Chapter 9

E-Learning, Fuzzy Methods, and Sign Language Video to Enhance Teaching for Hearing Impaired

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ABSTRACT

This chapter discusses the e-learning methods that were used within the Dedalos project for the teaching of English (as a second language) to deaf and hearing impaired people through the use of Sign Language. Firstly, special educational e-content was developed using modern digital and animation technologies, which was divided into educational levels in accordance to the special needs of the deaf and hearing impaired students. In addition, this special educational content was embedded in a newly developed e-learning environment aiming at the distance training of the aforementioned target group. Apart from the educational material, special evaluation tests were embedded in the e-learning environment towards the assessment and evaluation of the skills of the students. Finally, an intelligent taxonomy system was used for setting the e-content to the right level as well as for the realization of the evaluation process. The procedure can be used in tertiary education.

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INTRODUCTION

Despite the rapid evolution of ICT services and products, only a small percentage of these are used in linguistic training and even a smaller percentage of ICT services and facilities are used to support the linguistic training of disabled students and especially of the deaf students and the students with hearing disabilities (Drigas, Kouremenos, & Vrettaros, 2008).

Unfortunately, until quite recently, the majority of the ICT services targeted the common citizens and users and excluded people with disabilities and other sensitive community groups. This fact provokes and creates the phenomenon that is commonly known as “digital divide”, or in other words, the exact opposite of e-inclusion, which is supported internationally by several policies, organized actions and also by projects such as the Dedalos project (UNESCO, 2002).

The promotion of the English language as a second language for Deaf and hearing impaired people whose first language is the sign language is the main objective of the Dedalos project. For this, special pedagogic methodology of distant linguistic training was designed and used as well as innovative educational e-content, suitably adapted to this special group of people. The whole process includes audits and evaluation of the linguistic skills of the e-students. The educational e-content has been designed to be divided into different levels according to the knowledge of the student. The system has been designed to evaluate the student and set the pedagogic material at the corresponding level using an intelligent taxonomy system. Particular emphasis was given to the quality and innovation of the educational material of self-paced learning where new animation and digital video technologies were extensively used into the Sign Language of each participating partner-country (Tavangarian et al., 2004; Rosenberg, 2000; Lewis, 2003; Drigas & Koukianakis, 2006).

Finally, the promotion of equality of the deaf and hearing impaired people through their participation in the European Community was another important element of the project. Nowadays, the English Language as a second language constitutes an important resource and asset in the professional field, for all individuals. It is a common ascertainment that the deaf and hearing impaired people face adaptation problems in their social activities, especially in the European countries, where English is used as the main communication language. The ICT sector uses mainly the English language and the vast majority of information on the Internet is in English, while the terminology used in the economy and e-commerce sector demands the effective mastery of the English language.

THE CHARACTERISTICS OF GSL (GREEK SIGN LANGUAGE)

The Greek Sign Language (GSL) is a natural visual language used by the members of the Greek Deaf Community, which counts several thousands of native and non-native signers (Antzaks & Woll, 2002; Lampropoulou, 1992). It is used widely in the Greek deaf community and the estimation for GSL users is about 40,600 (1986 surveys of Gallaudet University). There is also a large number of hearing non-native signers of GSL, mainly students of GSL and families of deaf people (Lampropoulou, 1997; Bellugi & Fischer, 1972). The recent increase of mainstreamed deaf students in education, as well as the population of deaf students scattered in other institutions, minor town units for the deaf and private tuition may well double the total number of secondary and potential Sign language users (Kyle & Woll, 1985; Efthimiou & Katsoyannou, 2001). Official settings where GSL is being used include eleven deaf clubs in Greek urban centers and a total of...
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