Chapter 10
Bridging the Concepts of Educational Software and Assistive Technology

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ABSTRACT

The chapter looks at the educational resources available for students with disabilities. It aims at defining the boundaries and interconnections between the concepts of assistive technologies and educational software, starting from the consideration that students with disabilities could highly benefit from the adoption of both these categories of tools. Here the question arises of whether educational software products can be considered per se as assistive devices or, if not, under which conditions. The chapter explores the matter, with the specific objective of providing teachers and educators with a conceptual key to properly explore the specific databases containing information on the educational available tools and, finally, to find the needed, suitable material for students with disabilities. The creation of the European ETNA portal for assistive technologies represented the occasion for starting the reflections reported in this chapter and for defining a specific methodology for the introduction of educational software in disability-related databases. The ETNA portal itself, whose aims and foundations are also briefly described, coherently instantiates the adopted methodology by referring to the emerging concept that educational software can be considered and adopted as an assistive device for learning, provided that it meets key accessibility requirements and/or that specific practices with disabled students are fully documented and reported.

INTRODUCTION

It is very important that teachers and educators of students with disabilities are able to take an informed decision about the products to be ad-

opted in their educational practice (Ribeiro et al., 2010). To this aim, they have at their disposal a variety of educational databases and catalogues that can provide them with suitable and exhaustive information about the available products and, their

relevant features. But guidance on how to make this choice is still needed and some inter-related concepts are to be clarified; for instance, a clarification on the concepts of Educational Software and of Assistive Technologies (AT) is required (Stumbo et al., 2009). Are these concepts fully detached and divergent or to some extent overlapping? Should we consider all educational software products as educational aids able to help, sustain and foster learning? For which types of students with disabilities this is true? Should the teacher of students with disability solely rely on the use of educational software products or should they also look for assistive technologies allowing the use of software packages?

From the very beginning (around years 1995-98) of the EU community efforts to build up a database of assistive technology products with the HANDYNET database in the framework of the "HELIOS programme[1]," educational software products were included in the archives and fully considered assistive devices for education.

As a matter of fact, the use of appropriate educational software products (i.e. all ICT-based products expressly designed for educational purposes, aimed to sustain and enhance learning/teaching processes) can highly enhance the learning possibilities of students with disabilities (Dettori & Ott, 2003).

Unfortunately, in contrast with the widespread principle of e-inclusion (UNESCO, 2005) and of Universal Access to education (Ott, 2011), the use of such digital resources can be challenging for some students with disabilities (Klironomos et al., 2006). Nowadays this aspect assumes increased relevance, since the newest software products rely more and more on images, motion, voice, special effects, three-dimensionality, leaving aside the basic principles of Universal Design (Burgstahler, 2006), hence preventing students with special needs from using the same materials as their schoolmates. This dramatically limits their

educational opportunities and, finally, contributes to their "exclusion" (Benigno, Bocconi, & Ott, 2007). The availability of dedicated tools and devices such as special keyboards, screen readers, speech synthesizers, etc. plays major role in widening access to software products but *per se* doesn't completely solve the problems related to the huge variety of different accessibility problems that can be encountered (Croasdaile et al., 2011; Hitchcock & Stahl, 2003).

Actually, the accessibility of e-tools is a multifaceted, complex issue that calls for an in-depth examination not only of the software features but also of its educational contents, interaction methodology and cognitive implications. Several authors have tried to capture and model the different accessibility dimensions. Dettori and Ott (2003) argue that three different areas of accessibility should be taken into consideration, concerning material (or physical), cognitive and socio-cultural accessibility. In a seminal paper, Kelly et al. (2004) argue that there is a need for assuming a wider perspective that goes far beyond existing approaches and specific guidelines. These authors propose a holistic model for e-learning accessibility which takes into account the usability of e-learning, pedagogic issues and student learning styles. Cullen and colleagues (2009) maintain that a key factor promoting positive learning outcomes is how well the needs of users and the technological and pedagogical choices made fit together. This last point has been further discussed by Bottino et al. (2011) who highlight the need to support teachers in the setting-up of pedagogical plans, which both serve the purpose of describing educational itineraries and understanding conditions under which the educational use of ICT-based products can be genuinely meaningful and productive for all the students. Foley and Ferri (2012) put forward this perspective by offering a vision of *accessible technology*, as opposed to assistive technology and highlight the need to understand disability

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