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Assistive Technology 101

A school administrator's guide to assistive technology for education

Hello, my name is Stephen Vaughn. I am the Area Director for San Bernardino County Superintendent of Schools Desert Mountain Region. I have the responsibility to supervise the Special Educations in this part of our County. In many of our classes we have students who use assistive technology to help them learn. As I started this job, I realized that I was ignorant of many of the possible technology solutions available today for students with disabilities. This presentation is an overview of assistive technology for school administrators. After viewing this presentation you will have a solid foundation upon which to build you knowledge about assistive technology and the role it plays in helping students with disabilities. The presentation is based upon information presented by Harry Rizer and Janie Cirlot-New at the 19<sup>th</sup> Annual Technology and Person with Disabilities Conference March 15-20, 2004, hosted by California State University Northridge.

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What is Assistive Technology?

- Assistive Technology Device
  - "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"
  - PL 100-497

The first step is understand what is assistive technology. Assistive technology is the use of assistive technology devices to support the functional capabilities of individuals with disabilities.

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What is Assistive Technology?

- Assistive Technology Service
  - "any service that directly assists an individual with disability in the selection, acquisition, or use of an assistive technology device."
  - PL 100-407

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Assistive technology services is any service that directly assists a disabled person in the use of an assistive technology device.

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What is Assistive Technology?

- Assistive Technology Service
  - the evaluation of the needs of an individual with a disability, including a functional evaluation of the individual in the individual's customary environment.
  - purchasing, leasing or otherwise providing for the acquisition of assistive technology devices by individuals with disabilities.

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It also include the evaluation of the needs of a disabled person and the process of providing assistive technology devices to individuals with disabilities.

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What is Assistive Technology?

- Assistive Technology Service
  - Selecting, designing, fitting customizing, adapting, applying, maintaining, repairing, or replacing of assistive technology devices
  - Coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs

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Assistive Technology Service also includes the customizing of technology devices and the coordination of the use of assistive technology devices with other interventions used to help a student with disabilities.

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What is Assistive Technology?

- Assistive Technology Service
  - Training or technical assistance for an individual with a disability, or where appropriate, the family of an individual with a disability.
  - Training or technical assistance for professionals, or other individuals who provide services to, or are otherwise substantially involved in the major life functions of individuals with disabilities.

Finally, it also includes the training of individuals with disabilities and their support people, on how to use assistive technology devices.

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Individuals with Disabilities Education Act (IDEA)

- Assistive Technology must be "considered" for every student during the development of the IEP.

It is important to remember that assistive technology must be considered for every student during the development of their IEP.

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Areas of Assistive Technology

□ Computer Access	□ Low Tech Solutions
□ AAC	□ Seating/ Positioning
□ AT for people with learning disabilities	□ Mobility Aids
□ AT for people with Sensory Impairments	□ ADL/EADL
	□ Recreation

There are nine areas of assistive technology. They include:  
Computer access  
AAC Augmentative and Alternative Communication  
AT for people with learning disabilities  
AT for people with Sensory Impairments  
Low Tech Solutions  
Seating/ Position  
Mobility Aids  
ADL/ EADL  
Recreation  
For our purposes in this presentation we will focus on the areas that are directly related to learning.

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**Feature Matching**

<input type="checkbox"/> Individual	<input type="checkbox"/> Technology
■ Needs	■ Features
■ Abilities	■ Input/ User Interface
■ Expectations	■ Processing
■ Environment	■ Output
■ Future Plans	

When considering assistive technology for a student with disabilities you need to keep these factors in mind. You need to think about the individual's needs, abilities, expectations, environment and future plans. Then you need to compare the features of a proposed assistive technology device that match those considerations.

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**Computer Access**

Three elements of the Human/ Technology Interface

- The Control Interface- Where
- The Selection Set- What
- The Selection Method- How

The three element of the interface between computers and people are the control interface, which is where the connection is made, the selection set, which is what gets exchanged (numbers, words, pictures) and the selection method which is how the exchange happens.

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The Control Interface

- Hardware Operated by User
- Also called "input device"
- Generates one or more independent inputs

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The control interface is the hardware operated by the user, usually called the input device.

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The Selection Set

- Choices Available
- Letters, Words, Symbols, Icons
- Presented Visually, Tactilely, or Auditory
- Size and Type Based on User's Need

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The selection set usually allow the user to make choices about what is exchanged. Information can be presented in a variety of ways based on the users needs.

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The Selection Method

- Direct Selection
- Indirect Selection
  - Scanning
  - Coded Access

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The selection method is how the selections are made, either directly or indirectly.

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**Processor**

- Determines Action
  - Character is selected
  - Additional choices presented
  - Limited choices presented

Sometime the device needs to limit or expand the choices that a re available based upon the users ability.

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**Examples of Input Devices**

<input type="checkbox"/> Assisted Keyboard	<input type="checkbox"/> Keyboard Emulation
<input type="checkbox"/> On-Screen Keyboard	<input type="checkbox"/> Switch
<input type="checkbox"/> Cursor Control Pointer System	<input type="checkbox"/> Direct Switch Interface
<input type="checkbox"/> Alternative Keyboard	<input type="checkbox"/> Scanning
<input type="checkbox"/> Voice Recognition	<input type="checkbox"/> Morse Code
<input type="checkbox"/> Eye- Gaze	<input type="checkbox"/> Auditory

Here is a list of input device types.

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**AT for Sensory Disabilities**

- AT for People who are Blind/Visually Impaired
  - Access to Print/Multimedia Materials
  - Access to Computers
  - Orientation and Mobility

Assistive technology for sensory disabilities is fro people who are blind or visually impaired. Most of this technology is designed to help improve access.

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Access to Print/ Multimedia

- OCR and Scanners
- Video Magnifiers
- Large Print
- Braille
- Tactile Graphics
- Cassette Tape
- Audio Description

- There are a variety of technologies to help visually impaired students have access to print and multimedia. Optical character recognition software and a scanner allows a person to scan a written document and transform it into a digital document. Tactile graphics are images that are raised and can be felt.

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Access to Computers

- Screen Magnification
  - Accessibility Features in the Operating System
  - Specialized Software Programs
- Speech Output
  - Voice Synthesis
  - Screen Reading Software
- Braille Displays

Most operating systems have options for enhancing access for visually impaired students. There is also specialized software programs that simulate speech and can read the screen. There are also Braille displays.

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AT for People Who are Deaf and Hard of Hearing

- Assistive Listening Devices
- Telecommunications
- Interpreting
- Access to Print/ Multimedia Materials
- Independent Living Aids

Assistive technology for people who are deaf and hard of hearing include assistive listening devices, enhanced telecommunication devices, interpreting, enhanced access to print/ multimedia materials and independent living aids.

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Assistive Listening Devices

- Hardwired Systems
- FM
- Infrared
- Induction Loop

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Assistive Listening devices include hardwired systems, wireless FM based radio systems, infrared wireless systems and induction loop system. All these systems enhance audio signals by both volume and tone and they are customized to meet the specific students needs.

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AT for People with Learning and Cognitive Disabilities

- Reading Support
- Writing Assistants
- Organizational Assistants
- Math/ Spelling Supports

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Assistive Technology for people with learning disabilities includes reading support, writing assistants, organizational assistants and math/spelling supports.

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Reading Support

- Color Highlighting
- Books on Tape
- Reading Pen
- Text Reading Software

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Reading supports include color highlight which can be digitally based or low tech removable tape, books on tape, reading pen, which is a small pen type text scanner and text reading software.

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Writing Assistants

- SlantBoard
- Magnetic Poetry
- Labels
- Pen/Markers
- Pencil Grips
- Raised Papers
- Templates

Writing Assistants include SlantBoard, Magnetic Poetry, labels, specialized pens and markers, pencil grips, raised paper and templates.

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Writing Assistants

- Portable Word Processors/Organizers
  - AlphaSmart
  - QuickPad
  - LaserPC 6
  - DreamWriter
  - Pix Writer
  - Inspiration

Additional writing assistants include AlphaSmart keyboards, QuickPad, LaserPC6, Dreamwriter, Pix Writer and Inspiration, which is software to help with prewriting.

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Organizational Assistants

- Organizers
- Voice Diaries
- Two-way Text Pagers

Organizational Assistants include software or digital organizers, voice diaries and two-way text pagers.

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**Math and Spelling Support**

- Portable Calculators
  - Fraction Calculators
  - Coin Calculators
  - Money Calculators
- Spell Checkers

Math and spelling supports include a variety of specialized calculators and spelling checkers.

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**AAC**

- Low Tech/ High Tech
- Dynamic/ Static Display
- Input methods
- Symbol Sets

Augmentative and Alternative Communication has four basic characteristics. They are the level of technology, they type of display, the input method and the symbol set that is used.

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**AAC Input Methods**

- Direct Selection
- Eye-Gaze
- On-Screen Keyboard
- Alter. Mouse Control
- Alter. Keyboards
- Switch
  - Direct Switch Interface
  - Scanning
  - Morse Code
  - Auditory Scanning

There are a variety of input methods to match with the needs of students with disabilities.

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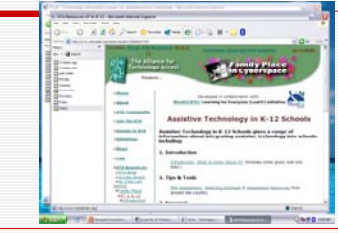
**TICAL Resources**

□ There are some outstanding resources in the TICAL website to review these resources go to [www.portical.org](http://www.portical.org) and click the Resources button at the top of the page. Type in assistive technology in the Key phrase field and you will find the following resources.

To expand your knowledge about assistive technology as school administrator we suggest you access the TICAL website resources.

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Alliance for Technology Access




The screenshot shows a web browser window displaying the website for the Alliance for Technology Access. The page title is "Alliance for Technology Access" and the main heading is "Assistive Technology in K-12 Schools". The page content includes a search bar, a list of resources, and a sidebar with navigation options. The search results show a link to "Assistive Technology in K-12 Schools" with a brief description.

This resource can be found at <http://www.ataccess.org/resources/atk12/default.html>. It is a comprehensive website that provides information for teachers, students and parents.

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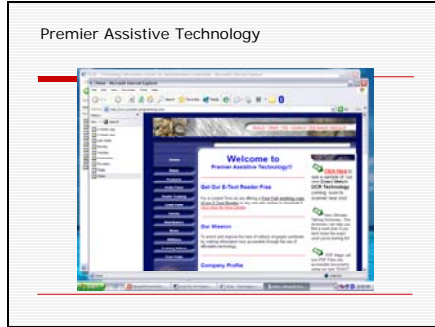
Family Center of Technology and Disability



The screenshot shows a web browser window displaying the website for the Family Center of Technology and Disability. The page title is "Family Center of Technology and Disability" and the main heading is "Family Center of Technology and Disability". The page content includes a search bar, a list of resources, and a sidebar with navigation options. The search results show a link to "Family Center of Technology and Disability" with a brief description.

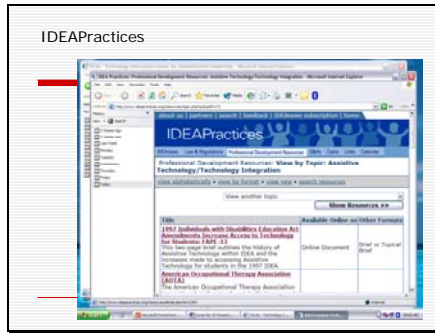
This resource can be found at <http://www.fctd.info/>. It also provides a wide range of services and information about assistive technology.

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This resource can be found at <http://www.premier-programming.com/>. This is a commercial website that has a variety of well designed reading aid software programs.

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This resource can be found at <http://www.ideapractices.org/>. This is a portal to other resources and websites for professional development related to assistive technology.

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**Summary**

- These resources will provide a basic foundation for understanding assistive technology.
- Contact information
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  - (760) 242-6322

A thorough review of these resources will provide you with a comprehensive foundation on assistive technology, which will enable you to better serve your students with disabilities. This is Stephen Vaughn wishing you the best with your students.