can not be effective in the courses which the contents of the text-book is not enough by itself to clarify the intent of the researcher and it leads to ineffectiveness of such a relationship and makes the joint effort by all of the factors involved in distance education obsolete whereas in the distance education while the emphasis is on the learner and the educator being physically separated from one another, a specific and unique property of distance education,

existence of a cooperation and coexistence between these two factors of education is a must but in a form that these two are distant from one another.

RECOMMENDATIONS

By reminding that education in different branches of art must be in a way that a more dependable form of interaction between the teacher and the student is created and emphasis on benefiting from complementary educational media alongside the corrections, books and classrooms, amount of on site classrooms which is a derivation of the nature of the academic topic and its difficulty level is highly recommended.

REFERENCES

- Agazadeh, M., 1371. The role and importance of analyzing the nature and organization of the educational curriculum in distance education system. Series of Articles on Distance Education, Payam Nour University.
- Boston, R.L., 1992. Remote delivery of instruction via the PC and modem: What have we learned. *Am. J. Distance Educ.*, 6: 45-57.
- Brookfield, S., 1993. Breaking the code: Engaging practitioners in critical analysis of adult educational literature. *Stud. Educ. Adults*, 25: 64-91.
- Burge, E.J. and J.L. Howard, 1990. Audio-conferencing in graduate education: A case study. *Am. J. Distance Educ.*, 4: 3-13.
- Chandler, A.L., 1993. Descriptive case studies of training, research and development in computers and related instructional technologies for teachers at three NCATE universities (National Council for the Accreditation of Teacher Education). Dissertation Abstract International. DAT-A 54107, Jan. 1994, pp: 244.

- Daniel, J.S., 1993. Distance Education and Developed Countries. Open University Press, London.
- Farahani, A., 1380. The Effect of Using Audio and Visual Aids in Teaching Corrective Actions. Olympic Publication, USA.
- Farireh, P., 1358. Education of the Disenfranchised. Fatemi Publication, Tehran.
- Garrison, D.R., 1987. Researching drop-out in distance education. *Distance Educ.*, 8: 95-101.
- Gorbani, R., 1375. Study of the effects of traditional and distance education on academic success of adult students. M.A. Thesis, Department of Behavioral Science, University of Tehran.
- Gunawardena, C.N., 1995. Social presence theory and implications for interaction and collaborative learning in computer conferences. *Int. J. Educ. Telecommun.*, 1: 147-166.
- Hackman, N., 1993. Changing faculty roles for audio-graphics and online teaching. *Am. J. Distance Educ.*, 6: 58-71.
- Hillman, D.C.A., D.J. Willis and L.N. Gunawardena, 1994. Learner-interface interaction in distance education: An extension of contemporary modes and strategies for practitioners. *Am. J. Distance Educ.*, 8: 30-42.
- Holmberg, B., 1990. Theory and Practice of Distance Education. 2nd Edn., Rutledge, New York, pp: 264.
- Hosseini, M.H., 1380. Necessity of paying attention to the positive aspects of distance education in the world. Proceedings of the 2nd Specialized Seminar, Payam Nour University.
- Kazemi, N., 1380. Look of distance education in the 21st century. Proceedings of the 2nd Specialized Seminar, Payam Nour University.
- Keegan, D.J., 1980. On defining distance education. *Distance Educ.*, 1: 13-36.
- Mcfarland, T.W., 1996. Results from a common final examination: A comparison between on-campus students and off-campus students. Research and Planning Report 96-17. <http://www.eric.ed.gov/ERICWebPortal/recordDetail?acno=ED403821>.
- Moore, M., 1986. Self directed learning and distance education. *J. Distance Educ.*, 1: 7-24.
- Moore, M.G., 1987. Distance learning in the United States: The near future. *Distance Educ.*, 8: 38-46.
- Nilipour, R., 1371. Self-education and preparation, two main factors in distance education. Series of Articles on Distance Education, Payam Nour University.
- Rezaie, M.H., 1380. Independent learning in distance education. Proceedings of the 2nd Specialized Seminar, Payam Nour University.
- Rumble, G., 1988. Economics in distance education: Time for a change of direction. Proceedings of the 15th Conference on Open Learning and Distance Education. <http://icdllit.open.ac.uk/icdlbrowse1.php?a=00000701>.
- Seif, A.A., 1371. Teacher centered education and book centered education. Proceedings of the 1st Specialized Seminar, Payam Nour University.
- Sherry, L., 1996. Issues in distance learning. *Int. J. Educ. Telecommun.*, 1: 337-355.
- Short, J., E. Williams and B. Ohristie, 1987. The Social Psychology of Telecommunications. 1st Edn., Wiley Jhon and Sons, London, New York, pp: 195.
- Srivastava, S. and V. Reddy, 1999. Unexplored Dimensions of Open Universities. Vikas Publishing House, New Delhi.
- St.-Pierre, P., 1998. Distance learning in physical education teacher education. *Quest*, 50: 344-356.
- Stanbrough, M. and B. Stinson, 1998. Anatomy of a distance learning course. Proceedings of the National Association for Physical Education in Higher Education Conference, New Orleans, LA.
- Zargham, N., 1371. Distance education in the world. Proceedings of the Series of Articles in the 1st Specialized Seminar, Payam Nour University.
- Zohoor, H. and M. Alimohammadi, 1993. Distance education, Iran in the twenty first century. International Council for Distance Education, OSLO. <http://icdllit.open.ac.uk/icdlbrowse1.php?a=00006067>.