Videos with integrated visual scene displays to enhance participation in community and vocational activities: Pilot case study

Tara O'Neill, Janice Light
Pennsylvania State University

Disclosure and Acknowledgements

Background: Supporting real-world participation

- The majority of AAC research to date has focused on communication in restricted settings with a restricted range of partners
- Participation of individuals with complex communication needs in community and vocational settings deserves greater attention
  - Only 42% of intervention research studies published in the AAC journal focused on participation in real world settings (Light & McNaughton, 2015)
  - Less than 5% of individuals with complex communication needs are employed (McNaughton & Byren, 2002)
- In order to maximize the positive outcomes of AAC interventions, it is critical that interventions are designed to support participation of individuals within real-world interactions in their natural environments.

Current AAC technologies

- Traditional AAC grid-based displays with isolated AAC symbols arranged in rows and columns depict language concepts outside of the meaningful communication contexts in which they occur

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).
  - However, current AAC technologies support the integration of only static photo VSDs
  - Static VSDs do not capture the dynamic routines that require communication within real-world vocational and community activities

Video Prompting

- Video prompting: form of video modeling in which a chained task is broken down into individual steps
  - Learner watches each individual step of the task and is given a chance to perform that step before moving onto the next step (Sigafoos et al., 2005)
- Individuals with autism spectrum disorder have experienced success with video prompting interventions within community-based vocational settings (e.g., Bereznak, Ayres, Mechling & Alexander, 2012; van Laarhoven, Johnson, van Laarhoven-Myers, Grider & Grider, 2009).

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)

Current Investigation: Aims and question

- The purpose of this study was to investigate 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
- Question:
  - Do videos with integrated VSDs on the EasyVSD application increase the percent of steps completed and communication opportunities fulfilled during community and vocational activities by an adolescent with autism spectrum disorder and complex communication needs?

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

Bus riding task analysis

(1) Walk to the bus stop
(2) Look at the schedule for the time of the next bus
(3) Wait for the bus to arrive
(4) Get on the bus
(5) Greet the bus driver
(6) Give bus pass to the driver
(7) Walk to seat, sit down, and wait
(8) Pull cord when stop is next
(9) Get up and walk to exit
(10) Thank the bus driver
(11) Exit the bus

Print shop task analysis

(1) Thank the van driver
(2) Exit the van
(3) Greet job coach
(4) Enter building and walk to print shop
(5) Get folder from the shelf
(6) Write date and time on sign in sheet
(7) Return folder to the shelf
(8) Get the die cuts from the shelf and bring to the table
(9) Put paper on the die cut
(10) Turn over the die cut and place in press
(11) Pull down the lever one time

(12) Slide out the block and remove the die cut
(13) Recycle the paper scraps
(14) Return the die cut to the shelf
(15) Brush off the tables with the dust pan and brush
(16) Get folder from the shelf
(17) Sign out with time and initials
(18) Return folder to shelf
(19) Leave print shop and walk outside
(20) Say goodbye to job coach
(21) Get on van
(22) Greet the van driver

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

Results: Print shop

Results: Public transportation
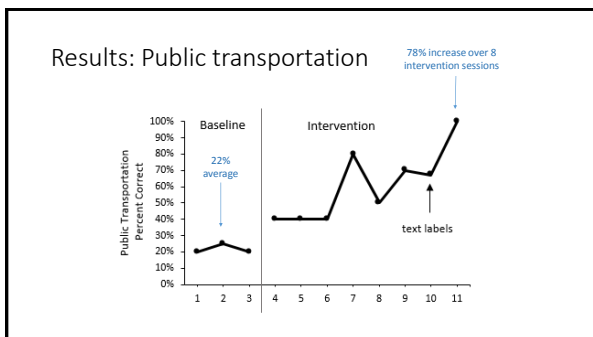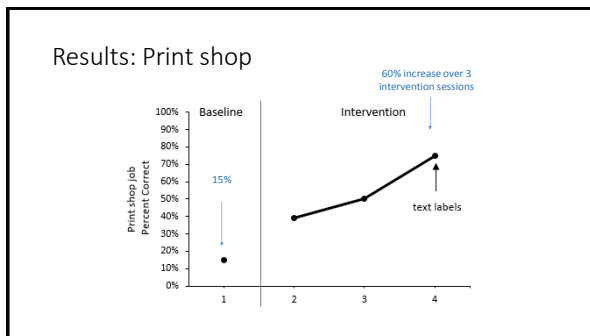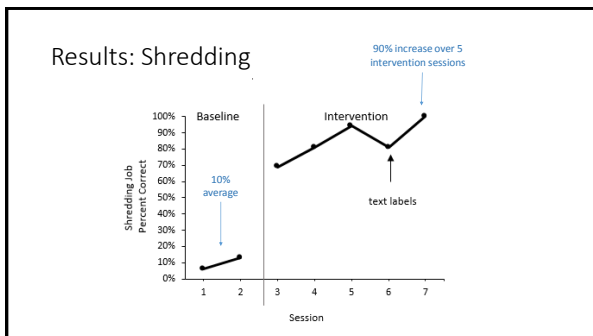
Implications

- 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 and 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

Impromptu app + AAC

• Questions?
• Handouts will be available at http://aac.psu.edu/

• Thank you!