# PERCEPTIONS OF STUDENTS WHO TAKE SYNCHRONOUS COURSES THROUGH VIDEO CONFERENCING ABOUT DISTANCE EDUCATION

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**ABSTRACT**
The objective of this study is to determine how students who are taking synchronous distance education classes via video conferencing perceive distance learning courses. A qualitative research approach was used for the study. Scale sampling was also used. The study's subjects consisted of a total of nine students comprised of 2nd and 4th grade students engaged in a course via synchronous distance education. For the study, the case method, a qualitative research method, was used, and research data was obtained via semi-structured interviews and observation results. Data was analyzed by means of the descriptive analysis method. Findings obtained at the study's conclusion indicate that students' perceptions of the course changed during and at the completion of the course. It was generally seen in the descriptions students made about the environment before taking synchronous distance education that they did not have advance information or that they had a prejudice due to their misinformation. It is seen in the conducted interviews that these prejudices start to be eliminated thanks to the opportunities provided by synchronous distance education through this process. It appears, from students' descriptions of the course environment prior to taking the course, that they did not have enough information or had preconceived ideas. As the course progressed, student perception changed and they were able to perceive more clearly the opportunities that synchronous distance education can provide. In this study, the most important problem in synchronous distance education was determined to be disconnection and sound problems. In this study, a significant problem was the hardware – i.e., sound, speed and connectivity issues. As well, students became bored after some time because of limited camera angles and cameras. It was concluded that this situation prevents the continuity of the course and so leads to distraction. On the other hand, it was observed that students start to get bored of the course after a while due to the fixedness of the camera angle and the small quantity of cameras. We also noticed that the fixed camera angle, small number of cameras and problems occurring in the images affected student perceptions. Besides these technical problems, the researchers observed, and the students expressed that the factors of teacher, environment, distance, course type and duration also caused the students' perceptions to change.
**Keywords:** Video Conference-Based Lecture, Student Perceptions, Distance Education

## INTRODUCTION

Developments occurring in Internet-based technologies, in recent years, have enabled the e-learning model to be a significant factor in distance education (Aşkar & Halıcı, 2004). E-learning, defined as an education based on electronic tools and media via Internet and network technologies, offers an alternative education model, bringing together teachers and students from different environments (Driscoll, 2002). The e-learning model is implemented using two different methods, synchronous and asynchronous.

The synchronous model enables a teacher and student to communicate in real time, though different spaces. The asynchronous model is defined as an e-learning model in which the student and teacher do not have to communicate in real time, and provides an opportunity for the learner to complete his/her education at his/her own learning speed and time (Horton, 2000; Rosenberg, 2001). Synchronous distance education is considered more advantageous in terms of real time discussion and brainstorming, offering an environment closer to the traditional class environment and allowing instant feedback. Delayed feedback in asynchronous distance education lowers interaction levels and can cause decreased levels of student interest and engagement. One way of solving this dilemma, in synchronous distance education, is to allow the student to establish visual and voice communication with the teacher with video conferencing based educations. Thus, an environment closer to the traditional class is created. (Reinhart & Schneider, 1998; Gillies, 2008).

 

Video conferencing is defined as interactive and synchronous voice, video and data transfer conducted between two or more points via communication lines (Gough, 2006). This system reduces the cost of education by connecting students and teachers who are in different locations. In addition, it offers a connected environment where students can relate their experiences to each another; and a feeling of togetherness is created, along with the benefit of expert instruction. As discussed by Hackman and Walker (1990), rapid comprehension in this environment, where students are able to express themselves comfortably in a, enables better teacher-student communication. Video conferencing is more developed compared to other methods of distance education, in terms of real-time interaction, relationship, motivation and collaborative learning (Brown & Liedholm, 2002; Wheeler & Amiotte, 2004; Bates, 2005; Wheeler, 2005). The quality of video conferencing systems varies according to the technology used, and the bandwidth, and it impacts the quality of education and student-teacher interaction level (Martin, 2005). Besides, fostering active student participation in the process is very important for ensuring an effective education and training environment. However, these studies determined that the students were not sufficiently encouraged in regard to learning during the video conference practices (Motamedi, 2001; Watkins, 2002; Newman, 2008).

A frequent error in assessing video conferencing practices is to equate the environment visually with the face-to-face traditional class environment and use it in this way (Hearnshaw, 1998; Anastasiades, et al., 2010). While video conferencing practices do provide opportunities for synchronous watching, listening and communication with other participants, the human interaction is not as effective as in the traditional education process (Bonk, et al., 1998; Schweizer, et al., 2003). Studies that have been conducted in order to evaluate the efficiency of video conferencing in education indicate that the expectations of the participants still cannot be met adequately (Motamedi, 2001; Knipe & Lee, 2002; Delaney, et al., 2004). This situation affects student perceptions and their learning depending on the perceptions. The perceptions are accepted as one of the determinants for the development of knowledge (Şimşek, 2008). Students stated that the applied technologies, the locations of the devices, technical problems such as sound, image and connection problems, the interaction inside and outside the class, the teachers' use of body language and the durations of the courses were the factors that affected their viewpoints about distance education (Martin, 2005; Koppelman & Vranken, 2008; Gillies, 2008; Marsh, et al., 2010).

Countries that put distance education in their educational policies are carrying out significant studies on this subject. In Turkey, many distance education centers and distance education programs are opening in order to keep up with this innovation. In a review of the scholarly literature, no detailed research into student perceptions of synchronous distance education in Turkey could be found in spite of all of these developments. The present study examines undergraduate students' changing perceptions of video conference-based lecture via distance education. "What are the undergraduate students'" perceptions of distance education acquired through a video conference-based lecture?" is the study's main question. "What are the opinions of students about distance education before taking a video conference-based lecture via distance education?", "What are the opinions of students about distance education after taking a video conference-based lecture via distance education?", "What impacts the students' perceptions of distance education during the educational process?" comprise the study's sub-problems.

## LITERATURE REVIEW

In the study, "The Quality of Teaching and Learning via Videoconferencing", Knipe and Lee (2002) examined the quality of teaching and learning activities performed via video conferencing. The study was conducted with 66 students. 45 students participated in traditional, face-to-face courses and 21 students participated in distance education. After the study, the students participating in the course via distance education felt alone and as if they were not a part of class when they could not make eye contact with other students and the teacher. This situation impaired the concentration of these students and made a negative impact on their learning.

The study conducted by Umphrey et al. (2008) studied the impact of interaction, class communication experience and the relational features displayed by an instructor when engaging directly with students, compared to student perceptions in regard to video conferencing education. According to the research results, students believe that face-to-face education is more positive than video conferencing, in terms of the teacher's proximity, understanding the teacher, mutual communication in the classroom, success and quality. From these results, it seems that the most effective video-conference courses would include interaction and in-class engagement.

A study carried out by Marsh et al. and titled "Interactive Video Technology: Enhancing Professional Learning in Initial Teacher Education" (2010) investigated the benefits of taking the live implementation of learned theoretical information via video conference. The research took place between 2005-2007 with the cooperation of Sussex University and 6 schools. The video conference technologies provided a way to overcome the limitations of the learning center's physical site. Teacher trainees could access various class applications and practice with the instructor. Course records aided the trainees by refreshing their memories about subjects they forgot.

Martin's article "Seeing is Believing: The Role of Videoconferencing in Distance Learning" (2005) examined Northern Irish students' study of the Constitution of the United States of America as explained by an American congress member. The students from Northern Ireland stated that the opportunity to interact with famous American politicians and to see them without traveling long distances from the places they lived enabled them to evaluate distance education via video conference in a positive way.

Gillies published a paper in 2008 titled "Student Perspectives on Videoconferencing in Teacher Education at a Distance". It was focused on the experiences of students who took courses via video conference for one year within the scope of initial teacher training. After the interviews, the students stated that the technical problems that occurred in the sound, the image and the connection caused them to feel as if they were not real students. Moreover, interviewing with the teacher during a certain time period is regarded as a deficiency. Live interaction with the teacher, creation of a feeling of affinity and receiving simultaneous answers to questions were situations frequently mentioned by the students.

In the study titled "Experiences with a Synchronous Virtual Classroom in Distance Education", Koppelman and Vranken (2008) aimed to determine the viewpoints of the teachers and 10 students in synchronous computer technologies education. The students stated that they liked the courses given in short and frequent intervals and they had no problems with concentration. In addition, they noted that the applied technologies prevented the waste of time it would be to travel for lessons with a distant technician. While the students evaluated the sound quality quite good, some students stated that they did not like the delays.

**THEORETICAL FRAMEWORK**

The theoretical foundation for this study stems from Rogers' diffusion of innovation research since, in the framework of the theory; the current study seeks to find out students' views about the video conference-based lecture as a new application that they encounter and to determine the students' adoption processes.

Rogers defined an innovation as "an idea, practice or object that is perceived as new by an individual or other unit of adoption" (Rogers, 1995, p. 11). Diffusion is "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 1995, p. 5). The innovation-decision process is the "process through which an individual passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision" (Rogers, 1995, p. 20). Thus, diffusion of an innovation occurs depending on communication channels, time and social systems.

Perhaps, the most important factor in the spread of innovations is the potential advantages that individuals or societies could gain. Generally, people are in favor of the innovations when they are more advantageous. Another factor for the spread of innovations is compatibility. The compatibility is the degree of overlapping of existent values, experiences and requirements. The innovation highly adopted by society is less ambiguous for the potential adopters. An innovation can or cannot be in harmony with socio-cultural values, beliefs, previous notions previous innovations, and requirements of the target group. Therefore, the higher rate of compatibility of an innovation means a higher rate of adoption (Rogers, 1995).

The diffusion of an innovation is more than an instantaneous event. Rather, it requires a period of time. No matter how new or old it is, an innovation has to pass through decision-making processes. The researcher states that diffusion of an innovation occurs through a specific process including the stages such as Knowledge, Persuasion, Decision, Implementation, and Confirmation (Rogers, 1995).

1) Knowledge: person recognizes an innovation and has some opinion about its functions;
2) Persuasion: person has a good or bad attitude toward the innovation;
3) Decision: person manifests his own view on adoption or rejection of the innovation via activities in which he is involved;
4) Implementation : person starts to use an innovation;
5) Confirmation: person finalizes his decision regarding the adoption or rejection of the innovation.

This adoption process of innovation is generally realized in the diffusion of almost any innovation, however, new stages can either be added or some can be removed depending on time and environment. Some kinds of communication channels are necessary in diffusion of innovations so that it conveys the innovation to the target group and allows them to share. Right decisions in choosing and using communication channels usually play a crucial role in diffusion of innovations.

Social system is defined as a set of interrelated units that contributes to the problem solving process so as to accomplish a common goal (Rogers, 1995). Since it refers to the medium in which the diffusion of innovation occurs, the social

system is of great importance.

The current study tries to determine factors affecting the diffusion of an innovation by investigating the students' adoption process of a video conference-based lecture during a semester.

## METHOD

### Research Design

A qualitative research approach was used in this study. The qualitative research approach is sensitive to the natural environment, the researcher has a participating role, there is an integrated approach, flexibility in the research design, it enables perceptions to be revealed, and it has an inductive analysis (Yıldırım & Şimşek, 2006). Within the framework of these features, the research design used was the case study. Case study was preferred in this study as the case study model allows more detailed, rich and in-depth data collection about a phenomenon or event (Hagan, 1993; Yin, 1994; Champion, 1993; George & Bennett, 2005).

### Sample of the Research

In selecting samples for this research, focused sampling was applied within the scope of the research design in order to obtain greater and in-depth data. Accordingly, interviews were conducted with a total of nine people from two different undergraduate levels from Karadeniz Technical University (KTU). These students were participating in a course via synchronous distance education during the 2008-2009 academic year, spring semester. These students were chosen in order to determine how undergraduates perceive class via synchronous education by means of video conferencing. Students taking part in this study had not previously participated in a synchronous distance education experience. Names of the participants were not used, in accordance with research ethics. Students participating in the research were coded as "P1, P2, P3, P4, P5, P6, P7, P8, and P9", while the assistant was coded as "A". Information relating to the participants is presented in Table 1.

Table 1. General Characteristics of Participants

| Participant | Gender | Class | Interaction in Classroom |
|---|---|---|---|
| P1 | Female | 4 | Active |
| P2 | Male | 4 | Passive |
| P3 | Female | 4 | Passive |
| P4 | Male | 4 | Active |
| P5 | Female | 2 | Active |
| P6 | Male | 2 | Active |
| P7 | Male | 2 | Passive |
| P8 | Female | 2 | Passive |
| P9 | Male | 2 | Passive |

### Researchers' Role

Researchers and participants existed in the same environment for a term. Researchers were able to observe all of the courses by being with the participants from the beginning of the term. As a result of this engagement, a warm relationship was established between the researchers and participants. Researchers and student participants also had informal conversations during breaks and before/after classes. In this more intimate setting, richer data was obtained. During the interviews, researchers avoided leading questions and maintained an objective and unbiased stance. Subjectivity of the researchers, and their opinions, are given in the Conclusion and Suggestions section.

### Ethical Rules of Research

A "Participant Permit", indicating the objective of the research, was prepared after the research objective was determined. Participants were given details of the research to be conducted. Participation was on a volunteer basis. Participants were given a guarantee of confidentiality and anonymity, and a guarantee that this data will not be used for any purpose other than the stated purpose. In addition, the researcher maintained objectivity during the collection and evaluation of the data.

### Validity and Reliability of the Research

Validity and reliability indicators are used for quantitative research. In qualitative research, indicators are credibility, transferability, consistence and verifiability.

Credibility is crucial in qualitative studies. In this study, credibility was ensured through continuous participation, source triangulation and participant control. The researchers' constant presence in the environment and the inclusion of participants with different characteristics is also important in order to determine multiple realities by revealing different perceptions and experiences. In addition, the researcher's presence enabled opportunities to engage with the subjects outside of the interviews, and to discuss and examine the subject matters in question. In this way, the researcher was

able to examine, in more depth, the participants' view of the process and subject matter. The data obtained from interviews was given to the participants after the interviews, in order to confirm and verify their responses.

First, data was cleared of bias as much as possible to ensure consistency, and deductions were supported with both quotations and raw data. Moreover, data in the study were coded from beginning to end by two different researchers and the consistency of these two data sets was examined. To ensure consistency, triangulation was used, with the addition of a third researcher examining the data.

A focused sampling method was preferred to ensure transferability of the research and the research process explained to the reader in as much detail as possible. During the data analysis, raw data, findings, conclusions and suggestions were recorded and checked several times in order to ensure verifiability criterion of other researchers.

**Data Collection Tools and Data Collection Process**

Semi-structured interviews and observations were used as data collection tools in this research. In this way, the researchers attempted to determine some unobservable mental perceptions, reactions, opinions and comments of individuals about the research. Interview questions regarding the sub-problems are shown in Table 2.

Table 2. Binding sub problems with interview questions

| Sub Problems | Related Interview Questions |
|---|---|
| 1) What are the opinions of students about distance education before taking synchronous course via distance education? | What did you think about distance education before taking education via synchronous distance education? Why? |
| 2) What are the opinions of students about distance education after taking a synchronous course via distance education? | What first comes to mind when you hear the expression "distance education"?<br>Did you change your opinions about distance education after taking course via synchronous distance education? Why?<br>To what degree do you think student – teacher interaction can be ensured in synchronous distance education?<br>How did the presence of the teacher in an environment different from the class affect your interest in the course? Why?<br>What are the pros and cons of synchronous distance education?<br>What kind of courses do you think should be given via synchronous distance education? |
| 3) What impacts the perceptions of students about distance education during the educational process? | Did you have any trouble within this process? If any, what are they?<br>Which element did you like most in synchronous distance education?<br>Has there been any change in your opinions about distance education during the process in which you studied? If the answer is yes, what were the factors that lead to this situation? |

In the data collection process, an interview form was prepared by the researchers first. A final version of the form was created by taking the opinions of experts in order to determine content validity of the interview form; in this way, the form was made ready to be implemented. Following this stage, interviews were begun. Interviews were recorded with a voice recorder with the permission of related people in order to prevent data loss and ensure the validity of data.

**Data Analysis**

The descriptive analysis technique was used in analysis of data obtained through interviews. Cassettes recorded during the interviews were transferred to the computer environment by the researchers, and the transcripts were made. Within the framework of the interview questions, transcripts of each participant were coded by repeatedly reading them and forming themes. In addition, themes were supported through reflecting striking views by means of quoting directly from opinions of the participants. Code names given by the researchers (rather than real names of the participants) are in quotations.

**Synchronous Distance Education Environment**

The synchronous distance education environment is an environment where students are in a distance education center and interact with an instructor in a different environment using technological instruments like video conferencing devices, document cameras and a smart board. In addition, there is an assistant coordinating the students in a distance education center, in the environment where this study is conducted. The synchronous distance education environment is

summarized in Figure 1.

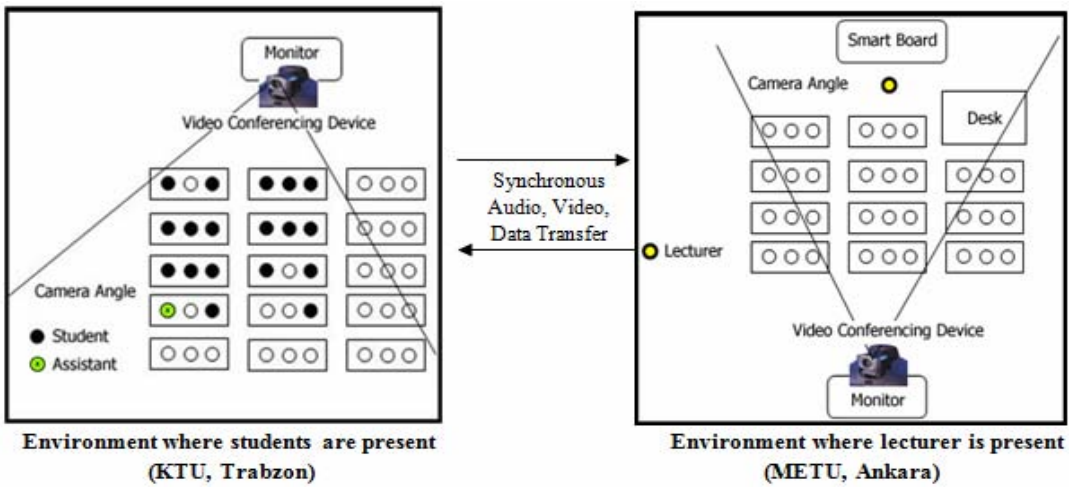


Figure 1. Synchronous distance education environment

**FINGDINGS**

This section presents the findings about undergraduate students' perceptions of synchronous distance education via video conferencing and the factors that caused these perceptions to change. Research questions were examined and analyzed meticulously within the framework of participants' viewpoints. Themes and opinions about each sub-problem, as well as data relating to the courses, were observed in the research process and are presented below, in observation forms.

Data relating to the questions "What are the opinions of students about distance education before taking a video conference-based lecture via distance education?" and "What are the opinions of students about distance education after taking a video conference-based lecture via distance education?", asked in relation with the first and second sub-problems, are presented in Table 3.

When Table 3 about the opinions of participants about distance education before taking a synchronous course by means of video conferencing, it appears that the majority of the participants thought that synchronous distance education was transmitted solely through a web camera or educational CD; and only two participants mentioned that synchronous distance education is a simultaneous and interactive education conducted via the Internet. Comments, below:

- *The first thing coming to my mind was vitamin CDs☺, but I would not like vitamin CDs, either. I used to buy them, but they would remain at home without me using them. (P2)*
- *The teacher would see me via web camera on the computer. We would also see the teacher individually. I thought his / her speech would be transmitted. (P7)*
- *I think of it as learning via internet. Its synchronicity stems from simultaneous education and distance mutual interaction. However, I had never experienced such a thing.(P9)*
- *I had a friend taking that type of course in another university. I heard from him/her that it is a class in which sound and video are conveyed simultaneously. (P6)*

Since a majority of the participants do not have an accurate concept of synchronous distance education, they believe that they will experience connectivity issues that may prevent them from learning or cause boredom, possibly even causing them to fail the course. Comments below:

- *First, I looked for answers to many questions like "Since I am a 4th grade student, how will I pass this course?" or, "How will I establish communication with this teacher?"(P2)*
- *I did not encounter this type of learning and so I did not think it would be very efficient. (P3)*
- *There would definitely be a lack of communication, and I thought I would get bored in the course.(P4)*
- *We take a course called SPSS in which we do practice exercises on the computer. When the electricity fails, our course work is deleted. In the same way, I was anxious that we would not be able to continue the course when connections failed. (P7)*

Although most participants had the biases mentioned above, they also noted that they were excited and wondered about the environment when they heard that they would take courses via synchronous distance education. One participant mentioned that he/she felt uneasy due to his/her biases. Comments below:

- *When we heard it, we said "Did KTU have that?' We wondered what kind of a thing it was?" (P1)*
- *Of course, I got excited since I would take such a course for the first time. Then, I wondered how it would be? (P7)*
- *Technological developments, devices caused me to be surprised. I was somewhat taken back ☺. (P9)*
- *I felt some unease due to certain questions in my mind like "How will that course take place?, Will I understand it?, How will I take notes?, What if I cannot understand?, and Will I be able to hear the sound?" (P8)*

After taking a course via synchronous distance education, participants defined this concept as a method of learning realized through a bidirectional communication between teacher and student in different spaces at the same time. Some participants mentioned that even though this education was different from the videos recorded on YouTube, it is not the same as face-to-face education in terms of communication. Opinions of participants follow, below:

- *It refers to conducting the course simultaneously and reciprocally, in a studio with technological equipment, when it is impossible for teacher to come here. (P1)*
- *It is kind of an education in which this spark in the eyes in individual communication can never be realized (….). It is absolutely different from the videos on YouTube. This is because there is just on –way flow in videos on YouTube as you cannot establish communication with the other part. As for this education, there is a bidirectional flow since we try to convey something to the other participant. (P2)*
- *I did not think there would be so much one-to-one communication. After taking the course, I came to see that education continues in a more one-to-one way and it is processed in the form of discussion and question/ answer.( P3)*
- *Synchronous distance education refers to teacher responding simultaneously to my comments. However, there is distance between student and the teacher. (P6)*
- *In synchronous education, dialogues are not the same as they are with face-to-face education. For instance, I know that you can start a dialogue with the teacher through a word or a sentence in face-to-face education; however, here we may have to repeat the word or sentence a couple of times to enable our voice to be heard. (P5)*

Participants noted that synchronous distance education had advantages in terms of being able to participate in a course from experts in a different space, learning new information in technology-intensive, interesting and comfortable environments, providing time savings for the teacher, compensating for a staff deficiency in the university, learning new ideas, being able to listen to the course records again, providing interactive environments and ensuring rapid access to information:

- *Being able to learn from teachers who are experts in their fields, but who might not be on the staff of our university, is very advantageous for our profession. New things can be learnt from different teachers. (P1)*
- *I did not think it would be one-to- one so much. After taking the course, I came to see that education continues in a more one-to-one way and it is processed in the form of discussion and question/answer. I think this is the greatest advantage of synchronous distance education. It provides quick access to the new information.(P3)*
- *In synchronous distance education we can access better data more rapidly. It enables us to learn new ideas from experts in different spaces. (P4)*
- *I can more easily make up missed classes because classes are recorded. There is no question of not reaching the specialists. That is to say, distance and travel pose no problems. (P6)*
- *It is nice to take course in such a technological class. I listen to the course more comfortably here, while I am careful about my behavior in a normal course. (P8)*

In spite of all of these advantages, participants mentioned that in synchronous distance education, teacher/student communication is weak. They also feel that it is more difficult to get motivated, since the instructor is not physically there, establishing eye contact, etc. Teachers do not get to know them as well, as they are not spending the time together that teachers and students spend in face-to-face learning situations. Also, technical problems can weaken the instructor's command of the class, and therefore students display behaviors not relating to the class:

- *To talk about disadvantages, I can mention lack of motivation, and the problem of eye contact. In this education, teacher just gives the lesson, and we ask our questions. We cannot spend much time with the teacher. Teacher does not even know our names completely.(P1)*
- *I consider the weakness of communication as a great deficiency.(P2)*

- *To talk about disadvantages, we can mention the weakness of teacher's control.(P4)*
- *When the camera does not shoot closely, face of the teacher seems more like a silhouette. Feeling the teacher here is another emotion, I think "This is the greatest disadvantage of synchronous distance education."(P5)*
- *Technical problems make up the greatest disadvantage. In addition, since teacher cannot see us easily, we message each other via cell phones and we can talk to one another easily.(P7)*

Table 3. Student opinions about distance education before and after taking synchronous courses

| | Their Opinions Before Taking the Course | | | Their Opinions After taking the Course | | |
|---|---|---|---|---|---|---|
| | **Ideas** | **Emotions** | **Expected Education Style** | **Positive Ideas** | **Negative Ideas** | **Existent Education Style** |
| **P1** | - | • Bewilderment<br>• Curiosity | - | • Benefiting from experts<br>• Making up the staff deficiency<br>• Learning new information | • Communication deficiency<br>• Eye-contact problem<br>• Weak teacher control<br>• Not knowing the students<br>• Failing to reach every time<br>• Not feeling together<br>• Lack of motivation | • Different spaces<br>• Conversation<br>• Synchronous<br>• One-to-one meeting |
| **P2** | • Anxiety about passing a course | - | • Education in the form of education CDs | • Benefiting from experts<br>• Sound and video are clear<br>• Making up the teacher shortage<br>• Learning new information | • Communication deficiency | • Bidirectional flow<br>• Different from the videos on Youtube |
| **P3** | • Inefficient course | • Curiosity<br>• Uneasiness | • Open education | • Benefiting from experts<br>• Learning new information<br>• Rapid access to information<br>• Interactive | • Communication deficiency<br>• Being able to behave not related to the course<br>• Time limit | • Synchronous<br>• One-to-one meeting |
| **P4** | • Sound problem<br>• Boredom<br>• Communication gap | • Curiosity | • Asynchronous education | • Interest in the course<br>• Different views<br>• Rapid access to information | • Weak teacher control<br>• Being able to behave not related to the course | • Synchronous<br>• Mutual Education |
| **P5** | • Connection problem | • Curiosity | - | • Obtaining a different viewpoint<br>• Course records<br>• Continuity of the course<br>• Bringing distant places closer | • Visual problem<br>• Not feeling together | • Not like face-to-face education |
| **P6** | - | • Bewilderment<br>• Curiosity | • Mutual transmission of sound and image | • Benefiting from experts<br>• More motivation<br>• Course records<br>• There is no distance problem | • Impossibility of face to face<br>• Weak teacher control<br>• Not knowing the students | • Mutual Education |

| | | | | | | |
|---|---|---|---|---|---|---|
| **P7** | • Anxiety about failing a course | • Curiosity<br>• Excitement | • Education via web-cam | • Benefiting from experts<br>• Making up the teacher shortage<br>• Feeling relaxed<br>• Taking a better course<br>• Course accessibility<br>• Course records | • Visual problem<br>• Impossibility of face to face<br>• Technical problems | • Synchronous Distance Education |
| **P8** | • Inefficient course | • Uneasiness | • Education via web-cam<br>• Education in the form of education CDs | • Technology intensive class<br>• Paying attention completely to the course<br>• Comfortable environment | • Communication deficiency<br>• Eye-contact problem<br>• Not knowing the students | • Different spaces<br>• Mutual Education |
| **P9** | - | • Bewilderment | • Education via Internet | • Benefiting from experts<br>• Course records<br>• Question-answer possibility<br>• Feeling relaxed<br>• More motivation | • It decreases sociability<br>• Connection problem | • Synchronous distance education<br>• Conversation<br>• Visual education |

The students' opinions about the synchronous distance education via video conference before and after taking the course are summarized in Figure 2.

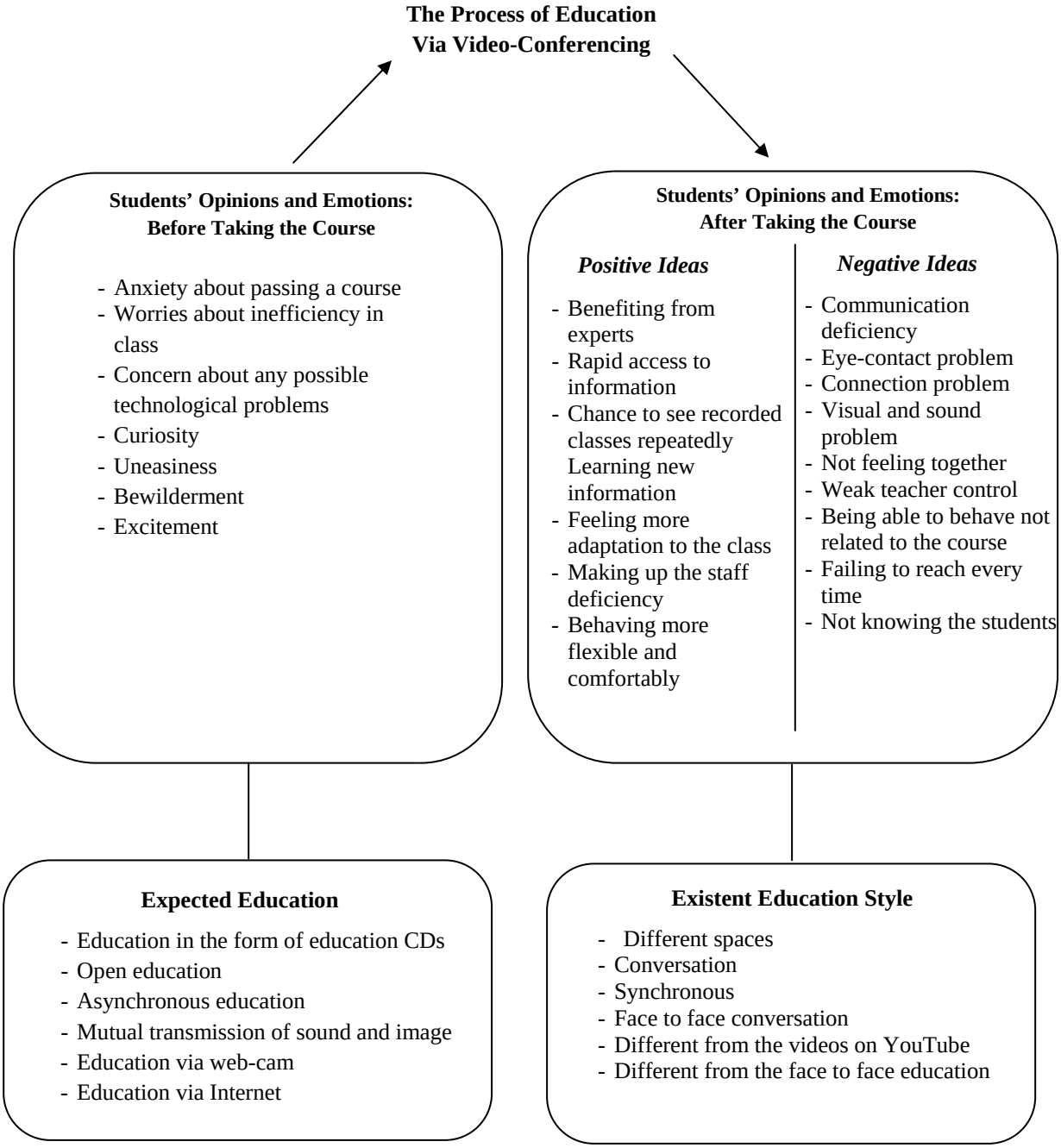


Figure 2. The opinions of the students taking synchronous distance education via video conference

Data relating to the question "What impacts the perceptions of students about distance education during the educational process?" (answering the third sub-problem questions) are presented in Table 4.

Table 4. Factors influencing perceptions of synchronous distance education

| | Technical Problems | Teacher | Medium | Type and Duration of the Course | Distance |
|---|---|---|---|---|---|
| **P1** | • Sound problem<br>• Connection problem<br>• Unable to see teacher in detail | • There is no interaction after the course<br>• The in-class interaction is insufficient<br>• Lack of classroom control<br>• Unaware of student needs | • The technologies used (Smart Board, Document Camera..etc.) | • Long term course<br>• Appropriate for the verbal courses | - |
| **P2** | - | • There is no interaction after the course<br>• Type of expression of the course | • Comfortable environment<br>• Design of the environment is appropriate (order of seating, illumination etc.) | • Appropriate for the verbal courses | • Comfort of being in a different space |
| **P3** | • Voice interrupt | • The in-class interaction is good | • Lack of camera<br>• The technologies used | • Appropriate for the verbal courses | • Feeling relaxed |
| **P4** | - | • Partial in-class interaction<br>• The class control is inadequate | - | • Long term course<br>• Appropriate for the verbal courses | • Comfort of being in a different space |
| **P5** | • Sound problem<br>• Eye-contact problem | • The in-class interaction is good<br>• There is no interaction after the course | - | • Appropriate for the verbal and numerical courses | - |
| **P6** | • Audio echo<br>• Connection problem | • There is no interaction after the course | • Screen is too high<br>• The technologies used | • Appropriate for the verbal courses | • Feeling relaxed |
| **P7** | • Audio echo<br>• Connection problem | • Partial in-class interaction | • Camera angle problem<br>• The technologies used | - | • Not being under stress |
| **P8** | • Voice interrupt<br>• Connection problem | • The in-class interaction is very low<br>• Lack of classroom control | • Place of the camera<br>• The technologies used | • Appropriate for the verbal and numerical courses | • Paying attention completely to the course |
| **P9** | • Sound problem<br>• Visual problem | • Partial in-class interaction<br>• There is no interaction after the course | • Design of the environment is appropriate<br>• The illumination is sufficient | • Appropriate for the verbal and numerical courses | • Paying attention completely to the course |

***Technical Problems***

By examining the table presenting the factors that affected the participants' perceptions of distance education during the synchronous course, it was determined that they faced a communication gap because of connection problems that caused cuts in the sound and image. It was also observed that the teacher did not recognize the drop in his/her students' attention and continued the class for long periods oblivious of the communication gap. Furthermore, the students stated that they

encountered problems such as not seeing the teacher clearly and not making eye contact. The participants' opinions about these issues are given below.

- *There were disconnections from time to time. In addition, since the teacher was not directly together with us, we were sometimes distracted. Another point is that the volume levels of the equipment meant that sometimes we could not hear the teacher or the teacher could not hear us. (P1)*
- *Making eye contact with the teacher was not possible. For me, eye contact is important in class. (P5)*
- *In the first weeks, the camera and sound were constantly cutting off. For that reason, we could not adapt to it.(P8)*
- *There were problems with the screen image quality and the sound during the course. This situation distracted me and made me dislike the classes. (P9)*

***Teacher***

The participants noted that the in-class and out-of-class communication were weaker than the conventional training, and as a result their social relations were insufficient. Observations also revealed that the teacher-student communication was weak in the first weeks; however, communication improved in the later weeks. Besides, the fact that the teacher cannot address his/her students' needs causes them to lose control of the class. The opinions of the participants about this issue are as follows:

- *According to me, the teacher should easily recognize when students are distracted but somehow is unable to realize when this occurs. (P1)*
- *First of all, I did not think that the interaction at that level could be provided. Teaching the lessons by discussions, questions-answers contributed to the in-class interaction.(P3)*
- *We can count the teacher's weak control as a disadvantage.(P4)*
- *We do not see the teacher after the course. In my opinion, distance education is not effective enough in terms of social relations. (P5)*

***Medium***

The participants liked the design of the synchronous class environment and availability of technological devices such as the smart board. They are satisfied learning new information from the specialists in a more comfortable environment than the conventional class environment. Besides, there are some difficulties faced in the one-to-one interaction because of certain environmental factors such as order of seating, the height of the curtain, the number and the angle of the cameras. The opinions of the participants are as follows:

- *I liked the smart board. (P1)*
- *You are more comfortable than in the (regular) class. I like it. You learn new things from people expert in their fields. In the simplest terms, even design of the environments is very different. One feels inspired to take lessons in this environment. (P2)*
- *It would be better if there were cameras in several places. This is because since we have a limited angle of view, we can not understand how much the instructor can see and we could not sense his/her body language.(P3)*
- *I saw new technology. (P7)*
- *The locations of the cameras were different for the first weeks. The instructor could not see us at all. This situation affected the interaction. (P8).*

***Type and Duration of the Course***

The participants stated that the type of course affected learning in the synchronous distance education via video conference. While five of the participants noted that the verbal courses should be taught via synchronous distance education, three of them suggested that the numerical courses should be taught via synchronous distance education. In addition, they expressed how negatively they were affected by courses that continued for long periods:

- *As for me, not all the courses should be given via distance education. The courses depending on practice rather than verbal courses should not be given via distance education. (P1)*
- *Listening to these lessons for long periods creates boredom. (P4)*
- *As well as verbal courses, numerical courses can be taught. (P5)*

***Distance***

Some of the participants stated that their teachers' location in a different environment made them feel comfortable and increased their attention:

- *Since there is no one always controlling and judging you, you are more comfortable. In this type of education, the teacher's pragmatic and informative identity comes to the forefront. (P3)*
- *You are more comfortable here and you can listen to the lessons better. This situation absolutely increased my interest in the course. (P4)*
- *The teacher in a different place enabled us to feel more comfortable. Synchronous distance education increased my interest in the course. (P7)*

In the light of the findings above, the factors affecting students' perceptions of distance education via video conference can be summarized in Figure 3.

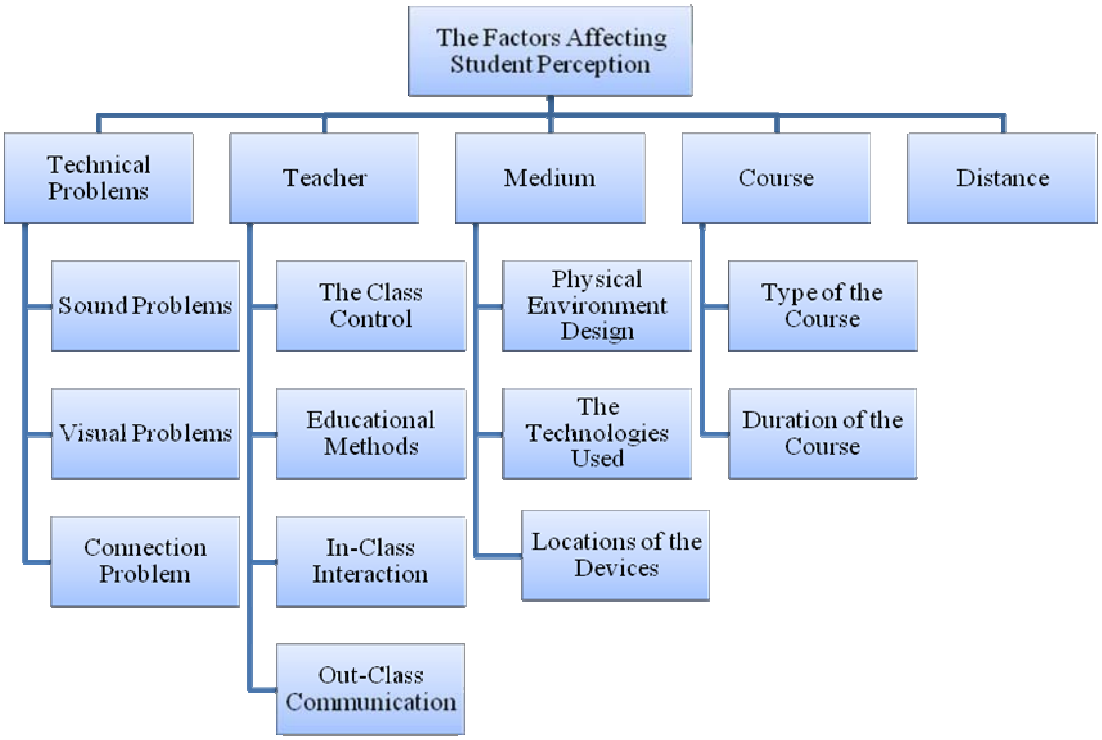


Figure 3. The Factors Affecting Student Perception

The researchers had the opportunity to observe all courses taken by the participants by staying in the environment from the beginning of the term. The observation data obtained in this process is presented in Table 5.

Table 5. Data relating to the observation findings

| **Themes** | **Codification** | **Weeks** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| **Technical Problems** | Audio | X | X | | | X | X | | X | | |
| | Video | | X | X | | | | | X | | X |
| | Connection problem | X | X | | | | | | | | |
| **Teacher** | The Class Control | | | | | | | | | | |
| | *Providing the Silence* | | | X | | X | | X | | X | |
| | *Realizing the Needs of the Students* | | | | X | X | | | X | | |
| | *Noticing the Tardy Student* | | | | | | | X | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Noticing the Misbehavior* | | | | X | | X | | | | |
| | Educational Methods Used | | | | | | | | | | |
| | *Expressional Method* | X | X | X | | | X | | X | | |
| | *Question-Answer Method* | | X | X | X | X | | X | | X | X |
| | *Discussion Method* | | | | X | X | | | X | X | X |
| | In-Class Interaction | | | | X | X | | X | X | X | X |
| | The Technologies Used | | | | | | | | | | |
| **Medium** | *Smart Board* | | X | X | X | X | X | X | X | X | X |
| | *Document Camera* | | | X | | | X | | | | |
| | Duration of Course | | | | | | | | | | |
| **Course** | *50min+ 40min* | X | X | X | | | X | X | | | X |
| | *60min + 30min* | | | | X | X | | | X | X | |

It was determined during observations that there were more problems related to sound and video in the first weeks. However, in later weeks, these problems decreased by changing the video conference venue and arranging other changes. As a result of those changes, teachers were better able to determine which students were arriving to class late. However, both the camera angle and the inability of the teacher to monitor the class from afar were factors in enabling student behaviors that had nothing to do with class. Also, the visibility problems stemming from the low image resolution caused the teacher to neglect some of the students' needs. In spite of all of these negative situations, the teacher tried to increase the in-class interaction by making the students participate in the class with question-answer and discussion methods. However, it was observed that the in-class participation was not realized adequately because of the technical problems and the students' recessive behaviors. It was detected that the teacher benefited from the smart board technology for presentations and making drawings. In addition, the document camera was used for sharing the notes in the printed documents. The duration of the classes were generally 50 minutes+40 minutes, while for other classes the duration was 60 minutes+30 minutes. Nevertheless, another observation was that students were distracted after a while in these long lessons.

**CONCLUSION AND DISCUSSION**

Interpreting the findings obtained with this purpose, the following results can be reached. The objective of this study was to discover how undergraduate students perceive learning through taking courses via synchronous distance education by means of video conferencing, and their opinions on this and distance learning.

We observed that the students had prejudices about the synchronous distance education in the definitions they made before they took the courses because they generally did not have knowledge about the program or they had false information. However, it was clear from the interviews that these perceptions began to change with the opportunities provided by the synchronous distance education.

In light of the research data, there are five main factors causing student perceptions of synchronous distance education to change. These factors are defined as: technical problems, the teacher, the environment, the course and the distance.

In this study technical problems take the lead among the factors affecting the students' perceptions. Students had negative perceptions about technical faults such as cuts and echoes of the sound, the freezing of the image and communication cuts that distracted them during classes. Gillies (2008) stated that faulty technology caused students to feel as if they were not real students. This conclusion is in compliance with the study carried out by Koppelman and Vraklen (2008). In addition, another result obtained is that since the screen image quality was not very high, students had difficulty in making eye contact with the teacher and therefore lost their motivation. This factor negatively affected their opinions about distance education.

In the Gillies' study (2008), the students regarded the impossibility of seeing the teacher outside of specific time periods as an insufficiency. The same results were obtained in the present study. Students stated that the insufficiency of interaction outside the class prevented being closer and intimate with the teacher. Moreover, the students noted that in-class interaction with the teacher provided more pleasant courses and depended on the teacher's phrasing methods. In the end, it was

determined that interacting with the teacher affected student perceptions positively for those students taking courses via synchronous distance education. Students also stated that they took the class more seriously when the teacher exhibited good control over the class, realized what was happening and responded appropriately. Otherwise, some students might misbehave because they would think that the teacher could not see them.

An educational environment consisting of technologies such as the smart board and document cameras designed according to the contemporary understanding of education holds the students' attention and increases their desire to take lessons via these environments. In the research of Martin (2005) and Marsh et al. (2010), it was also observed that students liked the educational environments in which the new technologies were used. In addition, the locations of the devices in the class environment are important for the students. In the interviews, participants noted that classes were adversely affected if the teacher could not see them exactly because of improper camera positioning.

It was found that while the teachers' location in a different environment (distance factor) affects some students positively, it affects others negatively. Some students stated that they were better motivated by their long-distance teacher and that they listened to lectures without feeling under stress. However, some students noted that this situation affected them negatively and they were distracted by things unrelated to the course.

Most of the students think that the courses with special contexts are more appropriate for the synchronous distance education. They noted that these kinds of courses could be given easily with discussions and questions-answers. Long lectures also affect the students negatively. In the observations, it was also seen that the students became bored and distracted when the classes continued for long periods. In a study carried out by Koppelman and Vraklen (2008), the students stated that the classes lasting for short periods and with frequent intervals were more effective and thus they had no problem keeping their concentration.

When the findings were evaluated within the frame of Rogers's Theory, students' perspectives on the video-conference based course which can be regarded as an innovation for the students and their adoption process to this innovation were shown. According to Rogers, the adoption process of an innovation consists of five stages. When the findings were evaluated within the scope of these stages;

In the *knowledge* stage, the question of how a video-conference based course would be handled, first appeared in the minds of students, then they had knowledge of the innovation primarily via both sensations gained from the environment and research carried out by themselves.

In the *persuasion* stage, it was observed that students started questioning what kind of benefits a video-conference based course would provide. At this stage, a person was convinced as to the use of this innovation via both their course experiences and considering the benefits of video-conference based course (easy access to experts, quick access to information, etc). It was identified that after taking a video-conference based course, the loss of anxiety which existed before, acted positively in persuasion.

In the *decision* stage, a person should decide to use the innovation. At this stage, a person either adopts the innovation and uses it or rejects it. When the findings were examined, it was observed that some of the interviewed students considered the innovation as useful, convenient and worth trying and *adopted* it; the rest could not adopt the innovation enough and *rejected* it since the inconveniences experienced in the implementation process (technical problems, etc.) caused a disadvantage.

**SUGGESTIONS**

When examining the factors affecting the students' perceptions of synchronous distance education via video conference, we hypothesize that there will be positive changes in the opinions of the students about distance education and more fruitful courses will be offered on condition that the factors causing negative perceptions are minimized. For this reason, the following suggestions may be taken into consideration:

- ✓ It is thought that introducing the system to the students before they take a synchronous course via video conference will reduce students' prejudices and misunderstandings before the course begins.
- ✓ Since network technologies provided for the synchronous course via video conference have wide bandwidth, it may be possible to minimize problems such as screen freeze, break in sound, echo and the eye contact problem resulting from low screen resolution. .

- ✓ A technician present in the distance learning classroom could deal with the technical problems of connection cuts, thus reducing the time of the cut and keeping the lesson going before students become too distracted.
- ✓ The teachers giving synchronous distance education should prefer educational methods and techniques in which they can activate the students and interact with them rather than using only the expressional method.
- ✓ The institutions organizing the synchronous distance education should not be content with only getting the students and the teachers together. These institutions should provide the students a way to meet the teacher outside the course hours in order to ask any questions and chat with the teacher.
- ✓ The teacher should make the students realize that he/she maintains authority in the class by warning them rather than ignoring misbehavior, noise and latecomers.
- ✓ The students' interests and motivations will be sustained on the condition that the video conference-based lectures are taught in short periods with frequent intervals.
- ✓ The visual materials should not dominate the lesson, and teaching verbal courses using a context of discussions and questions-answers will be more beneficial.
- ✓ It is hoped that this study will be a significant and quality source for future studies.

**REFERENCES**

Anastasiades, P. S., Filippousis, G., Karvunis, L., Siakas, S., Tomazinakis, A., Giza, P. & Mastoraki, H. (2010). Interactive Videoconferencing for collaborative learning at a distance in the school of 21st century: A case study in elementary schools in Greece. *Computers & Education*, 54(2), 321–339.

Aşkar, P. & Halıcı, U. (2004). E-learning as a catalyst for innovation in education. In Gauido, C. (ed). E-Educational Applications:Human Factors and Innovative Approaches. (pp.196-206). London: IDEA Publications.

Bates, A. (2005). Technology, e-learning and distance education (2nd ed.). Abingdon, UK: Routledge.

Bonk, C., Malikowski, S., Angeli, C. & Supplee, L. (1998). Holy Cow: Scaffolding case-base Conferencing on the Web with preservative teachers. San Diego: American Educational Research Annual Meeting.

Brown, B. & Liedholm, C. (2002). Can web courses replace the classroom in principles of microeconomics? *American Economic Review*, 92(2), 444–448.

Champion, D. J. (1993). Research Methods for Criminal Justice and Criminology. Englewood Cliffs, NJ: Prentice Hall.

Delaney, G., Jacob, S., Iedema, R., Winters, M. & Barton, M. (2004). Comparison of face-to-face and videoconferenced multidisciplinary clinical meetings. *Australasian Radiology*, 48(4), 487–492.

Driscoll, M. (2002). Web-based training: Creating e-learning experiences. San Francisco: Jossey-Bass/Pfeiffer.

George, A. & Bennett, A. (2005). Case study and theory development in the social sciences. Cambridge: MIT Press.

Gillies, D. (2008). Student perspectives on videoconferencing in teacher education at a distance. *Distance Education*, 29(1), 107-118.

Gough, M. (2006). Video Conferencing Over IP Configure, Secure, and Troubleshoot. Syngress Publishing, Inc.

Hackman, M. Z. & Walker, K. B. (1990). Instructional communication in the televised classroom: The effects of system design and instructor immediacy on student learning and satisfaction. *Communication Education*, 39, 196–206.

Hagan, F. E. (1993). Research Methods in Criminal Justice and Criminology. New York: Macmillan

Hearnshaw, D. (1998). Capitalising on the strengths and availability of desktop videoconferencing. *Active Learning*, 7, 52–59.

Horton, W. K. (2000). Designing web-based training: How to teach anyone anything anywhere anytime. New York: John WileyandSons.

Knipe, D. & Lee, M. (2002). The quality of teaching and learning via videoconferencing. *British Journal of Educational Technology*, 33(3), 301–311.

Koppelman, H. & Vranken, H. (2008). Experiences with A Synchronous Virtual Classroom in Distance Education, ITiCSE'08, Madrid, Spain, 194-198.

Marsh, B., Mitchell, N. & Adamczyk, P. (2010). Interactive video technology: Enhancing professional learning in initial teacher education, *Computer & Education*, 54(3), 742-748.

Martin, M. (2005). Seeing is believing: the role of videoconferencing in distance learning. *British Journal of Educational Technology*, 36 (3), 397-405.

Motamedi, V. (2001). A critical look at the use of videoconferencing in United States distance education. *Education*, 122, 386–394.

Newman, S. (2008). Videoconferencing and the K12 classroom: What is it? And why do it? In D. Newman, J. Falco, S. Silverman & P. Barbanell (Eds.), Videoconferencing technology in K-12 instruction, best practices and trends. Hersley-New York: Information Science Reference.

Reinhart, J. & Schneider, P. (1998). Foundations for creative effective two-way audio/video distance education environments: Issues of self-efficacy. Paper presented at the American Educational Research Association Annual Conference, San Diego. CA

 

Rogers, E. M. (1995). Diffusion of innovations. 4th Edition, New York, NY: The Free Press.
Rosenberg, M. J. (2001). E-learning: Strategies for delivering knowledge in the digital age. Newyork: McGraw-Hill.
Schweizer, K., Paechter, M. & Weidenmann, B. (2003). Blended learning as a strategy to improve collaborative task performance. *Journal of Educational Media*, 28, 211–224.
Şimşek, A. (2008). The wholeness teaching in history lessons: A perspective essay from Gestalt approach to Holistic approach. *International Journal of Human Sciences*, 5(2), 1-16.
Umphrey, L. R., Wickersham, J. A. & Sherblom, J. C. (2008). Student perceptions of the instructor's relational characteristics, the classroom communication experience, and the interaction involvement in face-to-face versus video conference instruction. *Communication Research Reports*, 25(2), 102-114.
Watkins, C. (2002). Videoconferences can bridge the gap. American Libraries, 33(11), 14. Retrieved September 10, 2009 from Library Literature and Information Science Full-text database.
Wheeler, S. (2005). Creating social presence in digital learning environments: A presence of mind? Paper presented at the TAFE Conference, Queensland, Australia. <http://videolinq.tafe.net/learning2005/papers/wheeler.pdf> Accessed 21.11.09.
Wheeler, S. & Amiotte, S. (2004). The death of distance: Documenting the effects of distance education in South Dakota. *Turkish Online Journal of Distance Education*, 6(1), 76–83.
Yıldırım, A. & Şimşek, H. (2006). Sosyal bilimlerde nitel araştırma yöntemleri. (Qualitative Research Methods in Social Sciences). Ankara: Seçkin Publishing.
Yin, R. K. (1994). Case Study Research: Design and Methods (2nd ed.). Beverly Hills, CA: Sage.