Technology as a Tool for Teaching: Innovative Community Instruction for Adolescents with ASD

Avi Glickman, M.Ed.
Kaori G. Nepo, M.Ed., BCBA

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Mission for Educating Children with Autism
You are an Essential Piece...

Preparing Adolescents for Adult Life
Transforming Possibilities into Abilities
Adult Competencies & Employment
Technology is a concept, not a “thing”

Identify technology as a primary tool for community-based instruction

Develop strategies to improvise, adapt and overcome challenges to independence through implementing technology as an integral part of instructional programming

View technology as a resource to enhance the quality of life.
The Total TECHNOLOGY Tool Box to Build Innovative Community Instruction for individuals with ASD

- Principals of ABA
- Functional relevance
- Community immersion
  - Teaching in the natural environments
- Environmental adaptations
- Electronics
- Community partnerships/Education
- Dyads / Triads: Reliance on Natural Supports
- Strong family involvement / communication
Technology.....what is it?

**Technology** [tek-nol-uh-jee] noun

1. The branch of knowledge that deals with the creation and use of technical means and their interrelation with life, society, and the environment, drawing upon such subjects as industrial arts, engineering, applied science, and pure science. (emphasis added)

2. The terminology of an art, science, etc.; technical nomenclature.

3. A technological process, invention, method.

4. The sum of the ways in which social groups provide themselves with the material objects of their civilization.

   - Webster Collegiate Dictionary
Technology....What does it look like?

Environmental Adaptations

Electronics
Technology....why do we use it?

Allows us to improvise adapt and overcome any challenge the environment or function presents as a barrier to improve ability.
Technology....the old
Technology....the old ... and the new
Technology: Environmental Adaptations

- **Tying shoes**
- **Money**
- **Buttoning**
- **Organization**
Technology: Environmental Adaptations

- Laundry
Technology : Environmental Adaptations
Technology: Electronics

Blue tooth

MP4 Player/Watch

Video Modeling

PDA/Smartphone
Technology: Electronics

Bluetooth

Purpose:

To promote independence and increase social acceptance of the adolescents with autism by reducing stigma associated with one-on-one instructions and physical prompts in the community.
Technology: Electronics

Bluetooth

- Used auditory prompts through Bluetooth earpiece for purchasing (locating items, waiting in line, and paying for items with a credit card).
Bluetooth - Results

Locate Items (Participant 1)

- Blue line: # of p
- Red line: distance

Session:
- Frequency
- Distance (ft)
Technology: Electronics

Bluetooth - Results

Wait (participant 1)

- # of p
- distance

Session

Frequency

Distance (ft)
Technology: Electronics

Bluetooth - Results

Purchase (participant 1)

- # of p
- distance
Technology: Electronics

Bluetooth
"I thought something wasn't quite right with him, but I didn't think it was as bad as that autism thing."

- Rite Aid Cashier
Video Modeling

History

It has been proved through many research studies that “Video Modeling” is an effective tool to teach various skills

- Social skills (Kimball, Kinney, Tayler, & Stromer, 2004)
- Complex play sequences (D’Ateno, Mangiapanello, & Tayler, 2003)
- Social language (Maione & Ayres, 2004)
- Perspective taking (Charlop-Christy & Daneshvar, 2003)
Video Modeling

- Variation on Video Modeling
  - Didactic teaching in contrived settings
  - Variation on time between video model and performance
  - Variation in models
  - Variation in instructions with video modeling
Technology: Electronics

Video Modeling

Benefit
- Rapid acquisition of skills
- Effective for both verbal and motor responses
- Effective for NT population and people with learning difficulties
- Fade one on one instructions
- Consistency of sequence/duration
Technology: Electronics

Video Modeling

- Technology-improved probabilities
  - MP4 player/IPOD
  - Portable DVD player
  - Digital Picture frames
  - PDA devices
  - Cell phones (c.f. IPhone)
Video Modeling

Purpose:
To improve independence of adolescents with autism during hygiene routines using video modeling via digital picture frames and portable DVD players.
Video Modeling-Tooth Brushing

Participants:

1. A 16 years old female student with severe to moderate autism
2. A 18 years old male student with severe to moderate autism
3. A 13 years old male student with severe to moderate autism
Video Modeling-Tooth Brushing

- Baseline
  - Priming
  - Textual (with pictorial for participant 1) prompts for showering routines
  - Partial and/or full physical prompts as needed
  - Verbal/social praise for attempt/completion of the steps
  - Delayed reinforcers upon completion of all TA
Video Modeling-Tooth Brushing

- Interventions
  - Priming
  - Video Modeling-visual prompts
  - Full/Partial prompts from behind
  - Gestural prompts to attend to Video
  - Systematic prompt fading
  - Social praise for attempt/ completion of the steps
  - Delayed reinforcers upon completion of all TA
Technology: Electronics

Video Modeling-Tooth Brushing
Video Modeling-Tooth Brushing

Baseline Behaviors:

- Participant 1: bite and suck on the tooth brush
- Participant 2: 2 seconds of brushing, staring the mirror, or bite the tooth brush
- Participant 3: staring the mirror and required repeated prompts to start the first step (up to 17 prompts)
Technology: Electronics

Video Modeling-Tooth Brushing
Video Modeling-Tooth Brushing

Result

- Participant 1: slow and steady improvement on independent completion of the TA
- Participant 2: significant improvement on independent completion of the TA
- Participant 3: significant improvement on independent completion of the TA
Video Modeling - Results

Brush Teeth (participant 1)
Video Modeling - Results

Brush Teeth (participant 2)

Percentage of Independent Completion

session

0 10 20 30 40
Technology: Electronics

Video Modeling - Results

Brush Teeth (participant 3)

Baseline

Percentage

Session

0 10 20 30 40 50 60

0 10 20 30 40 50 60 70 80 90 100
Brush Teeth (participant 1)

Brush Teeth (participant 2)

Brush Teeth (participant 3)
Technology: Electronics

Video Modeling - Tooth Brushing
Purpose:
To reduce stigma associated with one-on-one instruction (close proximity and physical prompts) by providing auditory/visual cues via watch during the workout routines at the local fitness center.
Baseline:

- Participants wore the MP4 player watch or IPod and earphones/headphones connected to the device.
- Use written schedule and a portable timer to follow the workout schedule (checking schedule, setting a timer).
- Partial and/full physical prompts were provided as needed.
Technology: Electronics

**MP4 player/ IPod™**

- **Intervention:**
  - Participants wore the MP4 player watch or IPod with earphones or headphones connected to the device.
  - Verbal directions combined with highly preferred music were given via MP4 player or IPod.
  - Partial/full physical prompts were provided as needed.
Technology: Electronics

MP4 player-video
Technology: Electronics

MP4 Player/IPod™ - Result

Nicky Workout

Percentage of Independent Completion

Date


winter break

MP4 Player

w/o

MP4
Technology: Electronics

Positive Outcome of MP4

Affect (Workout)

- Red: with watch
- Blue: without watch
Technology: Electronics

PDA/Smartphone

Purpose: increase independence by reducing the need for constant support from others. Promotes social acceptance by reducing stigma and by replacing cumbersome augmentative communication systems.
Technology: Electronics

PDA/Smartphone

- Combines multiple prompting strategies to promote independence
  - Video modeling
  - Auditory prompts
  - Textual
  - Pictorial
Technology: Electronics

PDA/Smartphone

Visual Assistant®

A Windows® based program that provides visual and auditory prompts sequentially. It runs on a handheld pocket PC (c.f. PDA) and can greatly improve independence of adolescents with autism by allowing staff to fade proximity and prompts.

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www.ablelinktech.com
1. Schedule indicates that it is time to make lunch.

2. Pocket Compass is programmed to automatically open. The student chooses what they want to prepare.

3. Software prompts the student through the task using a visual/written or video task analysis.

4. Pressing the “ALL DONE” button takes the student back to their schedule.
Technology: Electronics

PDA/Smartphone
Communication
Communication with an I-Pod™

Proloquo2go®

http://www.proloquo2go.com/
Technology: Electronics

PDA/Smartphone

- Communication
  - Microsoft Power Point® Customize Your Own Augmentative & Alternative Communication Program!
  - Pictorial, Textual and/or Auditory Prompting
  - Portable/Accessible
  - Inexpensive
  - Efficient Communication
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<th>Tape</th>
<th>roboraptor</th>
<th>computer</th>
<th>keys</th>
<th>bag</th>
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Technology: Electronics

PDA/Smartphone
Dyad/Triad Instruction......
Technology can get you there faster

- Targeting the future
  - Limited funding
  - Limited services
  - No one-on-one instruction

- Programming
  - Pairing of students
  - Geographic location
  - Staff training
  - Fading proximity
Dyad/Triad Instruction
ABA in Action

Hagner & Cooney (2005) interviewed the supervisors of 14 successfully employed individuals with autism to examine their supervisory practices and their perceptions of employees with autism. Supervisors evaluated their employees with autism highly, and qualitative analysis found that a set of specific supervisory accommodation strategies were commonly associated with successful supervision. These included:

› maintaining a consistent schedule & set of job responsibilities; *(activity schedules/task analysis)*
› using organizers to structure the job *(PDA, Environmental Modification)*
› reducing idle or unstructured time *(DRA Reliance on natural supports)*
› being direct when communicating with the employee, and *(present a clear and accurate Sd)*
› providing reminders and reassurances *(self monitoring/motivator/)*

*(Peter Gerhardt, Ed.D, 2007)*
Other Considerations: Technology as Communication /Information Gathering tools

EX: Wiki Page

- Secure personal web page
  - IEP/ISP
  - Daily communication
  - Window to the community
  - Graphs
  - Data sheets
  - Instructional plan
  - Clinical page
Independent Functioning

**in·de·pen·dent**
- Pronunciation: in-de-'pen-dent
- Function: adjective
- 1: not dependent: not requiring or relying on others (as for care or livelihood) <independent of her parents>

**interdependent**
- Pronunciation: In-ter-di-pen-duh nt
- Function: Adjective
- 1. mutually dependent; 2. depending on each other.

Activities:
- Drive a car
- Cooking
- Appts/Recreation
- Shopping

Directions:
- Taking the bus
- Follow a recipe (T.A.)
- Using a PDA (Schedule/Alarm)
- Asking for help
Ready ... Set ... Work !!!
The Outlook is Bleak........

- 74% stated that they wanted to work but were currently unemployed;
- 19% of individuals with autism were employed at the time of the survey;
- 74% of those employed worked less than 20 hours per week; and
- 85% still lived with parents, siblings, or older relatives.
- 78% were unfamiliar with agencies or professionals that might assist in job development.

(Source: University of Miami/Nova Southeastern University CARD 2008)
“If you can imagine it, You can achieve it. If you can dream it, You can become it.”

-William Arthur Ward
From Dishwasher to Desk Job.

Brett’s first day on the job with a tie!
Autism Works
“To think you can, creates the force that you will”
- Orison Sweet Marden - 1916
Preparing Adolescents for Adult Life

www.mecaaautism.org

Kaori G. Nepo, M.Ed., BCBA- Clinical Director
knepo@mecaaautism.org

Avi Glickman, M.Ed.- Community Education Director
aglickman@mecaaautism.org

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