An Analysis of Student Perceptions on Communication Barriers in Distance Education: A Case Study of Sakarya University Online Programs

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ABSTRACT

The purpose of this study is to investigate the perceptions and experiences of university students about communication barriers in online learning as a contemporary form of distance education. Because the study was descriptive in nature, the general survey model was employed. The population of the study was defined as students enrolled to the online courses at Sakarya University in Turkey. The sample consisted of 115 students who have taken online courses in various degree programs in Adapazarı Vocational High School at Sakarya University. All the students individually volunteered to participate in the study. Data were gathered through a Likert- type scale developed specifically for the study. The scale included 40 items, each with 5 options. Data were analyzed by using techniques of factor analysis, correlation, analysis of variance, and multiple regression. The results showed that students did not experience high levels of technical barriers or communicational problems. Most of the barriers and problems that the students experienced were communicational rather than technical. There was no significant difference in terms of gender. On the other hand, relatively older students had less communication problems compared to their younger counterparts. The students studying industrial electronics as a major faced less problems than those students in other fields of study did. Barriers and problems did not show considerable difference according to the amount of online lessons taken. However, those who have taken online courses as mandatory, experienced more problems than those taking at least some of the online courses as elective. When perceptions and experiences of students were positive about online courses, they usually reported less barriers and problems. Consistent with this, the students who encountered less difficulty in online learning

reported more willingness to take additional online courses in the future, and this willingness was the most powerful predictor of the students' general perceptions of online learning.

Keywords: Communication barriers, distance education, online learning

ÖZ

Bu tez çalışmasının amacı, çağdaş uzaktan eğitimin bir uygulama biçimi olarak çevrimiçi öğrenmedeki iletişim engelleri hakkında üniversite öğrencilerinin algılarını ve deneyimlerini incelemektir. Çalışma, doğası gereği betimsel nitelikte olduğu için genel tarama modelinde gerçekleştirilmiştir. Araştırmanın evreni, Sakarya Üniversitesi'nde çevrimiçi derslere katılan öğrenciler olarak tanımlanmıştır. Bu evreni temsil etmek üzere seçilen örneklem, Adapazarı Meslek Yüksekokulu'ndaki çeşitli diploma programlarının bir parçası olarak çevrimiçi ders alan 115 öğrenciyi kapsamıştır. Çalışmaya tüm öğrenciler bireysel ve gönüllü olarak katılmışlardır. Veri toplamak için doğrudan bu araştırma için geliştirilen Likert türü bir ölçek kullanılmıştır. Ölçek her biri beş seçenekli toplam 40 maddeden oluşmuştur. Verilerin çözümlenmesinde faktör analizi, korelasyon, varyans analizi ve çoklu regresyon tekniklerinden yararlanılmıştır. Sonuçlar göstermektedir ki, öğrenciler katıldıkları çevrimiçi öğrenme programlarında çok sayıda teknik sorun ya da iletişim engeli yaşamamışlardır. Çevrimiçi eğitimde yaşanan sorunların büyük bir bölümü teknik sorunlar değil iletişim engelleridir. Cinsiyet değişkeni açısından yaşanan sorunların miktarında anlamlı bir farklılık bulunmamıştır. Buna karşılık görece daha yaşlı olan öğrencilerin daha az sorun yaşadığı saptanmıştır. Bölüm olarak endüstriyel elektronik alanında öğrenim gören öğrenciler öteki alanlarda öğrenim görenlere oranla daha az sorun deneyimlemişlerdir. Alınan çevrimiçi ders sayısına göre yaşanan sorunlar ve iletişim engelleri farklılaşmamıştır. Ancak çevrimiçi derslerin tümünü zorunlu olarak alanlar, en azından bazı derslerini çevrimiçi olarak alanlara göre daha çok sorun yaşamışlardır. Öğrencilerin çevrimiçi öğrenme hakkındaki düşünceleri olumluysa daha az sorunla karşılaşmışlardır. Öte yandan, çevrimiçi öğrenme sırasında daha az sayıda teknik sıkıntı ve iletişim sorunu yaşayan öğrenciler

gelecekte daha çok çevrimiçi ders almak istediklerini belirtmişlerdir. Çevrimiçi öğrenmeye ilişkin algının an güçlü yordayıcısı gelecekte de çevrimiçi ders alma isteği olmuştur.

Anahtar Kelimeler: İletişim engelleri, uzaktan eğitim, çevrimiçi öğrenme

To My Family

With all my love and gratitude

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Chapter 1

INTRODUCTION

This chapter defines the problem of the study, specifies the purpose in terms of research questions along with hypotheses, indicates the practical significance of the study, mentions basic assumptions, shares limitations, and presents a list of the definitions of major concepts as used in the study.

1.1 Problem of the Study

Distance education, as a classical definition, is the kind of education that exists when there is a physical distance in between the person(s) delivering instructions and the person(s) receiving them. It comprises both distance teaching and distance learning. But in present, not only the distance is the problem, when people are experiencing restrictions in life, distance education becomes the most available and preferd way for those who would like to have an education in their individual areas of interest.

The ongoing developmental advances in technological instruments or media have made it possible for people to receive and distribute information or knowledge thus making education possible without any limitations regarding time and distance, in particular for those who are unable to attend traditional classrooms where face-to-face education is done.

Majority of the universities are now offering distance education worldwide almost in all the fields of education or skills. It is an observable fact that with distance education people can reach to instructions in their field of interests in such a way that

they would otherwise been able to do so. This of course is made possible by the contemporary telecommunication technologies that yield various ways and methods for conveying instruction to meet the educational requirements of people, while instant access to instruction and instant sharing of knowledge between the participants are enabled.

Each university employs different methods for conveying instructions to the learners who are far away. The most known and favoured is known to be the internet, in other words, the globally interconnected network. Thanks to the Internet, millions of personal or institutional computers are interconnected, bringing new capabilities, opportunities and horizons to education. This has made new resources and techniques in teaching available and education became more effective and interactive than the traditional face-to-face instruction.

The teaching-learning process via the Internet helps the participants to share information in a synchronous (sending "and" receiving) or asynchronous (sending "or" receiving) way, while enticing their knowledge immediately online or in different time interactions among participants.

The Internet, web-based, e-mail, e-messaging, and video conferencing methods play an important role in today's distance education with certain advantages, disadvantages, or restrictions, and limitations. The type of delivery system used in distance education is very reliant on the resource capabilities and conditions of the sending and receiving components. Some systems are expensive to establish and maintain whereas others are relatively less-expensive and can be run easily but in varying degrees of efficiency. All should be considered while trying to attain the standards and the satisfaction of the persons who are enrolled in the process. The educational institutions, therefore, face difficulty in deciding which method to

implement and what type of education to consider in satisfying their markets. In the meantime, customers' capabilities and their infrastructure of resource abilities to receive the instruction in the most appropriate way are considered. As a result, some educational institutions choose to give partial or full degree programs on the basis of online education.

With the on going developments in the Internet, World Wide Web (www), and the wide usage of e-mails the messages and instructions are electronically delivered thus making distance education a reality. This helped to improve and increase the amount of interaction, however limited in the boundaries of the technology, and created a cost-effective education (Robert & Jason, 2004). The study here concentrates on distance education that utilizes e-mails and the World Wide Web in online diploma programs in Sakarya University (Dabaj, 2009).

Sakarya University, on the other hand, is another institution that applies e-learning with a dynamic approach. Amongst its e-learning programs are the 200 e-learning courses, each of which are enticed using texts, animations, graphics, audios, and videos as elements of instruction (http://www.sakarya.edu.tr).

The success of distance education not only lies on the selection of a commendable institution, pertinent staff, and the particularity of courses (all of which are prepared based on effective pedagogy) but also on the effective influence of the student-student and student-teacher communications. In addition to these, the prominent significance of the seventeen different progress reports concerning students' achievements also plays an important part in its accomplishment. The services supported by this system are as follows:

- Internet based courses

- Online exams, such as quizzes, midterms, and finals

- White board applications

- A forum page

- 17 varying progress reports about students and courses

- Online student tracking

- Evaluation questionnaire

The above services are all administered and applied on the Internet. In other words, they are web-based programs delivered through web-based educational software. This software enables both instructors and students give or take online quizzes and prepare progress reports. They are programs which are accessible from discrete portals; one for students and the other for teachers, administrators and system administrators. Students' portal facilitates access to the educational (learning) aspect of the program and the other to the administrative or educational preparation and application one.

The educational content of the program constitutes of a fourteen web-based educational program packages to be implemented in fourteen consecutive weeks. These packaged programs embody all information, assignments, animations, visual and audio files, videos, printable PDF formats of lessons and online ZIP formats of the course materials all of which are the requisites for each week. Throughout the semester, students can have access to all courses they are enrolled in the stated weekly structure of the programs. All materials, for the specified weeks, are available online on each Monday (starting from 8:00 o'clock) throughout the semester. By this way, students' step by step progress is achieved. Students' attendances and participations to the course are evaluated under the auspices of progress reports. In order to improve student contribution and motivation towards the program and the education, online student access to the progress reports was made available.

Specialists in the field of education, after preparing the course contents and materials, upload them to the Internet. The mainstream of these uploaded materials is their educational validity. Therefore, all are developed and enticed in order to attain maximum effectiveness and understandability. Colors or different fonts are used to emphasize important points, or visuals like pictures and animations or audios and videos are used so as to improve the quality and clarity of these materials and ensure proper learning. Quizzes, exams, interaction and application activities are also used to add a variety to these programs.

The PDF format of the course material is important when printing the material on necessity. Furthermore, downloadable ZIP files of the course contents are also made available for those who wish to reduce the cost of web usage. Besides all these, students are also directed to useful and helpful resource materials and a link to the forum is available.

In these distance learning programs student performance is assessed through the Internet via quizzes and midterm exams. They also take the final exams at the end of the semester either online or under the supervision of an invigilator. The person in charge, of the course, gives the exams to students per requirement. Again, the answers are sent back via internet. The points attained as a result are added to the scores collected through the year.

Short exams are given online at certain times of the week as part of the weekly exam activities. The number of exams given varies from 1-14 as required by the lesson tutor. The total points of the exams are added to the overall points of the student. Mid-terms are given online after completing 60% of the material in one semester. These exams can be taken online throughout the one week of exams. Like in short exams the points are added to the overall points of the students.

There is also a forum used as an integrated part of the system to enable a connection between the teacher and the student. Furthermore, students are provided with an e-mail address where questions of further help can be directed. It is the responsibility of the teachers to reply to all the questions of the students and join in the forum and communicate with the students.

Assessment and Evaluation is done with maximum sensitivity at Sakarya University. All course attendances, homework, quizzes, and final exams comprise criteria for evaluation. The exam results taken online are added to the exam points taken at the exams administered via supervision of an invigilator.

As in Sakarya University, the sole aim of the initutions is to seek the effectiveness of their distance education programs and if their programs are satisfactory enough to be used in the place of face-to-face education. The interactivity level of the program is an indication of its sufficiency and the way institutions eliminate the communication barriers among the members involved shows their success.

Communication barriers, as in any communication practice, also exist in distance education because of the physical distance between the associates. As known by all researchers in this field, the barriers can be listed as the incompetence in using the new media, lack of prior knowledge regarding distance education, lack of skills in using technology, and how interactive the process is. All these problems make it very hard to establish the distance education process effectively. The level of these obstacles varies from organization to another, from course to another or even from the delivery system used to another.

1.2 Purpose of the Study

The goal of the work is to examine the relationship between how students' perceive communication barriers with respect to the following:

- Gender,
- Age,
- Academic major,
- Number of distance education courses taken,
- Educational level,
- Course type,
- Number of courses withdrawn,
- Perceptions of online education,
- How their opinions of online education were affected by their experience, and
- Whether they would take any online education in the future.

The case study is based on the online programs and the nature and the reasons for all known communication barriers in online distance education is analyzed in order to develop any strategies if we want to reduce the communication barriers in online courses. Students enrolled to these programs show different personal characteristics, perspectives, experiences and ability levels in utilizing technology and the periphery of distance education (Dabaj, 2009).

The main aim of this work then is to look at the interaction between personal characteristics, the online education experience characteristics, students' general perceptions of online educations and communication barriers faced by students in online education including both technical and communicational barriers and problems.

In order to do so, the answers of the following questions were sought based on data gathered from the students attending programs offered by Sakarya University's web-based education;

1. What are *common characteristics* of online education experience, general perceptions of online educations, and communication barriers faced by students during online education?
2. Are there any significant differences in communication barriers (technology-related difficulties and communication-related problems) faced by students during online education when *personal characteristics* (age and gender) are differentiated?
3. Are there any significant differences in communication barriers (technology-related difficulties and communication-related problems) faced by students during online education when the *background characteristics* of online education experience (educational level, department, types of courses, number of online courses taken, eligibility of the online courses) are differentiated?
4. Are there any significant differences in communication barriers faced by students in online education (technology-related difficulties and communication-related problems), when *general perceptions* of online education (students opinions concerning online education, opinions embodied by the experience in online education, students' plans to take any online courses in future) are differentiated?
5. How much *variance* are explained by personal characteristics, the online education experience characteristics, student general perceptions of online educations, in communication barriers faced by students during online

education (technology-related difficulties and communication-related problems)?

When seeking answers to the above questions, the null hypotheses and the alternative hypotheses were formulated and tested for each of the variables. As typical in all studies, null hypotheses indicated no significant differences among means, whereas alternative hypotheses claimed significant differences.

1.3 Significance of the Study

The important thing is to deal with the communication problems in distance education. In the quest to correct the structure and increase the effectiveness of distance education, we need to have a meaningful communication. Distance education is relatively new in some academic institutions, thus, it is normal to face some problems especially in communication during the online learning process. Therefore, it is very important to have a good definition for the communication issues regarding distance education in this study. Communication problems or barriers have adverse effects limiting the efficacy of the distance education thus minimizing the performance of all means and chances.

In order to increase the efficacy of the Web-based instruction, it is a crucial step to develop and design the program to enhance the demands of the course, facilitate students' expectations, and increase the interactivity of communication. It is of utmost importance to cope with the barriers in communication because of an asynchronous text-based traditional system of teaching. These barriers can be listed as; frustrations of students, the students feeling isolationed and their desire to relate to something, and their apprehension in dealing with the new tools.

In an online learning, the amount of contact the students have with the instructor is indicative of the degree of interactivity, amongst the students' peers, and the

course material. This learner-centered role of the learners and teachers, as opposed to the usual teacher-centered one, promotes the students to look build their own knowledge and base answers on their own experiences. In other words, the more interactive the process becomes the more active will students' role be, thus the fewer barriers will be faced in an online learning environment.

The answers to the research problems and the concerns raised in above paragraphs will be investigated in order to make the online distance education program in Sakarya University more effective, appealing, and efficient. It is particularly important from the point of putting it amongst the other competing establishments offering online education both in Turkey around the world. Of course, the results of the study will also be useful for everyone working on communication in distance education and in the area of online learning.

1.4 Assumptions

The following points have been accepted as underlying assumptions in carrying out the present study:

1. Communication is more sensitive and open to potential problems in distance education than face-to-face instruction due to isolation of students.
2. Sakarya University is a typical university which share common characteristics with other universities offering online learning programs.

1.5 Limitations of the Study

This study is subject to the following limitations:

1. The data were collected through an online survey and was therefore limited to information provided by respondents representing students solely at one university and its branches.

2. The study assumed honest, open answers by students who understood the survey questions as well as directions and were not afraid of payback for their completion of the survey tool.
3. The responses to the survey by the students were subject to unknown personal prejudices and views, which is a part of all survey studies.
4. The study was non-experimental in that the investigator does not have manipulative control of the independent variables; so, no clear reason and effect relationship can be found.
5. The students enrolled in classes where the courses were delivered via the Internet during the period of data gathering for this study were representative of all university students taking distance education courses.

1.6 Definitions of the Terms

Academic major: The term "academic major" refers to the students' major such as computer programming, management etc.

Asynchronous communication: This is communication where the interaction is not simultaneous.

Communication: The process of encoding, transmitting, and decoding messages to exchange information or ideas between participants.

Communication barriers: Problems avoiding healthy and effective communication such as language barriers, different communication methods, physical barriers, perceptual barriers, noise, etc.

Communication barriers in online learning: Lack of student participation, discussion structures, and connection with others; difficulties accessing course, Internet, untimely feedback, instructor responses to questions, and time to load course especially during peak hours.

Distance education: The process of providing instruction when students and instructors are separated by physical distance and technology often in tandem with face-to-face communication is used to bridge the gap (Schultz & Fogarty, 2002: Page 181).

Educational level: The level of education is divided into six categories: only online course, two-year program, four-year program, master's program, doctorate program, and others.

Internet: A worldwide "network of networks" that allows participants in different electronic networks to share information, transfer files, access news, and communicate through electronic mail (Schiller & Smyth, 2010: Page 236).

Student age: The age of students is divided into five intervals: less than 18, 18 – 25, 26 – 30, 31 – 35, greater than 35.

Student gender: The gender of students is divided into two parts: male and female.

Students' perception: Perceptions of distance education are indications of what students are experiencing about distance teaching and learning.

Students' perception of communication barriers: Perceptions of barriers to distance education are indications of what problems and difficulties students experience within distance teaching and learning.

Synchronous communication: Communication in which interaction between participants is simultaneous (Mantyla, 1999: Page 171)**.**

Telecommunication: The science of information transport using wire, radio, optical, or electromagnetic channels to transmit receive signals for voice or data communications using electrical means (Mantyla, 1999: Page 172).

The number of distance education courses taken: This term indicates the number of courses taken by the student in the distance education mode.

The number of distance education courses withdrawn*:* This term indicates the number of courses taken and withdrawn by student in the distance education mode.

World Wide Web (www): A graphical hypertext-based Internet tool that provides access to homepages created by individuals, businesses, and other organizations (Mantyla, 1999: Page 172).

Chapter 2

REVIEW OF LITERATURE

This chapter reviews the literature in details on topics related to distance education, online learning, interference in communication as discussed in major communication theories, communication barriers during online learning, and measures that should be taken to improve communications in distance education systems or practices.

2.1 Distance Education

In its broadest interpretation, distance education means delivering instruction to students who are not physically present in a traditional face-to-face educational setting such as a classroom. It is the result of the need to access education in the presence of time and place between the source of knowledge and the learners. Traditional distance education started with the invention of the print technology and the postal service. The modern distance education relies on the electronic communication used under various circumstances.

Many studies have tried to describe the place of distance education in educational thinking, its techniques of implementation, organization, and administration. The purpose of the following studies is to emphasize and identify the need for distance education, point out its goals, and suggest ways to enhance it in order to eliminate potential problems.

Holmberg (1980) defined distance education and talked about its aspects in his study. According to him, distance education is an educational approach and

implementation in which learning takes place in the absence of students' and tutors' in a traditional classroom teaching environment. In other words, it is based on a non-contiguous communication that is also supplemented with a certain amount of face-to-face session. The learner is at a distance from the teacher in most or all of the time during the teaching-learning processes. The instructions are in printed form or other media, like audio recordings, radio and TV programs. Although two-way communication is always the building block of distance education, in theory we can also do it without a pre-produced course, which usually forms the basis of the study.

Crooks (1983) concentrated on the outcomes of distance education for the developing world, regarding its potentials and dangers. In this study, he defined distance education as a form of study, at all levels, without immediate supervision of teachers in classrooms or on the same premises, yet still offering the same benefits of education and guidance by the same organization. In this form of education, there is no teacher-student contact in the physical sense. Interaction is achieved by means of multi-media, correspondence, and audio-visual material. The student studies where and when he wishes. This gives him the freedom and no constraint of the classroom and a fixed daily study schedule. However, he further implied that not all of these are found in every instance. It appears that distance education will continue to develop and increase opportunities for many people.

Barbrow, Jeong, and Parks (1996) concentrated on the connection between computer behavior and demographic variables like age, gender, income, and educational level. They discussed the challenge of developing computer competency. According to the results, younger men who are educated and whose income levels are high show a more positive attitude towards computers. Therefore, they concluded that the students should have computer competency and experience in application in

order to show interest in computers and imply distance education programs. However, having limited computer knowledge and experience hinders the educators' ability to deliver or support instructions effectively. Therefore, they suggested that it would be a good idea to have educators with computer literacy in the distance education programs. On the other hand, with the already existing programs in online education, they recommended that the instructors should be provided with computer training in order to better their insufficient computer knowledge and experience. They further pointed out that the distance education programs should consider various strategies for developing computer skills.

In another article, Simonson (1997) pointed out that the traditional evaluation models based on empirical and quantitative procedures (Stufflebeam and Shinkfield, 1985; Worthen and Sanders, 1987) were in practice for many years. However, he suggests that the assessors of distance education programs nowadays also use qualitative models that include nonnumeric form of data. Two alternative methods to evaluate distance education are mentioned in this regard (Woodley and Kirkwood, 1986). The first is the traditional approach. It applies the rules and procedures of the physical sciences to evaluation and includes an experiment aiming to understand the effectiveness of distant education. The second merges qualitative and naturalistic techniques.

Edwards, Cordray, and Dorbolo (2000) argued that distance education, according to critics is a threat to effective pedagogy and creative control over instruction (e.g. Farber 1998; Noble 1998). On the other hand, sociologists like to consider the positive implications of this development (Portes 2000). Rather than thinking of the negative aspects of distance education (Merton 1967) it would be better to consider the not so obvious functions of distance education. It is better to examine the Web-

based distance education and see if it might enhance the classroom experiences. Such new technologies have the power to shape the classroom experience for teachers and students (Cuban 1986). Using technology in online courses can strengthen many traditional classes. However, only some universities offer distance education, and many others do not have the resources to provide extensive student access to such technologies. Moreover, the program requires instructors who are used to this technology because skeptic teachers in the traditional classroom are not likely to become good teachers. Thanks to the resources for developing distance education, they are becoming more available to teachers; many started finding the use of distance-education technology as opportunities for improving classroom education.

Rüzgar (2004) mainly focused on the positive side of distance education by talking about the increasing usage of communication technologies in education and training. This led to the formation of new study fields one of which is distance education. In many cases, it is totally technology dependent. It has become, all around the world, a widely used educational system. According to Rüzgar, many corporations and organizations have successfully implemented distance-learning systems and realized its benefits for their corporations. Among these is its cost efficacy as its allowing companies and corporations to train more people having less travel expenses no matter how many students attend the course using a minimum amount of time. Moreover, distance education interconnected group learning, and learners received knowledge as well as skills while they stay at their worksite. Additionally, distance education technologies permitted access to remote experts around the country and/or around the world. This allows exchange of perspectives thus bringing a new insight to problems, productivity, and motivation. However,

organizations should choose technologies that will encourage interaction and cooperation while supporting the cultural context.

Larreamendy-Joerns and Leinhardt (2006) indicated that the key to apprehend the limitations and potential of online education, one needs to get a proper understanding of the potential and issues that bind online education with distance education. Therefore, in this article they reviewed the historical development of distance education. The article further emphasized the impact of online education to the advancement of the scholarship of teaching.

Richardson (2006) investigated demographic characteristics, perceptions, and behaviors. He evaluated the outcome. He particularly looked at the relationship between perceptions and study behaviors. The results supported the idea that the differences in study behavior results in differences in the way the academic environment is perceived. It has direct effects on their study behavior.

Simonson (2007) investigated evaluation and its five levels in distance education. He referred to Kirkpatrick's (1998) four levels of evaluation and Phillips' (2002) one additional level. These are the most favored methods used by the majority of trainers and some educators. Kirkpatrick's evaluation approach is for evaluating classroom training and teaching. These levels evaluate the reactions of participants towards the program, inquire about their likes and dislikes regarding distance learning, assess how much they learnt and applied, identify their chances of taking part in similar activities and the cost of the training programs to find the income on the initial cost. This is mainly because the institutions need to find out about the efficacy of e-learning and Kirkpatrick's and Phillips' evaluation levels help them to have a clear understanding of distance education and proving its usefulness along with academic validity.

Khan and Khan (2007) investigated the students' academic satisfactions, attitudes and level of involvement in Open University. The findings reveal that students' satisfaction is of a mediocre level towards their program in distance education.

Richardson (2007) examined the relationships among demographic characteristics, motives, and attitudes of students in order to measure the outcomes. According to the findings, the differences in the students' demographic backgrounds resulted in differences in their motives and attitudes; whereas differences in their study behavior resulted in differences in their motives and attitudes. All these affect the outcomes.

Price, Richardson, and Jelfs (2007) argued about the importance of the tutor's role in a multidisciplinary course where the students have to learn concepts, methods, and theories from two or more disciplines. Depending on the competence and expertise of the tutor, students' perceptions changed regarding their competence in areas in which they have less familiarity. Therefore, it is essential to address the problems regarding the nature and organization of the interactions that occur in tutorial groups. In online contexts, tutors and students need training in order to compensate for the lack of paralinguistic information through explicit verbal cues. In addition, they point out to the fact that many students enroll to online courses without fully being aware of their expectations so they cannot fully make use of the advantages of working in an asynchronous and collaborative learning environment. On the other hand, there is the tutor related problem due to the lack of the tutors' incompetence in understanding their role in an online environment. This reflects in their interactions with the students in the online context. Thus, they suggest staff development activities especially focusing on the technical aspects of the online tuition rather than its communicative or pedagogical aspects. They further suggest that the tutors and the

students need guidance and help in the quest to understand the nature of online communication and to know how to achieve effective online interaction.

Chifwepa (2008) pointed out that the increasing development and enrollment rate of distance education and states that the students have positive attitudes towards ICT based formats of course materials. Students believe that ICTs would improve learning. They also see it necessary for their studies. However, the students indicated that they would not use the internet as the only source of content unless access to ICTs is guaranteed to them.

Salı (2008) highlighted the need for designing instruction that accommodates educational needs of learners and developing functional learning systems that serve educational goals. The existing instructional design theories emerged because of this necessity. The Motivational Design Theory points out those instructional processes that need to be configured with the strategies, which would increase the attention, relevance, confidence, and satisfaction of students, and therefore securing the continuity of the learning motivation. She further talks about the systems that are developed because of the mentioned strategies that raise the attention of the students during instruction, developing a relevance to the students' requirements, creating a positive expectation for success and help having a satisfaction by reinforcing success. This article summarizes the empirical studies related with this subject and provides recommendations in designing effective motivational instructional designs in distance learning.

Harris and Krousgrill (2008) investigated the technologies used in distance education and they talk about the impact of development needed to facilitate the most important advances in this field. They further reviewed the early applications of this technology. However, they stated that technology-enabled productivity gains in

distance instruction have not materialized yet nor have the pedagogical changes been minimal. The reality is that higher education students worldwide enroll in distance classes due to their anytime and anywhere nature.

Ibara (2008) defined open and distance learning. He argued that the developing open and distance education is rapidly becoming an alternative system of higher education especially in Nigeria. This is mainly because of the level of infrastructural decay in the traditional higher education system. He further made some recommendations to enhance the possibility of open and distance learning as a valid alternative system of higher education. First of all, to ensure the quality of delivery services in open and distance learning and bringing them to an acceptable standard, institutions that offer distance programs should have a good administration and good assessment; monitoring and evaluation processes is also needed to ensure quality control. Finally, government should invest more on universities running distance education programs because of the initial high cost involved in offering distance education.

Batura, Krasovski, and Tavgen (2008) emphasized the quality assurance of distance education and thus analyzed the quality assuring system and the experience in distance education. They also highlighted that the main concentration should be on the quality control system of distance education. This is important because knowledge reaches students indirectly via the information and communication technologies. Therefore, the new quality control system of distance education should look into the quality of results, and the quality of goals, purposes, conditions and process. The previous education level of the graduates as well as accomplishment of external national procedures and international procedures should also be taken into account.

Bian (2009) commented on new ways of education offered through the digital technology. Thanks to distance education, many students overcome barriers like full-time work commitments, being far away, being a mother or taking care of an elder, and having physical disabilities. It also provides the advantage of convenience and flexibility. In addition, it will continue to develop and expand playing an important role in education.

Çakır and Oğuz (2010) tried to evaluate the present situation of the distance-learning institutions. They collected and evaluated data regarding the structure of the institutions, how the distance learning programs are implemented and assessed. They further evaluated the present conditions of the centers which carry out distance education.

Thangada (2010) identified the factors influencing distance education. He came up with these main hindering factors as distance faculty workloads, lack of release time, lack of faculty training, and class sizes. The time spent on course development alone also takes away the time that could be devoted to research. He suggested that the major problems arise from having not enough knowledge on distance education technologies and the lack of training for the faculty. He then recommended an appropriate training offered to faculty, site-facilitators, support personal, and administrators. It is important to hold a Professional Development Certificate in distance education.

Roy and Schumm (2011) elaborated on the elements of the "consumers" and "suppliers" of distance education programs. They further analyzed the historical development of distance education. They stated that one major thing that all organizations share is the fact that they all ignore the advantages of distance education. It solely depends on the understanding and the ethos of the organizations

of how rapidly and effectively they will integrate distance education into their organization's networks. Bearing in mind that the most effective approaches ought to be enhanced and used. However, there is the disadvantage regarding information flow that may be restricted to material reducing worthy debate and swallowing learning. They also underlined the importance of distance education training.

Zhan and Zhang (2011) tried to define the framework of learning attitude, learning behavior, skills acquisition, learning outcomes, and learning development. They stated that assessment is still a weak component of distance education. Nothing yet is adequate in showing subjectivity and the creativity of the learner in distance learners.

West (2011) conducted a study about the effects of distance education on learners, instructors and their performances. There are various factors found to be effective on student motivation in distance education, which is a self-directed (independent) education. Peters (1998) defined the complex nature of self-directed learning as having two dimensions: self-management of pedagogy and self-monitoring of cognition, or meta-cognition (motivation later added by Garrison). When students can self-manage, they can recognize and control their learning goals, their learning strategies, and efforts. When self-monitoring their cognition, learners recognize and control their inner cognitive strategies.

Locatis et al. (2011) suggested that feeling of presence can positively affect the educational outcomes and student satisfaction. This study examined possible outcomes and evaluates instruction and technology used in distance education. The technology used is videoconference or one-way streaming (webcast). They observed that the sense of presence is the highest when students are physically together and higher with videoconferencing since interaction is more harmonious with

communicating in-person. They also suggested that learning outcomes and evaluations of instruction and technology would be better with higher degrees of presence. In other words, in distance education, the performance of the students was higher when communication between students and instructors was two-way (either through student use of videoconferencing or the telephone) than when classes were broadcast one-way; on TV or radio.

Owusu-Ansah et al. (2011) pointed out that the fact that many institutions still have doubts about implementing distance learning due to several prohibitive factors such as cost, accessibility, faculty concerns, state mandates, academic administrative actions, and unit operations. Among many institutions, costs hinder the process the most. Similarly, income and education influence accessibility to distance education (Hoffman, Novak, & Schlosser, 2000). The more complex and expensive distance education delivery systems become, the learning gets less accessible to the low-income class of society. Knowledge of barriers is an effective way to reduce or eliminate certain barriers in the implementation of distance education programs.

Aqda, Hamidi, and Ghorbandordinejad (2011) attempted to analyze the impact of distance education, regarding constructivism and cognitivism on the learners' creativity. They also tried to define distance education. Like many in the field, they support the idea that in order to be successful in distance education, certain requirements need to be fulfilled like specific instructional design strategies, interactions, and skills that fit the particular characteristics of distance learning programs and courses. Moreover, a theoretical instructional design base is also essential. In order to have an effective teaching in distance education as Moore and Thompson (1990) stated that "It must be understood that distance education is not simply adding a new communications technology to an existing educational

organization. On the contrary, many pedagogical, instructional, and philosophical problems can result from the learner or learners when permanently separated from the teacher" (cited in Aqda et al. 2011).

Oteng-Ababio (2011) showed that students have a positive perception of the usefulness, satisfaction, and flexibility of the e-learning program but they have a negative attitude regarding examination related issues. The reasons were mainly related with factors like the poorly delivered and poorly edited modules as well as poorly arranged examination schedules. The study recommended the implementation of e-mediated services as one of the main ways of making the objectives of distance education a reality.

Karal, Cebi, and Turgut (2011) pinpoints the perceptions of students enrolled in concurrent distance education using video conferencing in their research study. They used various approaches and methods such as qualitative research, a scale sampling, a qualitative research. They based their data on interviews, which were structured partially, and to the results, they observed. Their results were indicative of the shift of students' perceptions while and after they completed the courses. They found out that the students had no sufficient information prior to taking the online courses, nonetheless, during the progression of the courses, their perceptions changed and they started having a clearer idea about the possibilities the concurrent distance learning had to offer them. They also nominated the connectivity and audial problems to be the leading problem in concurrent distance education. Besides, the unflexible and restricted camera angles made students loose interest and motivation towards the courses. It was suggested that these hindered the continuity of the courses leading to distraction. There were other technical problems mentioned like teacher, environment, distance, course type, and duration related issues. Therefore,

they came up with some solutions: First, to offer an orientation prior to registration, in order to eliminate student prejudices and misunderstandings before the courses begin. Many technical problems like freezing of the screen, sound interferences, echoes or eyecontact related issues due to the resolution of the monitors could have been resolved only if there would be a technician present on the spot, in this case the classroom.. Moreover, educators in distance education should be selective regarding the methods and techniques they employ in order to motivate students. Further, teachers should be available anytime outside course hours incase students need to ask questions or need to converse with them.

Yengin et al. (2011) contend that understanding of technologies used in distance learning and their individual characteristics can help achieving a better outcome. They also think that it is important to know the advantages of individual technologies over each other. Therefore, they make various media comparison studies to find out about each advantage so to help speed up the process of decision making regarding "which technology is better?" Comparative studies for distance learning are essential to determine these issues in order to make the decision process regardless of the possibilities of making some mistakes. In order to eliminate any mistakes, in this study, five of the most significant errors scholars make in writing and discussing distance education research in technology/media comparisons studies are determined. This study tries to help distance education policy makers, distance education researchers and instructors by showing them the possible flaws in comparison studies so that their decisions would be more accurate when implementing distance-learning solutions in their institutions.

Shephard and Knightbridge (2011) emphasized the widespread use of developed video-conferencing environments in conjunction with face-to-face instruction for

teaching and research purposes at a distance in universities. However, these places using technologies as means of teaching expect professional development support. The study, further sought ways in order to clarify our understanding of this field. They based their research on quantitative analyses of presenters' behaviors and participants' understanding of presentations. This study additionally explored educational approaches and the perceptions of participants in situations that combined face-to-face with distance education. Here they further tried and identified an education style appropriate for the needs of face-to-face and distance education participants. The research results were very interesting. Participant perceptions can be classified as one including interactive element of the presenter and the other including non-interactive element. Participants scored less for this factor than they did for the other. This shows that participants generally felt less satisfied by presenters' performance in this respect than in others. However, participants taking face-to-face education gave the same response, as participants at distant locations meaning that 'distance' is not necessarily the key variable.

West (2011) described the impact of distance education on learners in general as well as specific subgroups of distance students and instructors. He further made some recommendations for future studies in these fields. Distance learning (DL) has finally reached the tipping point. He assumed that educational researchers have gained enough information regarding distance education and its impact on both the learners and the instructors.

Martin and Scheetz (2011) focused on the significance of a collective environment for both instructors and students in distance education. They further pointed out to the similarities and differences of distance education when compared to traditional face-to-face classes. Their study also took the student perspective into

account and emphasized the diversity of students, the importance of computer proficiency, and student interactions. They stated that the teaching experiences environment, in other words, the way to deliver teaching modules, ways to learn about effective interactions of instructors and distance-education students, and to know the different types of students signing up for distance-education experiences are necessary. Majeski and Stover (2007, as cited in Martin & Scheetz. 2011) said: "Distance education has the potential for educating professionals in ways that allow them to effectively identify and address complex gerontological issues. Students share their daily professional experiences because many of them are already employed in gerontology settings." Shenk, Moore, and Davis (2004) on the other hand, said that "class discussions and interactions are often strengthened by the exchange of knowledge and different perspectives brought in by professional and personal experiences." They further stated that in distance education programs, in the process of developing and conducting it, it is crucial to collaborate among faculty members. Additionally, it is essential for the instructors to pay attention to the preparation of a good syllabus and be specific and to the point with their expectations and assignments. The interactions and their continuity between the students and the faculty are important. Finally, they stated that a good guidance for faculty members and program directors to design and maintain the best possible teaching and learning experience in a distance-education environment would be effective evaluation. Distance education does not possess the same delivery method as in face-to-face education, yet they offer classes to students who could not attend college otherwise.

2.1.1 Summary

It is clear both in theory and research that the success of distance education relies on well-defined goals, the prospective population, identifying and resolving the possible problems pertinent to distance education in general. Distance education made learning possible anytime and anywhere. It has made it possible for many who were underprivileged regarding access to education because of time and place constraints. Thanks to the invention of the means of correspondence and now to all the advancements in the digital technology, distance education provided the flexibility in time and place for such adults with busy schedules. It has made education for millions of people around the world much easier to fit into one's busy schedule. Furthermore, it has reduced the student over population by encouraging more students to take distance education instead.

The objectives of distance learning is not only to make education possible for people with time and place constraints but to create an effective learning environment for high quality to meet the needs of all students, thus wide spreading and encouraging its awareness and implementation by designing functional programs utilizing the latest technology. Nevertheless, there are still problems that need to be addressed regarding distance education. First of all, it's initial cost, implementation, running, and maintaining the program. In this respect some of the possible problems that educational institutions face are mentioned in the related studies include:

- Initial and running costs
- State authorization
- Program type
- Instructional design strategies
- Delivery systems and their characteristics
- Knowledge of used technology and its characteristics

- Lack of knowledge in distance education technologies
- Accessibility
- Unit operations
- Theoretical instructional design
- Student assessment and Evaluation
- Faculty concerns
- Skills and competence of instructors
- Lack of faculty training
- Academic actions
- Administrative actions
- Organizational and structural factors
- Lack of technical expertise
- Student services/administrative support
- Distance Learning Professors
- Confidence attitudes
- Social/Cultural attitudes
- Educational timeline
- Prior educational experience
- General lack of time

Considering the nature and important aspects of these problems, institutions should first pay attention to the needs and the goals for establishing such a program, and secondly state the administrative, financial, faculty, managerial and so forth capabilities and situations before implementation of distance education. Recommended solutions or necessary actions as highlighted by the experts working in this area are listed below:

- Develop new instructional strategies for better instruction and interactions
- Search for the best delivery systems to fit the education model
- Decide on the best possible delivery methods to increase interactions
- Decide on the best possible instructional design for maximizing outcomes
- Offer staff development programs in technical and technology aspects
- Provide staff development opportunities in the new instructional environment
- Offer orientation to staff prior the implementation of distance education program
- Take necessary measures including incentives to increase confidence of instructors
- Secure financial resources sufficient for initial and continuing costs
- Develop strategies for access to and support with new learning technologies.

2.2 Online Learning

The delivery of instruction has evolved from old-fashioned correspondence and TV to the use of advanced internet-oriented technologies in distance education. This opened a new era in education like online learning, which is an important method of delivering information in distance education. Online education is the form of education that is possible with the use of computers and the internet only. During the course of time, online education gained popularity and is offered today by many universities as enhanced pedagogical form of education.

However, it exists with its flaws and many research studies have been made in the quest to understand, enhance, and identify its strengths and weaknesses of the design, delivery, and implementation of online education.

Mehlenbacher, Miller, Covington, and Larsen (2000) compared the performance of two student groups; one group taking online courses and the other enrolled to

traditional face-to-face classes. There is no significant difference between the performances of both groups; however, there is a surprising connection between students' prior knowledge, attitudes, and learning styles and the web-based writing environment. The observable finding is that the pensive learners do better online than active learners; however, their performances are no different in conventional classes. Therefore, they concluded that it is not that easy to make a sound comparison between the online and the classroom environments.

Brunette (2001) investigated the importance of student-teacher interaction in distance education in order to see the success of web-based instruction in distance education for graduate degree programs. This is important to know in order to understand the reason why students do or do not insist in distance or web-based learning. This is particularly vital in designing various deliveries of individual distance courses.

Huang (2002) investigated the impact of constructivism on online education taking adult learners as the bases of his research. He pointed out that adult learners and young learners show differences in terms of needs and requirements when it comes to online learning. He then suggested instructional guidelines.

Simonson (2003) stated that students taking online courses need to know if the instructions delivered online are of a high quality and that online learning is a reliable approach to learning. In order to satisfy this requirement of students, he administered a survey whose results were surprising. The results showed that online education is as effective as traditional face-to-face education and that more students were expected to enroll to online programs. It is very evident that the growth of distance education is inescapable.

Tekinarslan (2008) investigated the attitude of students, depending on their gender, towards their internet experiences and how they feel about the internet as a medium of instruction and whether they preferred internet-based or face-to-face learning. After implementing a survey, the analyzed results pointed out to three factors; practicability, communication and usage skill. According to the t-test results, the study showed that the male students showed a higher attitude levels than the females on the usage skill subscale. In other words, internet based instruction supporters show significantly higher attitudes on the three subscales than those who prefer traditional face-to-face learning. Therefore, taking the two-way ANOVA results as a base, it is correct to say that the desire for students to participate in an internet-based course and their internet experiences play an important role on their attitudes towards the internet. In order to be successful in an online education, instructors should techniques and perceptions, because online education takes place in a different environment as compared to a face-to-face education. He recommended constructivism, as suggested by many, in online education.

Ho, Hsien, and Lin (2009) tried to find the relations between e-learning method value, willingness, experience and education results, to show the effect of online-learning system quality and online-learning readiness on the learning outcomes from the online-learners' competency point of view. The result is that e-learning system quality and e-learning readiness affect e-learners' competency, and thus influencing learning outcomes. Therefore, organizations that would like to implement have online learning with their employees should improving individuals' online learning skills.

Liu (2009) underlined the importance of learner satisfaction in online instruction and learning. There are six types of responses providing formative feedback in online

courses (Blignaut & Trollip, 2003). These are administrative, affective, other, corrective, informative, and Socratic. This study is trying to find out how these affect learner satisfaction and online learning. According to the results of this research, all six responses are needed to guarantee online learner satisfaction and effective online learning.

Abrami et al. (2009) analyzed distance and online learning. They indicated the significance of three types of interaction: (a) students-students; (b) instructor-students; (c) students-course content (Moore, 1989). They further examined these findings, analyzed methodological issues and suggested how the instructions could be made better. They came up with suggestions like self-regulation and multimedia learning, research-based motivational and collaborative learning principles. They further discussed that the pedagogical side of distance and online learning need to be considered during the process of instructional software development. Their results supported the importance of student–student, student-content and student-instructor interaction for learning. Therefore, they suggested that distance education should facilitate interaction that is more purposeful.

Küçük, Kumtepe, and Taşcı (2010) examined the connection between students' learning styles and the factors that influence students' participation in asynchronous online courses. Their findings showed that the learners in closer proximity groups are more involved to discussion boards than that of other learning style groups. Moreover, the pedagogical and social guidance is the most appealed support service while the least is in administrative and technical guidance. The study further suggested that it is important to pick the suitable learning experiences; therefore, designing or picking appropriate experiences for students is essential for teaching and learning in online settings. The research also found out that student support

services is important in well-designed programs and separates them from inefficient ones.

Paechter, Maier, and Macher (2010) have administered a survey on 2196 students regarding their achievements and satisfactions related with e-learning. They also enquired about their expectations and experiences. They used multiple regression analyses to find out the relationship between different facets of students' expectations and their experiences are related to perceived learning achievements and course satisfaction. The survey revealed that the student-achievement goals resulted in better outcomes thus ranking higher. Their experiences, on the other hand, in e learning and the counseling and support they received were the best predictors for learning achievement and course satisfaction. The results of the study suggest that in order to increase the motivation of the students, goals, and instructions should be relevant, and the instructors should be trained continuously.

McCord and McCord (2010) focused on the importance and efficacy of online learning as a method of study that many are choosing owing to its practicality and effective method for the busy who wants to take advantage of education without having to leave the comfort of his/her home. They supported online learning and recommended it as a viable option for people to have a positive, motivational, educational success via online environment. Many students prefer online learning opportunities due to time restraints. Therefore, they see cyber classroom not as a fad but rather as a good option, which is clearly here to stay. The flexibility and availability of online classes, give opportunity to many to expand and build their degrees. The research points out to the possibility of providing online classrooms that would motivate and stimulate learning. In addition, it says that such a supportive environment from peer- to- peer and teacher-to-student interaction clearly increase

motivation (Curry, 1991). When compared, learning style outcomes showed no differences in social or motivational preferences between online and face-to-face education. Having no cohesion between a students learning style and course outcomes shows that a learner can be successful by the online modality regardless of their preferred learning style (Argon et al., 2001). No matter how much and how many students want to meet their classmates, they also feel a sense of satisfaction and professionalism with Web-based courses and feel the class is rewarding and help prepare them for real-world practice.

Chen and Jang (2010) think that it is important to look into online learner motivation, its background and outcomes. Based on Deci and Ryan's (2002) self-determination theory, they tested a model for online learner motivation in two online certificate programs. Their results suggested that the effect of need satisfaction between contextual support and motivation/self-determination versus motivation/self-determination failed to predict learning outcomes.

Bradley (2011), in his interestingly article "Here today, gone tomorrow: Traditional classrooms vanishing as rise in online education accelerates", considered the growth in the enrollments to online education in all segments of education. This supports the growing consensus regarding the quality of distance education proving that they have reached to the standards of traditional face-to- face education.

Boling, Hough, Krinsky, Saleem, and Stevens (2011) aimed in their study to explore the online learning environment from both the teacher and student perspective. They implemented a qualitative research study and tried to concentrate on the development and implementation of effective online learning. They further analyzed the constituents of effective online learning experiences. They concentrated on the barriers and promoters of course content, tasks, and pedagogical approaches,

as described by students and instructors in online learning. They used a Cognitive Apprenticeship Model in order to proclaim their analysis of data. Their findings revealed an insight for the course development and pedagogy as well as offering possibilities for additional research.

According to Kim and Lee (2011), online education provides equal educational opportunity or excellence. In other words, it not only provides opportunity to underprivileged students but also boosts independent learning capabilities and academic achievement. Moreover, it has provided equal education opportunities by allowing everybody to study at any time and at any place. In their study, they aimed at finding the things that affect the satisfaction of underprivileged students towards online learning. The findings revealed that the underprivileged students (those who are devoid of the kind of learning environments, and there is not any full-functional learning support systems available for them) are more satisfied with their online experiences than those students, who are doing face-to-face education. The learning support function was the variable that had the largest influence on the satisfaction level of these students. They further suggest ways to help raise the online learning satisfaction of underprivileged students and to establish learning assistance models for this particular group of students. This means having online teachers who can offer assistance and learning support functions to the online students of the mentioned group. The study clearly shows that online learning produce good results to some extent when it is provided to underprivileged students; however, attempts should be made to get rid of the gaps in academic achievements between students who receive online education and others who do not.

Jones (2011) emphasized the popularity of online education as a method of course delivery. She further said that an effective online environment is necessary and that

faculty should consider the core elements of teaching and develop teaching techniques accordingly. In other words, the online education should be meaningful and educationally worthwhile learning outcomes must exist. The instructor should be able to create a learning environment and students should have a clear understanding of the course objectives, understand and follow the instructions. They should be made believe that their objectives are met, and that they are within learning community created by the instructor and with other students. According to the research, students said they learned a lot through the structure of the course.

Glogowska, Young, Lockyer, and Moule (2011) concentrated on students' perceptions of blended learning, meaning the type of education that blends traditional face-to-face education with electronic learning. They conducted a qualitative study and interviewed 17 students by telephone. They came up with three main themes: (i) discussion on online materials regarding face-to-face education (ii) what material should be online and (iii) balancing online and face-to-face components. They further say that instructors teaching online courses should pay special attention when developing blended learning courses and integrate online and face-to-face materials.

Emerson and MacKay (2011) examined how much is achieved through online learning in the students' learning outcomes in comparison with more traditional models of learning. In addition, they want to know if this may change according to subject. They indicated that it is difficult to reach valid conclusions in comparing traditional forms of learning with online learning when it comes to students-learning outcomes. Their results showed that students taking paper-performed lessons do better than those who take the lessons online. However, the reasons for this are not clear in the data from their study. They sought to find ways of effectively measuring the impact of the model of learning on learning outcomes, and further investigation

the impact of learning model on learning outcomes, using different methods and subjects.

Dowell and Small (2011) examined the way students join online resources with their learning strategies. They also performed an experimental research on how online learning affects students. In their experiment, they analyzed the relationship of online resources and the students' general success in the subject. Their results showed positive effect on the students' grade when online resources have been used showing that students make use of the online environment in their learning strategies, thus achieving higher grades. This is important as an indicator that teachers should create a motivational and resourceful online environment if they want their students to be successful.

Lee, Srinivasan, Trail, Lewis, and Lopez (2011) suggested that students need to be supported in any form of learning if success is to be achieved. In their study, they examined the support in context, focusing mainly on guidance within a course. They talked about instructional support, peer support, and technical support. They then administered a survey regarding support and their results show student satisfaction significantly improving on receiving support in online courses.

Papastergiou, Antoniou, and Apostolou (2011) emphasized the importance of online learning communities set up by the teachers through Internet services. They point out that these help for supporting students' collaboration outside school timetable. The study also showed that student participation has a positive effect on students' knowledge and attitudes towards the natural environment, on students' social skills as well as their attitudes and skills regarding information and communication technologies. In addition, it enhances students' cognitive engagements and reinforces students' desire to take further steps towards

environmental protection. Besides, online classes help students manage their relationships with other people and to harmoniously communicate and collaborate with others in a better way. Finally, their information and communication technologies literacy and willingness to use ICT improves.

Howlett et al. (2011) reviewed the possibility of blending a variety of online educational techniques with traditional face-to-face teaching methods at a UK Medical School. Their results were promising. They concluded that online educational techniques could be effectively integrated with the traditional face-to-face teaching and still deliver successful outcomes. However, the success of online instructions and their success relied on the efficacy of the IT links and good image quality. It was essential to promote the utilization of e learning in undergraduate and postgraduate radiological due to the increasing clinical and managerial workloads of radiologists with constant pressure on available teaching time.

Park (2011) emphasizes the importance of online learning and says that it is a recognized and effective pedagogical method and tool, thus it can be merged into different forms of education strategies in higher education. In fact, it is an integral strategy for quality education. Park discusses designing education from an online learning perspective and suggests blending the framework with three key components via Visual Learning Environment (VLE) with an interactive delivery structure, communication channels and learning evaluation. He then describes and evaluates how to build VLE sites based on an integrated framework and student learning experiences. His results support blending online education with various educational values and functional features in a systematic manner. He further proposes that it is essential to design learning evaluation protocols together with

learning activities and being in a close communication within online-based learning sites.

According to Sansone, Fraughton, Zachary, Butner and Heiner (2011) in order to be successful in online education, students must know and be motivated for learning. The Self-Regulation of Motivation (SRM) model (Sansone and Thoman, 2005) suggests the necessity of two kinds of motivation: (i) Goals-defined (value and expectancy of learning), and (ii) experience-defined (how interesting). Results suggest that with the addition of useful information the engagement levels would go up, thus increasing motivation and outcomes. Individual interest in computers showed parallel performance results. In other words, students with higher individual interest displayed higher engagement levels. However, higher engagement levels continued to yield positive outcomes regardless of individual interest.

Tsai, Shen, and Tsai (2011) discussed the developments in IT and their impact on teaching and learning. They also mentioned that many in this field have researched on the application of different parameters and technologies in e-learning in computer based or web-based learning for the last few decades (Burgos et al. 2007; Yang, 2008). Many agreed that online teaching is no less unworthy than traditional teaching in terms of student outcomes; therefore, web-based education could be justified based on cost efficiency or the need to provide access to learners in settings where face-to-face instruction is not possible (Means et al., 2009). However, at present, e learning is not that welcomed in many countries especially in Taiwan when it comes to getting an academic degree entirely through online courses. Therefore, it is best to adopt a blended learning mode (BL) then having totally a web-based learning when implementing e learning. Moreover, some students have trouble in getting used to the structure of online courses, handling their time in such environments and

maintaining self-motivation (Marino 2000). It is then utterly crucial to contextualize when preparing educational software and teaching websites or regardless of the quality of the program, no one would benefit from it (Bottino & Robotti, 2007). According to this study, it is important to blend technologies into the curriculum but it will only be successful if teachers have the expertise to use the technology in a meaningful way (Sadik, 2008). That is to say, instructors should modify the design to fit their needs and by redesigning their courses, they can help students learn better. Moreover, if they want to use the full potential effects of the new teaching methods and educational technologies on they need to fully research and understand the benefits of the web-enabled learning environments.

Tsai (2011) investigated online self-regulated learning (SRL) and collaborative learning (CL) within a blended computing course and examined the results of different combinations on improving students' computing skills. The reason is because undergraduate students have to take at least one introductory computer course to develop their computing skills. Nonetheless, this is almost impossible in Taiwan. However, if students received the help of online SRL and CL attained significantly best grades for practical computing skills compared to those that received the traditional lectures. The latter group had the poorest grades.

Friedman and Friedman (2011) reviewed the education related issues today. Their list included huge budgets that permitted less money for education, making education interesting and relevant for students, and the quality of the education. They, therefore, suggested online learning as an important tool for solving these problems. It is obvious that the flexibility and convenience of these programs allow individuals to achieve their goals, hence helping the institution increase revenue and popularity. The authors strongly support that online learning should exist from kindergarten to

doctoral programs. Wise use of online classes, they say, can help improve student learning and allow schools offer a wider selection of interesting courses. Online learning may be even more valuable than traditional classroom teaching in instructing students in discipline and persistence and even reduce the number of school dropouts, which is the case today.

Jong, Chen, Chan, Hsia and Lin (2011) sought ways to improve the method to understand the online performances of learners from their learning portfolios and how their learning motivations can be improved, thus helping them to improve their achievements as well. Their results showed that there is a positive correlation between online performance and learning achievement. They suggested that further investigation is necessary to pinpoint the weaknesses and needs in order to provide suitable remedial learning.

Raj (2011) stated that online learning can not only enhance students' learning experiences, but also help them develop skills and create job opportunities. Moreover, the number of students is increasing and online education will therefore help create less traffic on campus and still cater students. Despite all these however, integrating e learning into higher education was not that successful. Such learning depends entirely on technology that requires a fully automated environment thus resulting in management, planning and everyday administration issues. This paper tried to determine the challenges higher education institutions face when they implement e learning, further considering how the e-learning tools are used to enhance learning.

Alshare (2011) in his empirical research says that the success in online learning is human and technology dependent. Human factors are related with how competent the learner is with online learning, or how s/he manages learning, and perceives the Web

self-efficacy, and the success of online learning was measured in terms of their usage and satisfaction. While doing so, he examined the demographic variables. The results indicated that with the continuous increase in the utilization of the online learning systems, a need for a better understanding of the effective use of such systems is necessary.

Lee and Mendlinger (2011) examined how students perceived self-efficacy in online learning systems, and its effects on online learning acceptance and student satisfaction. They found out that perceived self-efficacy comes before online learning acceptance and its degree of importance is cultural. Moreover, perceived usefulness of online learning systems has a positive effect on online learning acceptance and student satisfaction. Therefore, the authors suggested examining additional cultural values since cultures show variations in online learning acceptance and satisfaction.

Henry and Potts (2011) try understand the effect of students' experiences when they share materials they create with their peers online. User-generated content in an online environment has significant implications. Instead of knowledge being transferred only from an expert to the student, this offers a more collaborative and participative process. However, many students feel not particularly happy about sharing material they create with their peers. The authors use online interviews, face-to-face focus groups in their quest to understanding. Their results show that students were in general both positive about creating and sharing material online, but also felt anxious about doing so. Moreover, they saw that course design, student workload and assessment pressures, were barriers to students creating and sharing material. They suggest the careful implementation of user-generated content, paying attention to practical details and knowing the possible student anxiety that can arise.

Lynch (2011) in his study indicated that online learning is becoming an accepted and mostly the preferred mode of instruction. He also agreed that face-to-face learning blended with online features enhances learning experiences. He further described how to structure online asynchronous discussions, which are essential in cooperative learning structures. Synchronous face-to-face discussions mostly have several limitations. First of all, there are students who do not participate and remain passive at all times. Other problems are that students do not listen to each other; therefore, discussions remain as monologues. However, online asynchronous discussions require every student to participate, and to provide students with facilitation and leadership skills. This shows that, the success of online discussions need carefully planning and implementation.

Thomas (2011) mentioned online learning as an available learning option, especially for the nurses in America who are working on tight schedule. By using a quantitative study, he tried to identify the barriers to online learning as understood by registered nurses. After a survey, he identified 8 barrier categories and 45 sub-barriers. These categories are about educational abilities, organizational/tutor matters, charge and right to use the Internet, student inspiration, public interactions, technological troubles, technical skills, and time and support for studies.

Boling, Hough, Krinsky, Saleem, and Stevens (2011) highlighted the fact that distance education provides a cheaper and flexible option for traditional education. They also recommended colleges and universities to expand offering more online courses, in order to enhance their instructions. However, according to many studies, teaching online needs a different pedagogy and skills compared to the traditional classroom (Fetherston, 2001; Hardy & Bower, 2004; LaMonica, 2004; Oliver, 2002). Online courses require a different course content design and delivery, multiple levels

of communication, new types of assignments and performance expectations, and different assessment and evaluation techniques to name a few (Moller, Foshay, & Huett, 2008, p. 67).

Tempelaar et al. (2011) in their empirical study analyzed students' education choices in a blended learning environment, online, and face-to-face learning. They investigated the effect of individual differences in students' success emotions (enjoyment, anxiety, boredom, hopelessness) on students' learning choices, depending on how much they use the online or the traditional face-face education. Their result showed that goal-setting behavior only has a little impact, whereas effort views have an important impact on achievement emotions.

2.2.1 Summary

Briefly speaking, all literature review regarding distance education as well as online learning indicate that the use of Internet as a mean of delivering knowledge has revolutionized distance learning in higher education, making it as effective and accepted as traditional face-to-face education. It, however, provides a less expensive and flexible option for traditional education; the flexibility and convenience of these programs allow individuals to achieve their goals, while helping institutions increase revenue and popularity.

Nonetheless, according to the literature, while distance education offers many advantages to universities and institutions, it is equally important to ensure both high levels of student satisfaction, successful outcomes, and quality to attract and maintain student enrollment. Therefore, for a good online education, design of various delivery systems, teacher and technical support, student motivation, effective access to online resources for better student performance, teacher-student interaction and well-defined student goals and objectives should all be considered. Moreover, it is

very important to help students feel their requirements and objectives met and that the instructions are relevant and instructors trained.

In short, many educational institutions have further blended traditional face-to-face education with online learning in order to improve, enhance and increase the enrollment of their online educational programs.

2.3 Communication Barriers

This section first explains the theories which are particularly important for better understanding potential barriers of communication in distance education. After discussing the explainations of these theories regarding communication barriers, more detailed elaborations about communication barriers in technology-driven distance education were presented.

2.3.1 Relevant Theories

The most related theories with regard to technical and social barriers of communication during distance education can be thought as the theories of "Diffusion of Innovation", "Technological Determinism", "Knowledge Gap" and "Uses and Gratifications". Two of these theories can be considered in the field of technology, and the other two are in the area of communication.

2.3.1.1 Diffusion of Innovation

According to Everett Rogers (1995, pp. 429-440) people have a certain opinions regarding new technology, the process of adaptation and the way which innovations is communicated through certain channels over time and among members of a group. New ideas and innovations frighten people and cause frustration for the fear of failing or loosing new ideas. For example, people when shifting teaching-learning process, from the traditional face-to-face to technologically mediated education experience feelings of fear and frustration.

Rogers (1995, pp. 429-440) states five factors that influence the person to adopt or reject an innovation as:

- Relative advantage
- Compatibility
- Complexity
- Trialability
- Observability

Considering the first factor in distance education, it is important to measure the extent to which the system is developed over the past years.

Compatibility: Todays world is well equipped with computers. This has numerous advantages like reaching, saving and transferring information. Use of computers in distant education is compatible with current world. However, the lack of computer literacy and competence pose barriers to learners.

Complexity: Distant education systems are multisensory and complex. This can cause some barriers to people who do not excel with computers.

Trialability: those who produce materials for distance education can pilot them in-campus students. However, they can never guarantee that this will not cause any difficulty for distant learners.

Observability is the extent to which the innovation can afford the degree of visibility. As for Sakarya University's distance education is concerned, observability of the distance education courses are very limited. They are not extensively advertised. Being not informed poses a barrier from the start.

The adoption process to new ideas or innovations differs from person to person regarding time. Ryan and Gross (1943, as cited in Rogers and Scott, 1997) divide the adopters into five categories:

1. *Innovators* have ability to understand and apply complex technical knowledge;
2. *Early adopters* have the greatest degree of opinion leadership in most systems;
3. *Early majority* are those who interact frequently with peers;
4. *Late majority* are those who cautious and skeptical;
5. *Laggards* are people who become suspicious of innovations.

Based on the above classification, distance eduction in Turkey started with Ankara University in 1956 (http://aogutcu.blogcu.com/turkiye-de-uzaktan-egitim-tarihi/10326346) and developed through Anadolu University by opening the open university in 1981, which currently stands as the largest university in Turkey, is now at the late stage. Some other universities (Sakarya University, Eastern Mediterranean University, Fırat University, etc.) also have distance education programs but to a limited degree.

Surry (1997) described the ways general diffusion theories are used to form diffusion theories, which are related with the field of instructional technology. The paper further identified and explained the two opposing philosophical views of technology: Determinism and Instrumentalism. As the diffusion's importance and expanded use of diffusion theories are better understood, so is the potentially great benefit to instructional technology. Of course, technological superiority is not the only necessary condition for diffusion. On the contrary, simplicity and basic logic is the best. Products, which are superior in technology, are not necessarily the ones people want to use.

Szabo and Sobon (2003) analyzed the implementation of a new system to reform education by using qualitative method. According to the study, the use of instructional communication technology and reforming education is a disruptive innovation.

Liao (2005) discussed how fast and how soon groups accept and use new ideas, products, practices, in general innovations. This method is especially useful in understanding how students adapt to a web-based course management system and blend this system into their learning environments.

2.3.1.2 Technological Determinism

Chandler (2011) claimed that technology has an impact in shaping the social change or extent of it is debatable. There is no clear explanation yet, and it is dangerous to generalize, since there is no accurate explanation what so ever. By not doing so, one can be careless about the nature and the dangers of the technological determinism, which is still the most dominant theory defining and describing the relationship between technology and society. However, many scholars are critically reviewing it in an increasing intensity. According to many social scientists and contemporary sociologists, technological determinism is often carrying a negative connotation of which students need to beware.

Technological determinists claim that communication technologies are the crucial foundations of the society at all times. The change of society was fast and inevitable after writing, printing, television, and computers were invented. The society was reformed by every technological innovation, thus transforming institutions, social interactions and people. Compared to technology, human factor is second in the row when it comes to change. Technological determinism brings along a technology-led theory in whose core lies the idea that technology causes the society and social organization to change. In other words, it is the "prime mover" as seen by historians and as to the economists, it is known as the technology- push theory.

Technological determinism holds the belief that technological developments form the basis of social and cultural change. As Marshall Mcluhan (1967) states "The

medium is the message". In this case, medium indicates the media through in which we relate to the world. Mcluhan points out that the media of the age determine the ratio of the senses we use, in other words, how we experience the world. He further makes the distinction (Mcluhan, 1964) between the hot and cool media. Hot media are the ones based on a single sensory receptor; cool media, on the other hand refer to the media which stimulate more than one sense.

The media used in distance education is one of the cool media since it stimulates more than one sensor (ears, eyes, hands, etc.). As Mcluhan (1964) puts it, in the electronic age we live in "Global Village" in which the TV is the dominant medium and its use extends to the central nervous system of human beings.

2.3.1.3 Knowledge Gap

Tichenor, Donohue, and Olien originally hypothesized this theory (1970, cited in Jenner, 2001), in which they say that the increase of mass media information in a society are usually acquired faster by people with higher socioeconomic status than those with low socioeconomic status. McLeod and Perse (1994, cited in Jenner, 2001) find out that communication skills, prior knowledge, social contacts, education and exposure are the principal reasons for the discrepancy of information.

With the influence of this theory, the students' socioeconomic status, background knowledge and their communication skills should be analyzed in order to find out whether the reasons mentioned above cause any barriers to distance education.

Kwak (1999) suggested changing the relation between education and knowledge acquisition by using the media. That is to say, the more people watch news stories on TV, the smaller is the educational impact on knowledge requirement. When people are closely involved with the news so is the knowledge gap.

Bonfadelli (2002) concentrated on the theoretical side of the knowledge gap for Internet research. He presents data based on two recent Internet surveys. According to these surveys, the majority of the educated people use the Internet more actively for information oriented reasons, nonetheless the less educated people are mainly interested in the entertainment functions of the Internet.

At the outset of the new millennium, the 'knowledge gap' is extended between the people who have access to digital technologies (computers and Intenet) and who do not have. This is named the 'Digital Divide' (2006, Dictionary of Media Studies, A & C Black: London. P.67)

> "the state of inequality that exists between people who have access to modern information technology and those who do not, since the formar have many more opportunities open to them than the latter"

Therefore, people who have no or poor access to digital technology face larger barriers in reaching the distance education programs. This situation is valid for some rural parts of Turkey.

2.3.1.4 Uses and Gratifications

People use media for different reasons. According to Blumer and Katz (1974), the media users are taking an active role in the communication process, by using the media that influences them the most. Different media have different influences on people that use them. In distance education, the medium that transmits instruction is the Internet. Since the students do not get to choose which media to use, these devices in a different fashion and level influence them, thus forming barriers to communication in distance education.

Vrocharidou and Efthymiou (2012) try to find out students' perceptions about how useful e-mails, IM and SNS in social and academic contexts are and see how the

role of personal factors (prior experience) to the frequency of CMC and to students' perceptions, identify the portrait of contemporary CMC environment in university settings. According to the results, these three CMC applications constitute "functional alternatives" (media that satisfy needs); however, they show varying degree of "functionality" for gratification of needs. Furthermore, people's level of use has nothing to do with their CMC experience over the years; it is totally due to the profile of use depending on their needs and preferences on daily basis. Based on this, they say their results reveal that newer communication technologies, IM and SNS, are alternative ways of communication between students and university departments. Nevertheless, they underline that there are still some limitations that need to be taken into consideration before reaching conclusions from their study. Because of the changing nature of CMC itself and the emerging paradigms, it still requires a continuous investigation.

Roy (2009), in his survey on Internet uses and gratifications in the Indian context, mentioned that the "uses and gratifications (U&G) theory" could determine peoples' motivations for media usage, access, and further understand their attitudes towards a specific medium. In the quest to find the Internet gratification structure of the Internet users in the Indian context, he follows four stages in his study. He used exploratory factor analysis, factor analysis, t-tests to identify the gratifications of males and females that show significant differences, and discriminant analysis. The study aims at exploring the motivations behind the Internet use in the Indian context. The results are that people use the internet in India for self-development, wide exposure, relaxation; it is user friendly, for career opportunities and global exposure. ''Relaxation", however comprises the most. All these can be grouped as social gratifications as per the definitions provided by Stafford et al. (2004). This is also

consistent with the findings of Parks and Floyd (1996). Moreover, the Internet usage of males and females shows differences based on the gratification factors such as ‘‘user friendliness”, ‘‘self-development”, ‘‘wide exposure”, and ‘‘relaxation”. The respondents show significant differences on the gratification factors, such as friendliness and career opportunities. These results then can provide opportunities for business advancement in the Internet service providers in India. Secondly, a comprehensive understanding of uses and gratifications theory can guide the ISP managers to offer more consumers friendly services. For example, by making Internet a more user friendly for students so that they can access educational and career related information with ease.

As it has been mentioned earlier, the medium for distance education is the Internet. Nowadays, the degree of accessibility and the speed of the Internet can cause a barrier for some students. Therefore, as the students use the distance education to gratify their education needs, they may face different levels of barriers posed by the Internet they use.

2.3.2 Types of Communication Barriers

Barriers of communication are the obstructions or difficulties involved in the process of communication, which distort messages from being properly delivered or understood by the receivers. The Shannon and Weaver Model of Communication is probably the best known explanation that emphasizes the impact of potential barriers during communication.

Weaver (1949) early categorized the problems of messages transmitted from the sender to the receiver into three levels. The first is the technical problems, and talks about the accuracy of the messages transmitted from a source to its destination. The second is the semantic problems, and this is concerned about how accurately the

transmitted messages are transferred with the desired meaning as intended by the sender of the messages. Finally, the third is the problem of effectiveness and its main concern is how effectively the received meaning affects accomplishment in the desired way. In other words, it is concerned with the success of the meaning transferred to the receiver that leads to the expected behavior on his part.

According to the Shannon and Weaver model (1963), the information source is the sender of the message who has the thought. The brain sends the message to the mouth from where it is transmitted reaching to the receiver with disturbances and from there it passes on to other receivers.

Information Source
- Thought / message -
↓

Transmitter
- Brain to mouth -
[Along with noise and distractions]
↓

Signal

↓

Recipient
- Receives the signal -
↓

Final Destination
- Finally gets the message –

The above loophole shows us the process in which a message reaches its final destination on whose way it sometimes gets distorted or being interpreted differently before being transmitted therefore changing the final knowledge meaning. This may be less in face-to-face instruction but more in distance learning because the feedback is limited.

Gould (1969) claimed that ineffective communication is the result of poor preparation, language incompetency, time and distance, and other individual factors. This last one, however, is the most important in communication. The authors are usually subject to many criticisms in their debates regarding ineffective communication. Nonetheless, authors, amongst themselves, relate to communication issues as poorly prepared materials, deadline issues, and lack of sufficient supervision. Communicators suggest that new writers should be encouraged and old writers should receive in-service training.

Hahn (2005) stated that the two parts of the communication (the sender and the receiver) should share similar meanings for words, gestures, tone of voice, and other symbols in order to understand each other. To establish a good communication, people should overcome the barriers that exist within the communication process such as differences in perception, incorrect filtering, language problems, poor listening, differing emotional states, and differing backgrounds.

Hahn (2005) later suggested solutions to each of the communication barriers mentioned above. For example, for differences in perception barriers, senders should choose the details that seem important and focus their attention on the most relevant and general and receivers of the message should try to fit new details into their existing patterns. For incorrect filtering problems, the sender should use more than one communicating channel, eliminate as many intermediaries as possible, and decrease distortion by condensing message information to the essentials. For decreasing the language problem, the sender should increase the accuracy of the messages by using language that describes rather than evaluates and by presenting observable facts, events, and circumstances. For the poor listening problem, the receiver should clarify the meaning by asking non-threatening questions, and listen

without interrupting. For different emotional state barriers, the person in communication should be aware of the feelings that arise in the self and in others as they communicate, and try to control them, and be alert to the possibility of misunderstanding those that go together with the emotional messages. Finally, for the different backgrounds barrier, the sender of the message should understand the background, personalities, and the perceptions of the others.

Sreenath (2009) listed the main problems, which obstruct the message from being fully comprehended by the receiver. Organizational problems such as status, complexity in its structure and policies, positions and fear of superiors, communication overload and wrong choice of medium regulations. Problems such as attitudes and values, difference in perceptions, past experiences, source incredibility, abstraction, filtration and resistance to change categorized as psychological issues. Obstacles related with semantic issues like lack of clarity in the message, round about verbiage, poor grammar and punctuation, use of jargons, poor vocabulary and lack of common language. Furthermore; there are other barriers to effective communication like distance, cultural difference and insufficient adjustment periods, poor communication skills, fear, technical problems and time. Sreenath also mentioned the ways of overcoming barriers like, improving communication skills, using a simple language, being open to changes, improving listening skills, staying away from jargons, progressiveness, avoiding injustice, and sending messages which are clear and concise, receiving feedback, developing emotional steadiness, selection of appropriate channel, understanding receiver, building credibility and finally avoiding fear.

Tanwar et al. (2009) divided the communication barriers into seven categories. These barriers are (i) physical barriers which are environmental disturbances,

personal physical health, poor hearing and distance); (ii) Mechanical barriers related with absence of means of communication, faulty instruments, interruptions on radio and television, non-availability of proper machines, presence of defective machines, interruption and power failure; (iii) Mental barriers comprising poor pronunciation, confused thinking, communication overload, unnecessary repetitions and attitude centered social evils; (iv) Cross-Cultural barriers including ethnic, religious, and social differences, traditions and barriers to membership of a group; (v) Perceptional barriers that are lack of common experience, different languages and vocabulary, lack of knowledge, overuse of abstractions, interrupting the speaker, asking too many questions, unclear messages, incomplete sentences and no clarifications; (vi) Interpersonal barriers meaning withdrawal, rituals, pastimes, and finally; (vii) Gender barriers in which women prefer conversation for rapport building want empathy, are more likely to compliment, emphasize politeness, more conciliatory. On the other hand, men talk as a means to preserve independence and status by displaying knowledge and skill, work out problems on an individualized basis, are more directive in conversation, are more intimidating, call attention to their accomplishments, tend to dominate discussions during meetings.

(Anonymous, 2010) categorized communication barriers as internal or external barriers. Internal barriers are fatigue, poor listening skills, attitude toward the sender or the information, lack of interest in the message, fear, mistrust, past experience, negative attitude, problem at home, lack of common experience, and emotions. External barriers, on the other hand, include noise, distraction, email not working, and bad phone connection. The author further suggested that while communicating, the person should watch out the barriers, examine the actions of the receivers, and observe the body language and check to make sure that the message is received

correctly and that the persons should have sufficient knowledge about information technologies. Moreover, one must apply certain communication principles, such as completeness, conciseness, consideration, concreteness, clarity, courtesy and correctness, to deliver effective written or oral messages, difference barrier will be resulted.

Smith (2010) emphasized the fact that the communication between the individuals should be kept simple and further indicated that there are differences between talking and communicating. In this article he mentions and then describes the barriers to effective communication. These barriers are physical, perceptual, emotional, cultural, language, gender, and interpersonal.

Pillai (2011) defined effective communication and listed the important barriers that lead to ineffective communication in order to establish a successful message delivery. These barriers are physical barriers (large working areas, environmental factors), language (inappropriate words, difference in language, difficult to comprehend), emotions (hostility, anger, resentfulness and fear), lack of subject knowledge (ignorance, irrelevant and unverified things), and overdose of information.

Dailey (2011) showed the effect of high quality communication over a good relationship. She then listed the problems causing interference in good communications such as physical problems, which are present in the surrounding of the communicators, lack of subject knowledge of the sender, and the unfamiliarity with the message content. Furthermore, the use of different language or inappropriate words in the message, and the emotional state of the communicators are the barriers affecting the communication process.

Garner (2012) divided the problems of communication into seven categories. Physical barriers are such barriers that they physically separate others in their working areas. Perceptual barriers exist when people see the world differently. Emotional barriers mainly consist of fear, mistrust, and suspicion. Cultural barriers exist when people show behavioral differences. Language barriers are caused by unfamiliarity of people to each other's expressions and phrases. Distinct differences between the speech patterns in a male and those in a female are categorized as gender barriers. Finally, interpersonal barriers are those that separate people from each other like withdrawals, rituals, pastimes, working activities, games and closeness.

Garner (2012) proposed that nearness is the way to building up a coherent communication. Persons should avoid excessive fear of what others might think of them; otherwise, they can exploit their development as effective communicators and their ability to form meaningful relationships and adopt the behavior patterns of the group. These are usually the type of behaviors that group accepts as they create the sense of belonging and the group rewards such behavior through acts of recognition, approval and inclusion. He further points out to the importance of using the language of the others, and improving your communication as a broad-brush activity. You have to change your thoughts, your feelings, and your physical connections.

Wagner (2012) defined the physical barrier as "If the audience perceives you at a distance from them, looking down on them, or simply not reachable, then they will not be as receptive to the message you are trying to share". Lack of common experience may cause a negative feedback from the audience when the person ignores their knowledge level. Using jargon or slang words is considered as a language barrier preventing audience from understanding the transmitted message. If the audience does not see what the sender of the message is saying then a credibility

problem is created. Finally, females communicate more on a regular basis than males do resulting in gender barrier. Wagner further advised that to perceive the message as intended by the sender, it is best to keep the physical distance as near as possible. She also suggested speaking at the knowledge level of the audience and not using many technical words to avoid the lack of experience barrier. It is best to talk to people in the way they can understand in order to minimize the language barriers. Both men and women have to learn how to communicate in a way that allows both genders to receive and understand the messages. Finally, she said that as a sender of a message, you need to make sure that you do not guide the listeners to question your credibility and genuineness.

Graham (2012) emphasized that no matter how good the communication system is, there are always barriers to communication, and this may happen due to several factors, such as physical barriers, attitudinal barriers, psychological factors, different languages, individual linguistic abilities, physiological barriers, presentation of information and system designs. Physical barriers (distance, poor equipment, staff storage, background noise or environmental conditions) are caused by the nature of the surroundings. System design errors (unclear structure, inefficient information systems, lack or supervision or training, lack of clarity in roles and responsibilities) are the problems caused by the formation of systems in organizations. Attitudinal barriers (poor management, lack of consultation, personality conflicts, personal attitudes, resistance to change) arise from the problems with staff in an organization. Psychological factors are the individuals' state of minds. Different languages and cultural differences are due to the differences in origin. Individual linguistic ability is the use of difficult or inappropriate words in communication that prevents the receiver from understanding the message correctly. Physiological barriers are the

result of personal discomfort. However, he says presentation of information is also an important aid in understanding.

Another article on the communication barriers concentrates on ineffective communication. The article is posted in "Management Study Guide" website. According to this article, obstacles can change an effective communication and lead to a number of misunderstandings and misinterpretations on the behalf of the receiver. Such barriers are noise, unorganized thoughts, misinterpretations, not understanding the receiver, ignoring the content, avoiding the listener, not confirming with the recipient, not understanding the mood of the recipient, low pitch and tone, impatient listener and other different cultural levels. First of all, noise is considered an external barrier. It distorts messages and results in ineffective communication. Secondly, unorganized thought, they are also important internal barriers when unrecognized and messy thoughts result in very poor communication. Wrong interpretations are also amongst the internal barriers that lead to misunderstanding messages. Not being able to understand the receiver properly may cause misinterpreting the message in a wrong way and is considered an internal barrier preventing effective communication. Thirdly, internal barriers are the result of ignoring the content of the message, which means partially receiving the message. Avoiding eye contact with listeners can cause a barrier for effective communication too. Furthermore, absence of cross checking and not confirming the message with the listeners are obstacle elements as well preventing the intended message to be delivered correctly. Next, the mood of the receiver is another barrier that should be considered if the sender wants his message to have an impact on the receiver. Finally, Low pitch and the tone of the sender's voice can cause a barrier for the information to be received correctly by the listener. The listener should be patient

while communicating; otherwise he will not absorb the full message and will not respond accordingly. Another important issue to be considered is if the speaker and his intended audience are tuned to the same line of thinking mode or else the cultural

Another article about the interpersonal communication barriers posted in "myinterpersonal.com" website states that there are obstacles for interpersonal communications such as emotional obstacles, the desire to participate, and the desire to explore. Emotional barriers are the most difficult to break through. Feelings and emotions are great pressures on our decision making. The lack of desire to participate in the communication process is a considerable obstacle. Finally, the unwillingness to discover different thoughts, views, and priorities create communication barriers.

A similar article titled "Communication Barriers - Reasons for Communication Breakdown" posted in "Management Study Guide" website divided the factors that influence the communication process into eight different groups. The first factor is the perceptual and the language differences between the two communicating members. Perception is generally how each individual interprets the world around him and the linguistic differences of words also lead to communication breakdown. Second factor affecting the communication is the information overload which is important to control the information stream otherwise the information is probable to be misunderstood or forgotten. The third factor affecting communication is inattention to the message and hearing without concentration. Forth barrier to communication is the time constrain regarding the completion of a task over a given period. Fifth problem for effective communication is interference like noise. Sixth factor is the emotional state of the communicators at the time of communication. Complexity in Organizational Structure is another problem for effective

communication. Finally, the weakness of retention is due to the feeble interest of the audience on the given message.

2.3.2.1 Summary

As seen from the literature, in order to have an effective communication, it is essential to guarantee the transmission of the message without interference so that the receiver understands the message as it is intended. It is important to understand the existing types of barriers to effective communication and the ways to overcome them.

In this summary, the problems to communications pinpointed by the theory and research in this field are listed in details below. The possible solutions for these problems are also mentioned.

(a) General Categories of Communication Barriers:

- Attitudinal barriers
- Effectiveness barriers
- External barriers
- Gender barrier
- Internal barriers
- Interpersonal barriers
- Mechanical barriers
- Mental barriers
- Organizational barriers
- Perceptual barriers
- Physical barriers
- Physiological barriers
- Psychological barriers

- Racism and cross cultural barriers
- Semantic barriers
- System design barriers
- Technical barriers

(b) List of Specific Communication Barriers

- A lack of clarity in roles and responsibilities
- A lack of supervision or training
- Absence of means of communication
- Abstraction
- Attitude creating social evils
- Attitude toward the sender or the information
- Attitudes and values
- Avoiding the listener
- Background noise
- Bad phone connection
- Barrier screens
- Closed office doors
- Closeness
- Communication overload
- Complexity in organizational structure and policies
- Confused thinking
- Difference in perceptions
- Different cultural level
- Different cultures
- Different world perceptions

- Differing backgrounds
- Distance
- Distractions
- Effectiveness
- Email not working
- Emotional barriers
- Environmental disturbances
- Ethnic
- Experiential
- Nonverbal
- Competition
- Fatigue
- Faulty instruments
- Fear
- Filtration
- Ignoring the content
- Impatient listener
- Inattention
- Incorrect filtering
- Inefficient or inappropriate information systems
- Information overload
- Interruption
- Interruptions on radio and television
- Lack of clarity in the message
- Lack of common experience

- Lack of common language
- Lack of consultation with employees
- Lack of credibility
- Lack of interest in the message
- Lack of knowledge of any language
- Lack of subject knowledge
- Language differences
- Low pitch and tone
- Manipulative interactions
- Marked out territories
- Mistrust
- Motivational
- Negative attitude
- Noise
- Non availability of proper machines
- Not confirming with the recipient
- Not understanding the mood of the recipient
- Not understanding the receiver
- Overdose of information
- Overuse of abstractions.
- Past experiences
- Pastimes fill up time with others in social but superficial activities
- People's state of mind
- Personal discomfort
- Personal physical health

- Personal problems
- Personality conflicts
- Poor communication skills
- Poor grammar and punctuation
- Poor hearing
- Poor listening skills
- Poor management
- Poor or outdated equipment
- Poor pronunciation
- Poor retention
- Poor vocabulary
- Poorly explained or misunderstood messages
- Positions and fear of superiors
- Power failure
- Preparation
- Presence of defective machines
- Presentation of information
- Problem at home
- Religion
- Resistance to Change
- Rituals are meaningless, repetitive routines devoid of real contact
- Separate areas for people of different status
- Social differences
- Source incredibility
- Staff shortages

- Status
- Technical barriers
- The human element
- The use of difficult or inappropriate words in communication
- Time and time pressures
- Traditions
- Unnecessary repetitions
- Unorganized thought
- Use of jargons
- Withdrawal is an absence of interpersonal contact
- Working activities which follow the rules and procedures of contact but no more
- Wrong choice of medium regulations
- Wrong interpretations

(c) Ways to Overcome Communication Barriers:

- Sharpening communication skills
- Using simple language
- Being receptive to changes
- Improving listening skills
- Avoiding jargons
- Open-mindedness
- Avoiding prejudice
- Clear and brief message
- Receiving feedback
- Developing emotional stability

- Selection of proper channel
- Understanding the receiver
- Building credibility
- Avoiding fear
- Proximity; building cohesive teams
- Nearness to others
- Changing your thoughts, feelings, and physical connections
- Avoidance of leading the audience to question your credibility and authenticity
- Principles to compose effective written or oral message
- Knowing what you intend to communicate and then only speak
- Being very clear
- The receiver's proper feedback that clear all the doubts
- Asking if you are not clear with anything
- Learning more about the culture, habits, thought process of the listeners
- Clear, crisp, and interesting content of the message
- Eye contact with the listeners
- Finding out whether the listener is getting your message or not
- Understanding the mood of the other and reading his/her mind
- Being loud and clear without shouting
- Getting the complete information and then responding accordingly
- Learning to use feedback well
- Being sensitive to receiver's point of view
- Listening to understand
- Using direct, simple language
- Learning to use supportive communication, not defensive communication

- Establishing a balance between talking and listening
- Putting the person at ease by creating a permissive environment
- Showing the person you look and act interested
- Removing distractions
- Empathizing: Trying to see the other person's point of view
- Being patient
- Holding your temper
- Going easy on argument don't putting people on the defensive
- Asking questions, it helps to develop points further
- Setting up an office to remove physical barriers
- Overcoming the fear
- Finding a common ground to work from
- Avoiding jargon or technical language
- Being sensitive to gender-related differences in communication
- Trying to hear others
- Eliminating as many intermediaries as possible
- Using the most specific and accurate words possible
- Trying to use words the audience will understand
- Increasing the accuracy of your messages
- Clarifying meaning by asking non-threatening questions
- Being aware of the feelings that arise in yourself and in others
- Being alert to the greater potential for misunderstanding
- Avoiding projecting your own background or culture onto others
- Understanding the background of others
- Patients, self-control, and determination

- Being conscious of possible barriers to communication
- Taking the time to develop your awareness and control
- Adopting the behavior patterns of the group
- Watch out barriers while communicating
- Monitoring the actions of the receivers
- Using the non-verbal communication including body language carefully
- Knowing something about information technology

2.3.3 Communication Barriers in Distance Education

The aim of the review under this title is to analyze and state the barriers and obstacles in distance education that impede the transfer of information to and from. It will further try and conceptualize their impressions on technology-mediated distance learning aftermath.

Initially it is proper to say that managing information by way of computers, and using this as an educational tool for transmitting information to students enrolled in "Distance Education Programs", is an important modus operandi. Nonetheless, one should always bear in mind the barriers and obstacles involved, and try and eliminate them to establish better communication.

Firstly, getting to know the possible inhibitors, the receivers encounter, in our case, the students, is important since the quality of education is proportional to the quality of data sent and received in an educational context. In the quest for eliminating these barriers, learnt experiences regarding communication in its broader sense, and more specifically barriers, related with the online and or distance education, have motivated the researchers to set out to seek solutions whilst concentrating their focus particularly on the online context, because in the online programs communication is either asynchronous or synchronous, is affected by many

factors such as technological, psychological, physiological, comprehension and so forth. All these may result in the form of communication interferences, thus making up the obstacles.

Sherry (1996) similarly discussed the barriers faced in distance education, particularly emphasizing the importance of teacher-student, student-student network in order to be successful. He, further, indicated that the absence of visual, audial, and immediate two way interaction, lessens the efficacy of distance education.

Minoli (1996) also completed a study on distance learning technology and applications. He mentioned the applications processes and effects of technology in the development of the e learning, in distance education. Moreover, Minoli realized the growing competitiveness in technology and its impact on corporations, government, schools and universities. He related the barriers in distance learning to union resistance, high capital costs, growth and teacher-related factors.

Galusha (1997) also discussed the barriers in distance education. He stated barriers as the decline in students' motivation in the absence of face-to-face contact, lack of immediate feedback; inadequate connection with the instructor, potentially obstructive startup expenses, inefficacy of services and the aid for students, alienation and feeling of desolation due to insufficient experience and training, close inspection of the fundamental issues, inefficacy in rating student performances all comprise the barriers in distance education.

Abrahamson (1998) argued that the effectiveness of online learning is correlated with the types of interactions. These interactions are between primary instructor-student, primary instructor- onsite instructor, onsite instructor- student and student-student. Students tended to be experiencing difficulties when their contact with their instructors is neither direct nor continuous. This had a negative effect on their

motivation. He, therefore, suggested flexibility, sufficient technical support, and two way voice.

Berge (1998) defined the problems in online education in highschools by identifying the benefits and problems of online education. In his study he listed the barriers as cultural, attitudinal, technological, none face-to-face teaching, more time requirement for both online contacts and preparation of materials and the disposition of the person, the quality of the online program and the policies of the educational institution sanctioning the program. He then conducted a survey to determine the perceptions of the teachers in the online education. 36 teachers responded to the survey and the technical barriers indicate deficiency in the reliability of the system, and that it has a connection related issues.

Rockwell, Schauer, Fritz, and Marx (1999) concentrated on what to do to minimize barriers and they came up with recommendations such as improving technical skills, bettering assistance and support, or offering rewards.

Lake (1999) tested on a pilot group in his quest to find ways to minimize the sense of isolation for distance learning students. His results strongly supported that online students require an orientation to university study by providing real and symbolic interactions between academic staff and students and by providing formal and informal contacts to promote social negotiation.

Asirvatham (2000) discussed barrier in his study while focusing on the tract of synchronous teaching. He suggested cooperating the use of inter-company chat rooms, white-boards etc. employed in distance education to deal with long distances. he further suggested video conferencing in dealing with geographical barriers by enabling great eligibility and keenness to online courses in order to impede time related barriers in distance education.

Gary and Remolino (2000) analyzed the disposition and the directives of the online support groups and concluded that having not enough or restrictive feedback, standard of control, members with deficient language aptitude all comprise the limitations of online support groups. They then, put forward some suggestions and emphasize face-to-face support in enhancing the access and delivery support.

Dusen and Gerald (2000) on the other hand, came forth with the idea of reconstructionalism in their study related with the issues of access, cost, and quality in media-enhanced and distance education. They supported the idea of responding to the social, demographic, and economic changes in society. Regarding the issues of access, they pinpointed inconsistency regarding quality and the shortcomings of the computer labs in American Colleges as a critical safety without access. In order to eliminate the barriers, they suggested that we should promote universal internet access, and develop reward systems, which would raise the standard of teaching and encourage the innovative uses of technology, justifying the social nature of learning, and preserving the quality and core values in order to address to the problems related with productivity, efficiency and effectiveness.

Rockwell, Furgason, and Marx (2000) administered the Delphi study, to research and evaluate the needs for distance education. In their research, they aimed at recognizing problems faced in distance learning related with delivery strategies like equipment, accessibility to online education with respect to time, place, motivation, and participation. Moreover, assessment of expectations and the identification of support and assistance related barriers have all been attended in order to define the type of assessment required in the best possible delivery of distance education.

In their study, Lawless and O'Dwyer (2000) mentioned the two barriers in distance training: social and technical barriers which hinder motivation for some.

They, therefore, suggested the identifications of the users need and the similarities and differences between face-to-face and online education and thus consider training accordingly because in distance education, there is no face-to-face communication nor is there any support from tutors. There is also no visual or auditory input for measuring students' behavior which creates a problem too.

Leach and Walker (2000) identified the barriers for establishing a secure atmosphere. They prioritized the barriers as instructors' feedback, instructors' aid and suppleness,, and the necessity to learn and welcome sharing the liability for envisaging and looking for the required knowledge or skills. The amount of experience the students have regarding technology or their acquaintance with the tools comprises the barriers in distance education.

Kinross (2000) argued that technology is also a tool to eliminate the barriers. Yet, Kinross underlined the social barriers, and said that videoconferencing, for future role, will regulate the social barriers in the online context.

Eisinger (2000) examined the evolution of education from chalkboard to online distance education. He cleared the understanding regarding student-centered education where the education becomes the autonomy of the learners. However, the lack of verbal communication may lead to misunderstandings while globally interacting. Besides, the differences in needs and expectations regarding the learning environment are another negative aspect of distance education.

Volery and Lord (2000) indicated access, capacity of constraints, market opportunity and serving as the catalysts of institutional transformation since they play an important role in the success of the online education, and are known to have been affecting the delivery of online education. They mainly focused on the technological side of distance education because of the globalization and the other

developmental characteristics and student characteristics which are influential to increase the effectiveness of delivery systems in online education. They administered a questionnaire and the results of their study indicated that success factors in online delivery crucially relies on the technology; ease of access and navigation, interface design, instructors' technological competence, interaction that affects the effectiveness of teaching, classroom interaction that encourages students to participate by eliminating temporal and spatial rigidity of hours and the technology competency of the students. The results clearly are indicative of the teachers' need to upgrade their technical skills by having more empathy on the students in the online context and focusing on the interactions between the teachers and students.

Horwath and Shardlow (2000) discussed the barriers in online programs. The students' related obstacles mentioned are their anxiety, obstacles faced while doing written work, fear of dealing with aggressions and personal difficulties in learning. The online education barriers, hindering the process of learning, are, therefore, identified as lack of information, absence of the learning environment, and learner oriented anxieties. To sum up, the leading barriers in online context are personal, cultural, social, technical, environmental and organizational.

Hara and Kling (2000) also analyzed students' problems in their distance education courses. They based their research on interviews, observations, and documentary data to attain accurate results. The student oriented problems found are complexities related with working alone. For example, students complained about technical problems encountered for which they do not receive enough or no feedback. The feeling of receiving insufficient instructions regarding their assignments and lack of teacher support, especially individual problems like having

no opportunity to express in full extent their dissatisfactions in their expectations make up the obstacles.

Lee (2000) discussed the online learning environment that is mainly constructed on text-based emails and forums which are asynchronous. Asynchronous communication creates a feeling of uncertainty in communication and feedback because of its absence and delay, thus, resulting in conflicting feelings of anxiety, sadness, depression, anger, joy and happiness causing both positive and negative emotional effects on students' motivations.

Frederickson, Pickett, and Shea (2000) analyze students' perceptions of online courses. Students with limited access to their instructors felt less satisfied; they further, experienced technical difficulties in online courses.

According to Berge (2001) students are not the only onews that faced barriers in distance education. Organizations and administrations faced varying barriers in varying degrees while utilizing distance education. He tried to find out such barriers that were not mentioned before apart from those in technical and interaction. He further analizes the organizations and their behaviours regarding distance education.

Burch (2001) concentrated on the enhancement of online courses with the merging of effective web units to it. According to Burch, the impact of internet has paid its toll on distance education by embedding its latest mass communication form on person to person basis. He pointed out the importance of the knowledge regarding the dynamics of the internet and basis its success on the true perception of the two way communication amongst the individuals, geographical locations, language and cultural differences.

In order to identify and better understand the barriers in distance learning, Godschalk and Lacey (2001), recommended the administration of a survey via e-

mail. They came up with the findings constitute the barriers in distance education and these are lack of knowledge on instructional technology, inadequate technical support, and having no or little motivation.

Rourke (2001) pointed out to the constructive side of web-based learning and its time wise flexibility opportunity to learners who may conflict with the school's schedule. Rourke, referred to the issues of control, personality conflict, and learning disability as removed barriers when active learning to students is permissible. He argued that online learning does not replace programs rather enhances and completes them. He suggested that the traditional educational institutions use this opportunity to become customer- driven in meeting the needs of their students.

Hyland (2001) concentrated on the adequacy of support and investigated the issue of feedback in distance learning. In his study, he took interaction and feedback as the most crucial elements to encourage students in the quest for motivation. He also emphasized to the importance of giving and receiving feedback in order to meet the needs and expectations of students, thus creating continuity in communication and, therefore, advance the students' performances by helping their learning strategies.

Manuel (2001) pointed out to the problems in online courses by underlining the predisposition of isolating students from each other, deficiency of fields, need for a thourough preparation, difficulty in meeting the needs of social skills, and the act of having insufficient preparation for conceptual requirements of a web-based education area as barriers hindering effective communication. He then underlines the importance of on the spot feedback, giving students the chance to have more than one and independent education opportunity by directing governance to students from the teachers.

Pajo and Wallace (2001) discussed the future of distance education and major barriers in distance education. The outcomes of their work revealed that some obstacles are effective at dissimilar levels in distance education and these barriers are the attitudes of teachers towards online teaching, impedance to change, worry regarding the outcomes, failure in training, inadequate reachability, time limitations and insufficient technical support. The most common and frequent ones are the ones related with constraints of time, short of of preparation and expertise, shortage of managerial support (Isman, 2005). Furthermore, individual obstacles are also listed amongst the barriers in web-based instruction.

Howell (2001), suggested ways to decrease the adverse effects of online courses. He outlined the elements of effective e-learning (distance education). He listed them as administering activities involving projects, progressive tutorials, improving connections to eliminate the desolate and solitary effect by giving importance to internet discourse, utilizing sensorial mode; optic, audial and tactile by engaging the appropriate media.

Gallini and Barron (2002) conducted a survey regarding the perceptions of those who receive and those who send the instructions in the web-infused space. The degree of perceived communication and interactivity in the survey are the two communication tools defined as chat discussion groups. These communication tools are used in terms of web-based instructions to enhance the courses and increase meaningful student participation, thus, the quality of the research based courses. The students say that they communicate with their instructors and peers using these web-based components. Therefore, revealing the satisfaction of all participants to the web-infused experiences.

Kader and Yawkey (2002) conducted a study about the problems and stated their recommendations to enhance communication. They perceived the main causes of barriers as miscommunication and the diversity in cultural and social systems. They claimed that the verbal and nonverbal communication between the teacher and students is important in enhancing communication.

Meyer (2002) was concerned with the learner's success in online learning and stated that personal qualities were important. He also provided comparative studies amongst online students and face-to-face students to show that online groups have the chance to do more and broader discussions, and are able to submit more complete reports while on the other hand, face-to-face groups experience problems related with sequentially. He further mentioned that online communities are suffering some of the same problems of face-to-face communities including misunderstanding, conflict resulting from lack of visual, body cues, and inability to progress through developmental stages. The loss of facial expressions, voice intonations, gestures, jokes, and irony result in the leading misunderstandings in the communication process. He investigated the four barriers that have an impact on the successful implementation of distance education. These barriers can be listed as first, the lack of skills or knowledge, second, formal organizational structures that are difficult to change, third, personnel and information systems that are difficult to take action and finally the implementation of changes that is discouraged or blocked. In order to eliminate the concerns regarding online cheating, a negotiable point is important.

Taylor (2002), in his appraisal of the advantages and disadvantages of the online learning from the point of view of faculty, mentioned the pros of online education like teamwork, the chance to reflect one's own personality and the delivery styles. On the other hand, the study also indicated the insufficient instructor competency

regarding the technology, students' perception that they don't get sufficient materials for the class, as the disadvantages of the online learning. In addition to this study, Read, Barcena, Barros, and Verdejo (2002) discussed the efficacy and problems experienced in distance learning courses like lack of face-to face contact and flexibility.

Picciano (2002) performed a descriptive analysis in an online course in which he tried to pinpoint the issues of interaction in online courses. His results revealed that the students' interactions and the sense of presence have a strong relationship on the students' perceptions of interaction and performance.

Perreault, Waldman, and Alexander (2002) have administered a questionnaire they have prepared to distance learning students. Their aim was to address, discuss, and overcome the technology related barriers in the students' education. The students were found to have been facing several problematic situations. Their descriptions of the barriers were accessibility, communication and technical support related. Their interpretation of the technical barriers was technology competency related on the behalf of both instructors and students. They all agreed on the inadequacy of traditional contact with the professors and fellow learners and the lack of immediate email response. They then suggested support centers where training is offered concerning adaptation to "teaching and learning" distance education, they also recommend that students' communication with the professors and fellow students enhances the quality of the education.

Barrett (2002) discussed the ways of overcoming barriers in distance learning in order to deliver efficient communication through internet. He says that by making people feel susceptible it is possible to lessen the barriers and have more effective communication. In his research, Barrett mentioned the cultural differences amongst

students and the university as a barrier. For him, it is crucial to have a socio-emotional span amongst students and their postings and to familiarize with the discourse and instruction of online courses. He then identified the problems like delay in the delivery of the teaching materials, no timely response to students' errors or needs, late feedback and absence of sufficient communication between the teachers and the students thus feeling of isolation.

Berge (2002) identified barriers as resistance to changes at organizational level, insufficiency in services offering help to students or legal problems, communal interaction and access menaced by technology, insufficient knowledge of technical expertise and support and so forth. He also said that the existing obstacles, in distance training and education, in identical institutions and overcoming these barriers depend on to the expertise of these institutions and to their capacity in distance education and training by means of questionnaires. The results of the questionnaires showed that many organizations resisted changes to organizational structure and most instructors did not possess the necessary information and ability to plan and teach in distance education programs. Moreover, all that partook in distance education felt solitary because of not having person to person contact. They also had no or insufficient access or competency in using technology. In addition, social, economic, physical and education related obstacles existed in workplaces and schools regarding technology competency and its usage in distance education. Obstacles in distance education could be comprehended as situational, epistemological, physiological, psychological, technical, social, and cultural (Isman, 2005).

Prammanee's (2003) examines how online interaction is perceived, associated with participation, in online courses. In his study, he used the qualitative and the

quantitative studies mainly concentrating on the perception of the interactions between the receiver and the sender. He mentioned the biggest problem to be the lack of social indicators and knowledge skills. According to the study, the motivations of the students were grouped as: learner with learner, learner with interface, learner with content, and learner with instructor. According to the instructors, interaction is the exchange of e-mails, chatting on line and posts whereas for learners it is the blackboard, webboard and so forth.

Sharma and Maleyeff (2003), on the other hand, pointed out to the possible solutions of the barriers related with online education. They categorized barriers as: barriers related with judgment, barriers related with distance, and barriers related with ethics. Distance related barriers are mainly those associated with the psychology of the individuals feeling insecure about how they are perceived by their instructors in their involvement to online courses, because they completely rely on technology. Sharma, Maleyeff, therefore, recommended the incorporation of face-to-face communication into online courses saying that this will lessen the feeling of isolation which is usually the case with the online courses' students. In distance education, internet is a powerful and effective medium and students problems related with barriers in distance learning should and can, significantly, be reduced by conducting role-plays, workshops on evaluation of technology or develop self-organizing groups.

According to Meyer (2003), in his study where he compares the issues in face-to-face and the successive discussions, and points out the main differences as lack of facial gestures, feelings to achieve critical thinking and in scheduling.

Rovai and Barnum (2003) conducted 19 online courses to three hundred and twenty eight volunteer graduate students. Their aim was to analyze the online course

effectiveness with respect to student interactions and the level of instruction received. They used the self-evaluations of the students in their study to disclose the feelings of the students and how much online courses helped them to learn. The result is that the motivation and the efficacy of the online learning are correlated with the amount of immediate interaction in the online courses. In the study technology was defined as means of attaining the educational consequences.

Angeli, Valanides, and Bonk (2003), dealt with the web-based conferencing by conducting computer-mediated interactions. They used qualitative and quantitative methods to analyze the responses of the 146 undergraduate students plus the teachers from a university in the United States. The participants' responses reflected their low level of thinking and poor interaction in the online environment with limited and restricted questions that hinder the quality of communication. Therefore, they suggested furthering the study on the issue of interactivity by involving more people.

According to Simonson, Smaldino, Albright, and Zvacek (2003) barriers are commonly related with the psychological and sociological nature of student. The uncertainty of an educational or professional goal, stress of multiples roles, time management problem, learning style differences and fear of failure all comprise the barriers. Furthermore, in their study, they defined noise as a part of the communication process, and mention the possibility of distorted transmission of messages accordingly. They also discussed obstacles like students' concerns on technical difficulties they face. They listed the limitations of internet-based courses as accessibility, technology related, copyright violations, infrastructure and the adaptations of topics to the delivery methods. Moreover, they pinpointed the necessity of accepting the new teaching paradigms on the behalf of the instructors. They detailed barriers as lack of money to implement distance education programs,

organizational resistance to change, lack of shared vision for distance education, lack of support, slow pace of implementation, faculty compensation/incentives, lack of technology-enhanced classrooms, difficulty in keeping up with technological changes, fear, training, technical problems, lack of one-to-one communication with the instructors.

Allen et al. (2007) attempted to find more about student satisfaction regarding distance learning by reviewing statistical meta-analyses and discovered how students, in general, feel about their experiences. The results showed that students of face-to-face education are a bit more satisfied than that of distance learning. Student satisfaction and motivation, according to Bures, Amundsen, and Abrami (2002) can influence their motivation. Moreover, students' intrinsic motivation is dependent on their participation and performance in the course. Other studies also showed that student motivation influence how well they can manage with the social and technical aspects of a course. (Whipp & Chiarelli, 2004). Hannafin et al. (2007) stated that online learning is not really motivating, on the contrary it can even be de-motivating as a result of technological (lack of familiarity with the technology), intrapersonal (personal relevance of the learning tasks and beliefs about computers' impact on learning), and interpersonal (managing distance collaboration) barriers (Bures, Amundsen, & Abrami 2002; Schrum et al., 2005). However, online learning can be made more motivating by the effective use of multimedia, context-based videos (Hee-Jun & Johnson 2005) and exploratory course design (Hsinyi, Chin-Chung, & Ying-Tien 2006).

Assareh and Bidokht (2011) investigated barriers to e-learning and they further suggested proper solutions. They categorized barriers as: (1) Learners-related barriers: financial problem, motivational issues, assessment of their progress, feeling

of isolation from peers, their incompetence in distance learning, affection and social domain; (2) Teacher-related barriers: incompetence in their knowledge about e-teaching environment, difficulty for assessment of different domain progress; (3) Curriculum- related barriers: ambiguity, quality, resource, teaching process, evaluation; (4) Institution- related barriers: organizational and structural factors. They suggested that in order to eliminate the barriers we need to be in more cooperation with curriculum developers, teachers, parent's students, social authorities, and technology specialists.

2.3.3.1Summary

Computer mediated learning is a relatively new educational paradigm which presents communication or delivery barriers and obstacles in the different scopes of its delivery. Communication barriers, which show disparities in varying contexts, are present due to the nature of the communication activities and the perspectives of the participants in their web-based education experiences. The studies here all analyzed and examined communication barriers and challenges in online education based on the experiences of different participants by implementing quantitative and qualitative research methods. In all the researches done in identifying the factors hindering web-based education, learning is believed to be most effective if educators take certain disabilities or barriers into consideration. When striving to develop a better delivery of the online courses, it is important to conceptualize and eliminate factors responsible in the hindrance of the online education. As a first step, it would be appropriate to list the barriers determined by the scholars in this field.

Communication barriers that affect the teaching and learning process in distance education and specifically in online learning as mentioned in the related studies can be categorized as the following:

(a) Administrative/instructor related barriers:

- Course materials not always being delivered on time
- Lack of sufficient academic advisors online
- Lack of timely feedback from the instructor

(b) Social interactions related barriers:

- The lack of interaction with peers or the instructor
- The lack of student collaboration online
- The lack of social context or being afraid of feeling isolated in online courses

(c) Academic skills related barriers:

- Writing
- Reading
- Communication

(d) Technical skills related barriers:

- Fearing new tools for online learning
- Lack of software skills, or their unfamiliarity with online learning technical tools

(e) Time and support for studies related barriers:

- Lack of time
- Lack of support from family, friends, or people

(f) Cost and access to the Internet related barriers:

- Access to the Internet too expensive
- Fear the loss of privacy
- Confidence
- Property rights or limited internet access

(g) Technical related barriers:

- Using the Internet
- Unreliable access to the Internet
- Lack of consistent platforms
- Browsers and software
- The lack of technical assistance that causes obstacles to online learning

(h) Learners related barriers:

- Financial problems
- Motivational issues
- Assessment of their progress
- Feeling of isolation from peers
- Incompetence in distance learning
- Affection and social domain
- Resistance to change

(i) Teacher related barriers:

- Incompetence of their knowledge about e-teaching environment
- Difficulty for assessment of different domain progress
- Resistance to change

(j) Curriculum related barriers:

- Ambiguity
- Quality
- Resource
- Teaching process
- Evaluation

(k) Organizational related barriers:

- Access to the Internet is not available

- Student shares the mail box with other users
- Temporary absence of the access to the Internet
- The lack of the self-education skills and habits

(l) Informational related barriers:

- Algorithms of the search and systematization of the information taken from the Internet recourses
- Where and how students could find the printed books and magazines for self-education regarding the topic of the course

(m) Pedagogical related barriers:

- Incorrect choice of the methods and forms
- Internet services
- Authoritarian instructor
- Coach, consultant, expert instructor
- Democratic and emotional instructor, friendly with students
- Communicative instructor

(n) Psychological related barriers:

- Unwillingness to communicate
- Waiting at teleconferences
- Excessive emotions, too relax, informal style of behavior
- Excessive aggression, criticism in communication
- Inconsistency of the work of the virtual group of students
- Resistance to change

There are certain solutions recommended by the researchers for these potential barriers. Consistent actions regarding some of the problems listed above include the following:

- Adequate behavior of a teacher related to the chosen teaching methods and technologies
- Aiding students to familiarize and feel confident with the delivery
- Being aware of norms and rules of telecommunication protocols
- Being aware of pedagogical ethics of teachers in respect to distance students
- Being aware of problems related to interpersonal relations in small groups
- Understanding the needs of students
- Using feedback in an efficient way.
- Contacting students one by one by e-mail or by the telephone
- Providing students with the detailed instructions about the course materials and useful Internet services
- Providing students with the detailed instructions about useful Internet and technology
- Developing plans for students' strengthening, evaluation, duplication and personalizing teacher participation
- Telling the students about the achievement results
- Establishment of a favorable psychological climate within the whole period of education
- Increasing learning and education motivations
- Combining diversity of delivery systems for interaction and feedback
- Making students content when they talk with a teacher and each other
- Cooperation with curriculum developers, instructors, parents, social powers, and technological professionals
- Preparing students to determine and manage the technical issues
- Preventing the possible personal differences between students

- Providing independence of choice and orientation at students' needs and interests
- Encouraging students to take a vigorous role in distance education

Additionally, the scholars discuss the advantages and disadvantages of distance education and its structure in order to present a wider perspective regarding the concept of distance education and the online courses.

In a learning situation where the teachers and the students interact and collaborate through a digital environment, it is crucial to enhance the delivery methods depending on the needs and requirements of the individual groups or students based on similar or different barriers highlighted. Because the students have individual perspectives and expectations, it would be proper for the students and teachers to have their barriers illustrated in order to attain a more equitable learning environment.

Chapter 3

METHODOLOGY

This chapter explains the methodology of the study with detailed explanations about the research model, population and sample, data gathering instrument, and the statistical techniques used to analyze data.

3.1 Research Model

This study is based on the quantitative research paradigm. Consistent with this general framework, a mixture of various models (descriptive model, correlational model and comparative model) was employed to find out the interaction between the independent and the dependent variables in order to assess the perception of students regarding the barriers in distance education. The research model of the study is illustrated at Figure 3.1.

The case study forms the main concentration within the framework of the general survey model of the research design. This case study was expected to get the analysis of the data gathered related with the communication barriers that students have while using the web-based online courses and the online programs offered by Sakarya University.

Measuring the communication barriers, taking the students' perceptions into consideration, thus offering possible solutions to reduce communication barriers confronted both by instructors and students was determined in order to produce more effective and interactive online courses. Therefore, a survey instrument was administered to collect the quantitative data in order to find out these barriers.

Descriptive model included applications of the following instrumentation to the online students. The descriptive statistical results (the number of participants, minimum-maximum scores, means and standard deviations) were reported.

1. Demographic Data Form

   (Gender, age)

2. The Characteristics of Online Education Experience

   (Department, number of online courses taken, eligibility of the online courses taken)

3. Students' General Perceptions of Online Education

   (Students opinions concerning online education, students' opinions embodied by the experience in online education, students plans to take any online courses in future)

4. Communication Barriers faced by students in online education questionnaire.

   (Technical barriers and problems, communicational barriers and problems)

Correlational model comprehended the correlation tables between Student General Perceptions of Online Education and Communication Barriers faced by students in online education (both technical and communicational problems and barriers).

Comparative model tested whether differences in personal characteristics, the online education experience characteristics and students general perceptions (independent variables) create a significant variance differences in the evaluations of communication barriers faced by students in online education (dependent variable). By conducting regression analyses, the explained variance by personal characteristics, the online education experience characteristics and student general perceptions in communication barriers faced by students in online education-CBS

were determined. The variables for regression equations and their explained variances were reported.

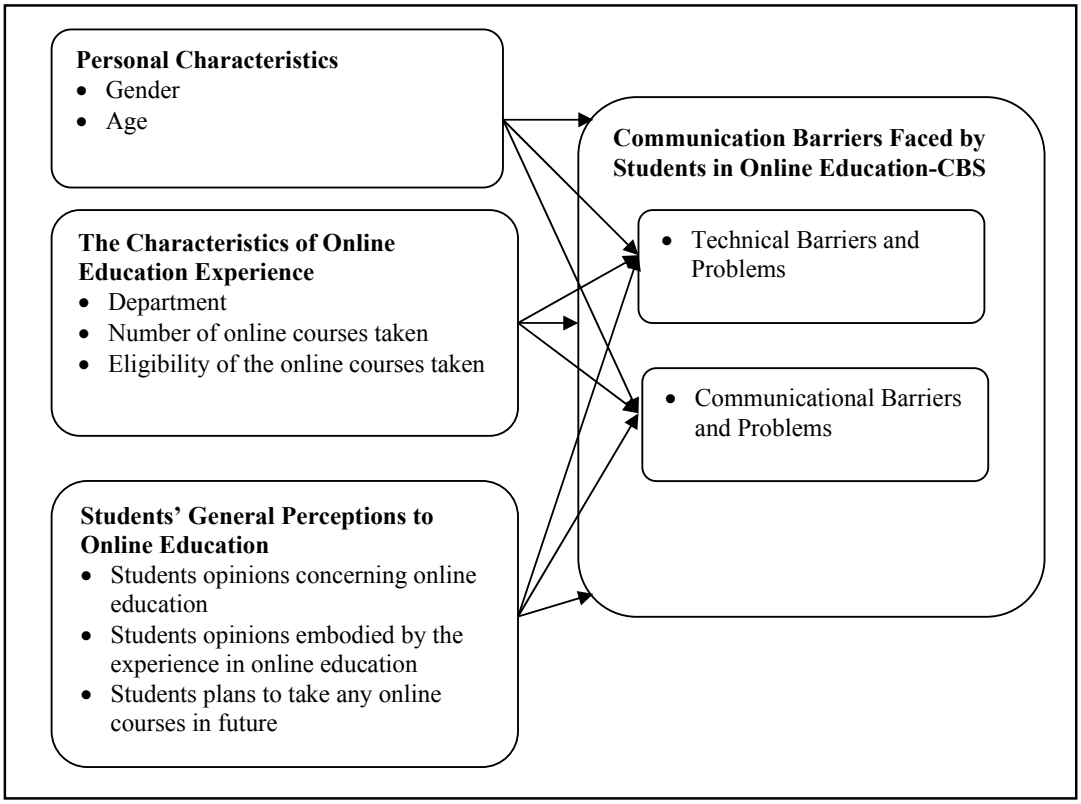

Figure 3.1 Research Model

3.2 Population and Sample

The population of this study was the entire registered online students during a semester of an Academic Year 2005 in Sakarya Vocational High School. Random sampling method was used which means all the participants had equal chances to join the research (Karasar, 2007).

The participants were 118 students attending online courses in five different online departments.

The participants consisted of 76 male and 39 female students. Of the total number of participants, 76 were younger than 25 years old, and 39 were older than 26 years old. Although age was measured based on five groups, (under 18, 18-25, 26-30, 31-

35, above 35), the age variable was re-categorized during the data analysis period because of the few members in some groups.

In terms of departments, 23 students were from Computer Programming and Information Technology, 22 students were from Information Management, 19 students were from Business, 23 students were from Industrial Electronics, and 28 students were from Mechatronic Department.

Sample size (N) is important to achieve reliable, valid and generalized results. Representing capability of the population and acceptable sampling error are the main criteria for sample size. Tabachnick and Fidel (2001, p.117) recommended $N \geq 50+8m$ (m=independent variable number) for multiple correlations. The "m" of this research is the sum of 3 variables for students' general perceptions of online education and two variables of communication barriers faced by students in an online education survey (CBS). When m=5, approximately 90 participants is sufficient for the study. For the regression equations $N \geq 104+m$ (m=predictor number) is enough for sample size. Considering subfactors, if m= 2+3+3, approximately 112 participants are sufficient.

According to the above, sample size of this study is sufficient enough for all research models and statistical analyses implemented in this study.

3.3 Data Gathering

The data gathering instrument was developed specifically for this study. After the necessary permissions were granted by the relevant units of Sakarya University to conduct this study, the data gathering instrument was administered by following the procedures explained below.

3.3.1 Development of Data Collection Instruments

For the present study, a survey instrument with a questionnaire containing demographic and Likert-scale type was prepared and put on the Internet to be completed by the registered online students.

A survey is a data gathering instrument by which researchers can measure the variables under study based on responses obtained. Through surveys, investigators ask questions to obtain relevant information from the respondents (Bouma and Atkinson, 1995: s.95).

With this in mind, the researcher first reviewed the literature to form an appropriate data-gathering instrument for this study. Although there were some instruments that appeared to be partially useful, none of them was considered to be fully sufficient toward the purpose of this study. Therefore, the researcher decided to develop an original instrument.

After reviewing the existing surveys, a general skeleton of the new data instrument was constructed. Then, individual items were produced. With the help and guidance of Zane L. Berge, Ph.D and Ali Şimşek, Ph.D, new categories and items were added along with the revisions of the available items. Following the approval of three additional members of the expert panel working in the field of educational technology, a pilot test was conducted on 16 undergraduate students at the Eastern Mediterranean University. The final version of the survey (Appendix A) was ready to be administered as a data gathering instrument.

The survey consisted of two parts. The first part was a questionnaire which aimed at collecting data about the independent variables of this study such as gender, age, department, number of distance education courses taken, the eligibility of the courses taken, students' opinions concerning online education, students' opinions embodied

by the experience in online education and students plans to take any online courses in future. They were assigned as independent variables for the analysis.

The second part of the survey was a five-point Likert scale about communication barriers faced by the students in online education, consisting of 40 items aiming to assess the students' perceptions of technical and communication barriers in online learning as a part of distance education.

The Likert-type scale had two subparts. The first part with 20 items aimed at determining students' perceptions regarding "technical barriers" they faced during online education. The Cronbach alpha reliability coefficient calculated for the first subpart on technical barriers was .907.

The second subpart of the scale with 20 items aimed at determining students' perceptions regarding "communication barriers" they faced during their online education experiences. The Cronbach alpha reliability coefficient for the second subpart of communicational barriers was computed as .905.

The reliability of the whole scale which aimed at measuring the total perceptions of communicational and technical barriers was also computed. The Cronbach alpha reliability coefficient for the whole scale was .942, which is considered very high.

3.3.2 Data Gathering Procedures

The questionnaire was pilot-tested with a group of 16 students as online. There was no problem encountered during this period. After analyzing the results obtained from the pilot test, no particular problem was determined and thus a go-ahead decision was made for the actual data gathering for the study.

The survey was uploaded to the Internet and made available for students to access and complete for a period of two months in a semester. At the end of the semester, a total of 118 students successfully filled and submitted the survey, which was online

under the Eastern Mediterranean University's web server with the site address http://research.emu.edu.tr/sakarya as an online submission form, linked to an access database stored in the same server. All the students completing the survey were from two year online associate degree programs.

3.4. Data Analysis

As it has been mentioned earlier, independent variables of this study were personal information, the online education experience characteristics, students' general perceptions of online education, whereas dependent variables were overall responses on the scale (all 40 items), technical problems/barriers (20 items), and communicational problems/ barriers (20 items). A total of 8 independent variables and 3 dependent variables were analyzed by using SPSS 15 package program.

First the data were screened in order to find out if the they were accurately entered. Univariate and multivariate outliers were determined and deleted. Factor structure of the scale was tested by factor analysis, which is also a form of structural validity of the instrument.

Correlations between the variables were evaluated by Pearson Correlation Coefficient. Variance analysis was tested to see whether the differences were significant with the personal information, the characteristics of online education experience and students' general perceptions of online education, on total score on the scale, perceptions of technical problems/barriers, and communicational problems/barriers. Regression analyses enlightened and explained variance by personal information, the characteristics of online education experience, students' general perceptions of online education as independent variables in the perceptions of the total scale, technical problems/barriers, and communicational

problems/barriers as dependent variables. The results are discussed and evaluated in context with the related literature.

Chapter 4

FINDINGS

This chapter represents the findings of the study collected and analyzed for the purposes of the study. The analysis include screening data, Reliability and the validity of the survey, descriptive statistics, Descriptive Statistics, Students' General Perceptions of Online Education, Communication Barriers Faced by Students in Online Education, Correlations of Independent and Dependent Variables and Causality Relationships between Variables Findings are presented in tables or figures and their interpretations given after each table/figure.

4.1 Screening Data

Prior to analysis, accuracy of data entry was checked for the items of two subscales and demographic variables separately by using SPSS Frequency table showing max-min scores. Then the total score of the "Communication Barriers faced by students in online education survey (CBS) and the two sub factors of CBS, technical problems/ barriers and communication problems/barriers were calculated, by dividing the sum of items with the number of items of that scale. Some variables were slightly negatively distributed in terms of technical problems and barriers score.

Univariate outliers determined by depending on extreme z scores, $z < -3.29$ and $z > 3.29$, one case were deleted because of being univariate outlier. Overviewing that case, it is determined that all items were marked 5 out of 5. Additionally, 2 multivariate outliers were deleted. Mahalanobis distance scores, X^2 (2, N=117) =

5.99, p< .005 was critical to determine multivariate outliers. The data of 115 participants then were analyzed.

4.2 Reliability and Validity of the CBS

The factor structure of the CBS was analyzed, aiming at testing the structural validity of CBS. The aim was to reduce a large number of variables to a smaller number of factors. In other words, the two-factor structure of the CBS was tested. First, initial principal component analysis of data was conducted. Eigenvalues and scree plot were examined. The rotation technique was determined by examining the component matrix. Varimax, one of the orthogonal rotation techniques, was used to simplify factors. Next, principal component analysis (PCA) was implemented. Lastly, reliability analyses were conducted for the whole scale and the subscales.

Factorability of R assumption was tested by using SPSS KMO and Bartlett's test. R should be higher than .30 for factor analysis. Values over .60 and above for the R is required for a good factor analysis. R(40, 115)= .846, which was factorable indicating partial correlations were small.

First, initial principal component analysis of data was conducted to estimate the number of factors. Eigenvalues show the variance in all variables which is accounted for a specific factor. Eigenvalues, smaller than 1, are not taken into account. The number of components with eigenvalues greater than 1 is usually somewhere between the number of variables divided by 3 and the number of variables divided by 5. A total of 40 variables should produce between 8-13 components with eigenvalues greater than 1. According to the Kaiser's criteria, there are 10 factors, having eigenvalues higher than 1 corresponding to a different potential factor. The 10 eigenvalues were respectively 13.020, 2.813, 2.208, 1.747, 1.536, 1.456, 1.352, 1.213, 1.128, 1.009, which were shown in Table 4.1.

Table 4.1 The Eigenvalues of Initial Principal Analysis

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	13,020	32,550	32,550
2	2,813	7,032	39,582
3	2,208	5,521	45,103
4	1,747	4,367	49,470
5	1,536	3,839	53,309
6	1,456	3,639	56,947
7	1,352	3,381	60,328
8	1,213	3,033	63,362
9	1,128	2,819	66,181
10	1,009	2,522	68,702

The rotation technique was determined examining the component correlation matrix. The correlations between factors were not so high, indicating that the factors were uncorrelated which was defined as orth the factors by maximizing the variance of the loadings within factors across variables.

Next, principal component analysis (PCA) was run. According to the Kaiser's criteria and scree plot, there were 10 factors. The goal of the PCA was to extract minimum variance from the data set with each component. The factor number was determined as two by designing the questionnaire. Communalities greater than 20 and smaller than 1.00 indicated that there were no problems in the numbers of factors. All communalities were within the limits. After that, the rotated component matrix was examined to determine the number of variables loaded on each factor. The greater the loading, the more the variable was a pure measure of factor.

Factor 1 includes item 21-40 except item 33; factor 2 includes items 1-20 except item 19. Total variance explained by factor 1 namely communicational barriers and problems were %33. Total variance explained by factor 2 namely technical barriers and problems were %7. Individual variances and cumulative variances could be seen in Table 4.2. Rotated factor matrix could be seen in Table 4.3 As a solution item 19

and item 33 were changed slightly. The general factor design of the CBS is very good implying structural validity of the CBS.

Table 4.2 Total Variance Explained by Factors (PCA)

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	13,020	32,550	32,550
2	2,813	7,032	39,582

The reliability of the communicational barriers and problems were computed. Cronbach alpha= .905 for 20 items. The reliability of the technical barriers and problems were examined. Cronbach alpha= .907 for 20 items. The total reliability of the CBS is .942. CBS and its subscales were highly reliable.

Table 4.3 Rotated Factor Matrix

Items	Factor	
	1	2
1. I face difficulties in accessing the hard and software needed for online education.		,298
2. I fear of losing my privacy, confidentiality and intellectual ethics in the internet environment.	,354	,268
3.Due to a lack of sound of Internet connection, I encounter difficulties in accessing data on the internet.		,358
4. I encounter technology related barriers due to shortness of effective soft and hardware maintenance services		,261
5. I encounter difficulties due to shortness of efficient internet providing facilities and thus experience connectivity barriers.		,174
6. I encounter difficulties in online courses due to my incompetence in utilizing internet connection devices.		,785
7. I encounter difficulties due to my fear in utilizing the online education technology and computer.		,643
8. I encounter hard and software related difficulties and in opening a web page because of the inconsistency in the online education platform.		,329
9. I encounter difficulties due to my incompetence in utilizing the software needed to follow the online courses.		,724
10. I encounter difficulties due to my incompetence in understanding the system requirements prerequisite to accessing online courses.		,793
11. Shortness or absence of technical help worries me personally.		,664
12. I fear that I may not satisfy the requirements of technology related methods used in online education.		,581
13. I encounter difficulties related with hard and software incompatibility.		,467
14. In technologic environments, I experience critical barriers in accessing the teachers.	,478	,423

15. I encounter barriers in finding an academic supervisor with adequate competence in online education.	,514	,481
16. I experience technology related fears due to shortness of sufficient information given on access to online education.		,665
17. I have concerns that the course materials may not be accessed at or downloaded on timely basis.		,428
18. I have concerns regarding the size of the online education classes; oversized or too small.		,584
19. I have concerns regarding the adequacy of supports and services provided by the academic staff in online education.	,630	,320
20. I have concerns related with the acknowledgement of the online courses I have taken.	,429	,203
21. I find online education mechanical due to its dependence on technology.	,377	
22. I prefer attending face-to-face classes.	,373	
23. I have concerns regarding the adequacy of the teachers in online education.	,627	
24 I have concerns regarding the adequacy of the online education given.	,705	
25. I am not happy about the punctuality of the information received in online courses.	,598	
26. There is no adequate communication between students in 2nline education.	,355	
27. I fear that I may be isolated from other students in online education.	,478	
28. I have difficulty regarding nonverbal communication and collaboration in online education.	,492	
29. I do not possess the academic confrontation needed.	,364	
30. I do not possess the communication competence needed in online education.	,400	
31. I face no difficulty in dealing with the easy tasks but encounter difficulties in the challenging ones.	,613	
32. I have concerns in taking the responsibility in online courses.	,485	
33. I am incompetent in using the computer		,721
34. Online education does not motivate me so I do not learn well.	,632	
35. I think in online education more time is needed.	,541	
36. I do not have confidence in the reliability of the materials and the knowledge attained in online courses.	,617	
37. I may be interrupted at home or at work while taking online education.	,514	
38. I don’t get support from my family, friends and bosses regarding online education.	,537	
39. I am worried that the online education may interfere with my personal life.	,472	
40. I believe that the individual differences are not taken into consideration in online education.	,651	

4.3 Descriptive Statistics

Descriptive statistics of dependent variables (DV's) and independent variables (IV's) were examined. Table 4.4 represents descriptive statistics of the categorical independent variables.

The number of online courses taken had 6 categories while measuring. (1, 2-3, 4-5, 6-7, 8-9, 10 or more). However, few participants in some groups brought up the need of re-categorization and the students taking 2-3, 4-5 and 6-7 courses were combined in one group namely 2-7 consisting of 16 students. Additionally, 17 students took only one course, 21 students followed 8-9 courses, and 61 students continued 10 or more courses.

The eligibility of the online courses was measured as four categories (All mandatory, all elective, some mandatory, some elective and other). Because of the structure of the online programs, the eligibility of the online courses classified as all mandatory-83 students and some/all elective-32 students.

Withdrawals from the online courses were measured in five categories (none, one fourth, half, three out of four, all). After regrouping, the group, namely "none" consisted of 105 students and "some of the courses" consisted of 10 students. Unbalanced sample size caused to exclude this variable from the research due to the assumptions of ANOVA and regression.

Table 4.4 Descriptive Statistics of Categorical Independent Variables

Independent Variable	N	%	Independent Variable	N	%
1.Gender			4. Number of online courses taken		
Female	39	%34	1	17	%15
Male	76	%66	2-7	16	%14
2. Age			8-9	21	%18
Students $\leq$ 25 years old	76	%66	10 or more	61	%53
Students $\geq$ 26 years old	39	%34			

3. Department			5. Eligibility of the online courses taken		
Computer Programming and Information Technology	23	%20	All mandatory	83	%72
Information Management	22	%19	Some/all elective	32	%28
Business	19	%17	6. Withdrawals from the courses		
Industrial Electronics	23	%20	None	105	%91
Mechatronic	28	%24	Some of the courses	10	%9

After these preliminary analyses, the descriptive statistics of the students' general perceptions of online education were reported including 3 variables of the total score on the survey, technical problem/barriers, and communicational barriers/problems. Minimum scores, maximum scores, means, and standard deviations of these independent variables were shown in Table 4.5.

Table 4.5 Descriptive Statistics of Independent Variables

Independent variables	N	Min.	Max.	Mean	Std.D
Students opinions concerning online education	115	1	3	1,97	,917
Students opinions embodied by the experience in online education	115	1	3	2.40	,782
Students plans to take any online courses in future	115	1	3	2,18	,720

After that the students' general perceptions of online education were evaluated based on the frequencies. Results were shown in Table 4.6. Students' general opinions concerning online education reveal that 44% of the students learned better in class with interactive teaching (1). In contrast to this result, fewer students' opinions (18%) were embodied as negative by the experience in online education. Moreover, only 18% of the students did not plan to take any online courses in the future. These results reveal that most of the students' general perceptions of online education were not negative.

Table 4.6 Detailed Frequencies of Students' General Perceptions of Online Education

IV	Points	N	Percent	Cum. Percent .
Students' opinions concerning online education	I learn better in class with interactive teaching (1)	50	43,5	43,5
	I see no difference between traditional and online learning (2)	19	16,5	60,0
	I learn better in online education(3)	46	40,0	100,0
Students' opinions embodied by the experience in online	My opinion of it is negative (1)	21	18,3	18,3
	My experience did not change my opinion of it (2)	27	23,5	41,7
	My opinion of it is affirmative (3)	67	58,3	100,0
Students' plans to take any online courses in future	No (1)	21	18,3	18,3
	Probably (2)	52	45,2	63,5
	Yes (3)	42	36,5	100,0

Table 4.7 and 4.8 represented the minimum scores, maximum scores, means, and standard deviations of technical barriers/problems and communicational barriers/ problems respectively. In general, students slightly had higher mean of communicational barriers and problems (M= 2.18, SD= .66) compared to the mean of technical barriers and problems (M= 2.10, SD= .58). The general mean of the CBS was smaller than the mean point of 3 (M= 2.14, SD= .58), implying that there are not so many communication barriers faced by students in online education.

Table 4.7 Descriptive Statistics of Technical Barriers and Problems

Items	N	Min.	Max	Mean	SD
1. I face difficulties in accessing the hard and software needed for online education.	115	1	5	2,36	,993
2. I fear of losing my privacy, confidentiality and intellectual ethics in the internet environment.	115	1	5	2,02	1,084
3.Due to a lack of sound internet connection, I encounter difficulties in accessing data on the internet.	115	2	5	2,70	,794
4. I encounter technology related barriers due to shortness of effective soft and hardware maintenance services	115	1	5	2,32	,812

5. I encounter difficulties due to shortness of efficient internet providing facilities and thus experience connectivity barriers.	115	1	5	2,37	,883
6. I encounter difficulties in online courses due to my incompetence in utilizing internet connection devices.	115	1	5	2,02	,991
7. I encounter difficulties due to my fear in utilizing the online education technology and computer.	115	1	5	1,85	,929
8. I encounter hard and software related difficulties and in opening a web page because of the inconsistency in the online education platform.	115	1	4	2,12	,785
9. I encounter difficulties due to my incompetence in utilizing the software needed to follow the online courses.	115	1	5	1,92	,947
10. I encounter difficulties due to my incompetence in understanding the system requirements prerequisite to accessing online courses.	115	1	4	1,88	,938
11. Shortness or absence of technical help worries me personally.	115	1	5	2,13	1,104
12. I fear that I may not satisfy the requirements of technology related methods used in online education.	115	1	5	2,21	1,072
13. I encounter difficulties related with hard and software incompatibility.	115	1	5	2,03	,868
14. In technologic environments, I experience critical barriers in accessing the teachers.	115	1	5	1,99	,932
15. I encounter barriers in finding an academic supervisor with adequate competence in online education.	115	1	5	2,08	,992
16. I experience technology related fears due to shortness of sufficient information given on access to online education.	115	1	5	1,95	,926
17. I have concerns that the course materials may not be accessed at or downloaded on timely basis.	115	1	5	2,14	1,131
18. I have concerns regarding the size of the online education classes; oversized or too small.	115	1	5	1,92	1,125
19. I have concerns regarding the adequacy of supports and services provided by the academic staff in online education.	115	1	5	2,06	1,003
20. I have concerns related with the acknowledgement of the online courses I have taken.	115	1	5	1,99	1,022
Total Score of Technical Barriers and Problems	115	1,20	3,60	2,10	,584

Table 4.8 Descriptive Statistics of Communicational Barriers and Problems

Items	N	Min.	Max	Mean	SD
21. I find online education mechanical due to its dependence on technology.	115	1	5	2,13	1,088
22. I prefer attending face-to-face classes.	115	1	5	2,88	1,299
23. I have concerns regarding the adequacy of the teachers in online education.	115	1	5	1,83	,939
24 I have concerns regarding the adequacy of the online education given.	115	1	4	2,00	,991
25. I am not happy about the punctuality of the information received in online courses.	115	1	5	2,02	,973

26. There is no adequate communication between students in 2nline education.	115	1	5	2,71	1,114
27. I fear that I may be isolated from other students in online education.	115	1	5	1,66	,936
28. I have difficulty regarding nonverbal communication and collaboration in online education.	115	1	5	2,17	1,154
29. I do not possess the academic confrontation needed.	115	1	5	2,05	,972
30. I do not possess the communication competence needed in online education.	115	1	5	1,85	,920
31. I face no difficulty in dealing with the easy tasks but encounter difficulties in the challenging ones.	115	1	5	2,22	1,033
32. I have concerns in taking the responsibility in online courses.	115	1	5	2,24	1,136
33. I am incompetent in using the computer	115	1	5	1,88	1,036
34. Online education does not motivate me so I do not learn well.	115	1	5	2,45	1,118
35. I think in online education more time is needed.	115	1	5	2,76	1,387
36. I do not have confidence in the reliability of the materials and the knowledge attained in online courses.	115	1	5	1,89	,989
37. I may be interrupted at home or at work while taking online education.	115	1	5	2,12	1,133
38. I don't get support from my family, friends and bosses regarding online education.	115	1	5	2,34	1,199
39. I am worried that the online education may interfere with my personal life.	115	1	5	1,91	1,081
40. I believe that the individual differences are not taken into consideration in online education.	115	1	5	2,48	1,307
Total Score of Communicational Barriers and Problems	115	1,00	3,70	2,18	,655
Total Score of Whole Questionnaire	115	1,18	3,48	2,14	,575

4.4 Students' General Perceptions of Online Education

In this part, the levels of students' general perceptions of online education were evaluated in terms of personal characteristics and characteristics of online education experience. "Student General Perceptions of Online Education" consisted of three items; namely, (1) students' opinions concerning online education, (2) students' opinions embodied by the experience in online education, (3) students' plans to take any online courses in future.

4.4.1 Students' Opinions Concerning Online Education

Table 4.9 illustrated the means and standard deviations of students' opinions concerning online education, considering personal characteristics and online education experience characteristics.

Table 4.9 The Levels of Students' Opinions Concerning Online Education

	Subfactors	Mean	SD	N		Subfactors	Mean	SD	N
Gen.	Female	1,79	,864	39	Nr. Courses	1	1,76	,970	17
	Male	2,05	,937	76		2-7	2,37	,806	16
Age	Students ≤ 25 years	1,83	,885	76		8-9	1,67	,913	21
	Students ≥ 26 years	2,23	,931	39		10 or more	2,02	,904	61
Department	Computer program.	1,43	,728	23	Elig	All mandatory	1,92	,913	83
	Information manag.	2,14	,889	22		Some/all elective	2,09	,928	32
	Business	1,74	,872	19	Total	Students opinions-online education	1,97	,917	115
	Industrial electronics	2,35	,885	23					
	Mechatronic	2,11	,956	28					

4.4.2 Students' Opinions Embodied by the Experience in Online Education

Table 4.10 summarized the means and standard deviations of students' opinions embodied by the experience in online education considering personal characteristics and online education experience characteristics.

Table 4.10 The Levels of Students' Opinions Embodied by the Experience in Online Education

	Subfactors	Mean	SD	N		Subfactors	Mean	SD	N
Gen.	Female	2,46	,76	39	Nr. Courses	1	2,47	,87	17
	Male	2,37	,80	76		2-7	2,81	,54	16
Age	Students ≤ 25 years	2,29	,81	76		8-9	2,24	,77	21
	Students ≥ 26 years	2,62	,67	39		10 or more	2,33	,79	61
Department	Computer program.	2,13	,87	23	Elig	All mandatory	2,39	,78	83
	Information manag.	2,73	,55	22		Some/all elective	2,44	,80	32
	Business	2,21	,85	19	Total	Opinions by experience	2,40	,78	115
	Industrial electronics	2,39	,78	23					
	Mechatronic	2,50	,75	28					

4.4.3 Students' Plans To Take Any Online Courses in Future

Table 4.11 illustrates the means of students' plans to take any online courses in future considering personal characteristics, online education experience characteristics.

Table 4.11 The Levels of Students Plans to Take any Online Courses in the Future

	Subfactors	Mean	SD	N		Subfactors	Mean	SD	N
Gen.	Female	3,13	1,005	39	Nr. Courses	1	2,88	1,111	17
	Male	3,38	1,119	76		2-7	3,69	,793	16
Age	Students ≤ 25 years	3,12	1,119	76		8-9	2,95	,921	21
	Students ≥ 26 years	3,64	,932	39		10 or more	3,43	1,147	61
Department	Computer program.	3,04	1,147	23	Elig	All mandatory	3,12	1,017	83
	Information manag.	3,50	,740	22		Some/all elective	3,75	1,136	32
	Business	2,58	1,305	19	Total	Future plans	3,30	1,084	115
	Industrial electronics	3,78	,998	23					
	Mechatronic	3,43	,920	28					

4.5 Communication Barriers Faced by Students in Online Education

In this part, the levels of communication barriers faced by students in online education were evaluated in terms of personal characteristics, characteristics of students' online education experiences and students' general perceptions of online education.

Communication barriers faced by students in online education survey consisted of two main factors namely technical barriers/problems and communicational barriers/problems. First, the general score of the "communication barriers faced by students in online education" survey (CBS) was evaluated. After that, the two subfactors of the CBS were analyzed separately.

Table 4.12 represents the means of communication barriers and problems faced by students in online education total score (CBS) considering personal characteristics,

characteristics of online education experience, and students' general perceptions of online education.

Table 4.12 Communication Barriers Faced by Students in Online Education Total Score (CBS)

	Subfactors	Mean	SD	N		Subfactors	Mean	SD	N
Gen.	Female	2,15	,528	39	Opinions	Better in class	2,35	,499	50
	Male	2,14	,601	76		I see no difference	1,98	,592	19
Age	Students ≤ 25 years	2,25	,574	76		Better in online	1,98	,583	46
	Students ≥ 26 years	1,92	,515	39	Experien	Negative	2,56	,48	21
Department	Computer program.	2,18	,416	23		Not change opinion	2,18	,58	27
	Information manag.	2,15	,587	22		Affirmative	1,99	,54	67
	Business	2,34	,700	19	Fut.Plan	No	2,53	,517	21
	Industrial electronics	1,83	,527	23		Probable	2,19	,550	52
	Mechatronic	2,22	,559	28		Yes	1,89	,517	42
Nr. Courses	1	2,16	,538	17	Total	CBS	2,14	,575	115
	2-7	2,18	,663	16					
	8-9	2,27	,514	21					
	10 or more	2,08	,585	61					
Elig	All mandatory	2,23	,583	83					
	Some/all elective	1,92	,497	32					

A set of ANOVA was conducted to test whether communication barriers faced by students in online education (CBS) scores were significantly different depending on the personal characteristics, characteristics of online education experience, and students' general perceptions of online education in accordance with the main purpose of this study.

First, it was tested to see whether gender differences affected the CBS. No differences were found between male (M= 2.14, N=76) and female students (M= 2.15, N=39) in terms of communication barriers faced by students in online education [F (1,114) = 0.11, p =.915].

Next, the interaction between age and the CBS was tested. The variance analysis results including age and CBS was surprising [F (1, 114) = 9.231, p < .001]. Students

who were older than 26 years (M= 1.92, N=39) experienced significantly less communication barriers in online education compared to students who were younger 25 years (M= 2.25, N=76).

Then, CBS scores of students from different departments compared. The CBS scores were significantly different between departments [F (4, 110) = 2.571, $p < .05$]. Industrial electronics students (M= 1.83, N=23) experienced significantly less communication barriers in online education compared to business students (M= 2.34, N=19).

Following this, CBS scores were based on the number of online courses taken by students. No differences were found between the student groups taking a variety of online courses in terms of CBS means [F (3, 111) = 0.608, $p = .611$].

Next, the CBS scores were evaluated between the two student groups, having their courses as all mandatory or some/all elective. Student group taking some/all elective courses (M= 1.92, N=32) experienced less communication barriers in online education then student group taking all mandatory courses (M= 2.23, N=83). When the eligibility of the online courses changed, the CBS scores significantly differed [F (1, 114) = 6.843, $p< .01$].

By assigning the categorized opinions concerning online education as an independent variable, the variance analysis of the CBS scores was conducted. The opinions concerning online education had three categories; Group (1) - “I learn better in class with interactive teaching”, Group (2) - “I see no difference between interactive and online learning”, and Group (3) - “I learn better in online education.” Group (1) preferring interactive classes (M= 2.35, N=50) expressed significantly higher CBS scores compared to both Group (2)-no differences (M= 1.98, N=19) and Group (3)-preferring online training (M= 1.98, N=46); [F (2, 112) = 6.282, $p< .01$].

In other words, students learning better in class with interactive teaching experienced more communication barriers in online training in terms of CBS scores.

After this, it was questioned whether the effect of experience in online education towards general opinion to online education could be associated with the differences in the CBS scores. The independent variable related to experience had three categories. Group (1) – "My opinion of it is negative" (M= 2.56, N=21) Group (2) – "My experience did not change my opinion about it" (M= 2.18, N=27) and Group (3) – "My opinion of it is affirmative" (M= 1.99, N=67). Based on CBS scores, Group (1)-having negative opinions significantly differed from Group (2) - not changed opinions and Group (3) - having affirmative opinions and [$F(2, 112) = 8.876$, $p < .01$]. If the experience in online education embodied students' opinions as negative, students then experienced probably higher communication barriers in online teaching in terms of CBS mean scores or vice versa.

Finally, CBS mean differences in terms of students' future plans related with taking online courses in future or not were analyzed. Concerning the desire to take online courses in the future factor categorized as Group (1)- no (M= 2.53, N=21) , Group (2)- probable (M= 2.19, N=52) and Group (3)- yes (M= 1.89, N=42). All CBS means were significantly different between three groups [$F(2, 112) = 10.458$, $p < .001$]. Results revealed that students, not thinking of taking online courses in the future are those who experienced the most communication barriers in terms of the CBS scores. Students, planning to take online courses in future experienced less communication barriers in terms of the CBS scores.

4.5.1 Technical Barriers and Problems

Table 4.13 demonstrates the mean scores on technical barriers and problems concerning personal characteristics, characteristics of online education experience, and students' general perceptions of online learning.

A set of ANOVA were conducted to test whether technical barriers and problems significantly differed depending on the changes in the personal characteristics, characteristics of online education experiences, and students' general perceptions of online learning in accordance with the main purpose of this study.

Table 4.13 Technical Barriers and Problems

	Subfactors	Mean	SD	N		Subfactors	Mean	SD	N
Gen.	Female	2,12	,588	39	Opinions	Better in class	2,22	,550	50
	Male	2,10	,585	76		I see no difference	2,02	,636	19
Age	Students ≤ 25 years	2,20	,593	76		Better in online	2,01	,585	46
	Students ≥ 26 years	1,91	,521	39	Experien	Negative	2,42	,58	21
Department	Computer program.	2,07	,471	23		Not change opinion	2,06	,58	27
	Information manag.	2,21	,606	22		Affirmative	2,02	,56	67
	Business	2,33	,696	19	Fut.Plan	No	2,38	,606	21
	Industrial electronics	1,84	,535	23		Probable	2,17	,566	52
	Mechatronic	2,11	,556	28		Yes	1,88	,525	42
Nr. Courses	1	2,17	,586	17	Total	Technical Barriers	2,10	,584	115
	2-7	2,18	,607	16					
	8-9	2,27	,539	21					
	10 or more	2,01	,588	61					
Elig	All mandatory	2,19	,599	83					
	Some/all elective	1,87	,470	32					

First, technical barriers and problems of males and females were compared. No differences were found between male (M=2.14, N= 76) and female students (M=2.15, N= 39) in terms of the means of technical barrier and problem scores [F(1, 114) = 0.30, p = .863].

Next, the interaction between age and technical barriers and problems was tested. The variance analysis results, considering age and technical barriers and problems,

were significant [F(1, 114) = 6.514, p < .05]. “Students ≥ 26 years old” (M= 1.91, N=39) experienced significantly less technical barriers and problems in online education compared to “Students ≤ 25 years old” (M= 2.20, N=76).

Then, technical barriers and problems means of the student groups, based on different departments, were compared. The technical barriers and problems means were not significantly different between departments [F(4, 110) = 2.219, p < .07]. Industrial Electronics students (M= 1.84, N=23) had a tendency to experience significantly less communication barriers in online education compared to the other departments.

After that, technical barriers and problems were considered based on the number of online courses taken. No differences were found between student groups taking different number of online courses in terms of technical barriers and problems [F(3, 111) =1.268, p = .289].

Next, technical barrier and problem means were evaluated between the two student groups, having their courses as all mandatory or some/all elective. Student group taking some/all elective courses (M= 1.87, N=32) experienced less technical barriers in online education then student group taking all mandatory courses (M= 2.19, N=83). When the eligibility of the online courses changed, technical barriers and problems scores significantly differed [F(1, 114) = 7.587, p< .005].

Assigning the categorized opinions concerning online education as an independent variable, the variance analysis of the technical barriers and problems was conducted. The opinions concerning online education fell into three categories; Group (1)- “I learn better in class with interactive teaching” (M= 2.22, N=50), Group (2)- “I see no difference between interactive and online learning” (M= 2.02, N=19) and Group (3)- “I learn better in online education” (M= 2.01, N=46). When

students' opinions concerning online education changed, their technical barrier and problem means did not significantly changed [F(2, 112) =1.919, p=.152].

Following this, it was questioned whether the effect of the experience in online education towards general opinion to online education could be associated with the differences in technical barriers and problems scores. The independent variable related to experience had three categories. Group (1) – "My opinion of it is negative" (M= 2.42, N=21), Group (2) – "My experience did not change my opinion of it" (M= 2.06, N=27), and Group (3) – "My opinion of it is affirmative" (M= 2.02, N=67). Based on technical barrier and problem scores, Group 1-having negative opinions significantly differed from Group 3 - having affirmative opinions [F(2, 112) = 3.934, p< .05]. If the experience in online education embodied students' opinions as negative, students' experienced probably higher technical barriers and problems during their online learning or vice versa.

Finally, technical barrier and problem mean differences in terms of students' future plans related to the taking of online courses in future or not were analyzed. Concerning the desire to take online courses in the future factor categorized as Group (1)- no (M= 2.38, N=21), Group (2)- probable (M= 2.17, N=52) and Group (3)- yes (M= 1.88, N=42). The technical barrier and problem means of Group 3 were significantly different from Group 1 and Group 2 [F(2, 112) = 6.250, p< .005]. Results revealed that students thinking of taking online courses in the future are those who experienced less technical barriers and problems.

4.5.2 Communicational Barriers and Problems

Table 4.14 shows the means of communicational barriers and problems considering personal characteristics, characteristics of online education experience, and students' general perceptions of online learning.

Table 4.14 Communicational Barriers and Problems

	Subfactors	Mean	SD	N		Subfactors	Mean	SD	N
Gen.	Female	2,18	,573	39	Opinions	Better in class	2,47	,555	50
	Male	2,18	,697	76		I see no difference	1,95	,635	19
Age	Students ≤ 25 years	2,31	,646	76		Better in online	1,95	,648	46
	Students ≥ 26 years	1,93	,605	39	Experien	Negative	2,70	,49	21
Department	Computer program.	2,30	,422	23		Not change opinion	2,30	,65	27
	Information manag.	2,09	,636	22		Affirmative	1,97	,60	67
	Business	2,34	,768	19	Fut.Plan	No	2,68	,546	21
	Industrial electronics	1,82	,615	23		Probable	2,20	,627	52
	Mechatronic	2,33	,668	28		Yes	1,90	,589	42
Nr. Courses	1	2,14	,609	17	Total	Communicational Barriers	2,18	,655	115
	2-7	2,18	,780	16					
	8-9	2,28	,578	21					
	10 or more	2,15	,669	61					
Elig	All mandatory	2,26	,673	83					
	Some/all elective	1,97	,565	32					

A set of ANOVA were conducted to test whether communicational barriers and problems had significantly differed depending on the changes in the personal characteristics, characteristics of online education experiences, and students' general perceptions of online education in accordance with the main purpose of this study.

First, communicational barriers and problems of males and females were compared. No differences were found between male (M=2.18, N= 76) and female students (M=2.18, N= 39) in terms of communicational barriers and problems [F(1, 114) = 0.001, p = .973].

Next, the interaction between age and communicational barriers and problems was tested. The variance analysis result regarding age and communicational barriers and problems was significant [F(1, 114) = 9.200, p < .005]. "Students ≥ 26 years"

(M= 1.93, N=39) experiences significantly less communicational barriers and problems in online education compared to "Students ≤ 25 years" (M= 2.31, N=76).

Then, communicational barrier and problem means of the student groups based on the different departments were compared. The communicational barrier and problem scores were significantly different between departments [$F(4, 110) = 2.916$, $p < .05$]. Industrial electronics students (M= 1.82, N=23) experienced significantly less communication barriers in online education compared to mechatronic students (M= 2.33, N=19).

Following this, communicational barriers and problems were considered based on the number of online courses taken. No differences were found between the student groups taking the various number of online courses in terms of communicational barriers and problems [$F(3, 111) = .196$, $p = .899$].

Next, communicational barrier and problem means were compared between the two student groups, having their courses as all mandatory or some/all elective. Student group taking some/all elective courses (M= 1.97, N=32) experienced less communicational barriers in online education then student group taking all mandatory courses (M= 2.26, N=83). When the eligibility of the online courses changed, communicational barrier and problem means significantly differed [$F(1, 114) = 4.513$, $p < .05$].

Assigning the categorized opinions concerning online education as independent variable, the variance analysis of communicational barriers and problems was conducted. The opinions concerning online education had three categories; Group (1)- "I learn better in class with interactive teaching" (M= 2.47, N=50), Group (2)- "I see no difference between interactive and online learning" (M= 1.95, N=19) and Group (3)- "I learn better in online education" (M= 1.95, N=46). Group 1-

expressing better learning in interactive classes had significantly higher communicational barrier and problem means as compared to the means of Group 2 - no difference and Group 3- better in online learning [$F(2, 112) = 10.382$, $p < .001$].

After that, it was questioned whether the effect of experience in online education towards general opinion to online education could be associated with the differences in communicational barrier and problem scores. The independent variable related to experience had three categories: Group (1) - My opinion of it is negative ($M = 2.70$, Group (2) - My experience did not change my opinion of it ($M = 2.30$, $N=27$) and Group (3) - My opinion of it is affirmative ($M = 1.97$, $N=61$). Based on communicational barrier and problem scores, Group 3 - having affirmative opinions significantly differed from Group 1-having negative opinions, and Group 2-having unchanged opinions [$F(2, 112) = 12.894$, $p < .001$]. If the experience in online education embodied students' opinions as positive, students experienced less communicational barriers and problems during online learning or vice versa.

Finally, communicational barrier and problem mean differences in terms of students plans related to the taking of online courses in future or not were analyzed. Concerning the desire to take online courses in the future factor categorized as Group (1)- no ($M = 2.68$, $N=21$), Group (2)- probable ($M = 2.20$, $N=52$) and Group (3)- yes ($M = 1.90$, $N=42$). The communicational barrier and problem means of all groups were significantly different from each other [$F(2, 112) = 11.945$, $p < .001$]. Results revealed that students, thinking about taking online courses in future are those who experienced less communicational barriers and problems. Students who don't prefer online courses in future are those who experienced the most communicational barriers and problems.

4.6 Correlations of Independent and Dependent Variables

Bivariate Pearson correlation coefficients and correlation matrixes were analyzed in order to determine the relationships between the variables. In Table 4.15 correlation coefficients are computed among independent variables (IV's). All of the correlations among IV's are significant at the .01 level. The highest correlation is determined between students' opinions embodied by the experience in online education and students plans to take any online courses in future. (r=.492, p<.001).When students' opinions are affirmative by the experience in online education, they think about taking more online courses in the future.

Table 4.15 Correlation Table of Independent Variables

IV*IV	1	2	3
1.Students opinions concerning online education	1		
2.Students opinions embodied by the experience in online education	,424**	1	
3.Students plans to take any online courses in future	,474**	,492**	1

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

In Table 4.16, correlation coefficients are computed among dependent variables (DV's). All of the correlations among DV's are significant at the .01 level. The correlation between technical barriers and problems and communicational barriers and problems is significant (r=.7222, p<.001). It means that technical barriers cannot be evaluated apart from the communicational barriers. They are strongly correlated.

Table 4.16 Correlation Table of Dependent Variables

DV*DV	1	2	3
1.Technical Barriers and Problems	1		
2.Communicational Barriers and Problems	,722**	1	
3.CBS	,919**	,936**	1

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Finally, correlation coefficients are computed among independent (IV's), and dependent variables (DV's). Results are illustrated in Table 4.17. Almost all of the

correlations among IV's and DV's are significant at the .01 level. The highest correlation is determined between students' opinions embodied by the experience in online education and communicational barriers and problems (r=.432, p<.001), the more students' opinions embodied as affirmative by the experience in online education, the less they experience communicational barriers and problems. The relationship between students' opinions concerning online education and technical barriers and problems are not significant. It can be inferred that concerning the relationship between the two subfactors of students' general opinions concerning online education, communicational barriers and problems seem to be more important than technical barriers and problems. Additionally, the consistency of the negative correlation results is a good evidence for psychometric quality of the CBS and technical and communicational barriers.

Table 4.17 Correlation Table of Independent and Dependent Variables

IV*DV	Technical	Communicational	CBS
Students opinions concerning online education	-,171	-,366**	-,295**
Students opinions embodied by the experience in online	-,231*	-,432**	,363**
Students plans to take any online courses in future	-,316**	-,414**	-,396**

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

4.7 The Causality Relationships between Variables

In this part, a series of regression analyses were conducted. The CBS scores, technical barriers and problems scores, and communicational barriers and problems scores assigned separately as dependent variables. Personal information, the characteristics of online education experience, and students' general perceptions of online education were entered as independent variables to regression analyses. These

analyses were expected to reveal the causalities between independent variables and dependent variables.

4.7.1 The Predictors of CBS

In order to predict the CBS, first personal information, the online education experience characteristics and student general perceptions of online education subfactors were regressed onto CBS separately. And finally a stepwise regression conducted, including all independent variables. Only significant regressions reported. Regression results are shown in Table 4.18.

Table 4.18 Regression Table (1)

Independent Var.	Predictor		Beta	t	Sig.
1. Personal characteristics (age, gender)	X	Age	-,275	-3,038	,003
	R= .275, R^2 = .076, F (1,113) = 9.231, p <.005 y= 2.59-.33x				
2. The online education experience characteristics (department, eligibility, number of online courses)	X	Eligibility	-,239	-2,616	,010
	R= ,239, R^2 = .057, F (1,113) = 6.843, p ≤.01 y= 2.53-.31x				
3.1. Students opinions concerning online education	X	Opinion	-,295	-3,284	,001
	R= ,295, R^2 = .087, F (1,113) = 10,787 p ≤.001 y= 2.51-.19x				
3.2. Opinions embodied by the experience in online education	X	Experience	-,363	-4,146	,000
	R= ,363, R^2 = .132, F (1,113) = 17,187 p <.001 y= 2.78-.28x				
3.3. Students plans to take any online courses in future	X	Future plans	-,396	-4,585	,000
	R= ,396, R^2 = .157, F (1,113) = 21,02 p <.001 y= 2.83-.32x				
4. All independent variables (Personal characteristics, the online education experience characteristics, student's general perceptions of online education)	X1	Future plans (15.7%)	-,205	-2,078	,040
	X1	Experience (19.4%)	-,221	-2,314	,023
	X3	Eligibility (22.5%)	-,186	-2,196	,030
	X4	Age (25.6%)	-,183	-2,159	,033
	R= .506, R^2 = .256, F (4,110) = 9.466, p <.001 y= 3.49-.16x1-.16x2 -.24x3-.22x4				

(IV's: Personal information, the characteristics of online education experience, and students' general perceptions of online education; DV: CBS)

First, age and gender were assigned as independent variables separately. Only age significantly predicted the CBS. Approximately 8% of the variance of the CBS was accounted for by age. Secondly, the characteristics of online education experience,

including department, number of online courses taken, eligibility of the online courses taken, were regressed separately onto the CBS. The eligibility of the online courses taken was the only significant variable in predicting the CBS. “The eligibility of the online courses taken” accounted for 6% of variance in the CBS.

Students’ general perceptions of online education subfactors significantly predicted the CBS. “Students opinions concerning online education” explained 9%, “opinions embodied by the experience in online education” explained 13%, “students’ plans to take any online courses in future” explained 16% of variance in the CBS. “Student’s plan to take any online courses in future” factor was the most powerful predictor among all independent variables in predicting the CBS.

All independent variables including personal characteristics, the characteristics of the online education experience, and students’ general perceptions of online education were entered into regression. Stepwise regression was run based on statistical criteria. R was significantly different from zero for four steps. Totally, 26% of the variance in the CBS could be explained by the independent variables. Student’s plans to take any online courses in future made the highest contribution to the prediction of the CBS, explaining 16% of the variance in the CBS. Opinions embodied by the experience in online education improved 4%, eligibility improved 3% and age improved 3% of the explained variance of the CBS in addition to student’s plans to take any online courses in future.

When all these regression results were summarized, students who are older than 26 years, having some/all elective courses, having positive opinions concerning the online education, having affirmative opinions embodied by the experience in the online education and planning to take online courses in future experienced less communication barriers with respect to its communicational and technical aspects.

4.7.2 The Predictors of Technical Barriers and Problems

In order to predict the technical barriers and problems, first, personal information, the characteristics of the online education experience, and students' general perceptions of online education subfactors were regressed onto technical barriers and problems separately. Finally, a stepwise regression was conducted, including all the independent variables. Only the significant regressions were reported here (Table 4.19).

Table 4.19 Regression Table (2)

Independent Var.	Predictor		Beta	t	Sig.
1. Personal characteristics (age, gender)	X	Age	-,233	-2,552	,012
	R= .233, R^2 = .055, F (1,113) = 6.514, p <.05 y= 2.49-.29x				
2. The online education experience characteristics (department, eligibility, number of online courses)	X	Eligibility	-,251	-2,754	,007
	R= ,251, R^2 = .063, F (1,113) = 7.587, p ≤.01 y= 2.52-.32x				
3.1. Opinions embodied by the experience in online education	X	Experience	-,231	-2,524	,013
	R= ,231, R^2 = .053, F (1,113) = 6.371, p ≤.01 y= 2.52-.17x				
3.2. Students plans to take any online courses in future	X	Future plans	-,316	-3,535	,001
	R= ,316, R^2 = .100, F (1,113) = 12,493 p <.001 y= 2.66-.26x				
4. All independent variables (Personal characteristics, the online education experience characteristics, student's general perceptions of online education)*stepwise	X1	Future plans (10%)	-,231	-2,524	,013
	X2	Eligibility(13.4%)	-,199	-2,233	,028
	X3	Age (16.5%)	-,180	-2,016	,046
	R= .406, R^2 = .165, F (3, 111)=12.493, p <.05 y= 3.14-.19x1-.26x2 -.22x3				

(IV's: Personal information, the online education experience characteristics, student general perceptions of online education subfactors; DV: Technical Barriers and Problems)

First, age and gender were assigned as IV's separately. Only age significantly predicted technical barriers and problems. Approximately 6% of the variance of the technical barriers and problems was accounted for by age. Secondly, the characteristics of online education experience, including department, number of online courses taken, eligibility of the online courses taken, were regressed separately onto technical barriers and problems. "The eligibility of the online courses

taken" was the only significant variable in predicting technical barriers and problems. "The eligibility of the online courses taken" accounted for 6% of variance in technical barriers and problems.

Among the students' general perceptions of online education subfactors, only "opinions embodied by the experience in online education" and "students' plans to take any online courses in future" significantly predicted the technical barriers and problems. "Students' opinions embodied by the experience in the online education accounted for 5% of the variance in the technical barriers and problems. "Students' plan to take any online courses in future" factor accounted for 10% of variance in technical barriers and problems.

All independent variables including personal characteristics, the characteristics of the online education experience, and students' general perceptions of online education were entered into regression. Stepwise, the regression was run based on statistical criteria. R was significantly different from zero for three steps. Students' plans to take any online courses in the future made the highest contribution to the prediction of technical barriers and problems, explaining 10% of the variance in technical barriers and problems. "The eligibility of the online courses taken" explained 3% of the variance additionally. Age improved 3% of the explained variance of technical barriers and problems in addition to the "students' plans' to take any online courses in future" and "the eligibility of the online courses taken" factors.

When all these regression results were summarized, students who are older than 26 years, taking some/all elective courses, having affirmative opinions embodied by the experience in the online education, are planning to take any online courses in future are those who experienced less technical barriers and problems. In contrast to

the significant regression results of the CBS, "having positive opinions concerning the online education (better learning in online education)" factor did not contribute to the prediction of the technical barriers and problems.

4.7.3 Predictors of Communicational Barriers and Problems

In order to predict the communicational barriers and problems, first, personal information, the characteristics of online education experience, and students' general perceptions of online education subfactors were regressed onto the CBS separately. Then a stepwise regression was conducted, including all independent variables. Only significant results were reported. Regression results are shown in Table 4.20.

First, age and gender were assigned as IV's separately. Only age significantly predicted the communicational barriers and problems. Approximately 8% of the variance of the communicational barriers and problems was accounted for by age. Secondly, the characteristics of the online education experience, including department, number of online courses taken, eligibility of the online courses taken, were regressed separately onto communicational barriers and problems. The eligibility of the online courses taken was the only significant variable in predicting communicational barriers and problems. "The eligibility of the online courses taken" accounted for 4% of the variance in the communicational barriers and problems.

Table 4.20 Regression Table (3)

Independent Var.	Predictor		Beta	t	Sig.
1. Personal characteristics (age, gender)	X	Age	-,274	-3,033	,003
	R= .274, R^2 = .075, F (1,113) = 9.20, p <.005 y= 2.69-.38x				
2. The online education experience characteristics (department, eligibility, number of online courses)	X	Eligibility	-,196	-2,124	,036
	R= ,196, R^2 = .038, F (1,113) = 4.51, p ≤.05 y= 2.54-.285x				
3.1. Students opinions concerning online education	X	Opinion	-,366	-4,178	,000
	R= ,366, R^2 = .134, F (1,113) = 17,76 p ≤.001 y= 2.69-.26x				
3.2. Students opinions embodied by the	X	Experience	-,432	-5,092	,000
	R= ,432, R^2 = .187, F (1,113) = 25,93 p <.001				

experience in online education	y=3.05-.36x				
3.3. Students plans to take any online courses in future	X	Future plans	-,414	-4,836	,000
	R= ,414, R^2 = .171, F (1,113) = 23,39 p <.001 y= 3-.38x				
4. All independent variables (Personal characteristics, the online education experience characteristics, student's general perceptions of online education)	X1	Experience (18.7%)	-,301	-3,182	,002
	X2	Future plans (24%)	-,266	-2,809	,006
	R= .490, R^2 = .240, F (2,112) = 17.699, p <.001 y= 3.31-.25x1-.24x2				

(IV's: Personal information, the online education experience characteristics, student general perceptions of online education subfactors; DV: Communicational Barriers and Problems)

Students' general perceptions of the online education subfactors significantly predicted the communicational barriers and problems. "Students' opinions concerning the online education" explained 13%, "opinions embodied by the experience in the online education" explained 19%, "students' plans to take any online courses in future" explained 17% of the variance in the communicational barriers and problems. "Students' opinions embodied by the experience in the online education" factor was the most powerful predictor among all the independent variables in predicting the communicational barriers and problems.

All independent variables including the personal characteristics, the characteristics of the online education experience, and students' general perceptions of the online education were entered into regression. Stepwise regression was run based on the statistical criteria. R was significantly different from zero for two steps. "Students' opinions embodied by the experience in the online education" made the highest contribution in the prediction of the communicational barriers and problems, explaining 19% of the variance in the communicational barriers and problems. "Students' plans to take any online courses in future" improved 5% of the explained the variance of the communicational barriers and problems in addition to students' plans of taking any online courses in future.

When all these regression results were summarized, students who are older than 26 years, having some/all elective courses, having positive opinions concerning online education (better leaning in online education), having affirmative opinions embodied by the experience in online education and planning to take any online courses in future are those who have less communicational barriers and problems scores. These students experienced less communication barriers.

Considering all stepwise regressions, "planning to take any online courses in future" was the most important factor in predicting the CBS and the technical problems and barriers. "Students' opinions embodied by the experience in online education" is the most powerful predictor of the communicational problems and barriers. Moreover, "students' opinions embodied by the experience in the online education" has incremental validity over the "planning of taking any online courses in future" in predicting the CBS. Additionally, eligibility of the online courses taken" and age had incremental validity over the "planning of taking any online courses in future" in predicting the CBS and the technical barriers and problems.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The purpose of this study was to investigate the perceptions and experiences of university students about communication barriers and problems in online learning as a contemporary form of distance education. Toward this purpose, certain hypotheses were tested to find out if communication barriers and problems differed significantly according to demographic as well as academic variables.

Because the study was descriptive in nature, the general survey model was employed. The situation was investigated as a case study. The population of the study was defined as students who enrolled online courses at Sakarya University in Turkey. The sample consisted of 115 students who have taken online courses in various degree programs in Adapazarı Vocational High School at Sakarya University. All the students individually volunteered to participate in the study.

Data were gathered through a survey which had a questionnaire section and a Likert-Scale section. The first section included questions on personal information about students. The second section of the survey included 40 items, each with 5 options. The data were analyzed by using techniques of factor analysis, correlation, analysis of variance, and multiple regression.

The study revealed important results. These results and their explanations within the context of existing literature have been presented below.

Students did not experience a high level of technical barriers or communicational problems. Most of the barriers and problems that the students experienced were communicational rather than technical. This is particularly important for a case study because the perceptions of the students about the online programs they attended appear to be positive. This result is partly due to the nature and characteristics of the online learning system at Sakarya University. The participants in this study indicated that the system in question functions well and they evaluated it positively. Positive or mediocre attitudes were reported in the literature for different settings (Chifwepa, 2008; Khan & Khan, 2007; Oteng-Ababio, 2011). However, one should keep in mind that this is only the perceptions of the students attending these programs. It should not be interpreted as a professional evaluation of the programs.

Students usually expect problems in technology-based learning environments. In fact, many students, regardless of nationalities and cultures, are afraid of taking such courses mainly due to their preconceptions of potential technology breakouts (Hara, 1998; Locatis, et al., 2011). Students may also be concerned about their own computer self-efficacy (Lee & Mendlinger, 2011). When the computer self-efficacy is low, it is normal that the students decrease their expectation as well as participation in online learning. It is also true that because the students did not encounter so many technical barriers, they might have not realised the communicational barriers and problems.

There was no significant difference in terms of gender. In view of existing literature, this comes as no surprise. In the past, technology was thought as a men's area and this had affected students' perceptions and attitudes. Thus, many studies reported gender differences in favor of male students (Richardson, 2007; Şimşek, 2011; Tekinarslan, 2008), which meant that they usually had higher computer self-

efficacy and lower computer anxiety. In the recent years, however, the technology improved significantly and it has become more user-friendly so that gender-related differences gradually disappeared (Tsai, Shen, & Tsai, 2011; Young, 2008). It is also true that most of the modern day's technology can be considered "soft technology" so that it is easy to use for everyone and thus common in different avenues of life including education. Considering all these changes and developments, perceptions of online learning technologies do not differ in terms of gender.

The results revealed that relatively older students had less communication problems compared to their younger counterparts. More specifically, those who were older than 26 years reported less barriers and problems than those who were 25 years old or younger. This result appears to be surprising and thus needs further attention because the studies usually report that younger students are more literate and better users of computer-based technologies (Barbrow, Jeong, & Parks, 1996; Richardson, 2007; Şimşek, 2011). There may be at least three explanations of this result. First, older students might have reported fewer barriers and problems even if they encountered more difficulties. Considering that these students are more mature, it is likely that they "did not want to complain" and marginalized the problems in their minds. Second, most of the previous findings have been produced in traditional face-to-face instructional environments. The nature of distance education might have played a role in this study so that the results in favor of young students disappeared. Third, it is possible that older students were more experienced in online learning and found their ways to overcome the problems that they encountered.

The students studying industrial electronics as an academic major faced less problems than the students in other fields of study. This is probably the most natural result of the study because the students majoring in areas of information

technologies, electronics, and computer programming were more knowledgeable and skillful in terms of using the system or overcoming the problems. Quality depends on readiness and competence (Ho, Hsien, & Lin, 2009). Also, understanding the technology may help perceptions and achievement (Yengin, et al., 2011) because apprehending the potential and limitations of the technology is important in developing proper understanding (Larreamendy-Joerns & Leinhardth, 2006). The fact that the students majoring in business had more barriers and problems may prove this point.

Barriers and problems did not significantly differ according to the number of online courses taken. However, those who have taken online courses as all mandatory experienced more problems than those taking at least some of the online courses as elective. Liking and ranking online learning is related to better achievement and positive experiences (Paechter, Maier, & Macher, 2010). In fact another result of this study showed that when perceptions and experiences of students were positive about online courses, they usually reported less barriers and problems. The explanation might be that one would prefer online or web-based learning as long he/she benefits (Bottino & Robotti, 2007).

Finally, the students who encountered less difficulty in online learning reported more willingness to take additional online courses in the future, and this willingness was the most powerful predictor of the students' general perceptions of online learning. This comes as natural and understandable because popularity of online courses is related to achievement or positive outcomes (Jones, 2011). It is also true that student attitudes toward technology-based learning environments improve when students perceive the technology as useful (Karal, et al., 2011), alternative (Ibara,

2008), effective (Bian, 2009), recognized (Park, 2011), and integrated (Glogowska, Young, Lockyer, & Moule, 2011) toward the purpose of successful learning.

5.2 Recommendations

Based on the results of this study, certain recommendations for further research and possible improvements in practice of online learning can be made. Although these recommendations were offered for online learning in mind, one can think that they may also be useful for distance education in general.

(1) Considering that most of the students in the current study involved technical areas such as information technologies and industrial electronics, the future studies should investigate the perceptions and experiences of students in social sciences. Actually, the business students in the present study have signaled the possibility of such differences. This point requires further attention. Therefore, the results may differ due to computer self-efficacy of students in various areas.

(2) Because the students in the sample of this study were attending associate degree programs, new studies should be conducted with undergraduate students. Their cognitive and affective attributions to online learning may differ, and this may have some effects on their perceptions of communication barriers and problems. The same may be true for students in certificate programs. This means that when the nature of students varies, their perceptions may differ so that new studies should shed some light on this point.

(3) Based on the fact that technical barriers and problems accounted only for a small percentage of the students' perceptions of difficulties in the present study and that a big variance was explained by communicational barriers and problems, it may

be useful for future research to focus on more specific aspects of communication problems in distance education. In fact, this may be true both for traditional and electronic forms of distance learning since technology has improved dramatically in the last decade and providers of distance education programs have overcome most of the technical barriers.

(4) Bearing in mind that opinions of the students taking all online courses as mandatory in their programs tended to be negative compared to opinions of the students taking at least some online courses as elective, psychological aspects of emerging technologies used in distance education should be further investigated. There may be some important but unknown dynamics (i.e. expectations) playing a critical role in perceptions as well as performance of distance education students.

(5) Considering that the students perceiving fewer communication barriers and problems during distance education indicated more willingness to take online courses in the future, future research should try to find effective ways of improving the quality of online courses along with students' perceptions and attitudes. New studies focusing on constructivist learning and social participation in online programs through appropriate technologies should be conducted.

(6) In view of the fact that communicational barriers and problems were more prominent in the distance education programs investigated in the present study, all team members developing and implementing online learning programs in all settings should be trained purposefully on communicational aspects of distance education. By so doing, they can better understand the nature and important aspects of online learning, particularly based on the fact that most of them have expertise in technical areas rather than educational communications.

(7) Because the results of this study suggested that when students had more positive opinions and attitudes toward online learning they experienced less communication barriers and problems, it may be useful to provide prospective students with training opportunities (at least information sessions) about online learning. This may decrease their fear and anxiety about the learning environment which often involves computer-based technologies. Students of today's distance education programs should know and expect more technology use in their education. When they are aware of this fact, it is likely that their approach to online learning will change.

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APPENDIX

Appendix: Survey on Communication Barriers in Distance Education (Dabaj, 2009)

PART I. Personal Information and Their General Thoughts/Opinions

1. Gender	
	Female
	Male

2. Age	
	Under 18
	18-25
	26-30
	31-35
	35 plus

3. Department	
	Computer Programming and Information Technology
	Information Management
	Business
	Industrial Electronics
	Mechatronic

4. Online program type	
	Distant Online Courses
	Two Year Online Program
	Four Year Online Program
	Master Online Program
	Ph.D. Online Program
	Other (Please specify)

5. Number of online courses taken	
	1
	2-3
	4-5
	6-7
	8-9
	10 or more

6. Eligibility of the online courses taken	
	All mandatory
	All elective
	Some mandatory, some elective
	Other (please specify)

7. The number of withdrawals from the online courses registered	
	None
	One fourth
	Half
	Three out of four
	All

8. Your opinion concerning online education	
	I learn better in class with interactive teaching
	I see no difference between interactive and online learning
	I learn better in online education

9. How does your experience in online education embody your opinion of it?	
	My opinion of it is affirmative
	My opinion of it is negative
	My experience did not change my opinion of it
	Other (please specify)

10. Are you planning to take any online courses in future?	
	Certainly no
	I do not reckon
	Probable
	Most Probably
	Certainly yes

PART II. Technical Problems and Barriers

5: Never	4: Seldom	3: Occasionally	2: Usually	1: Always

	5	4	3	2	1
11. I face difficulties in accessing the hard and software needed for online education.					
12. I fear of losing my privacy, confidentiality and intellectual ethics in the internet environment.					
13. Due to a lack of sound internet connection, I encounter difficulties in accessing data on the internet.					
14. I encounter technology related barriers due to shortness of effective soft and hardware maintenance services					
15. I encounter difficulties due to shortness of efficient internet providing facilities and thus exberience connectivity barriers.					
16. I encounter difficulties in online courses due to my incompetence in utilizing internet connection devices.					
17. I encounter difficulties due to my fear in utilizing the online education technology and computer.					
18. I encounter hard and software related difficulties and in opening a web page because of the inconsistency in the online education platform.					
19. I encounter difficulties due to my incompetence in utilizing the software needed to follow the online courses.					
20. I encounter difficulties due to my incompetence in understanding the system requirements prerequisite to accessing online courses.					
21. Shortness or absence of technical help worries me personally.					
22. I fear that I may not satisfy the requirements of technology related methods used in online education.					
23. I encounter difficulties related with hard and software incompatibility.					
24. In technologic environments, I experience critical barriers in accessing the teachers.					
25. I encounter barriers in finding an academic supervisor with adequate competence in online education.					
26. I experience technology related fears due to shortness of sufficient information given on access to online education.					
27. I have concerns that the course materials may not be accessed at or downloaded on timely basis.					
28. I have concerns regarding the size of the online education classes; oversized or too small.					
29. I have concerns regarding the adequacy of supports and services provided by the academic staff in online education.					
30. I have concerns related with the acknowledgement of the online courses I have taken.					

PART III. Communication Problems and Barriers

5: Never	4: Seldom	3: Occasionally	2: Usually	1: Always

	5	4	3	2	1
31. I find online education mechanical due to its dependance on technology.					
32. I prefer attending face-to-face classes.					
33. I have concerns regarding the adequecy of the teachers in online education.					
34 I have concerns regarding the adequacy of the online education given.					
35. I am not happy about the punctuality of the information received in online courses.					
36. There is no adequate communication between students in online education.					
37. I fear that I may be isolated from other students in online education.					
38. I have difficulty regarding nonverbal communication and collaboration in online education.					
39. I do not posses the academic confrontation needed.					
40. I do not posses the communication competence needed in online education.					
41. I face no difficulty in dealing with the easy tasks but encounter difficulties in the challenging ones.					
42. I have concerns in taking the responsibility in online courses.					
43. I am incompetent in using the computer					
44. Online education does not motivate me so I do not learn well.					
45. I think in online education more time is needed.					
46. I do not have confidence in the reliability of the materials and the knowledge attained in online courses.					
47. I may be interrupted at home or at work while taking online education.					
48. I don’t get support from my family, friends and bosses regarding online education.					
49. I am worried that the online education may interfere with my personal life.					
50. I believe that the individual differences are not taken into concideration in online education.					