DEPARTMENT OF SPECIAL EDUCATION AND APPLIED BEHAVIOR ANALYSIS

Using Video Prompting to Teach Addition to Learners with Moderate Disabilities

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INTRODUCTION

Children with moderate to severe disabilities make up one of our most vulnerable populations. Because of their disability, outcomes for these children are often poorer than those of typically developing children. They are least likely to be engaged in employment, post-secondary education, or job training due to their low functional skills (Newman, Wagner, Cameto, & Knokey, 2009). Based on these findings, and the chronic, long-term care needs for this population, more work needs to be done to identify skill building programs that lead to positive outcomes.

Bellini and Akullian (2007) conducted a meta-analysis of video modeling and video self-modeling studies for children with autism. They found that video modeling and video self-modeling were appropriate for learners of a wide range of ages and settings. They also noted that video modeling allowed the instructor to remove non-essential elements from the video through editing, making it possible for the learner to attend more closely to the stimuli that would produce the behavior change.

Knight, McKissick, and Saunders (2013) focused a literature review of technology-based instruction on academic targets. Of 29 studies identified, no studies directly targeted math, science, or social studies despite these being core academic subjects.

Video prompting, a form of video modeling, has been effective in teaching a wide range of skills to students with moderate to severe disabilities. Many studies have shown success in teaching functional living, vocational, and social skills using video prompting. Breaking the skill down into its component steps and teaching each one is an evidence-based practice that can be applied to academic targets.

AIM

The current study aimed to teach single-digit and double-digit addition to students diagnosed with moderate to severe disabilities using video prompting. This fills a gap in the research and can contribute to the existing research base in both video prompting and academic instruction.

Two research questions were generated for this study:
1. To what extent can learners with moderate to severe disabilities learn addition skills using video prompting?

2. What are the implications for practice if learners acquire the basic computational skills via video prompting?

METHOD

Learners were taught using a task analysis for either single-digit or double-digit addition problems. The steps of the task analysis were filmed and saved in a learner-specific folder. The learners accessed the videos on a Microsoft Surface tablet.

During intervention sessions, learners were given a worksheet with 10 problems, a pencil, and the tablet and directed to complete the worksheet using the videos. If the learner made an error, the researcher reset the scene and instructed the learner back to the videos a second time. Further errors resulted in least-to-most prompting to complete the problem.

Fading the videos took place at the end of the school year with maintenance probes in the learners' homes.

A multiple baseline across participants design was used to compare results.

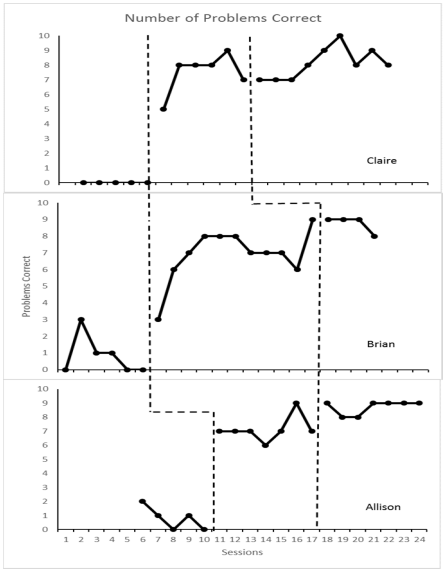

Figure 1. *Number of problems completed correctly.*

RESULTS

All learners had very low levels of correct responding in baseline. Visual inspection showed an immediate change in level from baseline to intervention across all participants. (See Figures 1 and 2) To assess the effect of the intervention, Percent of Non-overlapping Data (PND) was calculated (Scruggs and Mastropieri, 1998). To calculate the PND for each of the graphs, the number of data points in the intervention phase that did not overlap any points from baseline was divided by the total number of data points in the intervention phase. Analysis showed zero data points overlapping over five of six graphs or 100% PND. Brian had one point from baseline that equaled one point in intervention on the dependent variable Correctly Answered Questions, giving him 93.33% PND for that dependent variable. PND was 100% for the task analysis dependent variable and 97.73% for the correct responses dependent variable. Overall percentage of PND was 98.86% across all learners and dependent variables. Per Struggs and Mastropieri (1998), any interventions with PND over 90% are considered to be highly effective.

SOCIAL VALIDITY

Questionnaires to assess social validity were given to the classroom teacher, each of the parents, and each of the learners. A statistical analysis of the Likert scale questions from the parents showed they felt the intervention was appropriate for their child (4.7/5), helped their child learn the task (5/5), and could be used at home for further teaching (4.7/5). All three learners indicated they liked using the videos and the videos helped them do math. Two of the three learners said math was difficult for them. The classroom teacher strongly agreed that the intervention was something she could use in her class, the students enjoyed using the videos, and the strategies were appropriate for her students.

CONCLUSIONS

Video prompting was successful in increasing the accuracy of responding for all three learners. Single-digit addition was more amenable to using the videos for teaching the basic concepts of addition. This offers promise for classroom teachers. Because of the prevalence of videos in the lives of children today, using a video model or prompt in the classroom can provide a consistent model for them to see without being obtrusive. Using video prompting for instruction can free the teacher up for more intrusive prompting for specific individuals when needed.

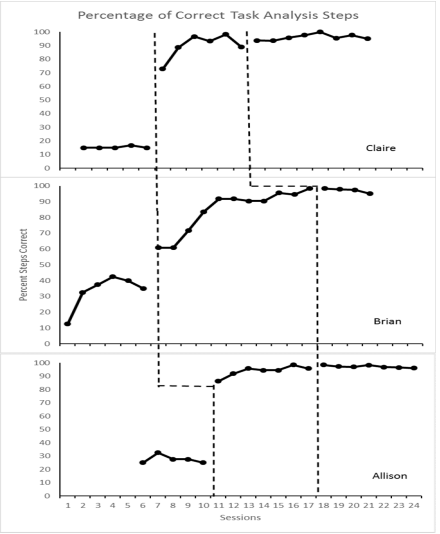

Figure 2. Percentage of task analysis steps completed correctly.

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