Chapter 25
Assistive Technology's Past, Present and Future

Barbara J. Kouba
California State University, San Bernardino, USA

Brian Newberry
California State University, San Bernardino, USA

ABSTRACT

Even though the term is relatively new, assistive technologies of various types have helped people overcome, achieve, and perform for many years and come in many forms. In fact, many familiar technologies, some that might even be considered mainstream, were in fact initially conceived as assistive devices. Recently, assistive technology has become the subject of legislation including the Rehabilitation Act and the Americans with Disabilities Act and much more legislation regarding access to and funding for assistive technology is expected. Currently, much attention in the area of assistive technology focuses on the computer, and communications technology, including portable devices, which help individuals use powerful tools for accessing information and communicating with others. The future of assistive technology certainly will continue these areas of development but will also likely begin to adopt newer methods for interfacing various assistive technologies directly with the human sensory system. As has happened in the past, it is expected that many technologies initially created as assistive will be adopted by non-disabled individuals.

INTRODUCTION

In 1967, the Fab Four harmonized their lyrical insights: "I get by with a little help from my friends," and, "I'm gonna try with a little help from my friends" (Lennon & McCartney). Increasingly, the Beatle's perceptive words are true for everyone, and they have an even greater importance for people living with special needs. In order to communicate, function, and participate in this society, people with disabilities need extra help and rely on some form of assistive technology (AT).

DOI: 10.4018/978-1-61520-817-3.ch025

BACKGROUND

Anyone can become a person with disabilities. Former President Ronald Reagan, credited with tearing down the Berlin Wall, and Hollywood superhero, Christopher Reeve, both became individuals with disabilities. It is not an exclusive club. Young and old, rich and poor, famous and obscure, powerful and weak, males and females can all belong. No exceptions are made for race, creed, nationality, sexual preference, or socio-economic status.

Helen Keller, one of the most admired persons in 20th century America, was both deaf and blind. In her 1957 book, Ms. Keller said, "All about me may be silence and darkness, yet within me, in the spirit, is music and brightness, and color flashes through all my thoughts" (Keller, 1957). Educator Annie Sullivan helped to break through the silence and darkness to release this inner light. As Helen Keller learned to communicate, her genius emerged.

Throughout history, people with disabilities were often relegated to lead frustrated, isolated, and dehumanized existences. Some even trace the origins of the word "handicap" to describe people with disabilities as beggars who went "cap in hand" (Barnes, 1992). Twenty-first century technology can complement basic education by delivering a voice to the voiceless, sound to the deaf, sight to the sightless, movement to the incapacitated, and independence to the dependant.

Marcia J. Scherer, Ph.D. referred to these people as "lives nearly lost forever" and spoke of the assistive technology revolution by comparing the past and present opportunities for users:

The choices available today for communication—from gestures to wordboards to computerized devices that speak for the person—are nothing short of a major revolution. Today, the mind of a child born with cerebral palsy who cannot speak is not apt to be a mind "nearly lost forever." That child will go to school and will be a visible member of the adult community (2005, p. 34).

Without the ability to communicate, whether naturally or through artificial devices, learning, self-improvement, and social inclusion are impossible.

Stephen Hawking, Ph.D. is one of the most recognized users of AT. Without the use of AT, Professor Hawking would have been unable to share his scientific genius with the rest of the world. This brilliant mathematician and theoretical physicist discovered that when one fused the ideas of quantum mechanics with those of general relativity, it was no longer true that black holes were completely black. Throughout most of his adult life, Dr. Hawking has had Amyotrophic Lateral Sclerosis (ALS), a motor neuron disease. Through the use of augmentive communication devices, the professor continues sharing his teachings, lectures, and written works.

In the 1970s, Dr. Hawking's speech became so slurred that very few people could understand him. By 1985, after undergoing a tracheotomy to help him breathe easier, he lost all remaining abilities to speak. For several years, the only way he could communicate was to spell out words letter by letter, by raising his eyebrows when someone pointed to the correct corresponding letter on a spelling card. It was laborious for this genius to carry on a simple conversation, let alone write a scientific paper.

David Mason, of Cambridge Adaptive Communication, fitted a small portable computer and a speech synthesizer to his wheelchair. This system allowed the professor to communicate much better. He was able to manage up to 15 words a minute which he could either speak or save to disk. Once in a digitized format, his thoughts could be printed out or disseminated using a variety of methods, including email. Using this system, he began to write books and scientific papers and has also given many scientific and popular talks.