Building Daily Living Skills Through Portable Video Modeling

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Abstract This study used video modeling via portable technology to improve daily living skills for a student with an intellectual disability in a university campus-based transition program. Results showed increased independence across four daily living skills. Implications for future practice are discussed.

Keywords Intellectual disability · Video modeling · Video prompting · Postsecondary transition program · Daily living

Video-based instruction is an effective instructional technology that involves the use of words, pictures, and actions to promote learning (Aldi et al., 2016). Video modeling and video prompting are two forms of video-based instruction most often used in special education (Kellems & Edwards, 2016; Rayner et al., 2009). The benefits of video modeling and prompting include immediate feedback, repetition of instruction, and cost efficiency (Kellems et al., 2016). In addition, video prompting presents instructions in smaller steps, helping students understand individual parts of activities.

Video modeling has efficacy in social and vocational settings. Collins et al. (2014) used it to teach employment skills to college students enrolled in a university transition program. Randall et al. (2020) used a smartphone application with video and audio prompting to improve the completion of work-related office tasks with four young adults with intellectual disability (ID). Parker et al. (2020) used video modeling to teach college-aged students to interact with coworkers at a workplace. The use of video modeling has demonstrated efficacy across a variety of settings and participants, yet limited data exists pertaining to its use to build daily living skills among college students with significant disabilities. The purpose of this study was to determine if video modeling could improve daily living skills for a 21-year-old college student with ID in a university transition program. The participant required prompting to complete many daily living activities, which limited independence.

Method

This study incorporated a multiple baseline across behaviors design for four daily living skills, which involved introducing video modeling one skill at a time in random order. To establish baseline stability, at least four consistent data points showing either a trend or a stabilization were required before changing the phase and introducing video modeling to another skill.

Setting and Participant

This research was conducted in a residential postsecondary transition program for college-aged students with ID.
Students received specialized instruction and participated in traditional campus coursework. Students in this program received specialized resident hall support from resident assistants hired for this transition program. Leslie (a pseudonym) was a white female student in the 2nd year in the program. She was 21 years, 3 months old at the start of the study. Her full-scale IQ was identified as 61, and her general adaptive composite score was identified as 65.

Intervention

After obtaining informed consent, Leslie was asked open-ended questions to identify activities that she wanted to focus on to build independence in the kitchen, which was an area of concern identified by her parents. With support from program staff, Leslie identified cooking pasta, making smoothies, using measuring cups, and reading recipes as activities to work to improve. Researchers completed a task analysis of each daily living activity before creating the videos that scaffolded each activity into individual steps. Next, a smartphone was used to record the lead author completing each activity and a separate voice-over was created for the audio instructions, randomly assigning which activities included audio instructions. Shotcut, a free video editing software, was used to remove any extraneous audio that existed from recording the videos and add the voiceover to the videos with audio instructions (Dennedy, 2020). Finally, videos were uploaded to Google Drive so the student could access them on her personal device.

The baseline phase began with two sessions each week, each including one trial per daily living activity. The trials began with a verbal direction to begin each activity without access to the video models. Leslie had 30 s to begin, or prompts were used for initiating each step. After baseline stability occurred, the intervention was introduced one activity at a time and followed the same session structure. The intervention trials began with the verbal direction “Please open Google Drive to _______” with the specific activity going in the blank. Leslie had 15 s to either begin watching the video prompt or to start the activity; otherwise, least to most prompting (e.g., gestural, verbal, imitative, and physical) was used. Leslie could choose to watch all the videos for that activity at the beginning or watch them one at a time to prompt the next step. The intervention continued until Leslie had access to video prompting for all four activities, and stabilization or a consistent trend in the percentage of correct steps was observed.

During each trial in baseline or intervention phases, researchers collected data for the number of steps completed without additional prompting. To collect this data, the lead researchers used an adapted version from the video modeling module by LaCava (2021). Each activity had a separate form to reflect the unique steps and a notes section for any anecdotal evidence used to inform data analysis. The lead researcher used the printed forms to rate each step as independent, independent with support, prompt, or error.

After each trial, Excel was used to digitize and analyze the data. Both independent, meaning Leslie completed the step without using the video modeling, and independent with support, meaning she completed the step by using the video modeling, were scored as a one in the Excel spreadsheet. A prompt, meaning that a gestural, verbal, or imitative prompt was provided to complete the step, and error, meaning Leslie completed the step out of order or incorrectly, were scored as a zero. The researchers then converted the number of steps Leslie completed independently or independently with support to a percentage of the total steps for that activity and graphed this percentage for each session.

Procedural Fidelity and Interobserver Agreement

Self-monitored data on implementation fidelity for the least-to-most prompting hierarchy were collected during all sessions that included prompting. The lead researcher completed the activity using the task analysis without the participant to check the fidelity of the task analysis. In addition, small tallies were added on the data collection sheet for each prompt given, ensuring the correct prompts were used. Implementation fidelity was 90% for the prompt hierarchy.

Interobserver agreement (IOA) was collected by the researchers on 30% of all sessions using video recordings of the sessions. Total count IOA was calculated by dividing the number of agreements of the occurrence of correct responding by the number of opportunities to respond and then multiplying the product by 100% (Cooper et al., 2020). Whether a response was correct and the number of opportunities to respond was based on behaviors described on the task analysis for the skill being demonstrated.

Results and Discussion

When using video modeling, all four skills increased (see Fig. 1). Researchers began using video modeling without
audio instructions with the measuring cups task first. Leslie increased from 42% of the steps on average during the baseline to 81% of the steps on average independently using video modeling, including the first two intervention
sessions where she was learning how to use the video files. If those two sessions are not considered, she completed 86% of the steps independently. For the reading recipes using the screen reader task with audio instructions, she increased from 56% to 82% of the steps independently. For making a smoothie with audio instructions, she increased from 46% to 93% of the steps independently. For making buttered pasta without audio instructions, Leslie increased from 54% to 95% of the steps independently.

There did not seem to be a difference between Leslie’s independence for the activities using the modeling with or without audio instructions, suggesting that they are not necessary but can be used; this mirrored findings obtained from Collins et al. (2014). After the formal intervention period, Leslie was able to complete the tasks without the use of the video modeling with minimal prompting. However, there was not enough time to complete a generalization or maintenance phase.

During the baseline phases, some of the activities showed some initial growth. After presenting Leslie with the activity, prompts were provided if she could not do the steps independently. These prompted steps were counted as errors during that trial. Leslie was more likely to do the step independently during the next trial if it was prompted during the previous one, which suggests that learning occurred quickly in response to meaningful cues. Although the growth did hit a plateau after three to four sessions, this prompting did inflate baseline data to some extent.

Not all of the activities reached the same level of independence through the video modeling. Making smoothies and buttered pasta could be completed in the same way every time and could be easily recorded for mimicking, and Leslie reached over 90% accuracy with these upon completion. On the other hand, Leslie was independent with between 80% and 90% of the steps for reading the recipes and matching the measuring cups, showing a somewhat lower level of proficiency. By combining video modeling with other intervention strategies to teach individual steps within the task analysis, this research suggests that video modeling can be an appropriate intervention for more complex tasks as well.

Limitations and Implications for Practice

Because this research involved a single participant, generalizability is limited and replication is needed to validate results in other settings with different participants. Likewise, this research occurred during the coronavirus pandemic, which required physical distancing during all trials and added complexity to the prompting and data-collection process. Finally, scheduling constraints prevented the collection of maintenance data, which would have been ideal to collect to demonstrate longevity of instructional gains. Nevertheless, results from this research appear promising and contribute to the literature supporting use of video modeling.

Video modeling can be implemented in many intervention settings. Recording videos with a cell phone, editing them with a free program such as Shotcut (Dennedy, 2020), and uploading them into Google Drive can be done with the technology that is already available in most settings. By creating their own videos, practitioners can teach many behaviors to their students. It is important to choose the appropriate behaviors when creating these videos, especially if the goal is to have the student reach independence. A task that is completed in the same way every time seems to be more successful than a task that involves more complexity.

Overall, this study is consistent with previous research that portable video modeling can be used to teach daily living skills to students with ID. Her improvements across all activities indicate that video modeling does not need audio instructions to increase skills. Video modeling in a variety of formats can promote greater independence in daily living skills.

Declarations

Conflicts of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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