

COMPUTER AIDED LIP READING TRAINING TOOL

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ABSTRACT

Worldwide auditory-verbal education is becoming widespread for deaf children. But many prelingually, late-diagnosed deaf children and adults may utilize neither hearing aids nor cochlear implants and needed the support of lip-reading. Therefore, lip-reading skill remains to be important for oral education programmes of hearing impaired. The computerized lip-reading system which will be accomplished in this project is called "AURIS". This project is designed for hearing impaired children with hearing aids or cochlear implants, aims to teach lip reading, by using characteristics of a word and will not be presented on its own but within a sentence.

Keywords: Hearing Impaired People, Education of Hearing Impaired People, Hearing loss, Lip-reading Training, Lipreading.

INTRODUCTION

The computerized lip-reading system which is introduced in this paper is called AURIS. "AURIS", is developed for hearing impaired children with hearing aids or cochlear implant and children who are unimplantable. In addition, hearing-impaired children and adults who are "unimplantable", lip-reading assistance as well as using sign language might be necessary in order to improve their communication skills (Graeme and Springer, 2003). Teaching lip-reading for those of infants with profound hearing loss will improve their verbal communication skills. AURIS has been designed as an elementary supplement to and strengthening the learning system and in a way that would support the education of hearing-impaired children, and is the software combining both visual and audio technology and supporting the education. AURIS has been developed for hearing-impaired preschool children, who are in the age group of 2 and 5 years.

THEORY OF DESIGN

The education of the hearing-impaired to be provided for the preschool children shall be a study that would be fulfilled together with concept teaching and hearing. Because a hearing-impaired 2 years child does not know yet that everything has a name.

What should be the studies to be fulfilled before the child starts to follow up the movements of lips?

The education of a hearing-impaired child is initiated with a word (Anadolu Üniversitesi, İşitme Engelli Çocuklar Okul Öncesi Eğitim ve Araştırma Merkezi):

- Selection of the initial word:
 - It should be an object that would draw the attention of child
 - Frequency of daily reference: it should be in a way that allow repetition
 - Frequency of comparing with the one in real: should be frequent
- Significance of the initial word: The initial word is defined as the key word. The child would build all the words he/she will learn on this initial word.
- The period of learning the initial word
 - It takes time
 - It is different for every child.
- Learning the initial word
 - The word is repeated by using it in different sentences. (It is observed in the records of a course where the tutor teaches to a hearing-impaired child that he/she repeats the word to be taught for 92 times in 5 minutes.)
 - At first, the meaning of the word is demonstrated using its picture (For instance, a car)
 - After the meaning of the word is shown, its model is shown (a toy car)
 - Its two dimensional picture (drawing) is shown.

Teaching the initial word may take with the best possibility 2 mounts, even longer based on the perception capacity of the child.

What is the role of a computer in this study?

In consideration the teacher has to use the one word approximately 92 times in 5 minutes and it may take at least 2 month, it is more evident that it is necessary to use computer in teaching to hearing-impaired children.

When the computerized education is started?

When the child is able to perceive the two dimensional picture or drawing of the word that is being taught, then computerized education is started. AURIS, the software which was developed by us, is developed in a way that will support and vary the studies for teaching basic concepts to hearing-impaired children. As much as the initial word is important for the child, AURIS also starts with sentences that include objects which female and male children may attach the most importance when they start with computerized education.

Given the background information outlined above, AURIS is designed as computerized lip-reading software in order to assist teachers of deaf in their practice.

AURIS

AURIS has been designed as an element supplementary to and strengthening the learning system and in a way that would support the education of hearing-impaired children by the teaching lip-reading which is combining both visual and audio technology.

Research Design

AURIS stands on hearing ability of hearing impaired children. Education is planned to be realized in three steps. First step of education is stimulation of brain with voice. The second step is teaching object and pronunciation of word by the usage in the sentences. In the third step, according to ability of child, feedback is expected. In AURIS system, the object and lip-reading characteristics of a word will be presented within a sentence. The lip-reading features and the picture of the word (object) to be chosen will be presented on the computer screen, consecutively, the object and lip-reading characteristics of a word will be presented not on its own but within a sentence (Özbay ,2000).

In AURIS, each word will not be treated in isolated units but within the context and within the sentences, as it is used in everyday conversations. Thus, AURIS will be the first lip-reading training tool in the world which lip-reading features of every word is to be presented similar to everyday conversations.

Aims of AURIS

AURIS aims to improve oral communication skills of hearing impaired children by support of teaching lip-reading with the following steps:

- improve their hearing ability
- teach lip-reading
- improving the ability of understanding what is told them
- improving the ability of answering questions orally

Prototype of AURIS

AURIS - Main page is designed as shown at Figure1. At this window child age and level is chosen.

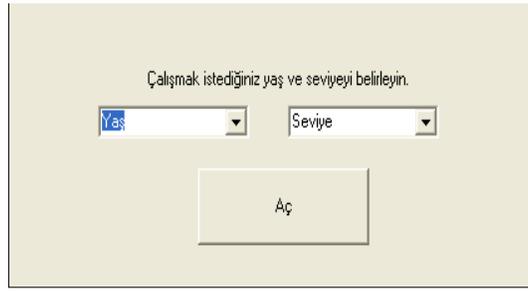


Figure 1: Main Page

In respect of chosen age and level “Subjects” window is shown Figure 2.

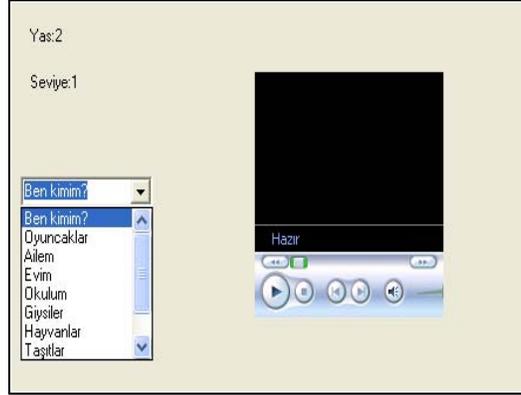


Figure 2: “Subjects” window

If it will be the first lesson, the subject “Who am I?” has to be chosen by loading personal information to AURIS. Thus child can have an idea about relation between with himself and the computer (Figure 3).

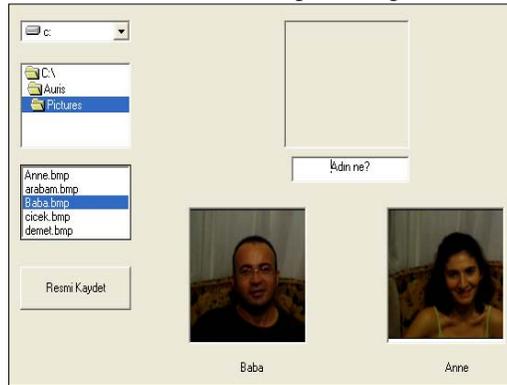


Figure 3: “Who am I?” window

After 1- 4 therapy (depending on learning ability and interest of child) another subject’s related object is chosen for training. “Ball” has been chosen at the following Figure 4.



Figure 4: "Objects" window

Trainings are continuous with such therapies.

The approach is applied in AURIS

"AURIS" aims to teach lip-reading by the object and lip-reading characteristics of a word will be presented not on its own but within a sentence (M.E.B., 2003).

Advantages of AURIS

By using this approach, children and the trainer will be able to communicate interactively with the computer. Thus, the computer software will guide and help the learner to make progress and obtain necessary feedbacks.

CONCLUSION

AURIS is being developed to assist for teachers who are responsible for lip-reading education. AURIS will help teaching lip-reading to become widespread with real life video graphics, sounds and pictures. With the support of this technique, children will be able to communicate interactively using oral communication links. Thus, the computer software will guide and help the teachers to make progress and obtain necessary feedbacks.

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