

International Conference on ICT in Serving
Individuals with Disabilities
and Learning Difficulties
20-22 May 2012 Kuwait



المؤتمر العالمي لتكنولوجيا المعلومات والاتصالات
في خدمة
ذوي الإعاقات وصعوبات التعلم
20-22 مايو 2012 - دولة الكويت

E-Learning Solutions - Assistive Technology for Special Needs in Occupational Therapy

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“Not every child has an equal talent or an ability or equal motivation; but children have the equal right to develop their talent, their ability”

- John F. Kennedy

What is E-learning?

- **E-learning** comprises all forms of electronically supported learning and teaching.

Tavangarian D., Leybold M., Nölting K., Röser M.,(2004). Is e-learning the Solution for Individual Learning? Journal of e-learning, 2004.

- E-learning is essentially the computer and network-enabled transfer of skills and knowledge. E-learning applications and processes include Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text, image, animation, streaming video and audio.

Occupational therapists are experts in using technology to increase, maintain or improve functional abilities in individual with special needs.

What is Assistive technology?

Assistive technology (AT) is an important tool since the origins of the occupational therapy profession, to improve function and participation

AT defined as “ any item, piece of equipment . Or product system, whether acquired commercially, off-the-shelf, modified or customized, that is used to increase, maintain or improve functional capabilities of individuals with disabilities”
(U. S. federal legislation, The Technology-Related Assistance for Individuals with Disabilities Act of 1988)

Assistive Technology

Low Technology

Traditional adaptive equipments: reachers, buttonhooks, pencil grips, pointers etc.



High Technology

- Recently a wide range of electronic devices ranging from simple switches to complex robotics have been used as a result of the rapid technological advances in society, specifically with the introduction of the microprocessor chip
eg. - AAC Environmental control system.

Who do we assist....

- Cerebral palsy
- Spinal cord injury
- Traumatic brain injury
- Learning disabilities
- Autism
- etc...



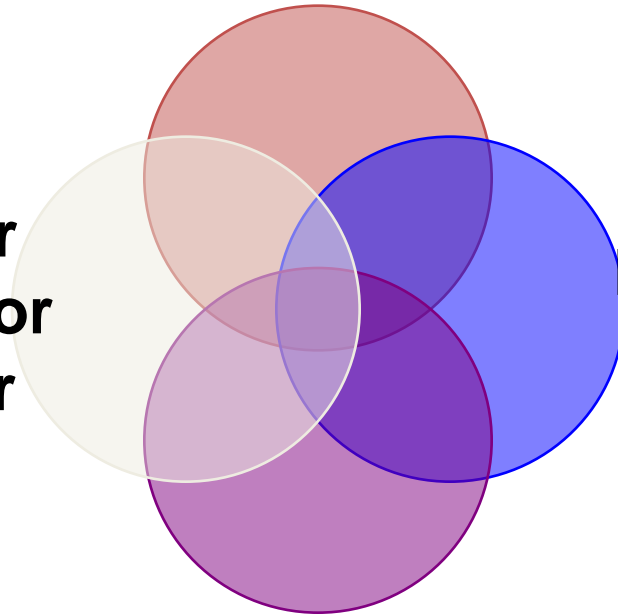
Categories of AT

- Computer Access
- Augmentative communication
- Activities of Daily Living
- Environmental Controls
- Seating, Mobility and Positioning

Team

Physician /Rehabilitation Nurse

**Family/Teacher
Special Educator
Social Worker**



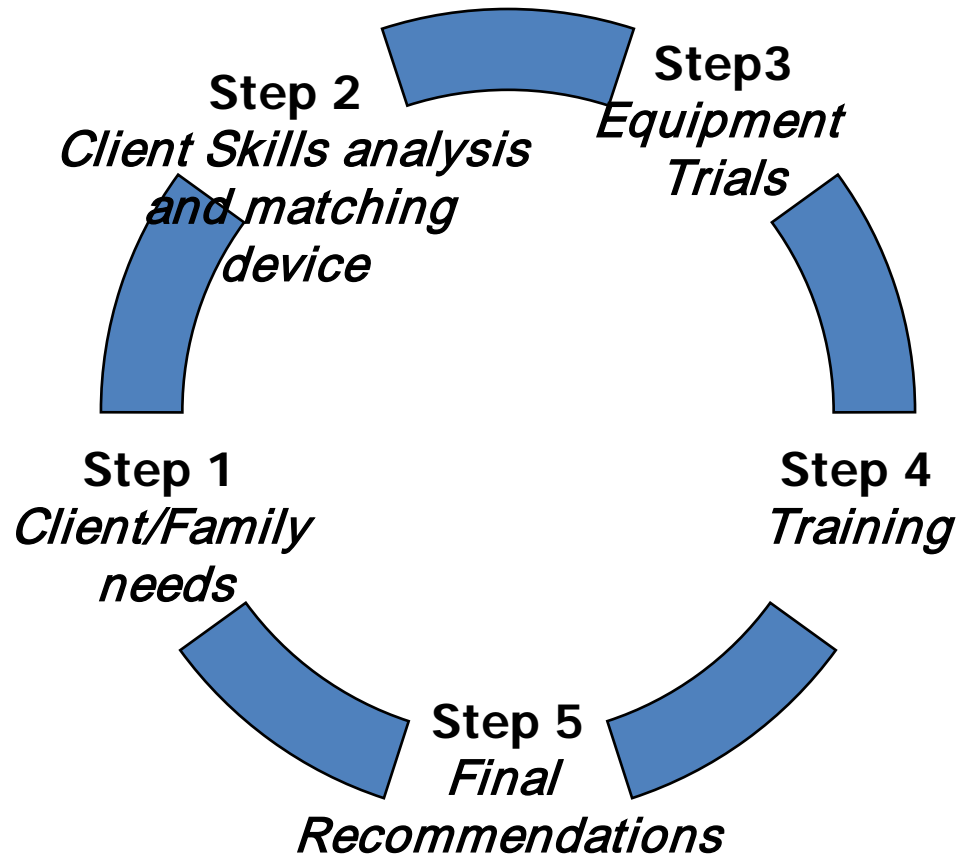
**Rehabilitation
Engineer**

**Occupational / Physical
Speech Therapist**

Assessment Process

- **What occupational performance areas of the person are affected?**
- **What are the individual's immediate and long-term-goal?**
- **How would use of devices help to achieve those goals?**
- **Family support**

Steps in the Assessment Process



Assessment of Client Skills

- Postural Control
- Motor Control
- Body Side Selection
- ROM
- Accuracy / Speed / reaction time
- Endurance
- Sensory Status
 - Auditory / Visual
- Cognition and Communication
 - Memory/attention span/ sequencing abilities
 - /following directions
- Psychosocial Factors

OT Intervention

- **Basic Skills Training**

including attention, understanding of cause – effect, the ability to make choices

- **Training the skills for the device**

helps to train understanding and use picture symbols

Assistive Devices

Switches and Controls

- Interface between the person and a device, sending signals from the user to the connected device.



Alternative Keyboards:

- Ergonomic Keyboards
- Enlarged Keyboards
- On screen keyboard
- Reduced Keyboards (Magic Wand)
- Customizable overlay keyboard (Intetllikeys)
- Ergonomically designed keyboard

The Mouse and other pointing devices:

- Trackball (upside-down mouse)
- Touch screen
- Head-Pointer
- Joystick

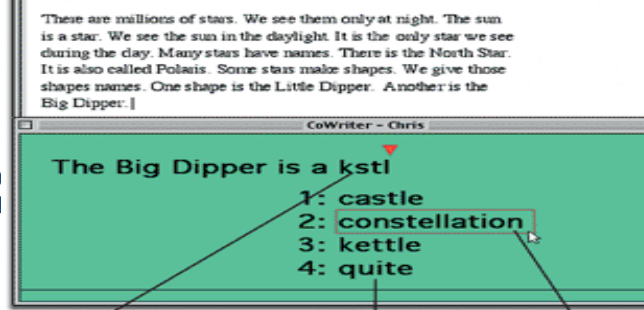


Positioning devices

- Wheel chair
- Other positioning devices



Assistive Software Programs



- **Word Prediction** (reduce the number of keystrokes by predicting what will be selected next)
- **Read It!** (provides many animated stories, fully narrated and beautifully animated)
- **IntelliTools** (such as: IntelliTalk= providing spell check, word banks and prompts/ IntelliMathics= math program for students)



Software Selection Criteria

- 1. Easy to use**
- 2. Levels of Difficulty**
- 3. High Child Interest**
- 4. Appropriate responses**

Categories of Software Use

Exploratory programs should allow the person to play and explore different areas

Drill and Practice opportunities for guided practice

Constructive allow to create new objects, designs , layouts

Word Processing develop early writing and language skills

Communicative opportunities to develop communication skills

Evidence based practice and Assistive Technology

There are a lack of studies involving all three PEO (Person Environment Occupation) components indicating a lack of research in occupational performance issues. Further research on occupational performance is important for developing occupational therapy practice in the area of assistive technology and physical environmental issues. Furthermore, study designs reflecting the societal level in all three PEO components are required. Finally, there is a strong need for conceptual and theoretical development.

Occupational therapy research on assistive technology and physical environmental issues: a literature review, *The Canadian Journal of Occupational Therapy*, Apr 2006, 73, 2, pg 109

“When we do the best that we can, we never know what miracle is wrought in our life, or in the life of another.”

Helen Keller

Thank You