Video Modeling to Promote Functional Skills for Children with Autism

Ketti Johnson Coffelt, OTD, MS, OTR/L
Ginny Stimac, MOTS
Ethan Boren, MOTS
Robyn Everist, MOTS
Megan Hansen, MOTS
Morgan Heard, MOTS
Rockhurst University, Kansas City, MO

Paving the road for Video Modeling
Learning objectives

+ Gain comprehension for the types of video modeling used with children with autism
+ Discuss evidence from a single subject RU research project and from OT fieldwork student/parent project
+ Examine the effectiveness of video modeling for children with Autism Spectrum Disorder’s in home and school contexts performing home and school tasks.
+ Describe and discuss the empirical evidence of video modeling via iPad® programming using an occupation based approach
+ Discuss parent perspectives of video modeling implementation

Significance of Research

+ Client centered approach
+ Addressed impact of Portable technology (iPad®)
+ Occupation based intervention
+ Evidence is lacking from Occupational Therapy perspective with consideration to context and functional routines
What is Video Modeling?

Defined as the use of visual display of a sequence of tasks demonstrated by others or by self to teach skills.
Types of Video Modeling

- Video Modeling Types (Corbett & Abdullah, 2005)
  - Point of view (Shrestha, Anderson, & Moore, 2012)
  - Self (Bellini & Akullian, 2007)
  - Peer/ adult (Bellini & Akullian, 2007)
  - Mixed-models: combination of any of the above approaches

Video Modeling Intervention Training (VIMT) vs. In-Vivo

<table>
<thead>
<tr>
<th>VIMT</th>
<th>In-Vivo</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cost effective (Charlop-Christy, Le, &amp; Freeman, 2000)</td>
<td>• Time intensive</td>
</tr>
<tr>
<td>• Little training (Cardon, 2012; Wilson, 2013)</td>
<td>• Requires high-fidelity model</td>
</tr>
<tr>
<td>• Portable</td>
<td></td>
</tr>
</tbody>
</table>
Importance of Video Modeling

- Establishes and increases independence
- Less prompting and cueing
- Repetition and consistency (Wilson, 2013)
- Ease of administration (Gena, Couloura, & Kymissis, 2005; Wilson, 2013)
- Being unobtrusive (Ganz et al, 2011)
- Cost effectiveness (Ganz, Earles-Vollrath, & Cook, 2011; Wilson, 2013)

Why the interest?

- Effective on individuals with Autism Spectrum Disorder (Wilson, 2013; Rayner, 2011; Cardon, 2012; Paterson & Arco, 2012; Coyle & Cole, 2004)
- Strengths-based programming:
Importance for child with ASD

+ Individualization (Wilson, 2013; Shretha, Anderson, Moore, 2012)
+ Good fit for family and school
+ Convenient for repetition
+ Less prompting and cueing
+ ASD students prefer computer based instruction
+ Relieve anxiety of student since environmental factors can be controlled

Occupational Approach with VIMT

Teach a variety of tasks
+ Unpacking a bag (Rayner, 2010)
+ Making a snack (Shrestha, Anderson, & Moore, 2012)
+ Write numbers (Jowett, Moore, & Anderson, 2012)
+ Teach pretend play skills (Reagon, Higbee, and Endicott, 2006)
The Effectiveness of Portable (iPad) Video Modeling Interventions to Promote Functional Skills for Children with Autism

Rockhurst Research Study, 2014

Purpose of RU Research Study

+ Determine if there is a functional relationship between video modeling intervention training (VIMT) via iPad® and functional task performance in the home environment of a child with ASD.
Primary Research Question

Does visual strategy of iPad® video modeling intervention effect the performance of functional skills in the home for children with Autism Spectrum Disorder? Discuss additional questions

Methods: Study Design

- Quasi experimental
- Quantitative
- Single Subject, Multiple Baseline Behaviors
Methods - Participant

- Child with Autism
- Convenience Sampling

Inclusion

- Diagnosis of autism or ASD
- Access to iPad® in the home
- Interested in electronic devices
- Attention for 1-3 min
- School aged
Exclusion

- No hearing deficits
- Vision deficits
- Not enrolled in any similar outside iPad® intervention

Setting/ Materials

- Child’s Home
- Canadian Occupational Performance Measure (COPM)
- Video Recording system (video camera)
- Home iPad® (video modeling intervention tool)
- Functional items to perform task
- Stopwatch
Research Method

+ Canadian Occupational Performance Measure used to identify child’s home functional tasks and performance satisfaction as reported by parent
+ Parent identified 4 home tasks
+ Baseline data obtained: videotaping of student performing identified home tasks

Four Home Task Behaviors

+ Bike Routine
+ Brushing Teeth
+ Making Peanut Butter and Jelly Sandwich
+ Making Bed
Research Methods

+ Develop video modeling sequence for each behavior identified
+ Develop data sheets from task sequence for each behavior using baseline data
  + Prompt levels, time, behaviors observed during home task
+ Analyze baseline data points for introduction of iPad® intervention phase
<table>
<thead>
<tr>
<th>Steps</th>
<th>Independent</th>
<th>Gestural</th>
<th>Direction</th>
<th>Praise</th>
<th>Question</th>
<th>Physical Not Done</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Get the Bread out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Untwist the bread bag</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Get two pieces of bread out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Get the peanut butter out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Get jelly out of the fridge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Get knife out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Open the peanut butter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Use the knife to scoop out peanut butter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Spread the peanut butter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Shake the Jelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Open the Jelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Squeeze onto bread</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Spread the jelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 Place the two pieces of the bread together</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous Prompts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Totals:

<table>
<thead>
<tr>
<th>Behaviors Count</th>
<th>Non-compliance</th>
<th>Sensory behavior</th>
<th>&quot;Echolalia&quot;</th>
<th>Persergeration</th>
<th>Requesting Help</th>
</tr>
</thead>
</table>

VIMT Intervention

+ VIDEO
It’s time to watch the video for____

Select and watch video

Child begins or continues task

“*It’s your turn*” cue

Child does not start or continue task

Caregiver gives question prompt

Caregiver gives gestural prompt

Caregiver gives directional prompt

Caregiver gives physical prompt

Verbal Praise!

---

Intra-Rater Reliability

- Intra-Rater Reliability established
  - 90% intra-rater observation agreement
  - Video data viewed and agreement established for the four behaviors during Single Subject baseline and intervention phases
Visual Data Analysis

- Bike Routine
- Tooth Brushing Routine
- Peanut Butter and Jelly Sandwich Routine
- Making Bed Routine

COPM pre and post comparison

- Main points - video
Preliminary Findings

- Number of prompts
- Amount of time
- Parent’s satisfaction in child’s performance
- Interfering behaviors

Discussion: Strengths

- iPad® and home setting
- Client centered
- Self help skills- increasing independence
- Establishes procedures for practitioners to implement caregiver video based modeling in the home
Limitations

- May not be effective for the specific child
- May need to alter procedures
- Difficulty to generalize results
- Caregiver compliance

OT Implications

- Child independence
- Reduction of Caregiver stress
- Cost Effective
- Add to body of research
OT fieldwork
student/parent project

Rockhurst OT Level II Fieldwork, 2014

Why video modeling?

- More effective method of teaching at home
- Child is drawn to iPad and videos
- Quick and easy to implement
- Need to develop independence
- Method to replace task strips and step by step applied behavior methods
Subject Background

- 12 yr old male
- Autism Spectrum Disorder-moderate/severe
- Primarily non-verbal
- Early intervention applied behavior analysis home program
- Center based school program pre-K to present
- Uses iPad for communication

Intervention Procedure

- Find appropriate subject to be in videos
- Choose 3 tasks that can be learned in a short time frame
- Show the video 1 or 2 times immediately prior to introducing the task
- If unable to complete the task, show the video again and try to continue until finished
Video Models

+ https://www.youtube.com/watch?v=HeTPzuzsKLo (Rinsing cans video model)
+ https://www.youtube.com/watch?v=E4F8FkoJUPY (Writing name video model)
+ http://youtu.be/k03wrUQFFto (Unload dishwasher)
+ http://youtu.be/OaVviZ1-bTc (John rinsing cans)

Results

+ Increased attention to processes due to motivation
+ Decrease in negative behaviors and verbalizations when participating
+ Decreased time to learn skill/process
+ Decreased contact assist with hand over hand prompting for writing name
+ Increase in legibility of name and improved letter formation
+ Processes did not have to be broken down as much
Results

+ Increase in independence
+ Improved attitude about activities
+ Parent enjoys working with child more
+ Parent feels empowered to help child learn

Implications for Subject

+ Provide a specific strategy that is successful for this child
+ Provide a strategy that can be used across different environments
+ Provide family with a manageable strategy to empower learning at home
+ Provide new strategy for school
Limitations

+ Single subject
+ Researcher relationship to subject
+ Subject was getting used to a change in medication which limited the number of trials
+ Different people used the video models other than just the researcher

OT Implications

+ Addresses the needs specific to person, environment, and occupation
+ Client-centered approach that can be used in combination with other interventions or approaches
+ Goal of independence and self-efficacy
+ Supports evidence found in current research
References


More References


End of the Yellow Brick Road

- We appreciate your time and attention during the presentation
- If you have comments or questions we welcome them at this time
- Thank you