AN ANALYSIS OF DEAF STUDENTS' PERCEPTIONS ABOUT USAGE OF INFORMATION AND COMMUNICATION TECHNOLOGIES FOR THEIR EDUCATION

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Abstract

Deaf children are interested in their environment like all other children as soon as they are born, however, they often differ in their hearings, voices and expressive skills that are needed for essential everyday communication. In this context, the most distinctive characteristics of deaf students that they are not always able to learn spoken language in a natural way, mostly they receive information through communication. It is observed that deaf students have problems in communication skills which are typically reflected in their reading, comprehension, speaking, and writing skills. Being below the level of hearing children in using spoken language skills can affect their cognitive, social and emotional developments negatively. Further, social pressure and lack of self-confidence may cause these children to have psychological learning problems in mainstream settings so many deaf

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students continue to need special education services. In order to meet these needs, it is necessary to create a differentiated environment according to their impairment levels and to provide equipment and opportunities to be able to experience education with using Information and Communication Technologies (ICTs). However, there is limited research about how Information and Communication Technologies are used in education of deaf students who study in Special Education Vocational High Schools for the Deaf in Turkey. Therefore, this study aims to examine the use of ICTs in schools and classes during the education of deaf students. In this study, semi-structured interview method as a research method was used as one of the qualitative research methods. The data were collected through semi-structured interviews developed by the researchers. The collected data were analyzed using a 'Content Analysis Technique.' According to the findings, deaf students are positive about ICTs using during their education such as computer, projector and smart boards. Further, it was found that teachers did not have enough knowledge about ICTs and software which should used in the education of deaf students.

Key words: deaf students, special education, technology use, ICTs, special vocational high schools for the deaf

1.   INTRODUCTION

Speaking skills are one of the main distinctive features among human languages and this also emphasizes that the most effective way for satisfying social life can be provided by effective communication with the environment (Topbaş, 2011). While people generally use

hand gestures for communication in addition to the spoken language, deaf people depend heavily on hand gestures as a way of communication (Abuzinadah, Malibari and Krause, 2017). The simple fact is that deaf people who attend the common residential schools for the deaf no matter what mode of communication is forced on them in the classroom tend to seek out other deaf people and communicate in sign language and this focuses on community and culture (Sarı and Söğüt, 2010). The quality of hearing is crucial for individual development.

Hearing loss can be classified from mild to profound and it is an impairment that can be described sub-groups based on degree of hearing loss or communication preference, such as 'deaf', "hearing impaired" and 'hard of hearing' (Sarı, 2013). Deafness is described as follows in the Special Education Services Legislation of Turkey (2012): "A situation in which a special individual is affected negatively in education and social adaptation because of the difficulty he/she has in speaking, using the language and communication which is because of loss of hearing sensitivity partly or completely. According to the Turkish Ministry of National Education Statistics in 2014-2015, there are 6239 hearing-impaired students in 51 Special Education Primary Schools. 4265 of these students stay in dormitories, 1974 students live with their families. Further, there are 768 students in inclusive classrooms, 414 students in special schools, 931 students (8 of whom are in multi-programmed high schools) are being educated in Special Vocational High Schools for the Deaf (Sarı, 2016).

Deafness, at first, seems to limit only spoken language development, in other words,

they have lack of aural/oral communication skills. Whereas a child who has permanent deafness faces also many obstacles that may hinder all his/her development and their adaptation to broader curricular issues (Kluwin, Stinson and Colarossi, 2002). Generally, deafness delays speaking and articulation and voice disorders (Ersoy and Avcı, 2001). In addition, his/her cognitive and motor skills, and emotional development, literacy, writing, listening, and speaking skills which are important for daily lives or for their education and successes in schools, may be affected negatively if the Information and Communication Technologies (ICTs) are not used in their education. It may be harder for these students to be able to learn academic skills compared with their hearing peers since they are not able to receive verbal-auditory inputs in spoken language environments and establish conceptual connections between spoken words and visual perceptions and behaviour because of lack of oral inputs without ICTs. Due to inadequate communication skills, hearing impaired students are exposed to loneliness, exclusion and social isolation. Often, the inability of deaf students with hearing students to communicate easily and directly makes group participation difficult for the deaf students (Stinson, Liu, Saur and Long, 1996; Antia, Sabers and Stinson, 2006).

In education of deaf students, the main objectives should be helping these students to improve their best communication skills and developing these skills as much as possible (Karal, Şılbır and Küçüksüleyman, 2009). For this, major instrument of the education in classrooms is using ICTs effectively. ICTs can make it possible for deaf learners without effective speech to interact with their hearing peers in an educational setting, allowing synchronous communication between students and others (Lartz, Stoner and Stout, 2008;

Shepherd and Alpert, 2015). In other words, ICTs may be received with the help of information related to academic subjects that individuals developed to check and change the physical settings (http://tdk.gov.tr/, 2015). Information and Communication Technologies (ICTs) include all technologies for manipulation, ICTs encompasses any medium to record information for broadcasting information such as radio, television, camera and loudspeaker (Salaudeen, 2015).

The Ministry of National Education in Turkey is responsible for deaf students to provide all ICTs for their education (Demirhan, 2008). Turkey Statistical Informatics Council of Education Work Group reported (2004) that The Ministry of National Education gave financial support to many state schools for the deaf regularly, for getting ICTs equipments (Sezer, 2011). Therefore, it can be concluded that there are some developments on using ICTs in class activities in Turkey. Using computers as being Information and Communication Technologies (ICTs) in the education of deaf students and teaching helps them to become more active during their teaching time while they are passive in the class. Besides, it is important to use ICTs in this process since it makes abstract concepts more perceptible, easy to learn and keeping in mind, increase the students' motivation and draw students' attention to the task for a long time. In addition, the students whose self respects increase by using ICTs can feel more freedom, more success, start to have positive attitude towards education and has an increasing interest on teaching activities (Baykoç, 2014). It has been observed that computer aided education not only increases the success but also improves high level thinking skills of deaf students (Çal, 2011).

The teacher, at first, needs to choose suitable ICTs in the lessons and benefit from the materials that would draw deaf students' attention (Karal and Çiftçi, 2008). It was emphasized that an effective ICTs that would be prepared for the deaf must depend on games, pictures and animations (Karal and Çiftçi, 2008). The use of ICTs allowed for greater repetition of the material and more indepth knowledge about learning activities. When activities are not prepared with ICTs, it is not possible for the deaf to develop their cognitive progress, system of thought and learning new things by searching the environment with their own because they can have inadequate information with their communication skills (Ersoy and Avcı, 2001).

Teacher has an important function in this process he/she will be guiding ICTs and establish the connection with the other students via technologies. Before applying ICTs teachers and students should be involved in education process which they should learn using an ICTs (Baykoç, 2014; Özbek, 2015). Because of negative attitudes towards ICTs known as complicated and expensive it may be postponed the use of ICTs (Yanpar, 2009). Moreover, not having enough ICTs equipments at schools, teachers of the deaf may have many difficulties to acquire enough knowledge of the deaf. Most of deaf students cannot receive enough knowledge and detailed information because of lack of knowledge on how to use ICTs in Turkey. Involvement of deaf students in education with ICTs classes, necessary equipments and personal-group hearing aids are essential (Demirhan, 2008). The teachers should adopt ICTs use to increase their positive improvements by taking their potentials (Karal, Şıbır and Küçüksüleyman, 2009).

When the researches were examined, it was found that using ICTs in the education of the deaf students increased the academic success ((Demirhan, 2008; Karal and Çiftçi, 2008; Baker, 2010; Bayrakdar and Çuhadar, 2015), self-confidence and motivation (Çuhadar, Odabaşı and Kuzu, 2008). However, it seemed that there is a need to do research which tries to explore what kind of views deaf students have because it seemed to have few research on using ICTs during their education. Therefore, the purpose of this study is to determine deaf students' views on ICTs use which should be used during their education.

2.   METHOD

In this section, information about research method, developing stages of the data collection instruments in this study, implementing the data collection instruments and the data analysis collected for this study are presented.

2.1 The Research Model

In this research, semi-structured interview method as one of qualitative research method was used to explore views of the deaf students about using ICTs during their education. Semi-structured interview method was selected as a research method in which collecting data is via interviews (Büyüköztürk, Çakmak, Akgün, Karadeniz and Demirel (2015). As Kıncal (2015) recommended, it was important in this research the collected data should be in detail and in depth and the opinions and experiences of the students mentioned previously in the research to be presented as directly as possible. In addition, this method

was selected because the researchers wanted to understand the deaf students' views deeply and thoroughly about using ICTs in education. In this research, the researchers developed the interview questions beforehand and they allowed redesigning the developed questions during the piloting in which four deaf students were involved who were excepted from the main study.

2.2. Study Group

The study group of this research consisted of 30 deaf students who are educated in Special Education Vocational High Schools for the Deaf in Konya. For the study group, cluster sampling technique was used because this technique is a subset of a statistical population in which each member of the subset has an equal probability of being chosen (Yıldırım and Şimşek, 2016). Before beginning to study, a contract was signed with the students and they were given information about the research aim and process before they were involved in the study. It was emphasized that only the volunteer students could be interviewed and those who were not volunteer would not be interviewed. Therefore, in the research all participants were all volunteers.

Table 1. *Demographic Informations of Deaf Students Participated in this Study*

Features		N	%
Gender	Females	9	30
	Males	21	70

Age	15-18	18	60	
	19-21	12	40	
Class	1st	5	16,7	
	2nd	9	30	
	3rd	6	20	
	4th	10	33,3	

As it is seen in Table 1, approximately one third of the students (9; 30%) were females and more than two thirds of the students who participated in this research were (21; 70%) males. Further, it was seen that more than half of the students (18; 60%) were 15-18 years old and more than one third of the studens (12; 40%) were between 19 and 21 years old. While few of the deaf students (5; 16,7%) were 1st graders, approximately one third of the students (9; 30%) were 2nd graders, some of them (6; 20%) were 3rd graders and one third of them (10; 33,3%) were 4th graders.

2.3.Data Collection Instruments

In this research, the data were collected with the help of semi-structured interview form developed by the researchers. The questions were prepared with the reflection of literature review and evaluated by the researchers in terms of deaf students' needs on using Information and Communication Technologies (ICTs). Prompts which are appropriate to the content of each questions were developed in the light of information obtained from literatüre. Then, the three item semi-structured interview form was

prepared to use in this study. The developed form was revised by three professionals, and then the form was redesigned according to their revisions. The interview forms were sent to the professionals again for being examined. After some suggestions were taken from the professionals, modified items along with prompts get the final form and it became the main form to be used in the main study. Three students were interviewed for the piloting, at the end of the pilot study, questions were reviewed again by the professionals to make unclear questions understandable. The revised form were adopted and adapted to the participants and there were three questions to be able to collect the data in the form for this study as below.

What kind of ICTs do deaf students need during their education?

What are the views of deaf students about teachers' use of ICTs during their education?

What are the views of deaf students about the benefits of ICTs which were used during their education?

2.4. Data Collection Process

With each question in the interview, it was aimed to explore the views of deaf students about ICT use and what kind of ICTs are used during their education. The data collected via semi- structured interview form were recorded with a videotape recorder. The participants were told that the interview would be recorded and the videotape records would be used only for the research aims but not used for any other purposes.

Thus, negative attitudes towards the videotape recordings were eliminated. After completing the interviews without making any changes on videotape records the data in the interview forms were transcribed then were analyzed. Each line was coded on the basis of the key thoughts written on the form. Reading the coded pages very carefully, each keypoint was written on the right side of the paper. Then by counting the keypoints, the frequency and percentage values were calculated and the data were presented as they were in 'The Findings' Section.'

2.5. Data Analysis

The acquired data from the interviews were analysed with the light of 'Content Analysis Technique.' After completing the interviews without making any changes on the videotape records, the transcripts of the data in the interview forms were written and then by coding each line, the content analysis technique was used to be able to analyse of the data. As reported in Yıldırım and Şimşek (2016), 'Content Analysis Technique' provided opportunity to figure out the initially specific themes and it required the collected data to be analyzed deeply.

After transcribing the data for each question 'Interview Coding Key' which have categories consisting of each question, was generated. In generating interview coding key, iterviews and interview coding keys were given to the professionals and required parts of coding key were changed in the light of the obtained data. After taking its final form, one of the interview transcript was selected, then evaluated by three professionals

and it was marked under the category of appropriate students' views. By analysing the consistency between the interview coding keys, comparisons of the data were made.

In the calculation of reliability, formule of 'Consensus/Consensus + Unconsensus' was used. During comparisons, the formula of Consensus and Unconsensus points was taken into account. It was appeared that there were consensus in two questions and unconsensus in one question of the semi-structured interview form which was used for the data collection in this study. In the analysis, it occured that the mean of reliability among evaluators was eighty-seven percent (87%). In other words, the data were high reliability for the acceptable and can be used for future study as well.

FINDINGS

In this section, in accordance with the data raised from deaf students' perceptions as participants about the usage of ICTs during their education, the findings are presented below.

The Needs of Deaf Students on the Use of ICTs

Two thirds of the students (20; 67%) who participated in the study stated that they needed ICTs in their education. They stated that the classes did not have ICTs but there should be ICTs in the classes. According to these students, all agreed with the idea that if only they were used correctly, the ICTs would become indispensable for them. However, they sadly stated that ICTs were not used adequately and they believed ICTs did not provide for them to reach the same academic level with their peers. The

quotations from the views of students taken from the transcripts were presented below.

''ICTs are one of the indispensable parts in our lives to survive without asking for any help from others'' (S20).

''We really want to use ICTs in our classes because we think that we will be more successful in this way, but ICTs do not provide for us same educational opportunities with our peers'' (S4).

Approximately a third of the students (7; 23%) stated that they needed ICTs in the classrooms. The students indicated that when teacher used these tools, they understood the subjects easily and felt comfortable because the ICTs help them understand the terms which they did not understand before. The quotations from the views of students taken from the transcripts were presented below.

''Think of a classroom in which you feel comfortable yourself and that makes you did not understand that you can't hear, see and walk. I don't want to be in such classrooms in which I would even forget easily the fact that I can't hear and see very well'' (S19).

'' ICTs are essential in our lives. For this reason if the classrooms are equipped properly they will provide a high quality of education for us and ICTs should be in all classrooms'' (S30).

Some of the students who participated in this study (3: 10%) stated that there should be ICTs such as smart boards. They stated that the classroom should be turned to

enjoyable learning environment. According to the students, when teacher used ICTs such as smart boards in deaf education, they could present the content of lesson in different forms. Deaf students thought that this could provide deaf students with an enriched learning experiences by projecting audio-visual elements. The quotations from the views of students taken from the transcripts were presented below.

''Some basic changes would be enough for us. The environment of classroom in which we don't feel incomplete have always been more friendly and charming with ICTs like smart boards'' (S2).

''Smart boards as one of ICTs are essential for our education. Teachers can reinforce their lessons via using ICTs and we can learn more effectively with audio-visual elementes'' (S16).

3.2. Teachers' Use of ICTs in Deaf Education

Some of deaf students (21; 70%) stated that teachers did not use ICTs during the teaching and learning activities. According to the students, teachers did not know about the ICTs such as softwares and aside from having used these softwares they even did not hear their names before. Thus, it was impossible for students to know about softwares. In addition, the school managers could make the necessary arrangements for their students in order to be used ICTs because they could help both develop themselves and they have pleasant years in the future. The students stated that school managers did not allocate any budget for buying even new ICTs and theacher did not have ICTs in

their classes. The quotations from the views of students taken from the transcripts were presented below.

''We can't obtain ICTs like softwares which are prepared for us maybe because of its high price or its difficulties to use'' (S28).

''We really enjoy using ICTs s in our classes. I wish not some but all of our teachers would use them'' (S9).

More than two thirds of the students (9; 30%) stated that teachers sometimes used ICTs such as only computers in the lessons as one of ICTs. It showed clearly that some teachers were familiar with the ICTs such as computers and they had no difficulties about using ICTs. Therefore, deaf students stated that teachers can enrich the learning activities with audio-visual technologies such as videos and slaydes. Thus, students can be motivated easily and learn quickly with the help of using ICTs. The quotations from the views of students taken from the transcripts were presented below.

''Teachers prepare presentations and slaydes about the lesson using ICTs. We are very motivated if the teacher teaches us with the help of ICTs'' (S3).

''For us, a school should be a place at which we have fun, so ICTs support and adaptation of ICTs on activities should be provided for us with different use of ICTs'' (S11).

Benefits of ICTs

All of the students (30; 100%) stated that they would be successful on ICTs based learning for example, learning, high education and getting jobs and they would have oppotunities for career developments. Additionally, they said that they were interested in ICTs for using social media and joining in learning activities. Deaf students stated that using ICTs makes many subjects learned and understood for the students. The quotations from the views of the students taken from the transcripts were presented below.

''ICTs make my lives easier and I'm really interested in ICTs. That is why I think that I would easily succeed in ICTs aided professions'' (S22).

''We will be more successful in our education and profession since the ICTs complete us'' (S1).

4.DISCUSSION

According to the research findings from this study, it can be concluded that deaf students prefer to attend at ICTs based classrooms. The students thought that theacher should use ICT devices such as computers, projectors and smart boards in their education and these devices should be ready to use in the classrooms. Çiftçi (2009) reported that in order to analyze the effect of ICTs aided instruction on developments of written expression skills. In addition, he reported that deaf students started studying at vocational high schools without having any entrance exams; they should receive education in classes with the help using ICTs. Moreover, using ICTs in the classroom

activities makes many subjects learned easier to understand the content that they really exist in real life and students can learn many words and help correct many wrongly known words with ICTs. With a global boom in terms of ICTs, educational achievements can be fostered, and these improvements can make it possible to expand and expedite learning for the students in the classroom as reported in Kenney (2011). Information and Communication Technologies (ICTs) make deaf children proficient by providing them with the ability to access knowledge with the help of suitable digital media and it plays a very important role in helping these children to be able to communicate with peers, thereby promoting collaborative and social learning environment (Patrick and Akinwumi, 2015).

According to another important finding raised from this research was that the teachers cannot help their students make their progress without using ICTs. This was because both teachers working in schools for the deaf did not have enough knowledge about using the ICTs and the schools were not equipped as they needed to be in terms of ICTs. Some teachers believed that ICTs were not a useful tool to be used in the classrooms if they are not used in accordance with the goals so it can be just an enthusiasm (Karal and Çiftçi, 2008). Some teachers rejected using these tools because of the anxiety that they might be displaced with ICTs in the classroom (Özyürek, 1983). Some teachers may not have enough confidence or experience to effectively adapt ICTs (Kingsley, 2007). In addition, school headteachers should have responsibilities to bring Information and Communication Technologies (ICTs) in the classrooms and leadership

for ICTs use in the school effectively to be able to integrate ICTs with the content of the units. Sezer (2011) concluded in his research about integrating ICTs with the contents in education that the most important duty of the school head teachers was managing some changes using ICTs and materials in the classrooms. This conclusion was supported with this research result which showed that during the education of deaf students, ICT use is very important and contemporary conditions which effect the students' success and their effective learning.

According to the findings raised from this study, using ICTs in classroom activities helped deaf students to revise subjects they have learned and this provided them ease in their education. It was thought that using ICTs in their education was necessary for a high quality of learning process. Availability of ICTs are very important to prevent students form distraction in the class and make lessons more enjoyable. School districts are responsible for the most enabling technology support to allow a student who is deaf or hard-of hearing to get fully access the curriculum (Girgin, 2003). They may fulfill their potential if the environment, the instruction method and technique used by the teachers and the available ICTs should be adequate and should motivate students learning as mentioned in Passig and Eden (2000). In addition, deaf students are very positive about choosing ICT programmes based on jobs in the future and their beliefs also showed that they should be successful in getting the job. It showed that ICTs provided rich individual learning environment because it increased the students' self confidence and self-esteem which effected the higher quality of education in

positive way.

5.RESULTS AND IMPLICATIONS FOR PRACTICE

In this section, results raised from this study and implications for practice developed through results were presented in the following.

5.1. Results

1) Deaf students think that ICTs are essential in their education but they know about ICTs just little which effects their learning in negative way.

2) It can be concluded that theachers do not usually use ICTs and know little about it and ICT softwares.

3) Deaf students thought that the use of ICTs in their education increases their successes in education.

4) Deaf students are very positive about ICTs use in their education and their beliefs showed that they would be very happy if ICTs were used in teaching activities.

5.2. Implications for Practice

1) Conditions in the classrooms in terms of using ICTs should be improved and deaf students should be introduced with the ICTs which were essential equipments for their education.

2) The teachers should know some software programs of ICTs when they need which should provide for them to use ICTs in classroom activities easily and the

teachers should explain their students how and in what purpose these ICTs programs can be used.

3) In-service trainings should be available to teachers when they need it any time about how to use ICTs and softwares.

5.3. Suggestion for Future Studies

In this section, suggestion for future studies is presented.

1) In future studies, teachers' views about problems faced by the teachers on ICTs use in the education of deaf students should be received and analysed in detail.

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