

Chapter 110

Using Assistive Technology to Ensure Access to E-Learning for Individuals with Disabilities

Hwa Lee
Bradley University, USA

INTRODUCTION

With the advancement of technology, Electronic Learning (E-Learning) now is more of the rule than the exception. E-learning has been the synonym for online learning, web-based learning, computer-based learning, in the fields of education, business, and information technology. E-learning utilizes a wide spectrum of technologies including internet, intranets, or multimedia platforms (O'Neill, Singh, & O'Donoghue, 2004). In order for individuals with disabilities to utilize E-Learning, often cases they need Assistive Technology (AT) which functions as a technological medium for accessing computer and the internet. The extent to which individuals need AT for computer and internet access varies depending on their residual abilities. Results from numerous empirical studies indicate the effectiveness of AT for individuals with disabilities in accessing learning and daily life activities. While a large body of

studies exists in E-Learning, very few focus on supporting individuals with disabilities in their access to E-Learning. Providing AT for E-Learning access is not only the intent of the federal laws but also the principles of Universal Design for Learning (UDL). The core intent of the federal law, Americans with Disabilities Act, is to narrow the disparity between individuals with and without disabilities by ensuring access to technologies needed for equal employment (CAST, 2009). Given that rehabilitation, business, education agencies attempt to fulfill the intent of the laws, the purpose of this study is to provide an overview of technology access for E-Learning for individuals with disabilities including legislations relevant to technology access for individuals with disabilities, AT service delivery models, principles of UDL, effectiveness of AT for individuals with disabilities, issues and solutions, and discussions for future directions for research.

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BACKGROUND

Federal Legislations for Technology Access for Individuals with Disabilities

Federal legislations such as the Americans with Disabilities Act (ADA) and the Individuals with Disabilities Education Act (IDEA) have been the major force for equal access to technology for all individuals regardless of their abilities or disabilities. According to the Technology-Related Assistance for Individuals with Disabilities Act (Tech Act, 1988), and the Public Law 105-17 the IDEA amendments of 1997, AT device is any item, piece of equipment, or product system that is used to increase, maintain, or improve the functional capabilities of a child with a disability (IDEA 1997). AT devices are typically categorized as low technology, medium technology, or high technology depending on the existence and level of sophistication in the included electronic components (Blackhurst & Lahm, 2000). The intent of these federal laws is that school and rehabilitation professionals consider AT as an option for individuals with disabilities, which presents challenges of evaluating individual needs for technology and identifying the appropriate AT items that will increase their functional capabilities in accessing E-Learning. In other words, these AT items can function as an equalizer, enhancing the independence and freedom of individuals with disabilities with their access to E-Learning.

Universal Design for Learning

The concept of universal design was developed by a group of professionals in multiple disciplines to ensure that the design of products and environments are accessible by the widest range of individuals possible (<http://www.design.ncsu.edu/cud/>). The item or product with universal design is such that it can be used by individuals with or without disabilities and without any ad-

ditional adaptation. Examples include curb cuts, elevators, and automatic doors to name a few. The seven principles of universal design are equitable use, flexibility, simple and intuitive, perceptible information, tolerance for error, low physical effort, and size and space for approach and use. To ensure access and participation in general education for individuals with disabilities, these principles have been applied to educational practices and yielded the Universal Design for Learning (UDL) framework by the Center for Applied Special Technology (CAST). A key characteristic of UDL curriculum is that it presents multiple options for access respecting the diverse learning styles of learners (Rose & Meyer, 2002). The UDL curriculum also recognizes the need to provide appropriate challenges to all individuals by understanding state and national standards (Hitchcock, Meyer, Rose, & Jackson, 2002).

AT Service Delivery Models

While considering a continuum of assistive technology items and services for individuals with disabilities is a mandated practice in the field of education. However, due to the vagueness of the current laws and lack of clear, consistent guidelines on how the services should be provided, service providers are faced with challenges of developing effective AT service delivery systems on their own. While funds for AT have been decreased, it is still the intent of the laws that school professionals consider AT as an option for individuals with disabilities. Once education professionals identify the need for any AT item on the Individualized Education Plan (IEP), they must provide the item at no cost to parents (IDEA 1997). As educators attempt to fulfill the intent of the laws, collaboration among all educational stakeholders including general education teachers is critical.

When educators consider AT devices for the student with a disability, evaluating the technological needs of individuals with disabilities and identifying the appropriate AT items that will increase

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