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# Does the Voice Matter? Impact of Voice-Over Instructions on Task Acquisition and Prompting Levels in Video Prompting

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## Abstract

**Introduction:** Opportunities are increasing for individuals with disabilities to live independently. Video prompting is important to increasing independence through observation and imitation of specific behaviors or skills. However, the impact of voice-over instructions has yet to be studied.

**Aims:** The aim of this study was to evaluate the impact of voice-over instructions on teaching daily living skills to three individuals with disabilities via video prompting.

**Method:** A single-subject adapted alternating treatment design was used. Two versions of each intervention video were created by the researchers and alternated: one without and one with step-by-step voice-over instructions. Four skills were selected: (a) making a bowl of oatmeal, (b) microwaving popcorn, (c) starting a load of laundry, and (d) cleaning the microwave. Data were also collected on the number of prompts to use technology and the number of views for each step.

**Results:** Results showed that the presence of voice-over instructions led to higher levels of task acquisition for all the participants. The number of prompts to use technology decreased for two of the individuals after exposure to both instruction types. The number of views did not appear to be related to the presence of voice-over instructions.

**Conclusion:** Video prompting, with or without voice-over instructions, is an effective way to teach daily living skills and promote independence to individuals with intellectual disabilities.

**Keywords**: video prompting, voice-over instruction, daily living skills, intellectual impairment

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# 1. Introduction

Opportunities are increasing for individuals with disabilities to live independently. Teaching essential functional skills such as meal preparation (Cannella-Malone et al., 2006) and social skills (Day-Watkins et al., 2018) to individuals with disabilities allows them increased independence and a higher quality of life (Matson et al., 2012). In the past decade, researchers have been seeking the most effective and least obtrusive instructional methods to increase independence by decreasing the need for direct prompting across school, community, and vocational settings (Kellems & Morningstar, 2012). Most video-based instruction allows students to first observe then imitate specific behaviors or skills. Video modeling always does this for students and video prompting (VP) may incorporate this tactic as well. Both are beneficial for individuals with disabilities (Banda et al., 2011; Park et al., 2018). However, individual components of VP have yet to be widely studied, including the impact voice-over instructions have on task acquisition and prompting levels.

## 1.1 Video Prompting

VP is also effective at teaching certain skills through observation and imitation, similar to video modeling. While video modeling presents the skill in one continuous clip, VP splits the video into automatically paused segments, allowing the observer to progress as needed and to complete each step before the next is shown. VP has been successfully used to teach skills such as cooking (Cihak et al., 2008; Mechling et al., 2013), cleaning (Cihak et al., 2008), and tying a shoelace (Rayner, 2011) to students with autism or an intellectual disability.

## 1.2 Voice-over Instruction

Voice-over instruction, also called audio cueing, may enhance the effectiveness of visual instruction or act as an environmental distraction. Crane et al. (2009) specified that adults with autism spectrum disorder (ASD) may experience more sensitivity to stimuli than those without ASD, which can make it difficult for these students to pay attention to videos if there are other distractions in their environment. On the other hand, a later study revealed that audio cuing produced immediate and sustained improvement in training and employment settings for individuals with ASD and intellectual disabilities (Allen et al., 2012). Video modeling has been used with voice-over instruction to effectively teach students with ASD social skills (Day-Watkins et al., 2018). These studies suggest that voice-over instruction videos could increase learning, however, some articles disagree.

The effectiveness of added voice-over instruction is conflicting. Mechling and Collins (2012) tested the effectiveness of video modeling with voice-over instructions through an experiment teaching fine motor skills to participants with moderate learning disabilities. All the participants' fine motor skills improved with and without voice-over instruction. Bennett et al. (2017) found voice-over interventions to be ineffective for two of their three participants, despite the positive results of audio cuing for students with ASD of a former study (Bennett et al., 2013). Another study looked at voice-over and no-voice instruction for teaching daily living skills to students with ASD and found that three of the four participants preferred voice-over narration although they had no differences in performance with or without voice-over instruction (Kaya & Yucesoy-Ozkan, 2022).However, another study found that participants preferred video modeling with narration compared to video modeling without and that they performed better with video modeling with narration (Smith et al., 2013). These varying results across studies highlight the need for further research in voice-over effects on VP and preferences.

Our study explored whether a functional difference would be found in learning daily living skills when videos with voice-over instructions were compared to videos with no voice instructions for youth with disabilities. The study also explored the relationship between task acquisition and the level of prompting that participants were given to use technology, as well as the relationship between task acquisition and the number of times the participants viewed the video. VP has a promising role as an instructional aid to teach functional skills and expand independence in youth.

## 1.3 Research Questions

This study addressed helping students with disabilities learn independent living skills by addressing the following research questions: 1) How does adding voice-over instructions to video prompting affect acquisition of daily living skills? 2) How is acquiring a task affected by the number of prompts a student is given to use technology? 3) How is task acquisition affected by the number of times a video is watched? 4) What is the social validity of using VP to teach independent living skills?

# 2. Method

## 2.1 Participants

Three participants were selected for the study based on the following criteria: (a) they were between the ages of 14 and 21, (b) they had an active IEP, (c) their primary eligibility category was intellectual disability, (d) they had no sensory deficits, and (e) they were physically able to complete the tasks. All participants were recruited from the same school in a rural school district in the western region of the United States.

### 2.1.1 Diane

At the time of the study, Diane, age 19, who had an intellectual disability with a General Intellectual Ability (GIA) Standard Score (SS) of 21, was in the very low range, with a grade equivalent (GE) of the first month of kindergarten. This is equivalent to a severe intellectual disability diagnosis. She scored in the very low range in conversational proficiency on the Woodcock–Johnson Tests of Cognitive Abilities (WCJ-III; Wendling et al., 2009). Her social

interaction and communication skills were in the very limited range according to the Scales of Independent Behavior-Revised (SIB-R; Bruininks et al., 1996).

#### 2.1.2 Alice

Alice, age 21, had an intellectual disability. At the time of the study her GIA SS was eight, which is in the very low range, with an age equivalent (AE) of 4 years, 4 months. This is equivalent to a profound intellectual disability diagnosis. According to the SIB-R, Alice's communication and social skills were in the very limited range, with an AE of 4-6 years.

#### 2.1.3 Elise

Elise, age 18, had an intellectual disability and exhibited a limited conversational proficiency compared to her grade level. At the time of the study, her GIA SS was 20, which is in the very low range, and her GE was the first month of kindergarten. This is equivalent to a severe intellectual disability diagnosis. According to the SIB-R, her social interaction and communication skills were in the very limited range.

### 2.2 Dependent and Independent Variables

The dependent variables were the percentage of steps the students completed correctly, the number of times they were prompted to use technology, and the number of times they viewed each video after the initial showing. The independent variable was the presence or absence of voice-over instructions.

### 2.3 Tasks, Settings, Materials and Videos

Four daily living tasks—making oatmeal, making popcorn, starting a washing machine, and cleaning the microwave—were selected because of their physical and cognitive similarity as well as their consistency with the participants' transition goals. Task analyses were completed by the researcher and verified for accuracy by another researcher, who specialized in teaching functional skills, along with the participants' special education teacher. After task analyses were complete, scripts for the voice-over instruction were written following the steps from the task analyses. For example, the cooking popcorn task had steps like "obtain bowl" or "unwrap popcorn bag from plastic" that were simple and clear for the participant to understand.

The researcher's video-recorded the tasks, following the task analysis to ensure that every step was included in each video. The making oatmeal task had 14 steps, making popcorn had 12 steps, starting a washing machine had 16 steps, and cleaning the microwave had 24 steps. Task analyses steps are available upon request from the author.

The phases of intervention, task completion, and data collection took place at the participants' school. Students performed the tasks of microwaving popcorn, cooking oatmeal, and cleaning the microwave in the kitchenette of the teachers' lounge.

The task of starting a load of laundry was taught in the special education classroom.

Both settings were free of distractions (i.e., no other students or noises) during the intervention sessions and took place during the regular school day. Participants were compensated for their time with a gift card when they completed the study.

The intervention videos were recorded with an iPad® Mini 16 GB (2nd generation) and edited with iMovie (Version 2.0). The models in the videos were similar in age and visual appearance to the participants. Studies have found that gender does not have a significant impact on VP and video modeling (Mason et al., 2012).

Voice-over instructions were added to the videos by a male researcher. Once the videos were created, they were uploaded to the VideoTote mobile application (The Prevention Group, 2012) on the iPad®. The VideoTote app allowed researchers to pre-program "chapter markers" so that the video would automatically stop at specific points. When introducing the intervention, the researcher instructed the students to select the VP (chapter) mode. Thus, the video would stop after each step, resuming only when the participant pressed anywhere on the screen. Two sets of videos were made, completely identical except for the inclusion of voice-over instructions for one set. The duration of the videos ranged from 1 min 54 s to 3 min 32 s.

### 2.4 Response Measurement and Data Collection

Data were collected across all sessions for all three students. The percentage of steps completed correctly was calculated using the task analyses data collected by the researchers and verified by other experts. To be scored as correct, the student must have completed the step according to the directions of the task analysis or according to an alternative method judged to have fulfilled the functionality of the task. For example, the task analysis for microwaving popcorn instructs the student to open the popcorn bag by pulling opposite corners apart. However, if the student tore the bag open in a method other than using the opposite corners, the step was marked as correct.

The data collection sheet included data for the second dependent variable: the number of prompts the student received to use technology. A verbal prompt to use technology was defined as any instruction to the participant to access or re-focus on the video. Participants who frequently asked what to do next would be told to "watch the iPad®" or reminded that "the iPad® will show you what to do." No other prompts were used, including prompts given on how to complete the task. Data were collected on the third dependent variable, the number of views, in the same manner.

A view was defined as any time individual clips or steps were watched after the initial showing at the participants discretion. They were not asked if they wanted to watch the clip again, but they were aware that it was an option from initial instructions. No incentives were given to participants for completing the task.

In order to measure social validity, formal surveys and informal interviews were conducted with the participants and their teachers. The survey measured the effectiveness of the VP experience on a Likert scale from one to five. The teachers were formally trained on VP before the interventions in order to carry it out effectively and were interviewed after the study was completed on its effectiveness for their students and their likelihood to use it in the future.

### 2.5 Experimental Design

To explore the relationship between the independent and dependent variables, the study employed an adapted alternating treatment design replicating across participants (Wolery et al., 2010). This design was selected due to the non-reversible nature of the behaviors. Four equivalent but functionally independent tasks were selected. To distribute interaction effects across the conditions, the treatment schedule of videos with voice-over instructions and videos without voice-over instructions were randomized for each participant and task. If randomization resulted in three consecutive outcomes of the same treatments, the third reverted to the other treatment. Finally, data were analyzed using visual analysis of trend and slope.

As recommended by Wolery et al. (2010), the adapted alternating treatment design included baseline, comparison, and maintenance phases. The baseline phase established performance levels on each task prior to introducing the intervention. Then the comparison phase explored the impact of voice-over instructions on task acquisition. The comparison conditions continued for a minimum of six sessions or until the data stabilized. The final maintenance phase evaluated whether participants-maintained tasks one week after the last intervention session. Participants did not have access to any of the intervention videos in the baseline phase.

### 2.6 Reliability

The second author conducted all baseline, intervention, and maintenance sessions. The first author collected reliability data on the dependent variables during 50% of all these sessions. All data collection sessions were video recorded. Data on the percentage of steps completed correctly, prompts received by students to use technology, and numbers of video views were collected and live coded by the second researcher via an observational checklist as each participant completed each task. After each session, the same researcher watched the recording to verify accuracy of the data and to capture any missed observations. Recordings of the sessions were also reviewed and scored by other researchers to establish inter-rater reliability and treatment fidelity.

A second researcher, specifically trained in data collection, scored 50% of the intervention sessions in each phase for each participant based on video recordings. Inter-observer agreement (Dillon, 2019) was calculated as 98.9%. Procedural fidelity was maintained using a fidelity checklist, which included all the steps, setting, equipment, and materials required to implement the intervention as designed. The checklist was reviewed prior to each session, then completed after the session. The procedural fidelity level was calculated during 100% of intervention sessions using a simple percentage completed formula (number of correctly completed steps/total number of steps x 100).

## 3. Procedures

### 3.1 Baseline

Baseline data were collected on the task analyses steps that students completed correctly and independently. A minimum of five baseline points for every participant was collected for each task. All the required materials to complete the task were available, and the student was verbally prompted to initiate the task, with no further prompting. When a participant failed to complete a step, it was completed for her outside of her view and then she was encouraged to continue. This provided a more valid baseline than stopping at the first step the participant could not complete. The session continued until the task was completed or the participant opted to finish. Observers recorded the number of steps the participant completed correctly and the number of times she was prompted to use technology\ Baseline data were gathered in the same settings in which the intervention and maintenance phases would take place. Following the minimum of five baseline sessions, students continued to participate in baseline sessions until they maintained a stable score across three separate sessions for each task. Additionally, each session was filmed to allow for inter-observer reliability.

### 3.2 Pretraining

Before engaging in instructional sessions, all participants were taught how to access videos on the iPad® mini using the VideoTote app via a model-lead-test format until they could operate the iPad® correctly. The researcher demonstrated how to open the app and access the video, then had each student practice accessing the video herself. He instructed the participant to follow what the video showed, using an unrelated but similar sample task video on how to load dishes into a dishwasher. To complete the training, participants needed to independently operate the iPad® to access the required video in the VideoTote app.

### 3.3 Video prompting procedures

During the intervention phase, the students were taken to the area with the necessary materials available for completing the task. Only the VP of the target task (e.g., making oatmeal, with or without voice-over instructions) was available on the iPad®. The researcher verbally prompted the student to use the VP and complete the task. Further prompts followed the system of least prompts; when necessary, prompting participants to press “play,” as they were prompted

only to use technology. Each session of VP was completed on separate days.

### 3.4 Maintenance

The maintenance phase occurred one week after the last intervention session. Participants were asked to complete each task without the VP. Conditions during the maintenance phase were identical to those during baseline: Neither access to the VP intervention nor additional prompts were given. If a student did not respond after 15 seconds, she was asked if she had finished. Maintenance data collection was ended when the participant indicated that she had completed the task.

## 4. Results

Figures 1-3 shows the number of times that the students viewed each training video on the iPad® and the number of steps completed for cooking oatmeal and cooking popcorn for Diane (see Figure 1), Alice (see Figure 2), and Elise (see Figure 3). Proficiency was defined as 80% or more of the steps completed correctly. After implementation of the VP intervention, all the participants increased their completion percentage.

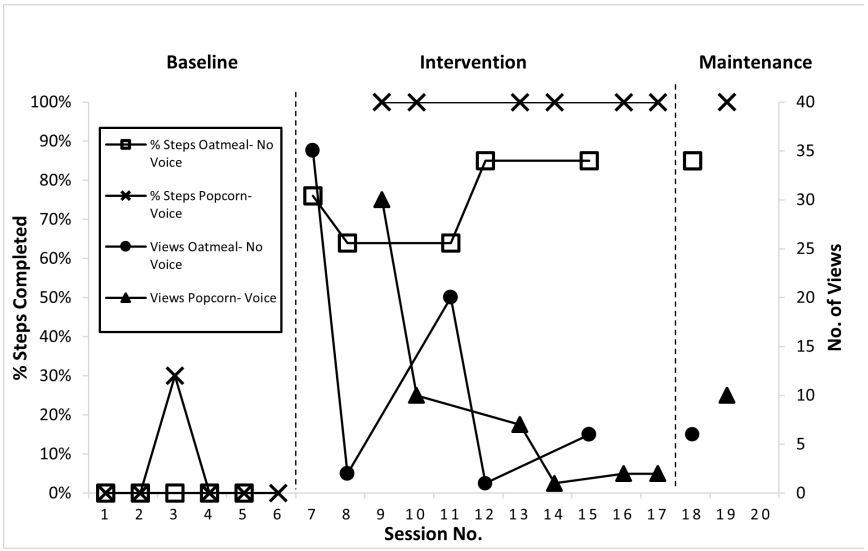


**Fig. 1.** *Diane Popcorn and Oatmeal Tasks*

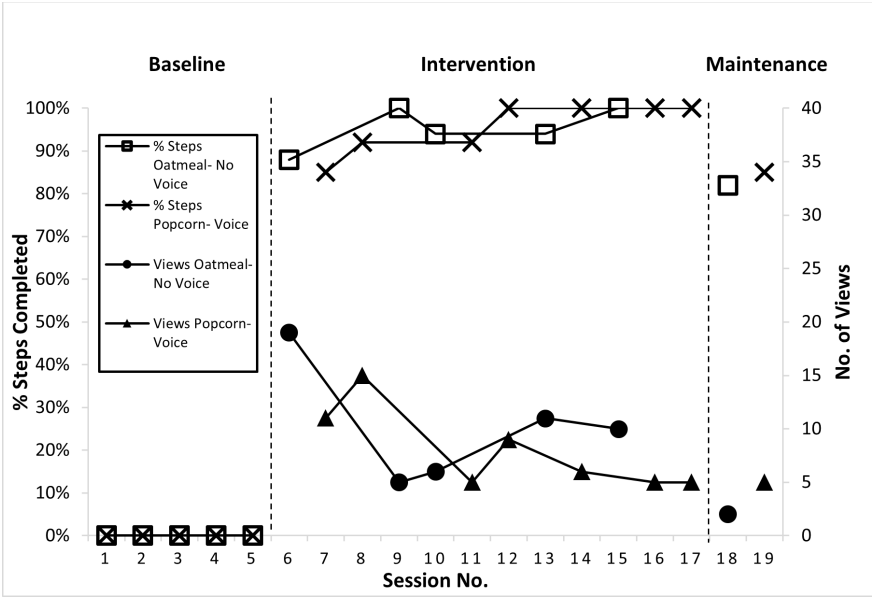


**Fig. 2.** *Alice Popcorn and Oatmeal Tasks*

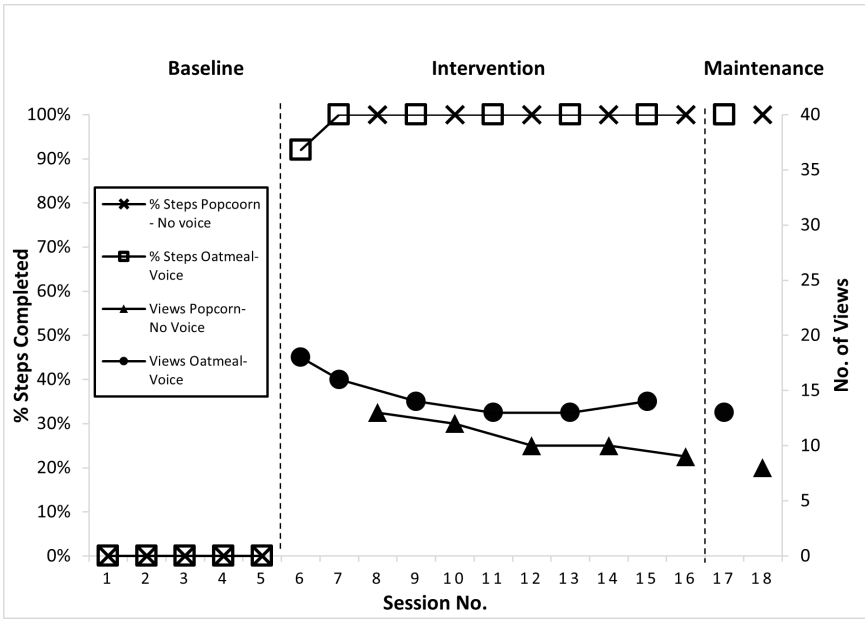


**Fig. 3.** *Elise Popcorn and Oatmeal Tasks*

Although both types of intervention increased proficiency, each participant generally scored higher with voice-over instructions except for Alice and Elise in the popcorn and oatmeal tasks. Figures 4-6 shows the number of times that the students viewed each training video on the iPad® and the number of steps completed by Diane (see Figure 4), Alice (see Figure 5), and Elise (see Figure 6) as they started a load of laundry and cleaned a microwave.

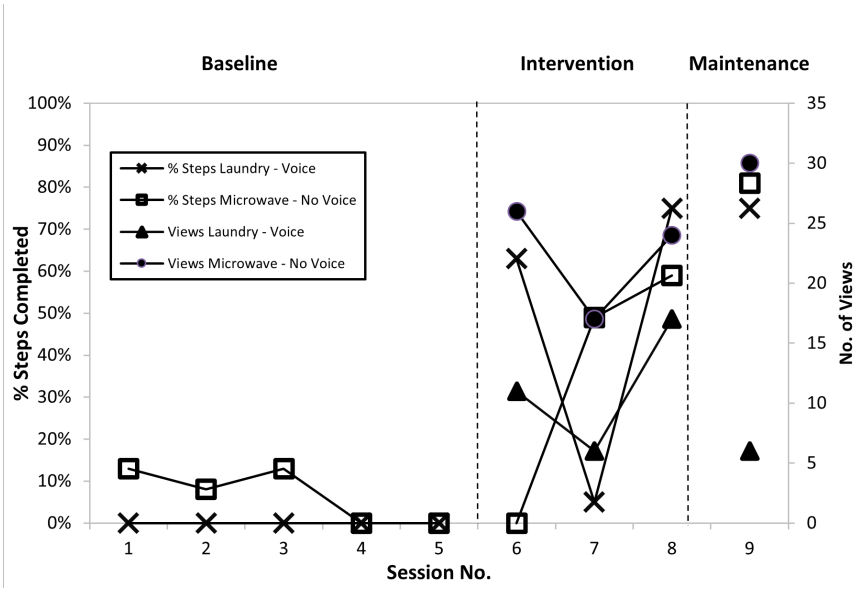


**Fig. 4.** *Diane Laundry and Microwave Tasks*

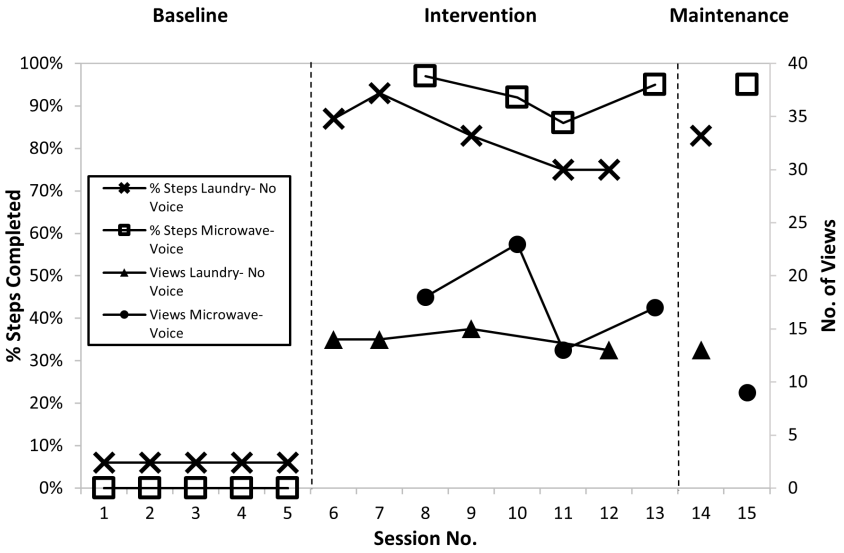


**Fig. 5.** *Alice Laundry and Microwave Tasks*

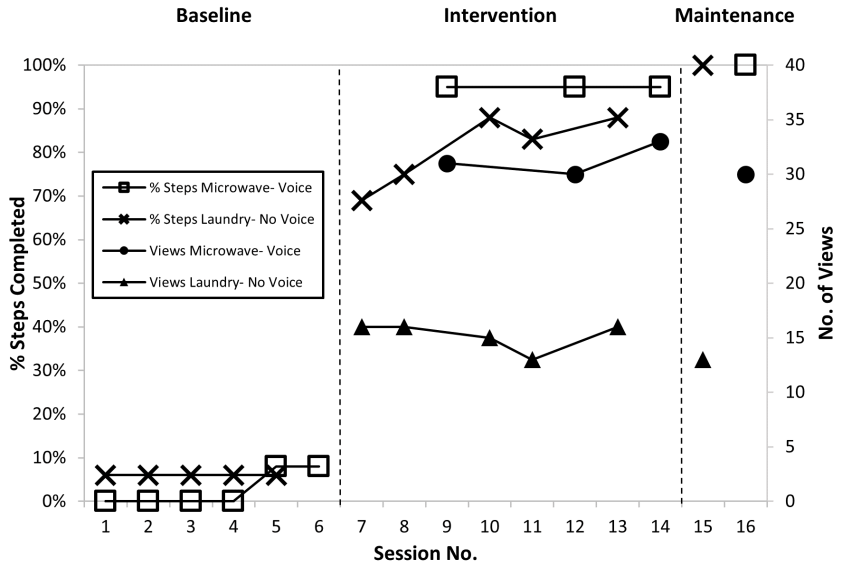


**Fig. 6.** *Elise Laundry and Microwave Tasks*

### 4.1 Diane

In Figure 1, we see that Diane did not complete any of the steps for the cooking oatmeal task at baseline with no voice-over instructions, and similarly did not meet criterion at baseline for cooking popcorn with voice-over instructions. However, she improved significantly during intervention with both tasks, increasing to 85% during her last intervention session with oatmeal and 100% with popcorn, which continued at maintenance.

The improvement during intervention could be attributed to her 35 views of the oatmeal clips or the 30 views of popcorn clips during the first session. The views generally decreased with each following session on both tasks.

For prompts to use technology, Diane required 16 to cook oatmeal in her first intervention session and that decreased to two prompts and remained there at maintenance. During her first popcorn intervention session, she required 13 prompts which decreased to one prompt during her last intervention session and maintenance.

In Figure 4, we see that Diane did not reach proficiency during the laundry task with no voice-over or the microwave task with voice-over instructions at baseline. She improved in the laundry task at intervention to 75% of steps correct and that continued at maintenance. For the microwave, Diane's scores slowly rose at intervention, ending at 81% of steps completed correctly at maintenance.

Laundry training views began at 11 during the first intervention session and dropped to six views in the second session and maintenance. Diane viewed the microwave videos 17 times or more during each intervention and maintenance session. For prompts to use technology, Diane had 12 during her first laundry intervention session but that decreased to one prompt at last intervention and maintenance sessions. At her first popcorn intervention session, she had eight prompts, which increased to 11 and then decreased to six prompts by maintenance.

### 4.2 Alice

Figure 2 shows Alice could not make oatmeal or popcorn during baseline. However, her scores exceeded proficiency during each intervention session for both tasks. Her no-voice oatmeal scores exceeded her voice-over popcorn scores for the first three sessions but then the popcorn scores increased quicker than the oatmeal scores on the forth session. She maintained her oatmeal cooking at 82% and her popcorn cooking at 85%. Alice viewed the iPad® most frequently (19 times) during the first oatmeal intervention session and it decreased in remaining sessions, dropping to two during maintenance. Her views of the popcorn clips declined overall, but not after every session, with her highest number views on the second intervention at 15. Alice initially required 30 prompts for cooking oatmeal, which decreased to five prompts in the second intervention, six prompts in the third, then two prompts at maintenance. In the first and second interventions for cooking popcorn, Alice required 24 prompts, only one prompt in the third session, five prompts in the seventh, and then one prompt at maintenance.

In Figure 5, Alice began with a steady baseline of 6% for starting the laundry but could not clean the microwave. The percentage of steps that she completed correctly increased after one intervention for both tasks, although she did drop slightly during subsequent interventions. Her voice-over microwave score was higher than her no-voice laundry score at each intervention. She maintained a score of 83% during follow-up for laundry and 93% of steps for microwave. The number of times that Alice viewed the laundry iPad® training remained at or between 13 and 15 views at intervention and 13 views at maintenance. However, the microwave task views jumped between 13 and 23 views at intervention, ending with nine views at maintenance. For prompts to use technology, Alice initially required one prompt for laundry, and she did not exceed three prompts during her intervention sessions, needing only one prompt at maintenance. Alice completed each of the four microwave intervention sessions with only one or two prompts, and one prompt during maintenance.

### 4.3 Elise

In Figure 3, we see that Elise did not complete any of the steps to cook popcorn or oatmeal at baseline. However, she quickly reached criterion at her first intervention with voice-over oatmeal and no-voice popcorn and increased to 100% of steps completed during most sessions and maintenance. Elise viewed the oatmeal video most frequently (18 times) during the first session and least frequently (13 times) during the fourth and fifth sessions and at maintenance. She had the most views (14) of the popcorn clips during her first intervention and the fewest (9) during maintenance. Elise initially required 12 prompts to use technology to cook oatmeal, the second session she required two prompts, one prompt at the third session, and one prompt at maintenance. She only required one prompt to use technology to cook popcorn during all five intervention sessions and the maintenance session.

Figure 6 shows that Elise did not reach criterion for steps completed for cleaning the microwave or doing laundry at baseline. Her score rose to a mean of 80.6% following no-voice intervention for laundry and she maintained criterion at 100% during follow-up. Elise's microwave scores reached a mean of 95% after the first voice-over intervention session and were higher than the no-voice laundry scores. She maintained 100% proficiency after follow-up. Elise watched the microwave video most frequently (33 times) during the third intervention session and the least frequently (30 times) at maintenance. She viewed the laundry clips 13 to 16 times during intervention and maintenance. Elise required one to two prompts to use technology to complete the laundry task at intervention and one prompt at maintenance. Elise required one prompt for cleaning the microwave during the first intervention, four prompts during the second, and one prompt at maintenance.

### 4.4 Social Validity

Formal surveys and informal interviews were conducted with the participants and their teachers to evaluate the VP experience, including effectiveness and usability. Overall, the students indicated the videos were helpful for learning tasks. One student who particularly enjoyed the sessions, commented after one of them, "It's like watching YouTube!" Three teachers were asked to complete a survey evaluating their views of VP; they unanimously agreed that the use of VP would benefit their students. The extent they believed it would be helpful varied according to the student's ability level. They were asked specifically "On a scale of 1 to 5, how confident are you that your low-functioning students' involvement could be improved by utilizing video prompting?" Every teacher reported a five for low-functioning students. When asked the same question regarding high-functioning students, teachers' responses varied from 3 to 5. Each teacher reported that VP had worked exceptionally for the students involved in the study. One teacher wrote, "I think it is a great tool. It gives students an independent way to learn skills." Another indicated that she was impressed at how the videos motivated students to complete the tasks.

## 5. Discussion

The purpose of this study was to compare the effects of VP with and without voice-over instructions on the completion of daily living tasks by three low-functioning students with intellectual disabilities. We will expound on the effects of steps completed, prompts given, and views for the participants, as well as participant preference.

### 5.1 Steps Completed

The percentage of steps completed correctly and independently on separate tasks was used to determine the efficacy of the intervention. The percentage of correct independent steps increased significantly for all three participants under both conditions. However, the effects of voice-over instructions were less significant, although generally higher than the no-voice tasks. Elise completed more steps correctly using voice-over instructions for the microwave task but achieved equal proficiency with popcorn and oatmeal tasks. Diane and Alice both completed more steps correctly using voice-over instructions on most tasks, although Alice's popcorn and oatmeal tasks did vary in their results. Although there were some differences among participants, adding voice-over instructions did not have a significant impact on the number of trials to task acquisition. These results show that VP is effective in teaching daily living skills tasks, but the effects of audio cuing are not certain. This aligns with the results of other studies that found comparable results (Kaya & Yucesoy-Ozkan, 2022) but disagrees with studies that found audio cuing to be effective (Allen et al., 2012; Bennett et al., 2017; Mechling & Collins, 2012). These results, in addition to the other studies referenced, shows that there could be another reason for the lack of significant effect with audio cuing that we did not account for, and that further research needs to be done to determine the effectiveness of audio cuing.

### 5.2 Prompts

The number of prompts tended to be more needed in the beginning of the intervention stage, but gradually decreased in number as the sessions continued. We followed the system of least prompts for all participants (Park et al., 2018). Alice required the most prompts in the first session, at 30 for oatmeal and 24 for popcorn, however, she only needed three and one prompt for laundry and microwave, respectively. The increased prompts for oatmeal and popcorn could be explained by multiple reasons, but our data did not show any difference in the tasks. In fact, oatmeal and popcorn were coded as easier tasks then laundry and microwave, meaning that perhaps it was an external factor that contributed to the increase in prompts. Diane required 10-16 prompts for the first sessions of all of her tasks. Elise required 12 prompts for oatmeal but only one prompt for the other tasks. This could be because she knew a peer in oatmeal and perhaps was more focused on watching the peer then the task. However, all maintenance sessions went down to one or two prompts, except for Diane's microwave task where she required six prompts. Nevertheless, all prompts went down for each task in maintenance.

### 5.3 Views & Participant Preference

The number of views varied for each participant and appeared to be strongly tied to participant preference (Kaya & Yucesoy-Ozkan, 2022), meaning how well the participant knew the model in the videos. When Diane saw a known peer as a model in one of the videos, she said that she was excited to see her friend; she knew the peers featured in two of the videos and watched those videos more frequently. If the video did not include known peers, Diane resisted watching the video and completing the task until she was prompted to do so. Alice expressed interest in and consistently watched the videos, although she did not know any of the models. Alice often waited for researchers to provide additional prompts between steps instead of completing the videos on her own. She also viewed the videos multiple times even after she had completed a task. Lastly, Elise showed a general willingness to participate in each session. She preferred the oatmeal and popcorn tasks, in which her known peers were models. However, Elise watched all videos frequently, whether or not known peers were in the video. She initially required several prompts to return to the iPad® after each step in the task, but as the study progressed, she relied more on the iPad® and needed fewer prompts.

### 5.4 Social Validity

The social validity scores were overall positive, showing that VP was found to be effective and fun for the participants, and easy for the teachers to use. The teachers also reported that VP would be effective for their students, especially for low-functioning students who require additional support. VP was found to be effective at motivating the students to complete tasks and required minimal prompts from the teachers. Overall, teachers and students recommended VP usage in the classroom.

### 5.5 Limitations and Suggestions for Future Research

For all three individuals the required number of prompts to use technology decreased over time. This indicates that the more familiar individuals become with using technology as a resource to access their task instruction, the less they require prompts to direct them to the information. This also suggests individuals who are prompt-dependent can learn to access technology containing intervention videos on their own. We would suggest that future research explore this further, especially relating to participate preference and audio cuing. Future research could validate the results through replication.

The data were limited because each comparison used only two behaviors. Lack of a third control sets limits on our ability to measure the impact of maturation or history on internal validity. There could also be limits to the study design, and other designs should be

considered (Bennett et al., 2017). Other limits include the study's lack of generalization data and its limited sample size due to the nature of single-subject research. Another limitation to this study was that we did not measure exact replication of the video and counted if the participant got close to the desired outcome. This could present some unwanted bias in our results, and we recommend having specific exceptions listed to make results more accurate. Another limitation to this study was that we did not assess participant or teacher preference with audio cuing, which may have had an impact on the results.

## 6. Conclusion

VP is critical to the current research on helping students with disabilities learn self-care skills (Banda et al., 2011; Park et al., 2018). Our findings suggest that the presence of voice-over instruction in VP, implemented with an alternating treatment design, did not significantly affect task acquisition over the results of voiceless VP, as measured by the percentage of steps completed correctly, the number of prompts required for using technology, or the number of views required by the three participants with severe intellectual disabilities. Regardless of the presence of voice-over instruction, VP administered in this design improved the participants' task acquisition in cooking oatmeal, microwaving popcorn, doing laundry, and cleaning a microwave. All maintenance scores, except for Diane's laundry task score, showed proficiency in task completion. These results suggest that VP with or without voice-over instructions is an effective way to teach daily living skills and promote independence to individuals with intellectual disabilities. These results are important for future researchers who are looking for VP as an option for helping students with disabilities.

## Conflicts of Interest

The authors have no conflicts of interest to declare.

## References


Allen, K. D., Burke, R. V., Howard, M. R., Wallace, D. P., & Bowen, S. L. (2012). Use of audio cuing to expand employment opportunities for adolescents with autism spectrum disorders and intellectual disabilities. Journal of Autism and Developmental Disorders, 42(11), 2410–2419. https://doi.org/10.1007/s10803-012-1519-7

Banda, D. R., Dogoe, M. S., & Matuszny, R. M. (2011). Review of video prompting studies with persons with developmental disabilities. Education and Training in Autism and Developmental Disabilities, 46(4), 514-527. https://www.jstor.org/stable/24232363

Bennett, K. D., Crocco, C., Loughrey, T. O., & McDowell, L. S. (2017). Effects of video prompting without voice-over narration among students with autism spectrum disorder. Behavioral Development Bulletin, 22(1), 147–158. https://doi.org/10.1037/bdb0000058

Bennett, K. D., Gutierrez, A., Jr., & Honsberger, T. (2013). A comparison of video prompting with and without voice-over narration on the clerical skills of adolescents with autism. Research in Autism Spectrum Disorders, 7, 1273–1281. http://dx.doi.org/10.1016/j.rasd.2013.07.013

Bruininks, R. H., Woodcock, R. W., Weatherman, R. F., & Hill, B. K. (1996). Scales of Independent Behavior – Revised. Riverside Publishing Co.

Cannella-Malone, H., Sigafoos, J., O'Reilly, M., de la Cruz, B., Edrisinha, C., & Lancioni, G. E. (2006). Comparing video prompting to video modeling for teaching daily living skills to six adults with developmental disabilities. Education and Training in Developmental Disabilities, 41(4), 344-356. https://www.jstor.org/stable/23879661

Cihak, D. F., Kessler, K., & Alberto, P. A. (2008). Use of a handheld prompting system to transition independently through vocational tasks for students with moderate and severe intellectual disabilities. Education and Training in Developmental Disabilities, 43(1), 102-110. https://www.jstor.org/stable/23879747

Crane, L., Goddard, L., & Pring, L. (2009). Sensory processing in adults with autism spectrum disorders. Autism, 13(3), 215-228. https://doi.org/10.1177/1362361309103794

Day-Watkins, J., Pallathra, A. A., Connell, J. E., & Brodkin, E. S. (2018). Behavior skills training with voice-over video modeling. Journal of Organizational Behavioral Management, 38(2-3), 258-273. https://doi.org/10.1080/01608061.2018.1454871

Dillon, L. H. (2019, August 9). How to calculate interobserver agreement. Applied Behavior Analysis. Retrieved December 9, 2022, from https://www.appliedbehavioranalysis.com/how-to-calculate-interobserver-agreement/#:~:text=1%20Mark%20all%20the%20intervals%20where%20both%20observers,total%20number%20of%20intervals%20and%20multiply%20by%20100

Kaya, F., & Yucesoy-Ozkan, S. (2022). Self-directed video prompting with and without voice-over narration in teaching daily living skills to students with autism spectrum disorder. Education and Treatment of Children, 45, 1-15. https://doi.org/10.1007/s43494-021-00060-4

Kellems, R. O., & Morningstar, M. E. (2012). Using video modeling delivered through iPods to teach vocational tasks to young adults with autism spectrum disorders. Career Development and Transition for Exceptional Individuals, 35(3), 155-167. https://doi.org/10.1177/0885728812443082

Mason, R. A., Ganz, J. B., Parker, R. I., Burke, M. D., & Camargo, S. P. (2012). Moderating factors of video-modeling with other as model: A meta-analysis of single-case studies. Research in Developmental Disabilities, 33(4), 1076-1086. https://doi.org/10.1016/j.ridd.2012.01.016

Matson, J. L., Hattier, M. A., & Belva, B. (2012). Treating adaptive living skills of persons with autism using applied behavior analysis: A review. Research in Autism Spectrum Disorders, 6(1), 271-276. https://doi.org/10.1016/j.rasd.2011.05.008

Mechling, L. C., Ayres, K. M., Foster, A. L., & Bryant, K. J. (2013). Comparing the effects of commercially available and custom-made video prompting for teaching cooking skills to high school students with autism. Remedial and Special Education, 34(6), 371-383. https://doi.org/10.1177/0741932513494856

Mechling, L. C., & Collins, T. S. (2012). Comparison of the effects of video models with and without verbal cueing on task completion by young adults with moderate intellectual disability. Education and Training in Autism and Developmental Disabilities, 47(2), 223-235. https://www.jstor.org/stable/23880102

Park, J., Bouck, E., & Duenas, A. (2018). The effect of video modeling and video prompting interventions on individuals with intellectual disability: A systematic literature review. Journal of Special Education Technology, 34(1). https://doi.org/10.1177/0162643418780464

Rayner, C. (2011). Teaching students with autism to tie a shoelace knot using video prompting and backward chaining. Developmental Neurorehabilitation, 14(6), 339-347. https://doi.org/10.3109/17518423.2011.606508

Smith, M., Ayres, K., Mechling, L., & Smith, K. (2013). Comparison of the effects of video modeling with narration vs. video modeling on the functional skill acquisition of adolescents with autism. Education and Training in Autism and Developmental Disabilities, 48(2), 164-178. https://www.jstor.org/stable/23880637

The Prevention Group (2012). VideoTote (Version 0.8.4) [Mobile application software]. Retrieved from https://itunes.apple.com

Wendling, B. J., Mather, N., & Schrank, F. A. (2009). Woodcock-Johnson III Tests of Cognitive Abilities. In J. A. Naglieri & S. Goldstein Eds., Practitioner's guide to assessing intelligence and achievement (pp. 191–229). John Wiley & Sons Inc.

Wolery, M., Gast, D. L., & Hammond, D. (2010). Comparative intervention design. In D. L. Gast (Ed.), Single subject research methodology in behavioral sciences (pp. 329–381). Routledge.