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Assistive Technology to Improve Classroom Performance

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Disclaimer

- The purpose of this presentation is to serve as an educational/clinical reference to best practices within school based settings as evidenced by current research.
- Parental consent was obtained prior to using all media in this presentation for educational purposes.
- The content discussed in this presentation is based on professional experiences in the general educational setting in New York State. Please check with your local state guided rules and regulations when referring to the process of AT.
Objectives

- After this course, participants will be able to identify what assistive technology is and low/high tech forms of assistive technology to be utilized in the classroom.
- After this course, participants will be able to discuss legislation that affects assistive technology in school based settings.
- After this course, participants will be able to discuss diagnosis that may benefit from specific devices/services.
- After this course, participants will be able to list the process on how to add assistive technology to a child’s IEP.

What is Assistive Technology?

Individuals with Disabilities Education Act (IDEA) defines AT as both a device and a service.

**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 the functional capabilities of a child with disabilities.”

**Service:**
“any service that directly assists a child with a disability in the selection, acquisition or use of an assistive device.”
Research Indicates

AT can be instrumental in helping young children with disabilities learn valuable life skills (social & communication skills, FM & GM skills, self-confidence and independence).


U.S Federal Legislation Affecting AT
The Individuals With Disabilities Education Act (IDEA)

1. Provides funds to states & local school districts to meet special education costs.

2. Every child is entitled to free and appropriate education. Children with disabilities are to be educated with their peers, (least restrictive environment).

3. Mandated Individualized Education Plan (IEP) for children 3-21 years of age with disabilities including consideration of AT.

4. Also, included mandated services from birth to 2 years and expanded emphasis on educationally related assistive technologies.

No-Tech/Low Tech/ Mid-High Technology

- **No-Tech and Low-Tech AT** allows the student to function in his/her environment as “naturally” as possible.

- **Mid-Tech and High-Tech** increase in complexity and may require a higher level of student support for care, programming, up-keep and use.
No Tech

- Highlighting key words on paper
- Color coded systems for organization
- Alternative assignment or shortened assignments
- Change text size, spacing, colors on reading material

*No Tech does not require any specialized equipment

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Low Technology

- Pencil grips
- Stunted writing surface
- Calculator with large switches
- Wheelchair tray
- Adapted paper
- Seating systems
Mid-High Technology

- Power Wheelchair
- Reading Pen
- Word prediction, Auditory feedback, Speech to text
- Touch screens/tablets/iPads

Mid-High Technology

- Desktop accessibility options
- Augmentative communication devices
- Modified Keyboards (Standard, Dvorak, Chubon)
- On-Screen Keyboards
- Switch Controlled Computers
When should you introduce AT to the student?

How is the AT evaluation process initiated?
Referral

- A referral by a parent or school staff must be implemented. Generally, school staff can request an informal screening by a therapist.

  “I would like my child_______ to be evaluated for assistive technology services.”

Evaluation

Schools often have a designated AT team to complete evaluations (OT/PT).

- Can use formal or informal assessments
- Evaluations should be conducted:
  1. as part of ongoing process linked with education and/or therapeutic planning.
  2. by a team within natural setting where child needs to engage in occupations.
  3. with trials using potential AT devices.
  4. with meaningful follow-through involving all team members (psychologist, OT, teachers, etc.)
Client Factors

- Auditory
- Somatosensory
- Visual
- Cognition
- Motor Control
- Psychosocial

Sample- Evaluation

You have a request for an AT evaluation for a 6th grade student. This child is falling behind in class, due to decreased writing speed and illegible handwriting. You as an OT are going to conduct this evaluation...
Sample- Evaluation

- Conduct observation of student performing the actual task
- Time the student copying a daily task, for example, date, aim, do now and homework
- Have him or her type the same task using a stopwatch and compare the results
- Conduct trial with potential device
- Staff input
- Documentation

Key Points to Consider

- Durability/Portability
- Training necessary? (paraprofessional, teacher, parents)
- Does the device require time to set up? Are they going to miss important information by the time device gets set up?
- Maintenance required?
- Parent/guardian involvement?
Diagnoses

Attention Deficit Hyperactivity Disorder (ADHD)

ADHD is a disorder involving a group of key skills known as executive functions. Executive functions impacts the ability to focus, organize, use working memory, and other executive skills.
Impact on School Based Performance (ADHD)

- Attention/concentration
- Memory
- Organizational skills
- Time management skills

ADHD

**No Tech/Low Tech Devices**
- Seating systems/lap belts
- Headphones for isolating attention/Books on tape
- Graphic organizers
- Timers
- Color coded/labeled/folders for each class/hooks or loops for easier grasp
- Reading trackers/highlighters

**Mid-High Tech Devices**
- Graphic organizers on powerpoint
- Google drive (folders/calendar)
- Speech to text software
Handwriting Sample of a 6th Grade Student with ADHD

Without Adapted Paper

With Adapted Paper

Dyslexia

Dyslexia- difficulty in learning to read, interpreting words, letters, and other symbols, but does not affect intelligence.
Impact on School Based Performance

- Reading
- Graphomotor skills
- Math
- Organizational skills

Dyslexia

No Tech/Low Tech Devices
- Highlighters/reading trackers
- Graphic organizers
- Adapted paper/raised line paper
- Color coded folders
- Books on tape

Mid/High Tech Devices
- Reading pens
- iPads/tablets
  - Speech to text, text to speech software (Writeout Loud), apps such as noteability, scantype, math apps
Case A - 7th grade student with Dyslexia

Case B - 7th grade student with Dyslexia
Muscular Dystrophy

Muscular dystrophy is a group of diseases that cause progressive weakness and loss of muscle mass.

Impact on School Based Performance

- Handwriting skills
- Sitting posture
- Ambulation
- Transitions
- Meal time
- Manipulatives
Muscular Dystrophy

No tech/Low Tech Devices
- Pencil grips
- Book holders
- Slant boards
- Modified feeding utensils
- Lap trays
- Page fluffers

Mid/High Tech Devices
- iPads/tablets (software)
- Computer accessibility options
- Power wheelchairs
- Walkers

Case C - 8th grade student with Muscular Dystrophy
Case C-Continued

Dyspraxia

Developmental Coordination Disorder (DCD) which causes difficulty with motor learning, motor planning difficulty.
Impact on School Based Performance

- Tying shoe laces
- Graphomotor skills
- Organizational difficulty
- Feeding

Handwriting Sample of an 8th Grade Student with Dyspraxia
Dyspraxia

No Tech/ Low Tech Devices
- Elastic shoe laces/Velcro shoes/curly shoelaces/slip-ons
- Graph paper/highlighted paper
- Color coded Folders/notebooks
- Modified utensils

Mid-High Tech Devices
- Laptops, Google drive
- Computer accessibility options

Cerebral Palsy (CP)

CP is a permanent damage to the brain which disrupts the brain’s ability to control movement and maintain posture and balance.
Impact on School Based Performance

- Graphomotor skills
- Toiling
- Feeding
- Transitions
- Transfers

Cerebral Palsy (CP)

Low Tech Devices/strategies
- Pencil grips
- Slant boards
- Teacher handouts
- Modified utensils
- Lap trays
- Book holders

High Tech Devices/strategies
- Recorders
- iPads/tablets (scan type, notability, co-writer, speech to text, words prediction, word completion, abbreviation expansion)
- Computer accessibility options
- Power wheelchairs
- Transfer lifts
Case D-10th grade student

Case D-continued (Video 2)
Case D-continued (Video 3)

Children with Hearing Impairments
Hearing Impairment

Hearing impairment, or hearing loss, occurs when you lose part or all of your ability to hear. Other terms that are used to refer to hearing impairment are deaf and hard of hearing.

Impact on School Based Performance

- Inability to focus (miss important information)
- Take notes at an appropriate speed
- Social/communication
Hearing Impairment

No Tech/Low Tech Devices
- Teacher handouts
- Books on tape
- Graphic organizers
- Tape recorded instructions
- Visual cues

Mid/High Tech Devices
- FM Unit
- Hearing Aids

Procurement process
- The school psychologist opens the case; however, the entire IEP team is involved in the process.
- The parent must sign a consent prior to beginning this process.
- The AT Team member will evaluate the student. This personnel is necessarily not an Assistive Technology Professional; however, he or she has received a specialized training from the AT Team.
Procurement process continued..

- If appropriate, the student will be provided with a trial period for the device that is believed to be the “best fit.”
- When the trials period ends, the IEP team will provide input to the evaluator on how the student’s performance was enhanced by this device or vice versa.
- The device will be issued only if the student/team provides objective feedback of performance enhancement in classroom.

Take Device Home?

- Trial period devices are not taken home.
- IEP team mainly decides if the student should be allowed to take the device home if the trial period ends.
- The IEP team, including the parents must concur with the decision (the decision will be included in the IEP).
REPAIR AND REPLACEMENT OF AT DEVICES

Repair and Replacement of Device

- Team that issued the device is responsible for repair.
- If lost or stolen, an individual from the IEP team must file a police report.
- AT TEAM will reissue the device after a thorough detailed investigation (each case varies).
- Process may take months.
Resources

https://abledata.acl.gov/

https://resna.ps.membersuite.com/onlinestorefront/BrowseMerchandise.aspx

https://www.aota.org/Search.aspx?q=assistive%20technology&sort=relevancy


Rehabilitation Engineering Society of North America
References


Questions?

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