Assistive Technology and Autism Spectrum Disorders

Technology and Curriculum Access Center, Easter Seals Arkansas

Bryan Ayres, M.Ed., Director
3920 Woodland Heights Road
Little Rock, Arkansas 72212
501-227-3612
Fax: 501-227-3601
Toll-free: 877-533-3600
bayres@eastersealsar.com
www.eastersealsar.com
http://www.facebook.com/#!/profile.php?id=100002129396450
http://twitter.com/#!/EasterSealsAR
The Technology and Curriculum Access Center is a collaborator with the Arkansas Department of Education, Special Education Unit.

A Little About Our Services

- Five core services
  - Assistive Technology Assessment
  - Consultation regarding access to curriculum and assessment
  - Consultation regarding assistive technology devices and services
  - Training
  - Loan System for Assistive and Educational Tech trials
- Arkansas partner in the regional Americans with Disabilities Act Network, Southwest ADA Center www.southwestada.org

Assistive Technology Device

- Assistive Technology Device—Assistive technology device means 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 a disability. (34 C.F.R. § 300.5)
P.L. 108-446. The Individuals with Disabilities Education Improvement Act of 2004
**Assistive Technology Services**

- Assistive technology service means any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device. (34 C.F.R § 300.6) The term includes:
  - Functional Evaluation
  - Acquisition
  - Getting it working
  - Coordination
  - Training for Child, Family and Professionals

**Assistive Technology is only a tool….Good instruction is essential**

- Assistive Technology Consideration
  - Consider the students abilities, strengths, and needs
  - Consider the environments
  - Consider the tasks and activities
  - Consider possible strategies and tools


- The SETT Framework is a tool that helps teams gather and organize information that can be used to guide assistive technology decision making.

**Assessment for Assistive Technology Models**

- Independent Expert Model
- Medical Model
- Blended Model
- Blended Team Based Assessment

(Whichever model is used, a framework that looks at student, environment and tasks required first is always the best decision making approach.)


Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history

1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.

2. Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.

3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.

Three levels of support. Level 1 requires support, Level 2 Substantial support, Level 3 Very substantial support

Source: DSM-5, May 2013
Two major ways to consider technology for individuals with autism

- Communication supports or “augmentative and alternative communication”
- “Teaching tools and support strategies”


Many find it helpful to think about technology in its technical complexity

- No Tech or Low Tech
- Middle Level Technology
- High Technology

Let’s Apply The SETT Concept to a Situation Associated with AT for Communication

- Know your student
- Assess current communication modes
- Expressive/receptive language skills
- Communication interaction skills
- Access skills for physical and sensory
- Literacy skills
- Visual considerations

Environmental Considerations

- Communication partners
- Partner behaviors/attitudes
- Daily schedule
- Communication opportunities
- Technology availability
- Multiple systems/modalities
- Vocabulary to support environmental access
- Sensory challenges?
Communication Tasks

- Functions
  - Initiating
  - Continuing
  - Commenting
  - Ending
  - Repairing
  - Requesting
  - Denials/rejection
  - Exchanging information
  - Social etiquette
  - Social closeness

Low Tech Strategies

Mid Tech

High Tech

http://www.specialed.us/autism/index2.htm
Susan Stokes, CESA 7
Changes in the Ways We Believe

- Prevalence between 1-150 or even less children nationwide
- Found throughout the world, throughout all cultures.
- 3-4 more times common in boys than in girls

- No known cause or cure.
- Early intervention produces great changes in many cases.


May experience co-morbid difficulties

- Anxiety and/or depression
- Attention deficit hyperactivity disorder
- Obsessive compulsive disorder
- Psychosis or neurotic disorders
- Bi-polar and oppositional defiant disorder

Evidence Based Practice
Established Treatments

Antecedent Strategies

- Choice making
- Behavior chain interruption
- Cues and prompts
- Stimuli manipulation
- High probability sequencing
- Non-contingent reinforcement
- Incorporating echolalia and an individual's obsessive behaviors
- Time Delay
- Errorless learning
- Satiation
- Adult presence
- Management of motivational operations
- Intertrial interval reinforcement
- Habit reversal
Teaching Tools and Support Strategies

- Teaching Tools often are associated with academic connections.
  - Reading, Writing, Studying, Mathematics, Science, etc.
- Support Strategies
  - Organization, Social Skills and Behavioral Supports, Schedules, Timers

Target Behaviors-Antecedents

- Communication
- Interpersonal for social skills
- Readiness to learn
- Personal responsibility
- Play skills
- Self-regulation
- Problem behaviors
- Sensory and emotional regulation

Behavioral Strategies

- Behavioral sleep
- Toilet training
- Chaining
- Contingency contracting, mapping, delayed contingencies
- Differential reinforcement
- Discrete trial
- Functional communication
- Generalization
- Fading
- Escape training
- Shaping
- Successive approximation
- Task analysis
- Token economy

Target Behaviors-Behavioral Strategies

- Academics
- Communication
- Interpersonal for social skills
- Learning readiness
- Responsibility
- Play skills
- Self-regulation
- Problem behaviors
- Sensory or emotional regulation
Strategies for Self-Management

Don’t overlook pre-made materials at sites such as boardmakershare, www.speakingofspeech.com, and other sites dedicated to visual supports. Structure is the great equalizer with autism spectrum disorders.


Comprehensive Behavioral Treatment for Young Children

• Intensive service delivery based on applied behavior analysis (ABA).
• Variety of settings
• Rich student to teacher ratio
• Targeting the defining symptoms of ASD
• Applied Behavior analysis (DTT, Incidental teaching, errorless learning, shaping
• Written guidance through treatment materials and data collection.

CBTYC

• Typically associated with the Lovaas studies
• Uses discrete trial and is effective most often in the literature ages 0.4-Age 9.
• Complex, expensive and intensive
• Data driven and usually 25-40 hours of week for best results.

Joint Attention Intervention

• Joint attention refers to two individuals focusing on an object or activity and each other. Joint attention is a pre-requisite for communication and not something that people with Autism Spectrum Disorder develop.
• Examples for young children include simple skills taught in a discrete trial format.
Modeling Strategies

- Live modeling
- Video modeling
- Prompting
- Errorless learning-reset strategies

Modeling Strategies-Target Behaviors

- Communication skills
- Good for student who have higher cognitive functioning
- Interpersonal skills
- Personal responsibility, executive skills
- Play skills
- Problem behaviors
- Sensory and emotional regulation

Naturalistic Teaching Strategies-Principles

- Direct and natural consequences
- Variety of materials and environments can lead to improvements
- Programming common stimulus
- Teach with generalization in mind
- Especially useful in communication, interpersonal and play skills

www.youtube.com/watch?v=J0nBatn5vUo
Peer Training Strategies

- Socially skilled peers
- Generally compliant with instructions
- Good school attendance
- Willing to participate
- Are able to imitate a model
- Various ways to provide supports

Pivotal Response Treatment Strategies

- Motivation
- Self-initiation
- Self-management
- Responding to multiple cues
- 3-9 years old
- Helps with students who are solitary and isolationist

Schedules

- Long term, daily, activity level, task analytic
- Simple as if/then
- As complicated as a sophisticated communication system using pictures or icons.
- Primarily effective for students ages 3-14 years of age.

Self-management

- 3-18 years
- Target skills: Academics, Interpersonal skills, self-regulation
- Brings about self-awareness, accountability for carrying out an activity or procedure, self-recording/management, multi-tasking, decreasing social stigma
Story-based Intervention Strategies

• Social stories
• Paired with modeling, both live and/or video modeling
• Cover the who/what/where/when and hows of behaviors or activities
• Date collection

Factors influencing success

• Decision making is data based.
• Set goals and define target behaviors
  — Specific, observable and measurable?
• Procedures
  — Frequency
  — Time sampling
  — Duration
  — latency

Factors Influencing Success

• Data analysis for Interventions
• Incorporation of family values and preferences
• A staff that is willing to build capacity and understand the learning differences inherent in the higher functioning autism population
• Early intervention, effective communication and systematic through the developmental years.
Emerging Treatments

- Augmentative and Alternative Communication
- Cognitive Behavioral Intervention
- Developmental Relationship Based
- Exercise
- Exposure
- Imitation
- Initiation
- Expressive Communication
- Expressive and Receptive Communication
- Massage
- Multi-component

Emerging Treatments

- Music Therapy
- Peer Mediated Intervention
- Picture Exchange Communication
- Recreation Therapy
- Reductive
- Scripting
- Sign
- Social Communication
- Social Skills
- Structured Teaching
- Technology Based Intervention
- Theory of Mind Training

Un-established Strategies
Seen less often in research literature, but still relevant

- Academic Intervention
- Auditory Integration
- Facilitated Communication
- Gluten and Casein Free Diet
- Sensory Integration
- Vitamin routines

Resources

- [http://www.specialed.us/autism/index2.htm](http://www.specialed.us/autism/index2.htm)
- [http://www.autismspeaks.org/autism-apps](http://www.autismspeaks.org/autism-apps)
- [http://www.autismspeaks.org/family-services/technology](http://www.autismspeaks.org/family-services/technology)
- [http://pecsforall.com/](http://pecsforall.com/)
- [http://www.mayer-johnson.com/boardmaker-software/?gclid=CP28j76s9bwCFVRo7AodrU4AVw](http://www.mayer-johnson.com/boardmaker-software/?gclid=CP28j76s9bwCFVRo7AodrU4AVw)

Resources

- [www.eastersealsar.com/](http://www.eastersealsar.com/) The Technology and Curriculum Access Center, Easter Seals Arkansas offers consultation, training, assessment and loans for AT in Arkansas schools and the Easter Seals Outreach Program provides technology assistance, consultation and training throughout Arkansas schools.
- [www.arkansas-ican.org](http://www.arkansas-ican.org) The Arkansas program for assistive technology, which maintains the AT4All program.

Resources

- [http://www.disabilityresources.org/AT.html](http://www.disabilityresources.org/AT.html) A good national resource directory for AT information
- [http://www.closingthegap.com/](http://www.closingthegap.com/) A resource directory and conference that is very comprehensive
Thanks for Participating!

www.eastersealsar.com
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