

AAC Video Visual Scene Displays: Supporting Adolescents with ASD

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Learning Objectives

- #1 - Define videos with integrated visual scene displays and describe at least three key components
- #2 - Evaluate the effectiveness of video VSDs to enhance participation in vocational settings by describing one strength and one challenge to the application.
- #3 - Identify at least two clinical implications and two future research directions for the use of video VSD technology.

Speaker Disclosures and Acknowledgements

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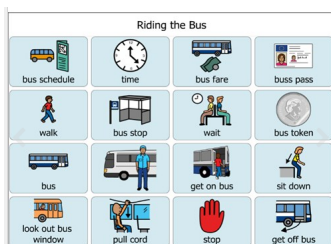
Background: Employment & Transition

- **Employment**
 - Individuals who use AAC
 - Individuals with Complex Communication Needs
 - Individuals with ASD
 - Approximately 25-50% of adults with autism are employed (Hendricks, 2010; Wehman et al., 2012).
 - Majority described as "high functioning" and using speech to communicate
 - 20-30% of individuals with autism do not make use of speech to communicate and are described as having *complex communication needs*
 - Less than 5% of individuals with complex communication needs are employed
 - (e.g., McNaughton & Bryen, 2002)

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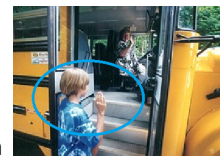
Current AAC technologies

- Traditional AAC grid-based displays depict language concepts outside of the meaningful communication contexts



Current AAC Technologies

- Visual scene displays (VSDs) capture meaningful events within an individual's life in an integrated scene (i.e., photograph), with language concepts embedded as hotspots within the scene in order to reduce cognitive and linguistic demands (Light & McNaughton, 2012).

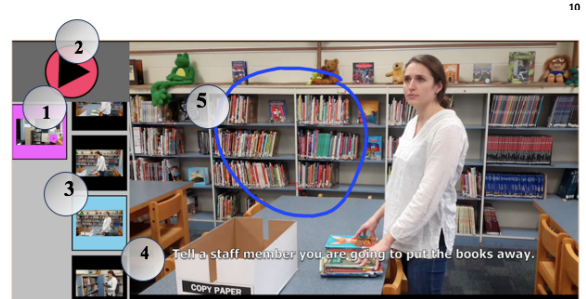
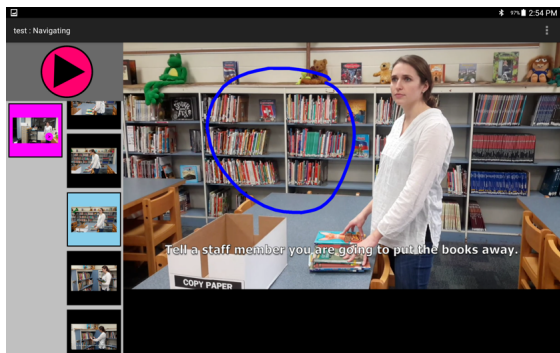


Video Prompting

- Video prompting: form of video modeling in which a chained task is broken down into individual steps

Videos with integrated VSDs

- Capitalize on evidence that:
 - (1) video prompting interventions support learning of new skills by individuals with autism spectrum disorder; and
 - (2) VSDs provide contextual support for communication within real-world contexts.
- Capture dynamic routines that support communication in real world vocational and community settings (Light, McNaughton & Jakobs, 2014)



Notes: (1) topics for selection (2) play button, which becomes a pause button when the video plays, (3) specific steps within each task, (4) text on screen that describes the current step of the task analysis, (5) hot spot for communicative turn

Current Research and Aims

- **Study 1: What are the effects of videos with integrated VSDs on a tablet-based application (Easy VSD software created by Invotek, Inc.) on participation in three real world contexts**

Design

- **Pilot case study with 2 phases:**
 - (a) baseline
 - (b) intervention

Participant

- **16 year old female (Lena) with autism spectrum disorder**
- **Able to use speech to communicate in some circumstances; however, it did not meet all of her daily needs**
 - Expressive communication characterized by use of ritualized phrases, delayed echolalia, and scripting
- **Highly prompt dependent on verbal and gestural prompting to complete vocational and community tasks and fulfill communicative opportunities**

Settings and Tasks

- **Intervention included three real world tasks:**
 - Using public transportation (riding the bus)
 - Shredding job at school
 - Working at the print shop
- **Task analyses were developed for each task after observing Lena during one session in each context**



- Used to identify the steps to complete the tasks and the opportunities for communication

Shredding task analysis

1. **Say goodbye to classmates**
2. Exit the classroom and walk to the office
3. Enter the office
4. **Greet the secretaries**
5. Walk to the shredding room
6. Turn on the shredder
7. Put papers through the slot
8. When the shredder stops, open the door handle and pull out the bag
9. Pick up any scraps on the floor
10. Dump shredding into garbage can
11. Slide bag back into shredder
12. Close the shredder door
13. Turn off the shredder and exit the shredding room
14. **Say goodbye to the secretaries**
15. Return to classroom
16. **Greet classmates**

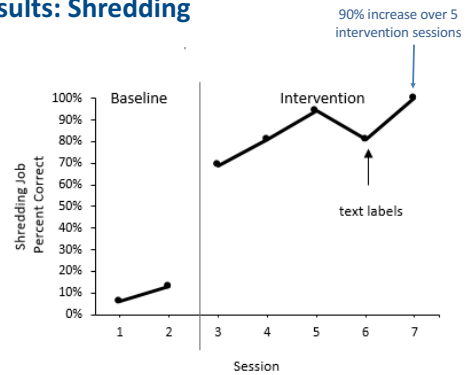
Materials

- **Tablet and app**
- **Operating the app**
 - (1) press the play button
 - (2) watch the video segment portraying one step from the task analysis
 - (3) perform the step or fulfill the communication opportunity depicted in the segment
 - (4) select the thumbnail of the next video from the left menu
 - (5) repeat steps 1-5 for each video segment to complete the entire task.

Procedures

- **Baseline:** Data collected as they typically occurred within her school program prior to the intervention, without the use of the video VSD app
 - % of steps completed and communication opportunities fulfilled independently
- **Intervention:** Completed tasks with video VSD app
 - Video review prior to intervention
 - Least-to-most prompting to use the app when Lena failed to complete or play a video
 - Expectant delay
 - Gestural prompt
 - Model

Results: Shredding



Study 2: Research Question

- **Do videos with integrated VSDs on the EasyVSD application to increase the percent of steps completed (and communication opportunities fulfilled) during vocational activities for an adolescent with ASD and complex communication needs (CCN)?**

Participant & Setting

- **18 year old male with autism**
 - High school student
 - No functional speech
 - A few signs – mostly yes/no, thank you
 - Prompt dependent
- **Local elementary school library**
 - 3 tasks – Checking in books, putting away/sorting books, and making dye cuts

Research Design

- **Multiple Baseline design across three behaviors**
- **Variables:**
 - IV - EasyVSD application
 - DV - percent of steps completed and communication opportunities in TA
- **Stages:**
 - Baseline, Intervention, Maintenance, Generalization
- **Video prompting**
- **Task Analysis**

Procedures

Probes

- Researcher provides initial cue (It's time to _____ (at the beginning of the task))
- no instructional feedback provided
- wait 5 seconds
 - if no response, or an error occurs (student begins to incorrectly complete step or complete a step out of sequence)
 - interventionist blocks view if possible
 - interventionist completes step
 - 'What's next?'

Baseline

- No tablet

Intervention

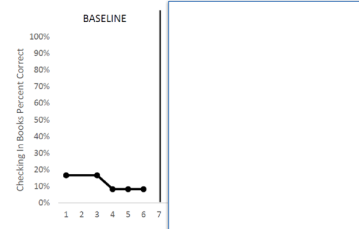
- Tablet - interventionist sets tablet to target skill

Task Analysis: Putting Books Away

- Ask to put the books away: Can I put the books away?
- Pick up the box of books
- Bring the box to the table
- Empty the books on to the table
- Sort the books into piles based on categories
- Ask a staff member to check your work: Can you check my work?
- Tell a staff member you are going to put the books away: I'm going to put the books on the shelf.
- Pick up the books and take them to the bookshelves
- Put the books in the correct place on the shelf
- Return the box
- Tell a staff member you are finished: I am finished putting the books away.

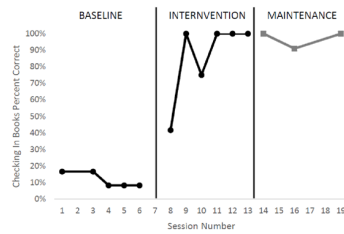
Results: Checking In Books

- **Task 1**
Baseline: = 8% on average across 5 baseline sessions



Results: Checking In Books

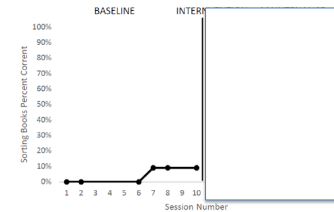
- **Task 1**
Intervention=
average of
86% across 6
sessions



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Results: Putting Away Books/Sorting

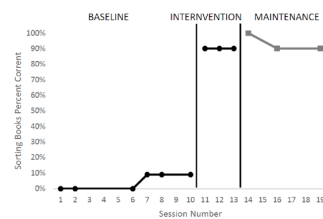
- **Task 2**
Baseline: = 5%
over 6
baseline
sessions



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Results: Putting Away Books/Sorting

- **Task 2**
Intervention
= average of
90% across 3
sessions

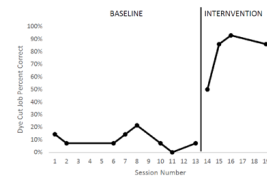


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Results: Dye Cuts & Shredding

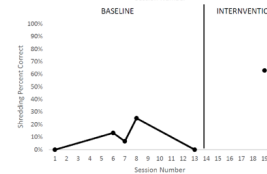
- **Task 3 Baseline:** = 15% over 8 baseline sessions

- **Task 3 Intervention** = average of 79% across 4 sessions



- **Task 4 Baseline:** = 9% over 5 baseline sessions

- **Task 4 Generalization** =
• Probe 1 = 63%



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Implications

- This investigation suggests that videos with integrated VSDs provide a means to seamlessly infuse video prompting and communication in order to increase participation and communication for individuals with autism and complex communication needs in real world contexts
- **Benefits:**
 - Increase independence
 - Decrease reliance on prompting from staff
 - Create increased opportunities for employment
 - Increased opportunities for independent participation in meaningful community activities
- **Future research**
 - More learners of various diagnoses and skill levels, across multiple contexts
 - Chunking of videos as learners increase proficiency
 - Other applications of the video VSD app (e.g., video schedule, shared context for social interaction)



Technologies currently available

- Snap Scene



Supports the use of still VSDs with embedded hotspots



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