CHAPTER 15: DISTANCE EDUCATION

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INTRODUCTION

Looking as if appearing as an effort of prevailing missionary and shaped as an application of postal tuition, distance education has leaned to meet the educational needs of the people in various environments afterwards whether or not they share the same time, and has been successful at this as well. However, in time, the meaning attributed to "distance" has become the interpersonal cultural, sociological or mental differences including teaching staff, students and the rest personnel in the system beyond the environment and time (maybe experienced in conventional classrooms). This phenomenon has been the most fundamental issue of the theorists and researchers dealing with distance education. Today although the programs of the most institutions offering distance education are prominently different from each other, they are basically depend on the present technology they have or the cheapest technology. All of these programs depend on the principle of existing in the education system though the geographical distance, physical exceptions, financial problems or other individual problems. In this chapter, on one hand, distance education will be explained briefly in the context of its basic concepts, history, positive and negative aspects, theories and relationship with instructional technology within the lack of being a chapter of this book.

BASIC CONCEPTS

It is going to be proper to deal with the title of basic concepts as terminology and distance education types.

The Definition of Distance Education

Distance education as a concept started to be used in 1970s and was first put into words officially in International Postal Tuition Council in 1982. Distance education is a distinct education type which cannot be regarded as an alternative of conventional face to face education due to embracing adults who are working or have constraints because of their family, face to face interviews, classrooms and freedom of general place and time, the combination of mass media and individuation, the potentials regarding student's freedom and peculiar administration [4].

When having a look at the definitions of distance education, it could be seen that there are four components of it, which are the institutional foundation, the difference between teachers and students, the share of video, sound and data (teaching experiences) and interactive telecommunication [5]. In other words it is possible to bring together the definitions under four titles [6].
In the definitions of distance education theorists, it might be seen that during the early years the time and place differences between teachers and students were obligatory [7,8,9], and this obligatory was attributed [10,11] to one of them in time. That the technology provided the flexibility in the definitions can be seen. Today we can define distance education as realizing the mass education in a certain quality under the authority of an institution. Both students and teaching staff make self-sacrifice for

the freedom of environment and time in distance education. It puts the most suitable examples of recent technology into service for the techniques, methods and strategies of instruction and it does not ignore the needs of students, and prioritizes the social sharing not only between students and teaching staff but also with each other.

Open Education

The most crucial quality of open education is that it includes quite a few acceptance requirements. To give an example, when Open University of England was first established, it did not ask from its students any diplomas or exam scores, but required a condition to be at the age of 21. These requirements and flexibilities may change from one institution to another. Today Open Universities are very well accepted in various countries that the number of their students has exceeded millions. The universities the number of the students of which exceeds 100.000 are called as mega universities. Self-learning/teaching materials, effective student support services, logistics, management supports and web systems play an important role in the success of the Open Universities'. Some of these universities can be seen as follows:

- Allama Iqbal Open University, Pakistan
- Anadolu University, Turkey
- Athabasca University, Canada
- Bangladesh Open University, Bangladesh
- Centre National d'enseignementa` distance, France
- China Cenrtal Radio and TV University, China
- City College of San Francisco, the USA
- Dr. B.R. Ambedkar Open University, India
- Indira Ghandi National Open University, India
- Korea National Open University, South Korea
- Madhya Pradesh Bhoj Open University, India
- Netaji Subhash Open University, India
- Open University, England
- Payame Noor University, Iran
- Shanghai TV University, China
- Sukhothai Thammathirat Open University, Thailand
- Universidad Nacional de Educacion a Distancia, Spain
- Terbuka University, Indonesia
- Maryland University, the USA
- Phoenix University, the USA
- South Africa University, South Africa
- Yashwantrao Chavan Maharashtra Open University, India

Online e- and m-Learning

Online e- and m-learning concepts refer to the application of electronic communication in distance education[3]. E-learning means that distance education needs computers which are in a fixed place, while m-learning needs mobile wireless utensils. The distinctive characteristic of e-learning is that the interaction with the virtual people is not crucial in learning atmosphere[13.] According to Paulsen this is acceptable for m-learning, too. However, as regards to online learning Holmberg interprets this definition with Keegan's popular definition of distance education: "It is presenting the learning content through computers and utilizing the computer web for bilateral communication of students to make use of the communication with one another, teaching staff and the other personnel[3]. Another definition is that "It is an open and distributed environment where pedagogical tools are supported by the Internet and web-based technologies and learning and creating data are provided by meaningful activities and interactions[14]." On the other hand, Ally defines it as using the internet for accessing the learning materials, interacting with the content, teaching staff and the other students, getting support during the learning process, obtaining information, constituting the knowledge of oneself and acquiring learning experiences[15].

Whereas mobile learning is to offer the education via palm devices, smart and mobile phones, mini tablets and laptops, these devices, which are used in mobile learning, are mobile, user-friendly, personal, cheap and easy to use. It can be realized that these devices are not bought for educational purposes but are used for education, as well[17].

Blended Learning

This concept was first used as "hybrid learning" in literature, yet those dealing with distance learning felt uncomfortable themselves since the hybrid was a concept in relation with biology; hence "blended learning" started to be used commonly. In our culture as the concept of blended is associated with agriculture it was uneasy to adopt this concept and co-education was suggested. However, in Turkish education system this concept refers that girls and boys or from 1st to 5th grade students study together. So, it is a concept upon which is not agreed. Burns describes blended learning as blending face to face and online learning together provided that online learning has a rate of 30%-79% [18].

Blended Learning Models: These models are as followed for primary and secondary levels[19]: The one in which face to face education is dominant and the teacher teaches in the classroom but presents the course material and resources online; the rotation model in which students study the face to face and online components of the course with the same teacher alternately; the flexible model in which most parts of the course are presented by the internet but studied with the teacher in the classroom environment flexibly, supported with individual or small group works and the teacher gives some explanations if necessary; the online laboratory model in which course assistants teach in the classroom and online teacher teaches through the computers in the classroom; the self-blended model in which students get the course material distantly and online, but at the same time conventional methods continue in the classroom; and finally the online platform model in which teaching and materials are all presented distantly and online but some controls are made through weekly face to face meetings. These models are also valid for higher education.

What is Interaction?

Interaction is "a bilateral developed action which necessitates at least two objects and two actions. Interaction may occur when these objects and actions interact with each other bilaterally[20]." The interaction in distance education has been equal to mental involvement in time. Providing students with the mental involvement to education by interaction may be possible only by making them willing and enthusiastic learners in education. In this case the simplest interaction is that students do something. This "something" must be further than pressing a button or writing something on a somewhere. The interaction in education can be described with the characteristics of pace, elaboration, approval, roaming and questioning[21].

Moore is the best known person regarding the interaction in distance education. Moore described 3 types of interaction[22]: The Interaction of Teaching Staff- Student, Student- Student, and Student-Content. Anderson and Garrison improved these interactions by adding those three dimensions[23]: Teaching Staff-Teaching Staff, Content-Content, and Teaching Staff-Content. Except from these, some distance education scholars have described various interaction types. These are: the interaction of Student-Interface[24], Vicarious Interaction, and Student-Environment.

Teaching Staff-Student Interaction: The importance of the interaction between teacher and students has been stated since Plato and Dewey. This importance is also effective in distance education. If a high-quality interaction between teaching staff and students is desired, it can only be ensured by a correct choice of the learning activities developed as part of teaching programme and a proper teaching design[27].

Student-Student Interaction: Communication enabled by computer increases the interaction between one another and it also facilitates the collaborative learning[3].

Student-Content Interaction: Students spend a great deal of time engaging in pedagogical content especially in adult distance education. Current technology facilitates to present this content

provided by teaching staff through various media[27]. Touvinen classifies these media under five headings as sound, text, graphics, video and virtual reality[28]. What kind of interaction may be between the contents presented by these media and students? The answer of the question could be the interaction taxonomy[28, 29]. In this taxonomical interaction types can be classified as objects, linear, support, updating, configuration, reflective, simulation, hyperlink, stimulus and not stimulus[27]. It is notable to say that referring to the known argumentation of Clark and Kozma, both the media in which the contents are presented and the method which answers the question how to present the content are crucial.

Teaching Staff-Content Interaction: Current technology gives the opportunity of preparing learning objects and integrating them into the courses to teaching staff. Teaching staff can interact with the content through adaptable search engine, so he can interact with the teaching staff that will study or has studied on the same subjects. In this case, the role of this interaction focuses on the process of teaching design.

Teaching Staff-Teaching Staff Interaction: Under this interaction heading, sharing needs of teaching staff with one another in terms of both their own disciplines, distance education which includes technical, technological, sociological aspects and pedagogical and androgogia are emphasized. These needs can be met through forums they will not pay fees, web diaries and portals[27].

Content-Content Interaction: It can be described as the interaction of interdisciplinary learning objects by being benefited from the modern technology. This new generation content is to be programmed by renewing the other automatic data sources themselves and interacting with updating and the other contents in order to gain new abilities[31].

Student-Interface Interaction: It refers to treating the tools when succeeding a task by focusing on access, skills and qualities to have a successful interaction. In short, it itself is not an interaction type but a component of other interaction types[27].

Vicarious Interaction: All students may not prefer to join the discussion atmosphere in distance education, in a conversation or asynchronous interaction**.** It is a fact that these students learn something in such an atmosphere by just watching the conversation passively[3]. Indirect interaction is virtually an interaction type, which we can see in a face-to-face classroom education, the student himself is seen as a passive one but benefits from the interaction between teaching staff, students and his peers[27].

Student-Environment Interaction: It is an interaction type considering that student has a circle except from his peers and teaching staff; he has a business life and community of which he is a member, and learning occurs around them. Social norms and expectations such as age and race play roles in this interaction[27]. We can call it as the social context.

Social Interaction: It can be called as the interaction between the people[32]. We can consider teaching staff-student, student-student, teaching staff-teaching staff, vicarious and students-environment interactions in this framework.

Control

It is one of the topic titles that is emphasized and should be emphasized in distance education. The most important quality of distance education student is that he should assume the learning responsibility, in other words, he is an individual who has learnt learning, can develop learning and studying strategies in order to learn in distance education, knows what he wants and also knows where and from whom he should ask for help. Therefore, the institutional structure should be stretched out in such way that the students would keep some controls in his hand.

Social Context

IRC, ICQ, AOL which new generation does not know what they are when seeing can be accepted as the ancestors of the present social media[33]. Social surroundings are the web applications in which simple essays and publishing techniques are used at micro level and with a point of view of keeping diary in order to users interact and communicate. Twitter, Facebook and Orkut that bears a Turkish's signature can be given as examples[18]. Social presence theories, which are not virtually new concepts, have started to attract attention of theorists with the fact that social webs have become widespread in distance education. Social presence is described as people in online media are perceived as virtual people and reflect themselves as virtual people, individuals show themselves in these media and attendants feel one another, the feeling of existing in a social media with other people, the degree of awareness between the individuals interacting with each other in these media, the student's perceiving himself as a part of online course[34].

Accreditation

Accreditation means ensuring the quality and effectiveness of higher education institutions and programmes[35] and it is also important for distance education institutions to be accredited. Accreditation, in other words, can be considered as recognisability. In our country the Council of Higher Education (YOK) gives the accreditation to the higher education institutions.

The Taxonomy of Distance Education Institutions

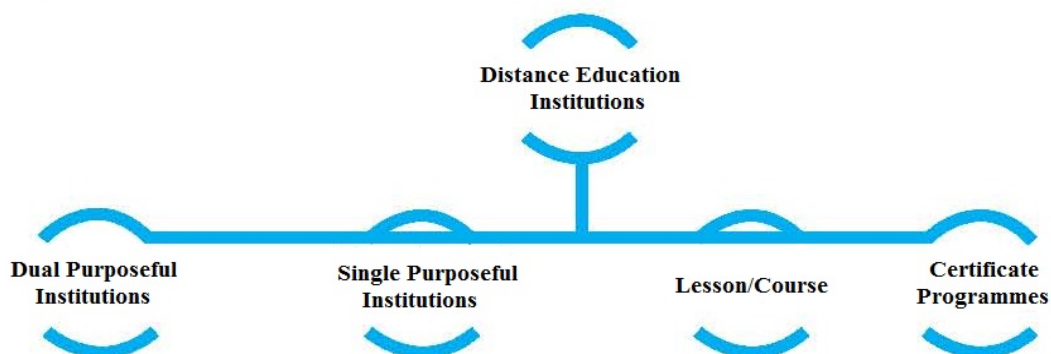Moore and Kearsley suggest taxonomy for distance education institutions[36]. It is summarized on Diagram 1.

Diagram 1:The Taxonomy of Distance Education Institutions

Dual-purposeful institutions are those, which start their education history with traditional education and then start to give distant education on one hand[36]. The opposite one is rarely seen. The first example was seen in Australia[37]. Single purposeful institutions are those, which are opened and served just for distance education. Some institutions conducting traditional education may offer only some of their courses by distance education. For example, the course of Introduction to Computing can be offered by distance education in institution-wide. In addition, the institution can organize some courses in order to train its staff or to broaden new horizons of its students within the context of in-service training. These courses, for instance, may be self-improvement courses. The institutions may organize some certificate programmes such as Language Certificate Programme within the same concept. In addition to those, blended learning or distance education, known as blended learning, applications can be seen with distance education applications which support both in-campus face-to-face education and are supported by the internet and other technologies in dual and single purpose institutions.

THE HISTORY OF DISTANCE EDUCATION

The start of correspondence education dates back to the invention of writing unless we consider distance education within the institutional context[3]. The first distance education effort within the institutional context announced on Boston Newspaper on March,20 1728 that with the advertisement called "Calep Philips, the teacher of stenography[1] which is a new method" it could teach this method through letters in a few weeks to the people living in Boston.

In 1883 the possibility of studying "learning through mail" was mentioned on the advertisement of the 30th number of the magazine called Lunds Weckoblad, which is weekly published in Sweden[3]. The newly founded mail institution allowed Isaac Pitman for stenography education through correspondence. There is no information about what happened after the advertisement was published in 1883, nonetheless, three years later Sir Isaac Pitman Correspondence Education High School was officially founded thanks to the effort of Isaac Pitman and the support of the Association of Phonographic Correspondence Education. The first institutional language school of correspondence education was opened in Germany, 1856 by Charles Toussaint and Gustav Langenscheidt[3]. Langenscheidt Dictionaries, which have blue L on yellow cover, have been unforgettable symbols for the users of foreign language dictionaries.

The first appearing of Turkish distance education as an idea[38] was in 1860s when Ottoman University, Daru'l-fünun, offered courses for the public; the content was published on the page of "Kısm-ı İlmi" of the newspaper called Takvim-i Vak'ayi in case there were people missing the courses[39, 40]. It is also known that at the end of 1800s teachers and students from different regions at American Chicago University1 conducted some courses. Distance education was put into effect in ıllinois Veslin University in 1874 in the USA[41]. Before this date, only men from upper crust could get education in pre-industrial period in Europe. On those days when the insight of today's education was shaped, the students used to listen to the intellectual person as a course in a proper time and place.

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1.   A method of quick writing that uses symbols in place of letters, words and phrases.

As a concept, William Rainey Harper first suggested correspondence education, which we welcome with smile even today and we have some suspicious about how it works, in 1890[1].
The education through radio of Wisconsin Open Education in 1920s enlarged the boundary of the school upon the boundary of the state.

Then television and computer started to be used as well as radio and public schools, high schools, military, business and industrial circles made use of those ways of teaching presentation[1]. It is known that the educational institutions in the USA during those years established at least 176 radio stations. In the early of 1930s television teaching programs were prepared for trial purposes in Iowa University, Purdue University and Kansas State School. The courses with credits started to be offered through television broadcast in 1950s. From 1957 to 1982 CBS Channel broadcasted courses in higher education level under the name of Sunrise Season offered by New York University[5].
The Institute of Banking and Commerce Law of Ankara University4 initiated the first application of distance education in Turkey in 1956. In 1975 Ankara Correspondence Education Centre prepared letters for the Correspondence Education Institutes of Higher Education. For example, Tuncel Özkan told the 1st year students of Painting Department about saws, the types of saws and how to use them at the 3rd one of the letters prepared for woodwork[42].

Correspondence education, once used to be ridiculed, gained its prestige when one of the pioneers of distance education, Charles Wedemeyer used multimedia in a modern way at England Open University in 1970s and at Wisconsin University in 1986[1]. England Open University founded in 1971 started a new era among the distance education institutions giving diploma. Fern Universitat, Germany, Open Universiteit, Holland, Universidad Nacional de Edcucaion a Distancia, Spain, Open University of Israel, Israel, Athabasca University and Universidad Nacional Abierta de Venezuela, Venezuela and Anadolu

University, Turkey could be regarded as the close followers of England Open University, which is a pioneer with its detailed and elaborate lessons, new contexts and systematic courses.

In 1982 International Council for Correspondence Education changed its name into International Council for Distance Education in order to reflect the developments of its field[1]. The current name of it is International Council for Open and Distance Education.

Satellite technology developed in 1960s; however it was cheap enough to be used in 1980s. The first satellite system for educational purposes, Learn was presented in Alaska; 1980[5].The widespread use of computer webs in 1990s caused the start of a new period in distance education[41]. The use of live, bi-directional and high quality sound and videos were started be make use of in education when fibre optics communication systems became widespread in the late 1980s and early 1990s[5]. Today scores of Turkish Universities add interaction to the educational programmes with live courses by using the infrastructure of fibre optics.

The fact that more adults as students exist in the system is a more predictable situation for distance education. However it is impossible to exclude the new generation called as digital citizen[2] from distance education. Correspondence education is accepted as the First Generation as long as the parallel development of distance education to the development of technology is taken into consideration. Then it proceeds like TV-movie production, interactional technologies: web 2.0 or smart databases created by semantic web etc. respectively. Nevertheless, the quality of these technologies is that the previous one does not completely disappear when a new one appears[43]. For example, correspondence education still exists like e-mail by changing its ways.

Keegan described six basic components of distance education in 1980s. It is inevitable today that these components have transformed[44]. On table 1 this transformation is outlined.

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2.   Digital Citizen; Generation Z, is a name used for the cohort of people born from the early 2000s to the present day who are distinct from the preceding Millennial Generation.
3.

Table 1: The Up-to-date Transformation of the Key Words of Distance Education

The Key Components of Distance Education Described by Keegan	The Key Components of Distance Education Adapted to Present Day
The difference between teaching staff and student	Swerving from the freedom of time and place when required. Minimizing the cultural, social or mental differences between teaching staff and student
The effect of education institution	Flexible institution structure centring around the student
Using the media to unite teaching staff and student	Benefiting from teaching technology as well as media to unite teaching staff and student
Bidirectional communication	Bidirectional communication
Individualized education instead of group education	Collaborative education taking into consideration the individual differences
Industrialized teaching staff	A transformation from the teaching staff fulfilling his responsibilities to the one having the interdisciplinary working skills

PROVIDING STUDENTS WITH DISTANCE EDUCATION

A great number of technological products are used in order to provide students with distance education. They are widely ranging from printed materials to Internet technologies. Some of the more up-to-date of these tools/ technologies are mentioned below:

Printed Materials: They can be regarded as the types of the presentation of distance education, starting its adventure with correspondence education, which have not lost their currency. Printed materials are those which are very successful at the independence of student and providing the student control as well as easy to prepare, use and carry and highlight and known by everyone[18,45]. The disadvantageous quality of them is that people are reluctant to read the texts when they are too long. The use of them may be far more difficult especially in the societies who are prone to speaking. It may also be problematic for the target group who have some constraints like partially sighted, visually handicapped or dyslexia[18]. Today the printed or paper media, which the text is offered, has been moved into CD-ROM, online education, e-reader (e.g. Kindle), tablet computer (e.g.IPad), or digital media etc[18].

Chat Media: They are the systems, which enable the users to communicate online at the same time in terms of the messages they send each other[4]. In addition to the advantages of chat media, making students sit in front of the computer for a certain while can be regarded as a constraint. However, taking into consideration their qualities can ignore this constraint. For example, they do not delay the interaction, interaction often takes place and they enable empathy.

Podcast: Educational purposed Podcast is an audio file, which has .mpg extension. They are the courses which are recorded earlier and include only one concept generally include just audio files, yet occasionally supported with the visuals which are static or mobile[47]. These audio files can be the combination of an event, a song, a talk or various sounds. The audio file is uploaded into a web site or a web diary site after it is recorded. The target group of this audio file follow this file through a technology called RSS 2.04, and they can download directly these files to their PC[48], smart mobile phones or mp3 through an audio management program. They can listen to them whenever and wherever they wish afterwards.

Today podcast are varied as *enriched podcast* (having the multimedia knowledge containing slide, picture, visuals, photograph, short video and part), *video podcast* or *vodcast* (video content) [49]. New Oxford American Dictionary has accepted the word of Podcast as the word of year of 2005. Podcast is not a new idea but the continuation of Sony Walkman[5]. The qualities of effective Podcast are as follow:
- The length of it ranges between 3-10 minutes.
- It is the independent cases series related with one another.
- It is the learning object, which can be reached through Mpeg3 (mp3).
- It is kept in a web site or another Internet platform in an easily accessible way.
- The current state of the Podcast can continuously be changed and updated.

4. Dyslexia is a very broad term defining a <u>learning disability</u> that impairs a person's fluency or comprehension accuracy in being able to read.
5. RSS (Rich Site Summary) is a family of <u>web feed</u> formats used to publish frequently updated works such as <u>blog</u> entries, news headlines, audio, and video in a standardized format.

Webinar: It is also known as virtual seminar, online conference, live meeting, web meeting. It may be offered through web conference systems or synchronous live platforms. Adobe Connect, Big Blue Button, even Skype can be given as examples to these platforms[18].

Streaming Media: The biggest advantage of the streaming media is that users do not have to wait to download the complete file to their own computers. As soon as the users access the file, one hand the file is downloaded; on the other hand the users can start to play the file. As the bandwidth increases, the possibility of watching the video in high quality or full screen increases as well. The most crucial point here is to divide into the parts of the format, which will be distributed via Internet. The user's computer gets aware of the fact that it is a streaming media and deal with both downloading and being watched. Streaming sound is the first example of this type multimedia. Steaming media's becoming available has contributed a lot to the education[50].

Desktop Video Teleconference: Desktop Video Teleconference is a technology, which turned up when web, PC and digital video were melted in a pot. Education can make use of this technology while offering real time materials, making up groups and also inter-group interaction[1].

White Board Applications: It may be also considered as a type of graphics conference. Through white board application both teaching staff and students can synchronically write, draw on the white board, and intervene with the writings, review or update them concerning course content or discussion. They can use mouse, electronic stylus or smart board that is used in the classroom, and also they can cut, paste, click or drag and drop. The users can keep the contents they created and use them again for the next times[49].

Mobile Applications: That Shaffer heralded that next generation computers would be in the palm was actually the messenger of the mobile computers. Phones, tablet computers and e-book readers are some of the mobile devices of the present day. These technological devices do not only connect to the Internet but also enable its user to use a lot of applications such as electronic spreadsheets, mnemonic, calendar etc. Therefore, it means that lost homework, forgotten texts, thick and expensive books appear to have come to an end[49].

Learning Objects: e learning describes learning objects[51], which are inevitable for content design as digital information resources, which help learning and can be reused. Learning objects which were produced as a solution for the needs, which developed course materials should be accessible, reusable and have some standards, are widely used today[52].

Classifying the Distance Education Tools
Dabbagh suggests a theory-based design structure for e-learning[14]. One extent of this structure is made up by teaching strategies (e.g. collaboration, bringing together, reflection, role-playing, exploring, problem-solving), another extent is made up by pedagogical models or structures (e.g. open/flexible learning, distributed learning, information configuration communities) and the third extent is made up by learning technologies (e.g.. asynchronic and synchronic communication means, hyper and multimedia tools, web authoring tools, course management system).
The classifying of the tools to be used in distance education is shown on Table 2:

Table 2: The Tools Used in Distance Education

Task	Type	Tools
Preparing	Course Authoring Tools	Authorware, ToolBook
	Website Authoring Tools	Dreamweaver
	Test and Evaluation Tools	Hot Potatoes, Articulate Quiz Maker
	Media Editors	Director, Flash, Illustrator, Photoshop, Visio, 3ds max, Movie Maker, Premier, Snag-It, Camtasia, Captivate
	Content Transformers	Articulate Presenter, Adobe Presenter, Impatica, Adobe Acrobat
Presentation	Web Servers	Apache, Internet Information Server
	Learning Management Systems	Blackboard, Moodle
	Learning Content Management Systems	Centra, Aspen, Dokeos
	Collaboration Tools	Adobe Connect, Big Blue Button, Openmeetings
	Virtual Schools	WizIQ

	Web Browsers	Internet Explorer, Safari, Firefox, Opera
Access	Media Players/Displays	Flash Player, Quick Time Player, Windows Media Player, Acrobat Reader
	Social Tools	Facebook, Twitter, Wiki, blog

Source: Adapted from Horton and Horton[53].

THE ADVANTAGES AND FACILITIES OF DISTANCE EDUCATION

The advantages and facilities of distance education could be reflected as follow:
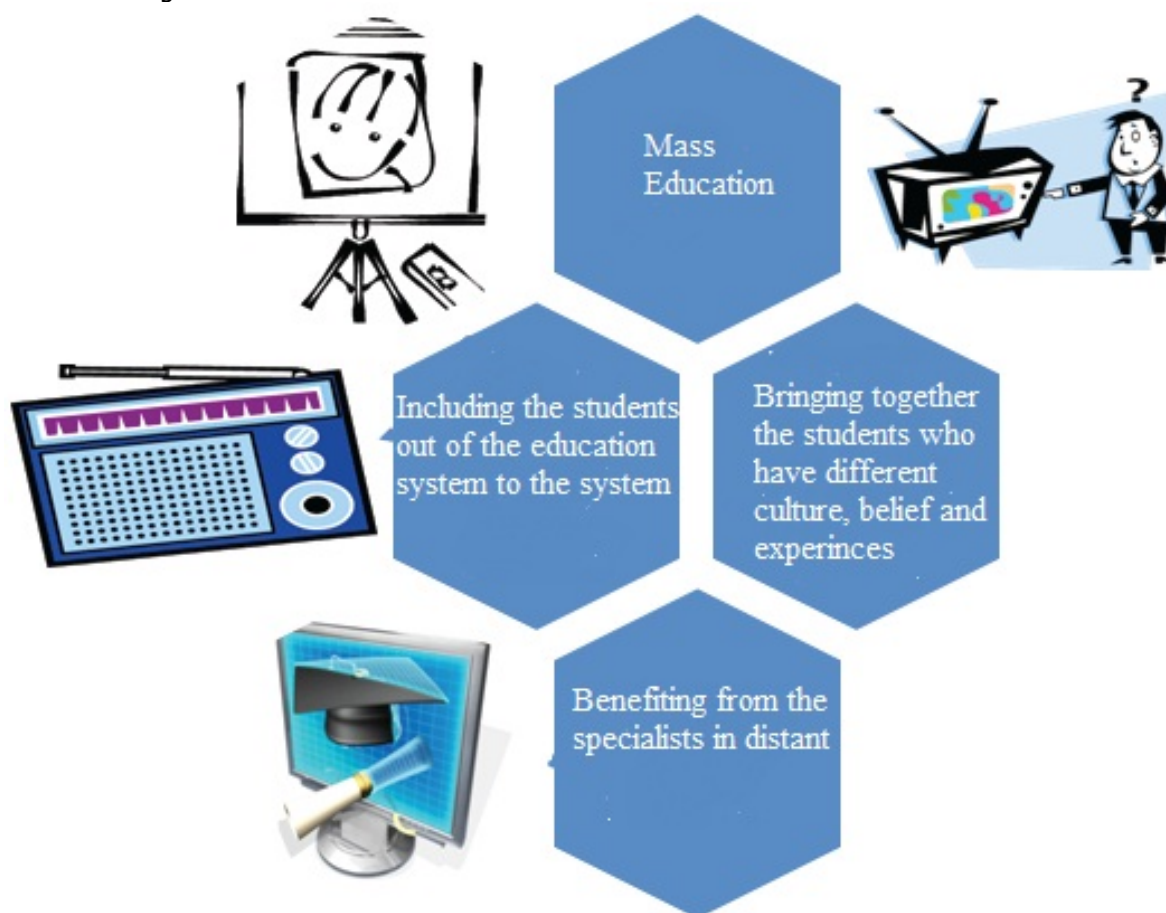

Diagram 2: The Advantages of Distance Education

The advantages of distance education since the Internet technologies started to be used for the distance education service can be reflected as follow[4, 5]:
- If anybody from anywhere in the world can access to the internet, he can access to the course content and online course materials from home, school, office or public places.
- The user can access to the asynchronic course contents whenever he is available round-the-clock.
- Students can study at their own speed.

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- Students can study at their own speed.
- The course materials and activities accessed from the web are independent from the computer platforms (Windows, Macintosh, Linux etc.)
- The use of the technologies used is easy to use for students.
- It is easy to update the developed course materials.
- It facilitates the training of the large mass of people.
- It is easy to enable the interaction via the Internet for the students.
- It provides the equality of opportunity for the students.
- Online courses providing learning experiences, which would support the different learning styles, can be designed.
- All the students are equal in terms of origin, gender, appearance, and handicap except from individual differences.

THE CONSTRAINTS OF DISTANCE EDUCATION

The disadvantages and constraints of distance education can be reflected as follow[4, 54:]

- Increasing the responsibility regarding time
- High tuition costs for registration to the programs of distance education
- The resistance of the institution for change
- Not having a common vision of the institution regarding distance education
- Lack of staff to develop courses
- Lack of strategic plan regarding distance education
- Slow progress of the application
- The wages/encouragement awards of teaching staff
- The difficulties in keeping up with technological changes
- The lack of classrooms, laboratory and infrastructure supported by technology
- Dependence on communication technologies
- Detention of socialization
- The constraints of the distance education applications offered via the internet technologies[4,5]
- Unfortunately the access and skills of computer and the internet of the rural and low-socio-economic regions are limited, which is called digital division
- It may emphasize technology much more than online courses, content and learning facilities
- It could be challenging to provide work load, time and staff for well-designed internet based courses
- It could be challenging for some teaching staff to teach in a student-centred way in the internet media
- No matter how well the students are as technology literate today, a small number of them still may have technophobia
- It could be problem to reserve the copyrights of the websites which do not ask password
- Even today it may not be proper to offer some contents via the internet
- It could be problem to offer graphics, multimedia and video with big-sized files
- Online courses require students to assume their own learning responsibilities
- The answers to be given to the questions of the students may take hours or days
- The technical support given to the teaching staff and students may be limited

SUCCESS CRITERIA OF DISTANCE EDUCATION

The quality indicators of distance education can be put in order as following: the interaction between teaching staff and students, effective learning techniques, immediate feedback, various ways of learning, respect, student support services, teaching staffs support services, program evaluation and assessment, powerful reason for distance education in relation with the mission of the institution, true analysis of target group, proper tools and media, the reliability of the technology, institutional support

and institutional resources, guide for the development of course content, review of teaching materials[55].

THEORIES AND DISTANCE EDUCATION

The leadership of distance education requires a significant competitive capacity and theories will be crucial means to fulfil the needs of the distance education institutions and students[2]. Before moving on to the theories of distance education it will be useful to describe the theory itself. Turkish Language Society describes the theory as "1. The abstract information dealt with independently from the applications. 2. The body of ideas and thoughts on a given issue. 3. The body of rules and laws, which is the base of the science and explain a lot of circumstances regulated in a systematic way[56]. When theories provide a generalization they could decrease the complicatedness. We may encounter with theories in various ways: It attracts attention that framework and model, which are ones of the important concepts of the theory, are used as synonym of the theory especially in international literature. It is pointed out that while theoretical framework offers the assumptions of the components of the theory in a broad framework regardless of the details of an extensive theory, model is more outlined compared to theory and represents the structural relationship between the basic concepts. The theory of distance education must reflect not only self-assembled but also the purposeful nature of the educational experiences[2].

Keegan who has an important role in the theoretical history of distance education classifies the distance education theories into three groups[9, 57]:
1. Theory of Autonomy and Independence
2. Theory of Industrialization
3. Theory of Interaction and Communication

The brief description of these theories is as follow:

Theory of Independent Study
It is a theory put forward by Charles A. Wedemeyer in 1973. The concept of independence study includes the various forms of teaching-learning arrangements in which teaching staffs and students perform important tasks and responsibilities individually and interact with each other in various ways. The concept of "independent study" of Wedemeyer includes the two forms of education: "independent study for internally controlled students" and "independent study for externally controlled students". Students do not have to attend a class in independent study for internally controlled students. They maintain their education freely by means of their individual study programs[9].

Wedemeyer assumes that distance or independent system which has the ability of processing in everywhere, in which students or a single student exists, has six special features whether or not teaching staff and students are at the same place or time[9]:

1. Teacher and students are independent.
2. The regular procedures of teaching and learning are maintained through writing or some other media.
3. Learning must be individualized.
4. Learning takes place within the student's activities.
5. Learning is practiced in accordance with the student's own circle
6. Students assume their own responsibilities of improvement by having the independence of starting, stopping at any time and progressing at their own speed.

Theory of Independence
Another scholar who has burst into prominence is Moore among those studying on independence study. Moore developed a theory related to the variables of "autonomy" and "distance" in 1983. Moore's point of view is completely out of the school environment and according to him school environment is the place where teaching activities take place through classroom, course or seminars

and learning activities. According to Moore, distance education is an education system in which students are independent and they are far from the teaching staff in terms of time and place. In this theory the system of distance education has three sub-systems: Student, teaching staff, communication way. All these sub-systems have much more distinctive features than other education systems.

Moore emphasizes that teaching has two stages: "Pre-event" and "Interaction". In pre-event stage the teacher chooses the objectives and develops teaching syllabus and strategies. In interaction stage, he faces with students, provides oral stimulants, makes some explanations, ask questions, and guides for students. According to this, teaching takes place in the classroom atmosphere during the school period.

Distance Concept: Moore uses the concept of distance as the meaning of students and teaching staff are apart from each other. In this way, Moore tries to classify the distance education programs depending upon distance concept. There are two criteria he uses for this: Dialogue (D), mutual communication must be ensured, and Structure (S), the program must meet the students' individual needs.

Autonomy Concept: Michael Moore was impressed by Charles Wedemeyer, Carl Rogers, Allan Tough, and Malcom Knowles in creating the autonomy concept in relation with independent student. University students rely on teaching staff for explanation, guides, and questions. Moore states that the authority of decision-making is given to teaching staff and this approach does not comply with theories of adult education.

Moore points out that all teaching-learning processes have these components given below:
- *Preparation activities,* in which objectives and strategies are set,
- *Application activities,* in which information, datum and ideas are actualized,
- *Evaluation activities,* in which a judgement is made on the efficiency of reaching the objectives of teaching processes.

According to Moore, independent study is an education program in which learning program is different from teaching program in terms of time and place. Students have an effect as much as teaching staff upon learning objectives, resources, and determining the evaluation.

Holmberg outlines the student's autonomy in distance education applications as following:
1. Free course selection and voluntary study
2. Independent study depending upon the curriculum designed beforehand
3. Making a free choice out of options as a part of an independence study depending upon the second item
4. Adding some units from other curricula to the curriculum and removing some units from the current curriculum depending upon the second item
5. Making a free choice out of learning objectives, course units and other optional support materials which will match up with independence study
6. Independence study guided by teaching staff
7. Independent project study

Theory of Industrialization

Otto Peters conducted most of the early studies on distance education in the early 1960s. Peters states that he developed a theoretical structure related to the field when completing the analysis of analytic and comparative systems of distance education. He puts forward that developing a system for distance education must be quite different from conventional, verbal education[9]. The teaching ways which are indirect and cannot be described as distance education suggested by Peters are those; correspondence education, printed learning materials, audio-visual education, educational radio and television, programmed learning, computer-based training, independence study, special studying, learning through teaching materials[9].

The relationship between theory of industrialization and distance education has been compared under these titles[9]:

- *Rationalization*: It is the characteristics of distance education in which teacher conveys his knowledge and abilities theoretically to the unlimited number of students in a stable quality.
- *Division of Labour*: Provided that the number of the students registering for distance education is very high, the other academicians apart from the teachers preparing the distance education perform performance evaluation.
- *Mechanization:* In distance education, mechanization changes the nature of teaching-learning process.
- *Accumulation Point*: Teaching responsibility changes its place at given points while teaching staff do not.
- *Mass Production*: Mass education is the subject in distance education.
- *Planning and Organization*: It requires extensive programming just like in industry.
- *Standardization:* It requires much more standardization compared to traditional education.
- *Functional Change and Objectivity:* The role of the teacher is divided into three ways: The one presenting information (Distant Unit Author), the one assessing the knowledge and improvement (teaching staff), and advisor (advisor of subject program).
- *Monopolization:* There is trend of monopolization of the institutions of distance education for the education of a given region or area. Localization and centralization are the basic characteristics of the management of distance education systems.

Theory of Interaction and Communication

It is assumed that directed communication, the sense of belonging, and collaboration have a crucial educational value in distance education[58]. According to Holmberg, the communication between teaching staff and student is the keystone of learning. To join this communication helps students to have pleasure from learning and be motivated. The importance of Holmberg's theory is because of the fact that it identifies a process peculiar to distance education systems. Individual efficiency comes to the forefront in Holmberg's distance education understanding[9].

According to this theory, the essence of teaching is the interaction between teaching and learning; this may occur by the way of resembling the interaction in the presentations about the courses of subject area prepared beforehand and making the students taking into consideration the various point of views, approaches and solutions by interacting with the course.

Holmberg explains the basics of the approach, which he calls guided didactic chat as follows[58]:

1. The feelings resulted from the personal relationship in teaching and learning promotes the motivation and pleasure of studying.
2. These feelings can be fostered through well-developed self-learning materials and bidirectional distant communication.
3. Mental satisfaction and motivation for studying could be possible by the way of using the acquisitions from studying objectives and using the proper studying procedures and methods.
4. Using a friendly language and an atmosphere, where the rules exist, reveal the feelings resulted from the personal relationship, which will enable the first item to occur.
5. The messages sent and received as the way of chatting are easy to understand and remember.
6. The media that distance education make possible can use the concept of chat.
7. Planning the work and providing guidance whether by institutions or students is necessary for a study which is designed based upon the explicit or implicit target understanding.

A Synthesis of Theories

The distance education theory of Perraton points out the originality of distance education systems[59]. This theory consists of the theories regarding current communication and spread and education philosophy theories. It is based on the assumptions that distance education can enable any types of sources to be used for education, remove quite a few constraints caused by formal education systems, reduce the cost, extend the service, and develop the education purposeful communication[60]. This

theory is explained with different situations which put forth the distance education methods that could be used to universalize the education (e.g. you can use any media to teach anything); remark the need for increasing the dialogue (e.g. distance education can be organized in a way that dialogue exists in); are with regard to the methods (e.g. feedback is an essential part of the distance education system).

Transactional Distance

It is known that Moore structured the theory of transactional distance over the theory of independence study he developed earlier. The concept of "transaction" shows the special nature between teaching staff and student in a distance education process. This relationship occurs during the process of the interaction between students and teaching staff in which students get experiences and meanings individually. In the process of getting experience and meaning students, teaching staff and content play an ever-changing dynamic role.

Students who will interpret and give the meaning to the learning process will advance on the structure and dialogue in process. Each transaction, which students will perform, will depend on student's mental potentials, status and experiences[61]. According to Moore, geographical and conditional distance is not more important than perceptive distance between students and teaching staff[62].

Michael Moore, a theorist of distance education, firstly expressed his ideas on the theory of "Transactional Distance" in 1972 and suggested the concept of "Transactional Distance" in 1980s. The concept of transaction of Moore in this theory is based on the ideas of Dewey: "The environment must meet the needs of individuals to get experience whatever the circumstances are." Condition and experience are two parts, which cannot be separated from each other. Depending upon these theories Moore described the transactional distance as a function of dialogue, structure and autonomy within the context of transaction in a curriculum in 1993[61]. Accordingly transactional distance has two extents. The first extent consists of dialogue and structure components, the second extent consist of autonomy of individual or in other words his independence[63].

Theory of transactional distance offers a theoretical framework to syllabus designers to design effective learning environment. Teaching staff and syllabus designers realizing the essential points of the theory of transactional distance will be able to prepare the education systems in which the balance between dialogue and structure established to reach the program objectives. The theory of Moore offers a method by which various levels of the interaction between teaching staff and students can be illustrated and made up. This interaction control will help syllabus designers to design more effective learning environment. This theory also contributes to develop new teaching models.

Equivalency Theory

This theory took its place in the history of education theories in 1999.When virtual learning is thought to be a subfield of distance education; theory of equivalency in distance education comes out. Some supporters of distance education ignore in a wrong way where and when the students learn and they try to organize the learning environment in the same way for all students. This is because it is thought that all students have the similar opportunities in learning. According to Simon the reason why the distance education applications have been successful in the USA is that the learning experiences and output of the students of distance education and traditional education are tried to be equalized rather than likening or equalizing the environments[64].

Each student can use various teaching strategies, change his learning resources or designate new activities individually. If the courses of distance education are designed effectively and ensured equal learning experiences, students can accomplish the objectives of the course[65].

The key point of this approach is the equality between the students of distance education and traditional education. The students of distance education and traditional education are not equal in terms of environment but the point is that they must be equal in terms of learning. According to this

theory, even if the experiences of those students are apart from each other, the thing is that they must have the same learning output[64].

Another key point is the context in which learning experiences are obtained. Various students may ask for various learning contexts with their various learning backgrounds at various environments at various times. Some of them may prefer to make more observations and some of them may also prefer to practice more. At this point the purpose of planning the education is to offer these experiences to every single student equally. The principle of syllabus is to struggle to offer the substantial proper learning environments and experiences for all students or given students[64].

All the theories suggested before describe the classical distance education. These traditional theories distinguish distance education from traditional education. The approaches except from the theory of equivalency regard the physical and time autonomy of teaching staff and students in the application of distance education as inevitable. On the other hand, equivalency theory emphasizes that it is possible to make concessions partly to time autonomy. As the reason of this, it is asserted that it is necessary to call upon the educational potentials of synchronic applications to get equal experiences to face to face learning expeiences[66]. However; the potential of recent technologies decreases this distance[60].

The Theory of Cooperative Freedom

The theory of cooperative freedom of Paulsen can be classified as the theory autonomy and freedom[13]. This theory was inspired by the theory of "adult education" of Knowles. It is suggested that adult students consider themselves as self-administered individuals and describe themselves from the point of their personal achievements and experiences. The theory of cooperative freedom provides both adult and young students with the opportunity to be the students, who are motivated, self-administered and want to check their learning output. By expressing the freedom of motivational tendency, the theory of cooperative freedom asserts that distance education students need cooperation at least as much as freedom.

Cooperation: Learning accompanies with the interaction between individuals. Even it enables just students to get help and courage from other students by guiding them in their programs without the help of a teaching staff. In a social atmosphere those who are the part of an educational activity have to cooperate with each other both in planning and performing. In the extreme point a student needs a group that does everything together they agree upon. In another extreme point when a good number of people come together to listen to a lecturer, sharing could be confidential.

Freedom: Cooperative freedom is more related to limited freedom than unlimited one. It is said that students should have the rights of making choices rather than being limited by a strict distance education program. It is pointed out that freedom is highly important in distance education. The need for continuing education and life-long learning is increasing for a lot of people. Most of today's students have full-time jobs and they have to care about their families. If distance education makes most of them leave their very well going family lives or jobs performances, those people are reluctant to maintain it. They need flexible education; education enables job, family and education to be combined in an administrative way. Freedom is a complex structure. It has a lot faces and features. The theory of cooperative freedom claims that the features reflecting the special importance of distance education are time, location, speed, media, access, and curriculum. None of them can be thought to be separate from one another; each of them should be comprehended as a piece of a puzzle. On diagram 2 the faces of the hexagon of Cooperative Freedom can be seen.

Paulsen states that cooperative freedom is a made-up concept[13]. At first glance, it seems as if it is in contradiction with itself. "Cooperation" shows the group interaction, yet "Freedom" indicates the individual freedom. If a distance education system combining the group cooperation with the freedom for individuals is developed, a distance education system which has the cooperation freedom is achieved.

LEARNING AND TEACHING : THEORIES, APPROACHES AND MODELS

MAIN LEARNING THEORIES AND DISTANCE EDUCATION

Besides the theories of distance education, syllabus models and main learning theories also directly affect distance education. New terminology has been noticed in the literature of the field under the effect of these theories: cognitive, social and teaching readiness... The cognitive readiness refers that the students structure and verify new information in learning atmosphere. In cognitive behaviourist model, the students must be informed about teaching objectives in the system offered to the students by applying teaching systems syllabus models. Distance education applications, which have broken new ground with new technologies, mention about another concept, social readiness, which distinguishes itself among the other cognitive behaviourist models[42].

In the applications of cognitive behaviourist distance education, teaching readiness has undergone a change. In the age of correspondence education teaching staff used to have only the words he transferred into written paper in his hand. In our age he added sounds and gestures into his power by means of synchronous technologies. However, the discussion is still going on whether the recorded videos have the same effect when shared asynchronically[42].

Socio-constructivist theories have effects on distance education. Numerous theorists agree upon the fact that learning is not something the individual makes up in his mind, but it occurs within its own context and relations. The role of teaching staff in socio constructivism has changed from focus of control into guidance, organizing activities and designing a structure in which these activities will take part. In this regard, cognitive readiness requires presenting the real life experiences to the students by going out of the traditional classrooms. Constructivists think that cognitive readiness could be achieved through the ways such as role-playing[67], imitation[68], and questioning depends based on dialogue[69]. In socio constructivism distance education, social readiness comes up with quality interaction. Gestures, intonation and body language support this. Teaching readiness consists of choosing, preparing, teaching and teaching directly of educational applications when needed. But it may lead to problems in crowded classes[42].

The third generation of distance education pedagogy is the connectivism[42]. This concept is offered as the new learning theory of digital age, which has four key principles such as autonomy, connectivism, variety, and explicitness[70]. Connectivism assumes the access to the web technologies from anywhere. The fact that a great deal of information exists and the role of students does not mean memorising or understanding all of them is accepted by connectivism. However, it is known that students have the capacity of finding and using this information in case of need[42].

Holberg mentions that by choosing some traditional learning theories (behaviour management model of Skinner, written instruction model of Rothkopf, organizers model and cognitive communication model of Ausubel, discovery learning model of Bruner, experiential learning model and formalized learning model of Rogers) he made a systematic research and they all were likely to be applied in distance education[3]. Laurillard states that those could be used in online learning media: Experiential learning theory of Dewey, stage theory of cognitive development of Piaget, social development theory of Vygotsky, discovery learning model of Bruner, conversation theory of Pask, problem-based learning theory of Schank, deep learning theory of Marton, and socio-cultural learning theory of Lave[71].On the other hand, Holmberg underlines that the variance of target group should be taken into consideration based upon the view of Keegan which asserts that distance education is a whole system rather than a method of teaching[3].

INSTRUCTIONAL DESIGN AND DISTANCE EDUCATION

We can approach to the instructional design in distance education with various points of views. These points of view are those: ADDIE Model, the technology to be used interaction types, student autonomy, and student's control or financial issues[44].

Instruction systems design models such as ADDIE, Algo-Heuristic, Dick and Carey Model, Instruction Systems of Robert Gagne, Kemp, Morrison and Ross Instruction Systems Model, Rapid Prototyping and Emphatic Teaching Design, could be applied to distance education environments[72]. Just prototyping model is going to be mentioned as an example out of instructional design models considering the limits of this book.

Rapid Prototyping

The design model of rapid prototyping instruction systems chooses the most crucial steps of ADDIE. It identifies the most urgent needs of education and enables the teaching design to come out with the help of template tools, the minimum budget, and a professional team of 1-3 persons as the shortest time as possible (fewer than 3 weeks) [73]. Rapid prototyping is actually a design methodology of software engineering, and also its software design is similar to instructional design. Rapid prototyping has a lot of positive aspects: it allows and supports the students to join the design process; those who joining to this design process must let their mentality change; target group has the conscious that they cannot get aware of their needs without joining the application process; mistakes are recognized earlier; prototyping promotes the creativity since it gives feedback instantly; it accelerate the cycle of instruction development[74].

Design Models for Asynchronically Offered Web-Based Courses

Traditionally there are 4 model suggestions for the instruction design of asynchronically offered web-based courses[5]:

1. Linear designed instruction: It is similar and consecutive to linear programmed teaching. Students get the course units, modules, subjects, assessments, and test at the same time.
2. Branched designed instruction: It is different from linear designed instruction in terms of evaluation. If the students get successful, it can remove some subjects or add some additional subjects if necessary or review the previous chapters in the case of failure.
3. Instruction designed considering hyper content: It makes possible to roam among the hyper contexts like a website or assessments under the control of students. The instruction designer has a very little role in roaming in instruction in beforehand.
4. Student-managed designed instruction: It is the design type in which students are the most flexible. In this instruction type, students can choose the subjects they want to study if necessary. Line or order is not established by the designer. Students make up their own teaching strategy or design by themselves.

The common trait of these four models is that courses are divided into units, units are divided into modules, and modules are divided into subjects. If it is a 14-week course content, it is going to be divided into 14 weeks[5]. If the course content is for in-service training, it is going to be divided into the hours of the training.

The Qualities of a Good Instruction Design in Distance Education

According to Burns, the qualities of a good instruction design are those as follow:

- Comprehending the teaching process
- Comprehending the students (adults or not) needs
- The relationship between theory and practice
- Reaching a compromise on the differences of learning styles of target group
- Flexible design
- Flexible presentation
- Access facilities

SUMMARY

✓ Distance education as a concept started to be used in 1970s and was first put into words officially in International Postal Tuition Council in 1982.

- ✓ Distance education is a distinct education type which cannot be regarded as an alternative of conventional face to face education due to embracing adults who are working or have constraints because of their family, face to face interviews, classrooms and freedom of general place and time, the combination of mass media and individuation, the potentials regarding student's freedom and peculiar administration.
- ✓ Presenting the learning content through computers and utilizing the computer web for bilateral communication of students to make use of the communication with one another, teaching staff and the other personnel is called "online learning".
- ✓ Offering the education via palm devices, smart and mobile phones, mini tablets and laptops is called "mobile learning".
- ✓ The method by which online and face to face learning are implemented at the same time is called "blended learning". In this method from 30% to %79 of the content is offered in an online way.
- ✓ Interaction is "a bilateral developed action which necessitates at least two objects and two actions". Interaction may occur when these objects and actions interact with each other bilaterally.
- ✓ Social surroundings are the web applications in which at simple essays and publishing techniques are used at micro level and with a point of view of keeping diary in order to users interact and communicate. The application such as Twitter and Facebook can be given as examples for this.
- ✓ The first distance learning effort within the institutional context started with the advertisement given by Calep Philips to the Boston Newspaper in 1728.
- ✓ The first appearing of Turkish distance learning as an idea was in 1860 when Ottoman University, Daru'l-fünun, offered courses for the public; the content was published on the page of "Kısm-ı İlmi" of the newspaper called Takvim-i Vak'ayi.,
- ✓ The Institute of Banking and Commerce Law of Ankara University initiated the first application of distance learning in Turkey in 1956.
- ✓ The advantages of distance education can be reflected as follow: facilitating the training of the large mass of people, providing the equality of opportunity, enabling students to study at their own speed, enabling anybody from anywhere in the world to access to the course content and online course materials whenever he likes if he has the access to the internet and computer.
- ✓ The disadvantages and constraints of distance education can be reflected as follow: depending on communication technologies, detention of socialization, the difficulties in keeping up with technological changes, lack of staff to develop courses, insufficient technical support, and high cost of content development.
- ✓ The theories of distance education could be classified into three groups, they are: theory of autonomy and independence, theory of industrialization, and theory of interaction and communication.
- ✓ We can approach to the instructional design in distance education with various points of views. These points of view are those: ADDIE Model, the technology to be used interaction types, student autonomy, and student's control or financial issues.

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