

# Development of Communication Skills through Auditory Training Software in Special Education

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## INTRODUCTION

The primary function of language is communication and this is per excellence, of verbal nature; manifesting itself as the defining feature of men as a rational being capable of communicating through a system of signs (language) used by social communities. People with hearing loss do not have access to natural language, hampering their oral and/or written communication. Some of them have never heard any sounds; in others, the hearing loss appeared later, so they have the need for auditory therapy.

Hearing impaired individuals who have received a cochlear implant, as well as those who need to use an electronic device to improve their hearing, should receive auditory therapy to teach the proper use of the devices. Those who never had access to a proper hearing do not recognize the meaning of the sound, and must learn to associate the sound with its concept. On the other hand, people who had access to hearing have the problem of oral communication, so it is necessary to receive auditory training therapy and must attend therapy in a special education (Merzenich, Pandya, & Tremblay, 2005).

This paper presents a study in Saltillo, Mexico in 2014, which is intended to verify the development of communication for people with hearing loss using Auditory Training Software (ATS), which allows to develop listening skills in a motiva-

tional context and influencing positive behavior in training tasks. The ATS helps to develop the skills of identification of presence or absence of sound, identify and discriminate a syllable from similar pairs considering difficulty levels and distinguish individual words and sentences or phrases.

This ATS has been useful in the community as an important support educational tool for students and teachers, it goes beyond teaching materials because it becomes relevant in the teaching-learning process, appropriation of linguistic symbols, communication (oral and written), personal identity (auditory phonetic), among others.

However, the use of ATS should be customized according to the user profile considering their language, age, education, level of curricular and cultural competition, type and degree of hearing loss, type of disability, among others; the ATS development is complex, it is difficult to find freeware. Currently, there are several applications for Auditory Training (AT) in different languages and even some adapted to the educational needs of other countries, for example, from English to Spanish (Moore & Amitay, 2007).

This paper contributes with a description to develop an educational software created by students and teachers of Computer Science, as well as a teaching tool to assess the user's progress, useful for teachers of Special Education and an appropriate research method to the disciplines mentioned.

## BACKGROUND

AT is necessary for the development of communication for people with hearing impairment. ATS has designed to help streamline the complexity of projects and tasks as well as facilitates team collaboration, to develop human skills (the ability to interact and motivate), understand concepts and develop ideas.

Some basic concepts of the subject are mentioned below.

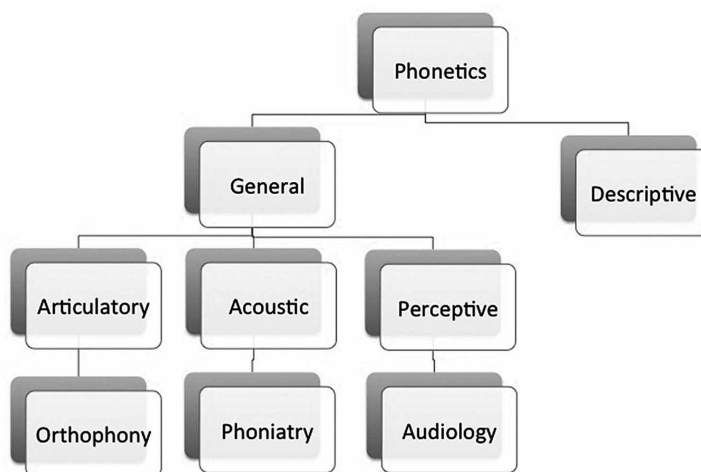
- **Prelocution Deafness:** Hearing impairment is one that occurs before the child has acquired spoken language and for whom the development of speech and hearing may be affected in different ways.
- **Post-Lingual Deafness:** Hearing impairment that occurs after learning spoken language.
- **Phonetics:** The study of the sounds made by the human voice in speech; production by the speaker and reception / perception by the listener, (Llisterra, 1991, p.15).
- AT is the process to teach people to understand the meaning of sounds. During this training, auditory stimulation is provided

to people to learn, to identify, distinguish and conceptualize sounds.

- Auditory-verbal method is a process that uses multisensory rehabilitation methods such as Ling’s oral phonological system, Calvert’s Multisensory System and the Van Uden reflective Method.

In the AT, the application of the theory of phonetics is very important because it is the basis of our communication system. The AT process uses an experimental method consisting of three stages to achieve the goal of communication. This process is described below (see Figure 1). In the first stage it is necessary to differentiate the General Phonetics (production and perception of sounds) from Descriptive Phonetics (different known languages); it is important General Phonetics because it describes the communication process. The second stage is refers to the study of the sound production by the sender is the Articulatory Phonetic, the Acoustic Phonetics studies transmission and perception of the message. Finally, Perceptive Phonetics, studies hearing and perception of the message by the receiver also used in the synthesis and voice also recognition between human-computer. The application of

*Figure 1. Phonetics in the communications process*  
 Source: Prepared, 2016.



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