

## Chapter 4

# Learning Applications for Disabled People

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### ABSTRACT

*This chapter presents e-learning practices and applications, which target people with visual and hearing disabilities. The first part discusses an e-learning application, which targets visually impaired people while the second part presents an e-learning application for the teaching of the English language to deaf and hearing impaired people. The final part presents a study about the relationship of the deaf and hearing impaired with new technologies in Greece. The chapter stresses the importance of the thorough exploitation of ICTs together with e-learning technologies towards the effective improvement of educative methods for this target group. The objectives of this chapter are to support the distance and lifelong education and training of the target group, to guarantee their equal access to information, knowledge, education and employment and finally, to minimize the digital divide through the use of assistive technologies and contemporary, easily navigable and user-friendly e-learning environments.*

### E-LEARNING PRACTICES FOR VISUALLY IMPAIRED PEOPLE

Promoting equality of access to e-content for disabled individuals is a primary goal of web designers nowadays. Keeping in mind that access to information and education is the most undeniable right of all people, it becomes clear that

the adjustment of ICT services and the Internet content to the needs of disabled people and special target groups in general, especially in education issues is essential (Drigas, Vrettaros, Stavrou & Kouremenos, 2004; Twining, 2007).

Very thorough international activity has been taking place, concerning the adjustment of the Internet to the special needs of the disabled people, through the use of special technological applications in the already existing communica-

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tion mediums, with very important results. A large number of organizations and companies have been active in the area of preserving the rights of disabled people and have come up with gadgets that adjust the existing technological mediums to their needs. E-content can be available to all users and information can be found faster regardless of the user agent that is being used and regardless of their disability (Colace, DeSanto & Vento, 2003; Graf & List, 2005; King, 2003).

A significant number of methods contribute to the improvement of e-content accessibility by various target groups of people such as people who have reading difficulties, people with cognitive and learning disabilities as well as hearing impaired people and people with mobility problems. Some of these methods include icons and videos depicting a person translating the text into the Sign language, enhancing internet access, multi web internet browsers, media access generators, sensus internet browsers, TTY-text phones, hearing aids, image phones for the deaf, special keyboards, joysticks, mouthsticks and sensors for those with mobility disabilities. All the aforementioned supportive technological equipment (assistive technology) stems from the continuous effort to familiarize the disabled in general, with the ICTs in order for them to become equal members of the information society (Angehrn & Balakrishnan, 2004; Phipps, Sutherland & Seale, 2002; Pilling, Barrett & Floyd, 2004).

In visually impaired individuals' cases, there are numerous ways to tackle their disability. The most important ones are the auditory description of visual-multimedia information, which benefits the blind individuals, whereas for those individuals with sight disabilities there is the solution of the graphics enlargement with the use of special software.

This section presents an e-learning environment that was developed and designed for the informing and education of blind and visually impaired individuals and their trainers (Geoffrey,

Aimeur & Gillet, 2002; Humar, Pusticek & Bester, 2003). This e-learning environment provides the following possibilities to the people that it targets. Firstly, it incorporates technologies that cover the communicative needs and handicaps of the visually impaired. Moreover, it provides the opportunity to the users to make use of their alternative sensory routes such as hearing and touch for easier navigation and finally, it provides them with the opportunity to access e-content that will initially inform them and in the long run ensure their equal access to information, knowledge, education and employment. The lifelong training-education of the trainer was considered a very crucial part of the project as it indirectly upgrades the education quality of the visually impaired.

Such supportive environments are mainly based on the principle of the knowledge and understanding of the handicaps of the visually impaired from a psychological point of view. It is essential to take this information into account in order to be able not only to smooth these handicaps, but also to enhance their other skills and finally, cover in full both their special personal as well as their communicative needs (Drigas & Koukianakis, 2004; Drigas, Koukianakis & Papagerasimou, 2006).

### **System Units Presentation**

In psychology studies it is stated that individuals with visual impairments have their other senses (such as touch and hearing) upgraded, which in a way replace and fill in for the lack of or low eyesight. Unfortunately though, the use of one of the aforementioned senses alone is not adequate enough. It is essential that the visually impaired use a combination of their alternative sensory routes for better results. Hence, it becomes obvious that the e-learning environment must provide such possibilities to the user. There were three main system units that were taken into account when designing this informative and educational

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