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Connecting to learn: Educational and assistive technologies for people with disabilities

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Our fundamental sense of connectedness, our sense of well-being, is usually derived from the quality of interactions we have over time. We need to feel that we're connected with our environment and the people and information that we value. Assistive and educational technologies have already done much to eliminate the challenges and barriers posed by disabilities and they will be even more crucial to the educational and vocational success of this population from the boardroom to the classroom; in the community and in the home.

While there are many benefits to be gained by using assistive technologies, they have the potential to limit and isolate as well as enable, liberate, and connect their users. As paradoxical as it sounds, some ATs, particularly the very high-tech ones, can sometimes work against connectedness as they highlight a student's differences and set AT users apart as looking "different."

Information is the Vital Link to Connection.
Norris Hansell conceptualized "seven essential attachments" to the world in which we live (1974) - attachments consisting of a connection to other persons, a social role, to the feeling one matters and that one's life is meaningful. Hansell's seven essential attachments necessary to achieve a high quality of life are:

1. supports necessary for existence (food, oxygen, information).
2. identity
3. connection with other persons
4. connection to groups

5. connection to a social role
6. money and purchasing power
7. a system of meaning.

The seven essential attachments are interdependent and all are necessary for a positive sense of self and a feeling of well-being. When there is a slight imbalance, readjustments can be made by, for example, getting a hearing aid or other type of AT. But such an attempt at readjustment can lead to new stressors, like feeling stigmatized. Throughout our lives, we are often in a process of rebalancing or re-establishing our sense of self and our subjective well-being.

While Hansell's theory speaks well to the goals we have for students in today's varied education settings from pre-school, through high school and college, to continuing education in the workplace, they address particularly well the issues facing today's educational system as it confronts its mandate to connect people to other persons, groups and social roles, provide the knowledge necessary to be a productive member of society and to help individuals achieve a sense of identity, purpose and meaning. Defining effective educational practices and qualified educators in a technology rich society, however, is one of the largest challenges facing education as we've entered the 21st century.

Hansell's first, and key, attachment is our dependency upon the environment for life's basic needs: food, water, air, and information. Without information, the individual can experience social seclusion and is at risk for psychological distress. According to Hansell, "Abundantly flowing raw sensation provides a necessary engine for experience. Informative variety and pattern provide organization to the experiencer as well as body to the experience. When the flow of information is severely restricted, [as with certain solitary styles of life or those resulting from isolation due to hearing or vision loss], the attachment to information often must be considered severed, or at risk of severance (pp.35-36)."

Hansell believed that communication must be reciprocal. Just as we need certain information to thrive ("You need to see a doctor for that infection") we also need to be able to send or feed back certain kinds of information ("I'm allergic to penicillin"). When we have reciprocity of communication, we have the ingredients for a positive communication interchange which can lead to an enhanced sense of well-being.

Information and communication competence and involvement are keys to a successful life. Without them, people are typically left outside of the mainstream of society. For those who cannot hear the spoken word or cannot see text or visual images, it can truly be said that communication as well as sensory disabilities exist.

Learners with hearing and vision loss are becoming increasingly dependent on technologies. In fact, the majority of the information they receive is now technology-based and delivered via telecommunications or computer-based technologies. This makes literacy all the more important. For deaf persons, captioning or speech-to-text systems are commonplace; for people with vision loss, they can choose among synthetic speech, electronic magnification, Optical Character Recognition (OCR)

technologies, and Braille technology. Yet, their specialized needs and preferences regarding technologies continue to be understudied in all levels of their education. Other areas in need of attention are

1. an analysis of the influences on successful and unsuccessful outcomes from these technologies and

2. the identification of strategies and tools which result in the most appropriate match of person and technology, training in its use and optimal use of the technology.

While technologies have had a significant impact on the number and quality of educational opportunities available to persons with vision and hearing loss, there is tremendous potential for many more opportunities to occur. There also exists a need to monitor new developments for possible limitations or barriers they may create. It is also crucial that opportunities be made available to persons throughout their lifespan and educational careers, including school readiness and adult literacy.

The importance of parameters and steps that must be taken to ensure a good match of person and technology cannot be overemphasized. For a match to be good and enhance learning, many factors need to be taken into account:

1. Learner Characteristics and Preferences

Technology should not be a mere "Gee Whiz" and possible distraction to learning, but used to unlock and enhance individuals' abilities. Sometimes technologies create as many barriers as they remove. Equal emphasis needs to be on the "people" aspects of learning.

2. Environments for Learning

In spite of legislative support for widening the quality and amount of educational opportunities available to persons with disabilities, most attention has focused on the classroom environment. Lifelong learning requires equal attention to laboratory settings, libraries and other repositories of information, community-based centers for learning, and the home. Distance learning needs to be developed to enable people to access education in more environments.

3. Technologies for Access to Information and Instruction

Learners with or without disabilities—regardless of age—share the goal of having complete access to information. For persons with vision loss, however, print and graphic/pictorial information present a tremendous challenge; for persons with hearing loss, it is sound and auditory information. Many barriers remain to the utilization of technologies by persons with disabilities due in part to their lack of knowledge of available technologies and training in their use.

4. Technologies and Systems for Instructional Delivery

There are many needs, learning styles, and different ways of presenting information. More information on the implications of choosing particular technologies and delivery systems for students

with disabilities needs to be available. Educators need an active introduction to and practice in using technologies.

This presentation will focus on educational and social practices needed to make technologies work to the advantage of an individual's learning, social participation and quality of life or sense of well-being.

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