



Introducing an Information-Seeking Skill in a School Library to Students with Autism Spectrum Disorder: Using Video Modeling and Least-to-Most Prompts

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Abstract

This study investigated the effectiveness of a video peer modeling and least-to-most prompting intervention in the school library setting, targeting the instructional delivery of an information-literacy skill to students with Autism Spectrum Disorder (ASD). Research studies have evaluated the effectiveness of video-modeling procedures in the acquisition of social initiation, conversational skills, perspective-taking, appropriate play, and functional skills. However, the literature is limited on the acquisition of academic skills in library instructional programs as effected by video modeling with least-to-most prompting. This single-case, multiple baseline design across five middle school students with ASD used a descriptive approach to measure baseline, video peer-modeling intervention, and withdrawal phases. The results suggest that video modeling with least-to-most prompting was successful in teaching the five participants to access the online library catalog to help them select books for academic and leisure activities. Findings from the current study add to the literature on the use of video-modeling procedures in improving academic skills in students with ASD and can be applied in library instructional programs to strengthen existing educational programs and services for children with ASD.

Introduction

The ability to locate and use information is very important to today's students who want to find information for both personal and educational purposes. The abilities to determine when information is needed, gather information from a variety of sources including authoritative electronic sources, use information effectively, and create new knowledge are known as information-literacy skills. A good deal of research has been conducted around the topic of informational-literacy skill acquisition of typically developing students (Lance et al. 2000a,

2000b; Kachel et al. 2013). Fewer studies have focused specifically on determining whether instructional techniques in the school library setting differentially impact the skill development of students with Autism Spectrum Disorder (ASD) or identifying which instructional practices are effective to teach these skills to this population (Allen 2008; Bonnici, Maatta, and Wells 2009; Ennis-Cole and Smith 2011; Farmer 2009; Murray 2002). Using guidelines provided by ALA's Library Bill of Rights and Student Library Bill of Rights and AASL's *Standards for the 21st-Century Learner*, professional librarians have been proactive in initiating programs to provide support and training to their staff in order to meet the needs of students with special needs. (AASL 2009; ALA 2009, 2014; Allen and Hughes-Hassell 2010; Farmer 2013; Gavigan and Kurtts 2009).

The number of students identified as having ASD and qualifying for special education services has rapidly increased in recent decades. In 2011 13 percent, or 6.4 million, of the 49.8 million children enrolled in public schools, received special education services (Brault 2012; Buescher et al. 2014; NCES 2014). Approximately seven percent, or 455,000, of these 6.4 million children were three- to twenty-one-year-olds classified as having ASD and receiving public school special education services (NCES 2014). This number was an increase from the 22,664 students with ASD enrolled in special education programs in 1994 and the 94,000 enrolled in special education programs in 2000 (CDC 2014; NCES 2014). Today, it is estimated that one in every sixty-eight children is diagnosed with autism, making it more common than childhood cancer, juvenile diabetes, and pediatric AIDS combined (CDC 2014). Inevitably, based on these population statistics, school librarians will need to serve students with ASD.

Purpose and Significance of the Study

The purpose of this study was to evaluate the effects of implementing a video-modeling and least-to-most prompting intervention strategy within a school library setting to teach an information-literacy skill to students with ASD. There is a lack of research on effective, evidence-based instructional practices to deliver information-literacy skill instruction in library settings while addressing the special learning styles of students with ASD. The significance of this study is that it demonstrates an effective instructional strategy that school librarians can implement, leading to improved information-seeking skills in students with ASD.

Key Terms

Prompts are defined as "extra or artificial" stimuli that are given to children to increase their ability to make correct responses. Initially, instruction is provided on the desired behavior or skill to be learned, and the student is asked to respond or do the task without prompts. If the student does not respond within a set amount of time, more help is given until the child makes the correct response. Least-to-most prompts are a sequence of cues that are given by an instructor. These cues begin with minimal assistance and progress to more support if needed. A common least-to-most prompting system includes verbal prompts, gestures, modeling, and physical prompts (MacDuff, Krantz, and McClannahan 2001).

Video modeling is a strength-based instructional strategy that focuses on a student's talent or strongest learning modality rather than on his or her weaknesses. Video modeling is an observational learning technique that uses a video demonstration of a targeted skill or task being performed by a "model" and then imitation of the behavior by the individual viewing the video. There are several video-modeling perspectives: self, adult, peer, point-of-view, and mixed

methods. Each of these formats has been shown to be successful as an intervention strategy for students with ASD (McCoy and Hermansen 2007).

Literature Review

Overview

First, this literature review discusses the theoretical basis for video modeling and least-to-most prompts. Next, it provides an in-depth look at the research regarding video modeling and why it is considered an evidence-based practice for instructing students with ASD. The literature on effectiveness of combining prompts with video modeling is then discussed.

Theoretical Basis for Video Modeling

The theoretical basis for video modeling can be attributed to the theories of social learning and self-efficacy as identified by Albert Bandura (1969, 1997) and the theory of social development by Lev Vygotsky (Berk 2005). The theory of social learning emphasizes the ability to learn based on observing a model or receiving instructions without experiencing the behavior beforehand. Although Bandura believed “observational learning” occurred intentionally or accidentally, video modeling is a strategy that can intentionally promote this learning modality.

One of the major themes in Vygotsky’s social development theory is the Zone of Proximal Development (ZPD). ZPD is considered the distance between a student’s ability to perform a task guided by a more knowledgeable other (MKO), an individual who has a better understanding or higher ability level than the learner, and the student’s ability to solve the problem independently. According to Vygotsky, learning occurred in this zone. In video-modeling interventions that incorporate least-to-most prompts, both adults and peers that are more knowledgeable in performing the targeted task may provide models and support to the less-advanced learner (Berk 2005). Combining video modeling with least-to-most prompts ensures that the learner has opportunities to complete steps in a skill independently but also provides prompting when needed to eliminate undue frustration for the student, providing appropriate supports to keep learners in the ZPD.

Video-Modeling Intervention Strategies

Video modeling is an intervention strategy that has been used successfully to modify and improve functional, behavioral, and academic skills in students with ASD. It is a technique that uses videos rather than live (*in vivo*) instruction for children, adolescents, and adults to observe and imitate the desired behavior or skill (McCoy and Hermansen 2007). Research findings provide evidence that this procedure increases the learner’s capacity to memorize, imitate, generalize, and maintain these observed behaviors (Hitchcock, Dowrick, and Prater 2003). Video modeling also allows students to learn at their own pace, review cues and directions, rely less frequently on teacher prompts, and increase independent learning (Kagohara 2011). Advantages for the teacher are that, once the videos have been created, delivery is convenient and students can independently and repeatedly review the videos, playing individual steps as needed.

Video modeling has been used effectively for over forty years in a variety of settings, with a diverse group of participants, including children, adolescents, and adults with behavioral and cognitive disabilities, as well as with students at risk for academic failure. Partly in response to positive study outcomes and ease of use, video modeling has become a popular tool as an

educational intervention with individuals with ASD (Delano 2007a, 2007b; Dowrick 1999; Hitchcock, Dowrick, and Prater 2003; McCoy and Hermansen 2007). Allison Lowry Apple et al. (2005) found video modeling also to be effective in teaching social behaviors, but the results are more positive when followed by additional practice, verbal prompts, and role-playing.

Many instructional strategies target a learning modality that does not build on the strengths of students with ASD. Video modeling, on the other hand, is a strength-based educational-programming intervention that focuses on the students' visual strengths rather than their weaknesses (McCoy and Hermansen 2007). Video modeling emphasizes what an individual with ASD is capable of achieving through a visual modality instead of what that individual may have difficulty learning without visual supports.

According to Kathleen McCoy and Emily Hermansen (2007), providing videos for students to observe behavioral, functional, and academic skills places emphasis on the video-based instructional stimulus, which is delivered in a standardized manner, instead of a live scenario, which may be delivered differently each time. Although early studies focused on the use of video self-modeling (VSM), McCoy and Hermansen examined five types of video-modeling intervention studies—adult, peer, self, point-of-view, and mixed methods—to determine the efficacy of using these intervention strategies with students with ASD. Each modeling perspective technique has been shown to have benefits, as well as drawbacks, and has shown varying levels of effectiveness in studies. Models shown to have the most positive impact on student outcomes are peer and self-modeling. Several studies included in this meta-analysis indicate that the use of video-modeling techniques with other teaching strategies may have an influence on the positive outcome of the interventions.

Adult Video Modeling

Adult video modeling, in which an adult, such as a teacher, parent, or an unfamiliar person, demonstrates the targeted behavior, has been shown to be successful in interventions used to improve behavioral or functional skills for students with ASD. Adult video modeling has also been shown to be easier than peer- or self-modeling to design and requires less editing and training of the model, making it time- and cost-effective (Ayres and Langone 2007; Charlop-Christy and Daneshvar 2003; Cihak and Schrader 2008).

Video Peer Modeling

Peer models used in video peer modeling are usually the same age and gender as the learner. Peers can be either familiar to the participant (classmate or sibling) or an unknown model. Researchers have found that video peer modeling with a peer similar in age to the subject or video self-modeling is often more effective in achieving positive results than using adults (Apple et al. 2005; Nikopoulos and Keenan 2003). In this method, researchers film the model describing each step as it is performed when teaching a specific task (Ganz, Earles-Vollrath, and Cook 2011).

Christos K. Nikopoulos and Michael Keenan (2004) examined the effects of video-modeling intervention using a peer model, and the experimenter engaged in socially interactive play. Three children with ASD between the ages of seven and nine were shown the video and then their play and social initiations were measured. Findings showed that social initiations and play skills measured during baseline were enhanced after the children viewed the video. Follow-up tests were completed at one- and three-month intervals, showing that these skills were maintained.

Video Self-Modeling

Video self-modeling (VSM) techniques involve filming the participant performing the targeted behavior or skill. Students then are shown an edited video of themselves exhibiting appropriate and effective actions; inappropriate behavior or mistakes in the skill have been edited out. The video can be used as a positive self-review in which learners observe themselves successfully performing the targeted behavior or as a feed-forward approach in which the participant is shown performing a behavior or skill that (unedited) is above his or her current capacity of performance (Hitchcock, Dowrick, and Prater 2003).

In 2003 Caryl H. Hitchcock, Peter W. Dowrick, and Mary Anne Prater reviewed almost two hundred applications of video self-modeling that had been implemented over the previous three decades and the reported outcomes of these uses of video self-modeling. To determine the validity of positive outcomes of the studies, those researchers examined the videos that had been used within a school-based setting to promote academic and behavioral skills. Only eighteen studies met the authors' strict criteria for inclusion in this review. The authors concluded that all eighteen studies showed evidence of moderate to strong positive outcomes related to the VSM intervention. A variety of video-modeling techniques were used in these studies, with four combining self-video and other interventions such as verbal praise from adults.

Eight years later, Mary Anne Prater et al. (2012) again analyzed video self-modeling research studies used within the school setting to determine the efficacy and effectiveness of VSM in improving student performance. When selecting studies to be included in the 2012 review, the authors found nearly 650 video self-modeling interventions. Unlike their previous review, only VSM interventions that specifically targeted academic achievement were included in the analysis. The literature shows limited use of VSM to improve academic performance, and the authors located only eight studies that met their criteria. Of the eight studies examined, only two included participants with ASD (Delano 2007a; Marcus and Wilder 2009). It was also noted that, unlike the findings of the 2003 review, the 2012 research revealed that video self-modeling had gained in popularity as a technique to improve behavioral skills, especially in students with disabilities or at risk of failure. Improvement in technological tools, lowered equipment costs, and increased availability of video-editing software applications have made VSM a more popular form of intervention being used by educators. Monica E. Delano has cautioned that skill development is "only meaningful if the skills are useful in normalized settings" (2007b, 40).

Point-of-View Videos

Several research groups have analyzed research studies of video modeling, focusing on specifically targeted skills acquisition and different video-modeling perspectives to measure their effectiveness in improving behavioral and academic skills (Ayres and Langone 2007; Bellini and Akullian 2007; Cihak and Schrader 2008; Hitchcock, Dowrick, and Prater 2003; McCoy and Hermansen 2007; Prater et al. 2012). Point-of-view videos are shot from the perspective of the participant as if he or she were engaged in the targeted activity. This type of video is created by placing a camera at the shoulder of the model, with only the model's hands visible as the learning objective is performed. Point-of-view modeling is a relatively new type and was first used by Laura Schreibman, Christina Whalen, and Aubyn C. Stahmer (2000). This modeling perspective was found to be effective in teaching play skills, self-help skills, and functional skills, and in priming students for transitions.

Debora M. Kagohara et al. (2011) used a subjective point-of-view video-modeling intervention to teach two students with ASD to check the spelling of words using the spell-check function included in word-processing software programs. During the baseline phase, the students had little success performing the steps of the task with less than 40 percent correct results. The students were then introduced to a video model of the task; the students used an iPad to view the video. The modeling of the task was filmed using a point-of-view perspective, showing the participants what the activity should look like if they were actually performing the task. During the intervention phase the two participants completed the spell-checking task correctly between 76 and 100 percent of the time. Follow-up data on both participants showed 100 percent correct performance.

Video Modeling as an Evidence-Based Practice

In a meta-analysis of video-modeling interventions, Scott Bellini and Jennifer Akullian (2007) evaluated twenty-three single-subject studies to determine the effectiveness of video modeling and video self-modeling interventions for children and adolescents with ASD. The study was undertaken to examine whether or not video-modeling interventions meet the Council for Exceptional Children's criteria for evidence-based instruction. Based on Bellini and Akullian's meta-analysis, they concluded that video-modeling interventions meet the criteria for evidence-based practices as developed by Robert H. Horner et al. (2005).

Quality indicators for meeting the criteria of evidence-based practices include measurement of intervention fidelity, social validity of the intervention, and the dependent variables. According to Bellini and Akullian, intervention fidelity measurements are essential in determining whether the intervention was implemented as intended. Intervention fidelity can be measured by documentation of how often the video is shown, any events that could prevent the video from being viewed, absences, behavioral problems, and whether the participant is attending to the video (2007, 283). Social validity refers to the social importance and acceptability of treatment goals, procedures, and outcomes from the perspective of the consumer of the services (Schwartz and Baer 1991). During meta-analyses of video-modeling interventions conducted by Bellini and Akullian (2007) and Delano (2007a), only five research studies that measured video-modeling intervention treatment for social validity were found. Bellini and Akullian (2007) pointed out that, although studies do not always include documentation of intervention fidelity and social validity, this absence does not necessarily indicate lack of success, but can impact the development of new or existing interventions. Bellini and Akullian provided information on how to create checklists or documents that can easily measure the social validity of a research study, including "impressions of the child's progress and... asking the child herself whether or not the child enjoys watching the videos." Delano has recommended that future research studies "include assessment of social validity of intervention goals, procedures, and outcomes" (2007b, 39).

Prompting Strategies

To acquire new skills, all learners, including persons with ASD, need to practice skills and receive feedback (MacDuff, Krantz, and McClannahan 2001). However, to master desired skills or behaviors, persons with ASD, who often do not respond to seemingly obvious cues, need additional explicate supports. Prompts are considered "auxiliary" or "artificial" stimuli (MacDuff, Krantz, and McClannahan 2001, 38) or supports that have been proven effective in eliciting the correct response. Prompts are often delivered verbally or by means of gestures,

modeling, or providing physical guidance to increase the chance that the learner will make the correct response (Krantz and McClannahan 1993).

In 1999 Gregory S. MacDuff, Patricia J. Krantz, and Lynn E. McClannahan reviewed 268 journal articles and book chapters, and found that verbal prompts were the most commonly used auxiliary cues, with modeling of the target behavior or skill the second most common type of prompt (2001). Studies reporting the use of modeling prompts included both *in vivo* and videotaped models. Many of these studies used prompts in conjunction with other intervention techniques; none of the studies reported the use of modeling prompts alone.

Although prompts can help facilitate the acquisition of new behaviors or skills, mastery of these skills is considered successful only if the skills are performed correctly and independently after prompts are removed. MacDuff, Krantz, and McClannahan described the six most frequently used “prompting packages” (2001, 40) that combine several prompting sequences to assist persons with ASD in acquiring new skills or behaviors.

A least-to-most prompting strategy begins with minimal assistance; assistance is increased to more support if the desired response is not received. If the student does not respond after a short (five- to ten-second) delay, the teacher provides help, using the least intrusive prompt, often beginning with verbal prompts, and then progressing—if necessary—through gestures, modeling, and manual or physical prompts.

In contrast, most-to-least prompting provides the learner with the amount of support needed to successfully acquire a new skill, with gradual reduction of prompting until the task can be completed independently. Most-to-least prompts include “physical guidance, partial physical guidance, modeling, gestural prompts, and verbal instructions” (MacDuff, Krantz, and McClannahan 2001, 41).

Delayed prompting strategies encourage fading of the prompts (that is, reducing the strength or frequency of the prompts) by providing a prompt only after a brief period of time has elapsed between the stimulus that should elicit the behavior and the delivery of the prompt. This type of prompt has been shown to be effective for teaching new skills. However, Moshe Oppenheimer, Richard R. Saunders, and Joseph E. Spradlin (1993), found that delayed prompting might result in dependence on the prompts by causing the learner to wait for the prompt instead of attempting to respond independently.

Graduated guidance consists of manual prompts that are faded by changing the intensity of the prompts or the location of their delivery. This prompting sequence might start with hand-over-hand prompts, faded to prompts at the wrist, arm, elbow, and shoulder. The next step in the prompting strategy might include shadowing the learner’s movements without physical contact. This approach is often used in combination with other prompting procedures.

Promoting Strategies Incorporated into Video-Modeling Interventions

In 1994 Paulo R. Alcantara conducted one of the first studies to incorporate video-modeling intervention accompanied by a least-to-most prompting strategy. Calling this intervention a “videotape instructional package” (1994, 41), Alcantara sought to teach three students with ASD how to shop for groceries. Students were shown videotapes of an adult instructor modeling the desired 32-step task, and then immediately taken to a grocery store in the community and provided on-site verbal prompts, reminders, and reinforcements to assist them in the acquisition of grocery-purchasing skills. When study participants were unable to independently complete all

the steps in the purchasing task, a least-to-most prompting system was added. The instructor would first provide a verbal prompt. If the student did not respond to this prompt, the instructor modeled the step. Finally, if the student still did not respond to the modeled prompt, the instructor provided physical guidance to help the student accomplish the step. The results of the study showed that the study participants were successful in mastering the skills being taught in this intervention “package.” However, Alcantara noted that it was difficult to determine whether videotaped modeling alone could have delivered the same results (1994).

Natalie T. Murzynski and Jason C. Bourret (2007) compared a video model combined with least-to-most prompting treatment with a treatment design using least-to-most prompting alone to teach daily living skills to two boys with ASD. The authors designed this study specifically because previous studies “had not thoroughly examined the supplementary effects of combining these two procedures” (2007, 147). Their results showed that study participants were able to acquire the desired behavior with fewer sessions during the treatments that combined video modeling and least-to-most prompting treatments than in the sessions using only least-to-most prompting.

Smita Shulka-Mehta, Trube Miller, and Kevin J. Callahan conducted a meta-analysis to evaluate the effectiveness of different video-instruction strategies (video modeling, video self-modeling, and point-of-view video modeling) for teaching skills to children with ASD. In their report, the team provided this description of video modeling, which includes a system of prompts as part of the video-modeling treatment procedure:

VM is described as a process where (a) a person is asked to watch a video prior to instruction in the target skill, (b) the target skill is modeled by an adult or peer within the activity context, (c) the instructor provides prompts and reinforcers to the person for attending to relevant stimuli, and (d) the person then imitates the behavior of the model when provided with the opportunity to perform the skills displayed in the video. (2010, 23)

Conclusions Regarding Video-Modeling Intervention Strategies

The literature indicates that video modeling is an effective tool to improve skills in individuals with ASD. Reasons for this effectiveness may be because video modeling reduces demands on attention and language, does not require social interactions with teachers or peers, and provides information in visual format (Sherer et al. 2001). However, there is a gap in the literature concerning research studies examining the effectiveness of the use of video-modeling techniques for the acquisition of academic skills within the library setting to improve the learning outcomes of students with ASD. For this study, video peer modeling accompanied by least-to-most prompts filmed with a point-of-view perspective were chosen to teach information-literacy skills to students with ASD. Peer modeling was chosen because research shows that modeling by peers is often more effective than modeling by adults (Apple et al. 2005; Nikopoulos and Keenan 2003). Video self-modeling was ruled out because exposure of the students with ASD to the informational-literacy skill would require instruction prior to the intervention sessions. Point-of-view perspective was critical to the intervention because it allowed the student with ASD to see the computer screen while watching the peer model each step. This study is one of the few research studies to use point-of-view modeling and to investigate its efficacy in the acquisition of academic skills.

Method

Research Questions

While conducting this single-case, multiple-baseline design across five middle school students with ASD, data was collected to explore the research questions below. In this design the video-modeling intervention is introduced to each participant individually after the baseline of the skill has been established. Finally, the participant is returned to the baseline assessment condition after the intervention condition.

Research Question 1: How does the use of video peer modeling accompanied by least-to-most prompting affect the acquisition of library information skills in middle school students with ASD?

Research Question 2: What are the perceptions of middle school students with ASD regarding their learning and the helpfulness, usefulness, and enjoyment of a video peer modeling intervention with least-to-most prompting in the school library?

Participants

Five participants (n=5) were selected through convenience sampling of public school students who had been formally diagnosed with ASD and who were eligible for or receiving resource assistance from the school district's Autism Support Services Department. Students selected to participate in the study were required to have an IQ in the "average" range of 85 to 129 and to be able to read at a second-grade level or above. At the time of the study, eighteen students were enrolled in the Autism Support classes at this middle school.

Using a document review and consulting with staff members, the researcher (the school librarian) reviewed the eighteen students' characteristics to determine if they met study criteria. It was determined that five students in the Autism Support program did not meet the study criteria due to lower IQ and reading scores. These students were not invited to participate in the study. An additional six students were excluded from the study because their IQ levels were above the "average" criteria set for this study. Each of these students had been dually identified as both gifted and ASD. These students received support and services from both the Gifted and Autism Support programs. It was determined that only seven students met the criteria to participate in this study. Parents of two students invited to participate declined, and parents of five students gave their consent. All students in the latter group agreed to participate; their demographic profile is in table 1.

Table 1. Demographic profile of participants.

Participant (see note 1)	Gender	Age	Ethnicity	Grade	IQ	Reading Level	Diagnosis (see note 2)	Date of Diagnosis
Tommy	M	12	Caucasian	6	97	2.4	ASD	12/2003
Nick	M	13	Caucasian	7	100	4.7	ASD	5/2005
Amanda	F	12	Caucasian	6	107	5	ASD and LI	7/2003
Henry	M	11	Caucasian	6	95	2.4	ASD	4/2005
Zoey	F	14	Asian	8	93	4.2	PDD	12/2000

Note 1: Participant names are pseudonyms.

Note 2: ASD = Autism Spectrum Disorder

LI = Language Impairment

PDD = Pervasive Developmental Disorder

This table displays diagnosis information based on DSM-IV-TR criteria and guidelines, which was the standard used to diagnose participants who took part in this research study. However, under DSM-5 guidelines (published by the American Psychiatric Association in 2013), all participants would be categorized under the ASD diagnosis.

Instruments and Tools

To develop an in-depth understanding of each student participating in the study, several data-collection instruments were used to gather information. By collecting multiple forms of data, the researcher had a strong foundation on which to explore this “bounded system” (Creswell 2008, 476).

Document Review

The students’ Individual Education Plans (IEPs) were reviewed for any specialized instructional modifications that may have impacted this study. Scores were gathered from the Wechsler Intelligence Scale for Children-IV (WISC-IV), Test of Nonverbal Intelligence (TONI), Gilliam Autism Rating Scale (GARS), and other formal assessment tools such as the Group Reading Assessment and Diagnostic Evaluation (GRADE) and the Degrees of Reading Power (DRP) assessment results collected by the school district.

Task Analysis and Task-Analysis Observation Form

After identifying the targeted skill, the researcher created a task analysis to determine each step in the process of locating a library book using the online library catalog. The task was broken down into twelve steps as shown in table 2. The task analysis was used to create a script for filming the video. The task analysis was also the basis for the task-analysis observation form, which was used to observe each student during the study and record when steps were completed independently or with prompts.

Table 2. Task analysis for using the online library catalog.

Step	Description
1.	Log onto school computer by entering your student number and password.
2.	Open Internet using “Firefox” Internet connection.
3.	Click on link for your school.
4.	On school district homepage click on “Library Pages” link.
5.	Log onto Library Pages by entering your student number and password.
6.	Click on Destiny online card catalog system link.
7.	Type name of book in search box.
8.	Click on box with T (search titles).
9.	Find book you want on the search results screen.
10.	Click on book title for more information about book.
11.	Make sure a copy is available – check info on right side of box – “1 of 1 available”
12.	Write down the call number of the book or print out book record

Note. Steps 7 and 8 may be repeated until book is selected.

Video-Modeling Tool

After the task analysis had been developed, a video was designed showing a student peer modeling the step-by-step procedures involved in this task. The student model was taught the search process and practiced it before filming began. The researcher then filmed the model describing each step as she performed the task (Ganz, Earles-Vollrath, and Cook 2011). The peer model demonstrated how to search for a book using book titles, authors, and subjects or keywords. The peer model was recruited from among the student library aides who assist the school librarian in helping other students during their free periods and was not a student diagnosed with ASD. The researcher followed instructions provided in journal articles written by Scott Bellini and Luke McConnell (2010), Tom Buggey and Grace Hoomes (2011), and Melissa A. Collier-Meek et al. (2012) on how to film and edit videos to be used in video-modeling interventions. Filming was done in the school library and required a laptop computer; Follett’s Destiny library cataloging software program; and a Flip camera attached to a small tripod to minimize distractions, excessive noise, and jittery camera movements. The raw video footage was uploaded to a MacBook computer and was edited down to five minutes using iMovie software (Bellini and Akullian 2007; Buggey 2005). After editing, the movie was converted to a QuickTime video. For this study, using live peer models was ruled out as an intervention strategy because it would require the students with ASD to socially interact with the peer. This need for interaction would emphasize a core deficit skill for students with ASD.

Field Notes and Reflections Form

A Field Notes and Reflections Form (see Appendix A) was completed after each interaction with study participants to assist the researcher in documenting events occurring immediately before

the student arrived at the library intervention session (as shared by the student's teachers) and during the session. These field notes were used in identifying new themes that presented themselves during the research process. The researcher also wrote reflective memos on this form to capture thoughts on the research process and to interpret what was being observed as it happened (Merriam 2009).

Videotaping the Intervention Activity

To monitor the intervention process actively and accurately, the researcher video recorded each intervention session throughout the study. Each study participant was video recorded as he or she viewed the video model on the computer and attempted to complete the targeted skill. Before the participant arrived in the school library, a small Flip camera was activated for filming. This camera was discretely positioned on a shelf in front of the participant to capture any sounds, gestures, facial expressions, or actions that were not easily observed by the researcher who sat beside the participants during each treatment session.

Student Questionnaire

Student participants were invited to complete a questionnaire (see Appendix B) at the conclusion of the video-modeling intervention; the questionnaire was designed to explore their enjoyment of the experience, their self-perception on skill acquisition, anticipated use of the skill for future library searches, and the value of this skill in their educational pursuits. For participants to continue to use the skills learned, it was important that intervention goals be socially relevant and meaningful to the participants (Bellini and Akullian 2007; Delano 2007a). Questions in this survey were developed from procedures recommended by the authors referenced above, as well as from original studies that incorporated this method (Apple et al. 2005; Buggery 2005; Nikopoulos and Keenan 2003).

The survey included six Likert-scale items, ranked from "strongly disagree" to "strongly agree," and one open-ended item. Students were asked to rate their experience in learning the new information-literacy skill (see table 3). If a student had difficulty reading the questionnaire, assistance was given to aid the student in completing the form.

Table 3. Student questionnaire items.

- | | |
|----|---|
| 1. | Watching the video helped me learn how to search for a book on the computer by myself. |
| 2. | Knowing how to use the online library catalog will help me find information for my school projects. |
| 3. | Knowing how to use the online library catalog will help me find books that I am interested in reading just for fun. |
| 4. | I will probably use the online library catalog again to find books when I want information on a topic. |
| 5. | I enjoyed learning how to use the online library catalog. |
| 6. | I will suggest using the online library catalog to my friends when they need to find a book. |

Please share any other opinions you have about learning how to use the online library catalog. You may write your comments below or ask an adult to help you complete this section.

Description of Intervention Activities

Technology Observation

All students in this school are given a student ID and password at the beginning of the school year. At each grade level students attend technology classes in which they are instructed on how to log onto school laptop computers and access the Internet. Study participants attended these technology classes. However, before the implementation of the video-modeling intervention, their ability to perform these activities was confirmed by their technology and special education teachers and through direct observation by the researcher. In a session prior to the start of the intervention, the students met with the researcher to assess their skill in using a computer. If it was determined that the student was unfamiliar with using a computer, he or she was instructed on how to turn the device on, how to navigate through the screen icons, and how to choose an icon to play a video or to use another software application.

Intervention Procedures

Each of the students participated in the study separately, two days a week for approximately one-half hour, during homeroom or a language arts class period, for a total of one hour each week. To minimize any possible disruption to the students' daily schedules, whenever possible treatment for each student was scheduled during non-instructional times. As mentioned previously treatment sessions for all participants were video recorded to capture video and audio data.

Each participant's ability to perform the library book search (the dependent variable) was measured using an A-B-A Withdrawal design. During the baseline phase (A) session, students were instructed to log onto a computer using their ID and password and asked to attempt to locate a library book using the library catalog located on the computer. Baseline data collection was limited to one session for each student, to determine the ability to perform this task independently.

During the first intervention phase (B) session, each student was instructed by the researcher to locate the video thumbnail icon on the computer, watch the video that had been downloaded to the laptop, and then log onto another computer at the same desk and attempt a search for a book. In subsequent intervention sessions, the participant was expected to follow the directions given by the peer model in the video. The researcher sat beside the participant while they viewed the video and attempted a search for a book. The study participants were allowed to view the video then complete the task, play the video and follow along with the steps on the other computer, or chose to stop and replay the video when a particular step was difficult for them to understand or master.

A list of popular book titles had been generated using the "Top Titles Statistics" report program in the Destiny database. Each student was asked to look for one book on the list, using the book title, then an author, and, finally, a subject or keyword. When a student was unable to complete a step in the task, the researcher provided a prompt after a five-second delay, assisting the student in learning the skill. The use of prompts was noted on the task-analysis form along with the type of prompt needed. The prompts moved from least-to-most, using verbal (e.g., "Click on the Library Pages link"), gestural (point to what needs to be done), or physical prompts (touch the student to get the motion started). As each student progressed in his or her ability to complete the task, prompting was faded to avoid a dependence on the prompting (Heflin and Alaimo 2007).

The intervention phase (B) continued for study participants for a maximum of eight sessions (four weeks) or until a student was able to complete all the steps without prompts. Following the intervention phase (B), to determine maintenance of the targeted skill, participants were asked to complete the task without the video and prompting support during a withdrawal phase (A). The withdrawal phase continued for two sessions (one week).

Data Analysis

Document Review

The information gathered by means of the review of existing documents about the students helped establish an understanding of the abilities and characteristics of the participants. A matrix was created that placed the formal assessment results for each case study participant in categories. Demographic data included gender, age, ethnicity, grade level, reading level, IQ, and date of diagnosis of autism.

Task-Analysis Observation Forms

Data were collected using the task-analysis observation form checklist to record the score or level of completion for each case study participant during each phase. The completed form indicated the number of steps the students were able to complete independently and noted the type of prompt that was needed to complete a step. The researcher calculated a percent of steps completed independently and the quantity of prompts required for each session.

Field Note and Reflections Form

Handwritten field notes and reflective memos were transcribed and then coded to ascertain reoccurring themes, contradictory information, and impressions of the events as they occurred during the multiple case studies. To identify categories and emerging themes, after transcription preliminary or “open coding” was completed to break the information into discrete concepts. After completion of the open coding, the researcher collapsed the codes into five broad themes or categories: behavior, collaboration, consultation/information seeking, content scaffolding, and curriculum (see table 4).

Table 4. Open coding collapsed into categories and themes.

Code and Definition:	Example:
Behavior: including but not limited to communication, social interaction, and mannerist behaviors.	Distractions, Self-Regulation, Risk Taking, Confidence Building, Learning Strategies, Enjoyment of Activity: (Participant responses to successful search; examples follow) <ul style="list-style-type: none"> • “Victory Dance” after finding book • “I found it! I found it!” • “Alrighty!”
Collaboration: Any collective action in which two or more individuals work together towards a common goal of planning, implementing, or evaluating a specific aspect of an educational	<ul style="list-style-type: none"> • Avoiding scheduling conflicts (Amanda) • Use of common words/phrases: “safe hands,” “quiet body”

program for a student or group of students	(Tommy) <ul style="list-style-type: none"> Reward system (Henry)
Consultation/Information Seeking: Process through which a professional assists or interacts with other professionals and the families of students with disabilities in order to acquire information that facilitates the learning of such students.	<ul style="list-style-type: none"> Understanding Special Education terminology and testing information (e.g., IEPs) Guidance on instructional strategies for students with ASD
Content Scaffolding: Instructional strategy in which educators teach material that is not too difficult or unfamiliar to students learning a new skill.	Online Library Catalog Search by: <ul style="list-style-type: none"> Use of Top Twenty Book List Selecting book titles and topics of personal interest Using search skills to locate resources for class assignments
Curriculum: Any of a variety of resources, items, or tools, including textbooks, supplemental materials, and activities, used by teachers to engage students in the learning process. The body of courses and other formally established learning experiences, which constitute a program of study. <ul style="list-style-type: none"> Class Assignments: Searches initiated because participant needed book or information for class assignment Library Skills/Information Skills/Information Literacy: Both formal and informal lessons to help library users become more proficient in seeking and locating information and resources. 	Searches: <ul style="list-style-type: none"> U.S. Civil War (Social Studies) Fantasy, Easy biography, Science Fiction Free choice fiction book (Language Arts)

Figure 1 provides a brief sample of coding on one form from a session with Zoey. The concept of not being distracted was coded and then collapsed within the behavior category while the act of Zoey searching for a book for her English class was collapsed within the curricular category. Whenever feasible, direct quotes were used to capture the participants’ feelings or attitudes about the topic being discussed and to provide additional detail. The field notes provided a description of the activity being observed; the reflective memos provided the researcher’s impressions, hunches, or insights on what was occurring during the observation (Creswell 2008).

DESCRIPTION:	INTERPRETATION:	NOTATIONS/ CODING:
Student <i>paid attention</i> to video	<i>Not distracted</i> by other activities occurring in library area	<i>Behavior</i>
<i>Without prompting</i> , student logged onto computer after final scene in	Good computer navigation skills	<i>Scaffolding</i> of previous computer

video where student demonstrator says, "Why don't you try looking for a book."		class lessons, comfort in using technology
Student first used Online Library Catalog icon on toolbar to access OLC information but then stopped and followed step-by-step procedures in video demonstration	Asked why she was searching these terms and she said she needed book for class (English assignment)	Using this tool for curricular needs
After logging onto OLC, student entered search terms without prompting: <i>Easy Biography, Science Fiction</i> and <i>Fantasy</i>	Remembered call # for each book	
Found a book and clicked on title in bold, read book summary, did again with another title	Did not ask for help in locating books, needed to be prompted	Consultation with teacher, need to prompt Zoey when she fails to ask for help
Found both books with assistance and checked them out for class project	CHECK VIDEO	

Figure 1. A sample of coding of Field Notes and Reflection Form

Analysis of the Intervention Activity Video Recordings

The researcher used Transana software, a CAQDAS (Computer Assisted Qualitative Data Analysis) program, to analyze data gathered during the study. Using a facilitated manual process, the researcher transcribed the audio and video recorded during each treatment session, which captured the study participants' activities, organized each video clip into meaningful categories, added searchable keywords to the clips, and applied thematic coding to the segments. This coding was cross-referenced with the coding generated by the researcher in her field notes and reflective journals. Transana fully integrates text and video into a searchable database, which allowed for easy access to important video frames and corresponding text. This software-assisted qualitative data analysis process provided verification of observed activities, created displays of coding patterns in graphic form, and allowed for manipulation of video clips to show thematic patterns within each case and across cases.

By viewing and transcribing the videotapes of the intervention sessions as soon as possible after each session, the researcher measured the fidelity of the intervention process, to detect any problems with intervention quality or deviations from intervention protocol, and to make corrections, if necessary. The researcher noted that the established protocol was delivered in the same way for each participant. Adjustments to the scheduling of intervention sessions were sometimes required due to unanticipated events such as school closings due to snow or student absences, and an explanation for these changes were noted. However, the researcher did not find variations to the established protocol that required corrections to be made to the intervention treatment itself. These activities were done to ensure treatment fidelity and enhance the validity of the results.

Student Questionnaire

The student survey was used to determine the students' perceptions of the teaching strategy that combined video modeling with prompts. The goal was to determine the strategy's social validity and its relevance to their social and educational needs, to measure their self-assessed skills acquisition, and to determine their willingness to use this skill in future academic and recreational pursuits. These data were depicted visually in a table that displayed the percentage of responses to each question.

Results

Introduction

Each study participant met with the researcher for baseline phase (A), intervention phase (B), and withdrawal phase (A) sessions. The number of times each participant met with the researcher was determined by how quickly that participant completed the task with few or no errors, no need for prompts, and the ability to stay on-task. During initial baseline phase (A) sessions, all participants showed limited ability to complete the twelve steps in the task.

Research Question 1: How does the use of video peer modeling accompanied by least-to-most prompting affect the acquisition of library information skills in middle school students with autism spectrum disorder (ASD)?

The summary of the participant data is found in table 5. All participants were seen for one baseline phase (A) session at the beginning of the study to determine their ability to complete the task independently before the intervention was implemented. During the baseline phase (A) session, participants were able to complete an average of five steps out of the twelve steps (identified in the task analysis) for using the online library catalog, with a range of two to eight steps completed. Of these steps, they averaged completing only four independently and requiring an average of two prompts. Once the intervention phase (B) was implemented, all participants were able to complete the twelve steps by their tenth session with most of the participants (n=3) completing twelve steps by session five. The highest percent of independent steps completed out of the twelve steps during the intervention phase (B) ranged from 75 to 100 percent. The number of prompts needed during the intervention ranged from a high of seventeen to a low of zero.

The video-modeling intervention effectively facilitated the acquisition of the targeted skill for all of the study participants. During the withdraw phase (A), in which the participants completed their book searches without the aid of the video, all participants were able to complete twelve steps except Nick who completed eleven. The participants independently completed steps ranged from 67 to 100 percent during the withdrawal phase. Prompts required during this phase ranged from zero to seven. As each participant's ability to complete the twelve steps in the modeled task improved, the researcher was able to decrease the prompts needed by the participant and began fading the prompts as the participants' skills increased.

Table 5. Steps achieved and prompts required for task completion.

Participant / Sessions	Baseline	Intervention							Withdrawal				
	A	B							A				
Participant 1 – Tommy	1	2	3	4	5	6	7	8	9	10			
Total steps achieved	2	11	12	11	12	12	12	12	12	12			
Total steps achieved independently	0	4	6	8	9	9	8	11	10	9			
Total prompts needed	5	15	17	4	9	7	5	1	4	3			
Percent completed independently	0	36	50	73	75	75	67	92	83	75			
Participant 2 – Nick	1	2	3								4		
Total steps achieved	8	12	12								11		
Total steps achieved independently	7	12	10								10		
Total prompts needed	1	0	4								1		
Percent completed independently	88	100	83								91		
Participant 3 - Amanda	1	2	3	4	5						6	7	
Total steps achieved	8	12	12	12	12						12	12	
Total steps achieved independently	8	7	6	9	10						10	11	
Total prompts needed	0	8	7	4	3						2	1	
Percent completed independently	100	58	50	75	83						83	92	
Participant 4 - Henry	1	2	3	4	5	6	7	8	9	10	11	12	
Total steps achieved	4	3	8	8	7	8	11	12	12	12	12	12	
Total steps achieved independently	2	2	4	4	4	3	7	8	9	10	8	10	
Total prompts needed	3	2	13	6	5	10	6	8	5	2	7	3	
Percent completed independently	50	67	50	50	57	38	64	67	75	83	67	83	
Participant 5 - Zoey	1	2	3	4	5	6	7	8				9	10
Total steps achieved	3	12	3*	12	12	12	12	12				12	12
Total steps achieved independently	3	10	3*	8	10	10	10	12				10	12
Total prompts needed	0	2	0	7	2	6	5	0				3	0
Percent completed independently	100	83	100	67	83	83	83	100				83	100

*Session 3 for Zoey terminated due to problems with Internet access.

Each participant completed the study within four to twelve sessions, with one student (Nick) opting to withdraw from the study after achieving the goal in his fourth session. Another student (Tommy) asked to continue meeting with the researcher after completing the withdrawal phase (A) sessions. After the research study was concluded, Tommy, Henry, and Zoey continued to visit the school library and work with the researcher on various information-literacy skills. Nick and Amanda had limited contact with the researcher (the school librarians) and visited the library only when they needed to borrow books for class assignments. Both were able to locate their books by using the skills they had learned during the study.

By triangulating data from observations, field notes and reflective memos, and videos of the intervention sessions, the researcher was able to document and confirm treatment fidelity. Unavoidable events, such as school closings due to snow or holidays, formal testing sessions, problems with Internet access or technology, student absences, and behavioral issues, caused

delays or rescheduling of some treatment sessions. However, none of these events impacted the intervention treatment itself, which was delivered in a consistent manner with all participants without any changes being made during the study.

Research Question 2: What are the perceptions of middle school students with ASD regarding their learning and the helpfulness, usefulness, and enjoyment of a video peer modeling intervention with least-to-most prompting in the library?

The results of this questionnaire indicate that the study participants showed satisfaction with the video modeling with prompts intervention (see Table 6). Most responses recorded were either “agree” or “strongly agree.” For questions related to skill acquisition, anticipated use of the skill in the future, and the value of mastering this skill, all responses were positive. Only one student responded “strongly disagree” when asked whether he or she would use the online library catalog to find books in the future. For the questions concerning study participants’ enjoyment in learning how to use the online library catalog and their willingness to recommend using it to their friends, one student responded negatively, while the other four students responded positively. Only one returned survey included a response for the open-ended question; it indicated enjoyment of this learning experience.

	Strongly Disagree	Disagree	Agree	Strongly Agree
Table 6. Student Questionnaire Results.				
Watching the video helped me learn how to search for a book on the computer by myself.	0%	0%	80%	20%
Knowing how to use the online library catalog will help me find information for my school projects.	0%	0%	20%	80%
Knowing how to use the online library catalog will help me find books that I am interested in reading just for fun.	0%	0%	60%	40%
I will probably use the online library catalog again to find books when I want information on a topic.	20%	0%	60%	20%
I enjoyed learning how to use the online library catalog.	0%	20%	40%	40%
I will suggest using the online library catalog to my friends when they need to find a book.	0%	20%	40%	40%
Open ended Question: (Only one response to this question was recorded.)				

Please share any other opinions you have about learning how to use the online library catalog.

“I liked learning on the computer.”

Discussion

The results support previous studies that used a video-modeling intervention as an instructional strategy for children with ASD (Bellini and Akullian 2007; Delano 2007b; McCoy and Hermansen 2007; Nikopoulos and Keenan 2004). It also adds to the literature by using a video-modeling intervention with least-to-most prompts with students with ASD in a school library setting for information-seeking instructional purposes.

The current study extends previous research studies comparing the effects of video modeling on acquisition of academic skills in students with ASD (Delano 2007a; Kagohara et al. 2012; Kinney, Vedora, and Stromer 2003; Knight et al. 2010; Pennington 2010). The results of this study suggest that video modeling with least-to-most prompting was successful in teaching the five participants to access the online library catalog to help them select books for academic and leisure activities. The video-modeling intervention effectively facilitated the acquisition of an information-seeking skill and contributes to the literature on school library instructional strategies for students with autism.

When reviewing the field notes, task observation forms, and transcripts, the researcher did not identify trends or areas where all or most of the study participants had difficulty in completing steps in the targeted task. However, field notes, task observation forms, and transcripts from the video recorded intervention sessions show that each of the participants approached the treatment sessions in a variety of ways: demonstrating quiet independent work, engaging in animated discussions with the researcher, completing only the tasks demonstrated, or doing self-initiated advanced searches. Individual learning styles and student characteristics may play a role in these results. Future research should take these unique learning styles and characteristics into consideration and demonstrate the understanding that instructional strategies, including video modeling, should be adapted to each student's unique learning style.

Throughout the study, the researcher maintained constant contact with the staff in the school's Special Education Department. The researcher frequently consulted with the staff to gain a better understanding of the issues associated with working with students with ASD and adapting instruction to enhance their learning experiences. Collaboration resulted in the implementation of techniques that addressed specific characteristics and behaviors of the participants that were impeding their progress but did not result in any changes to the intervention protocol. Understanding each participant's learning style, being aware of sensory stimulators that might trigger temper tantrums or shutdowns, and using common terminology and a timer system to encourage self-regulation were all management strategies shared with the researcher. These collaborative efforts proved to be invaluable in the conduct of the study. Collaboration with special education teachers can provide content-area teachers with the tools they need to make the educational experiences of their students with ASD effective and rewarding.

Although this study focused on the use of a video-modeling intervention with least-to-most prompts to teach a skill in a school library setting, it could be easily adapted to provide instruction to students with ASD in other classroom settings. According to Linda Dale Bloomberg and Marie Volpe, transferability, which allows for "understanding and knowledge to be applied in similar contexts and settings" is the goal in case study research (2012, 31). Data collected during this case study provides rich narrative details that allow for transferability to other information-seeking skills and in other content areas (Bloomberg and Volpe 2012; Maxwell 2005; Merriam 2009). The strategies used in this research could be implemented across educational settings that provide inclusionary instruction for students with ASD.

Teachers of special content areas such as art, music, technology, physical education, and family and consumer science programs often struggle to find effective teaching strategies that help students with ASD successfully master the skills being taught in their classrooms. Deficits in fine motor skills, visual-motor skills, and sensory arousal sensitivity can cause students with ASD difficulty in their ability to participate in these classes (Heflin and Alaimo 2007; Turkington and Anan 2007). Previous studies have used video-modeling interventions to teach students with autism to paint (Chan et al. 2013); to shop for groceries, prepare meals, wash dishes, and acquire other life skills (Ayres and Cihak 2010; Mechling 2004; Mechling et al. 2014; Murzynski and Bourret 2007); to listen to music for leisure purposes (Chan et al. 2013; Hammond et al. 2010); to develop basketball skills (Lo, Burk, and Anderson 2014); and to use the Internet (Zisimopoulos, Sigafos, and Koutromanos 2011).

Advances in technology have made user-friendly equipment and software readily available and reasonably priced (Bellini and McConnell 2010; and Bugghey and Hoomes 2011; Collier-Meek et al. 2012). Taking advantage of these technologies, a school librarian or other classroom instructor can easily implement a video modeling with least-to-most prompting intervention for their students with ASD.

Limitations to Consider

As with any research study, this case study had several limitations that have been identified by the researcher. The sample size for data collection was limited, with only five students with ASD participating. Of the five participants, analysis of the data shows that only three (Tommy, Amanda, and Zoey) successfully completed the study; Henry completed the study, but his non-compliant behaviors contributed to mixed results; Nick withdrew from the study voluntarily. All study participants attended the same suburban middle school and were enrolled in a special education program with excellent resources and staff. However, the students were mixed by gender, grade level, and formal diagnosis; their demographic characteristics were fairly representative of the population of children with ASD. Although five is a reasonable number of participants for a single-case, multiple-baseline design across participants, it is not possible to generalize the results to the ASD population as a whole. To facilitate generalization of the results of this study, replication is necessary to provide conclusive evidence that video modeling with least-to most prompts is an effective instructional strategy to teach information skills to students with ASD in a library setting.

The study did not include a formal assessment of skill maintenance after the final withdrawal (A) session. Therefore, a second limitation in this study is the inability to provide data that skills were maintained by any of the participants. This study was conducted in a public school, and the final intervention sessions with the participants ended shortly before the end of the school year. Several of the students left the school due to graduation from middle school or transfers to other school districts, circumstances that made it difficult to collect formal data on their maintenance of this skill. However, anecdotal evidence suggests that three of the five participants were able to maintain the skills learned in this intervention and use the skills in their academic pursuits. At the conclusion of the study, the researcher (the school librarian) invited all the participants to continue visiting the library. Only Tommy, Henry and Zoey accepted this offer. Eventually, they began helping in the library as student volunteers, using the skills learned in this study to assist other students in locating library books and materials.

A third limitation encountered in this study was the difficulty of controlling for prior learning behaviors. Prior knowledge was evident in the participants' independent completion of the first

several steps in the task starting with their first session, baseline phase (A) demonstrating their ability to log onto the computer and use their IDs and passwords to access the Internet. Their ability to use the computer can be attributed to computer technology classes that all students are required to attend. Because of the difficulty in controlling for prior learning histories, future researchers may consider conducting similar studies involving elementary-level children when instruction in general computer use and in using the online library catalog is usually first introduced to students; working with younger students would provide greater control over any previous exposure to this activity.

Conclusion

Current research and literature on the efficacy of video modeling used in instructional strategies for students with ASD is still emerging, with most studies focusing on social and behavioral issues (Ayres and Langone 2005, 2007; Bellini and Akullian 2007; Buggey and Hoomes 2011). This study is one of only a few that have investigated the use of video modeling in a school library setting to deliver curricular instruction. Additionally, it introduces a video-modeling intervention with least-to-most prompts with students with ASD for information-seeking instructional purposes. However, a gap still exists in the area of information-literacy skills training for students with ASD.

More research in this area is needed. The resulting evidence will assist school librarians in performing their duties at optimum level, while enhancing their library instructional program offerings to assure resources and training are available to empower learners and prepare them for future academic endeavors using 21st-century literacy skills: digital, visual, textual, and technological (AASL 2007; Ennis-Cole and Smith 2011).

School environments, including the school library, must allow for physical and intellectual adaptations to provide educational opportunities for all students, including students with ASD and other conditions (Ennis-Cole and Smith 2011; Erickson, Hatch, and Clendon 2010; Gavigan and Kurttis 2009). School librarians should actively pursue opportunities to receive training and to collaborate with other members of the school staff to enhance educational programs for students with ASD; these efforts should be supported through staff development programs offered by school district administrators. Proactive efforts on the part of school librarians will help them to uphold the mandate set forth in the Library Bill of Rights and its interpretations, which emphasize the role of all librarians in reaching out to persons with disabilities and in assuring the equitable availability of resources that best suits library users' needs (ALA 1996).

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Appendix A

Field Notes/Reflections Form

Video Modeling Intervention Instructional Strategy

PROGRAM LOCATION:	FIELD NOTE NUMBER:	DATE:	START TIME:	END TIME:
NAME OF OBSERVER:			ROLE:	
LOCATION OF ACTIVITY:			ACTIVITY NAME:	
INDIVIDUALS PRESENT:				

DESCRIPTION:	INTERPRETATION:	NOTATIONS/ CODING:

Appendix B

Student Questionnaire

Please read each sentence carefully and circle the number that best describes your response. Use the scale listed below each statement to determine how it reflects your opinion.

- 1. Watching the video helped me learn how to search for a book on the computer by myself.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

- 2. Knowing how to use the online library catalog will help me find information for my school projects.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

- 3. Knowing how to use the online library catalog will help me find books that I am interested in reading just for fun.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

- 4. I will probably use the online library catalog again to find books when I want information on a topic.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

- 5. I enjoyed learning how to use the online library catalog.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

- 6. I will suggest using the online library catalog to my friends when they need to find a book.**

1	2	3	4
Strongly disagree	Disagree	Agree	Strongly agree

Please share any other opinions you have about learning how to use the **online library** catalog. You may write your comments below or ask an adult to help you complete this section.

Thank you for your time and participation in this project.

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