Article

Hammill Institute on Disabilities

Remedial and Special Education
XX(X) 1–12

DOI: 10.1177/0741932512448218
http://rase.sagepub.com
SAGE

Effects of Simulation to Teach Students With Disabilities Basic Finance Skills

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Abstract

This study used a multiple probe design across participants to examine the effects of classroom simulation using static picture prompts to teach students to make a purchase using a debit card and track expenses by subtracting purchase amounts and adding deposits into a check register. Results demonstrated a functional relation between simulated instruction and students' ability to complete a 20-step task analysis of debit card use and expense and deposit tracking in a check register. Students were able to generalize purchasing skills to new community settings up to 5 weeks after intervention. Implications for practice and recommendations for future research are described.

Keywords

simulation, money management, transition, special education, disabilities, general case programming

Graduating from high school is a time of growing independence. It includes moving away from home, forming relationships, and managing financial responsibilities; however, few youth with disabilities, 25%, have lived independently outside the family home since exiting high school (Newman, Wagner, Cameto, & Knockey, 2009). Finance skills are one key aspect of independence that youth with disabilities are struggling with, in particular youth with learning disabilities (LD), emotional disabilities (ED), and autism (AU). Data reported in Wave 4 of the National Longitudinal Transition Study 2 (NLTS 2; Newman et al.) indicated that many youth with disabilities lack finance skills. Wave 4 data indicated that (a) 60.2% of all youth with disabilities had a savings account (58.1% with LD; 49.0% with ED; 61.4% with AU) and (b) 56.7% of youth with disabilities had a checking account and wrote checks (49.3% with LD; 35.1% with ED; 50.3% with AU; Newman et al., 2009). Although statistics indicate that few youth have financial accounts, 94.9% of youth had money he or she could decide how to spend (96.7% with LD; 97.7% with ED; 82.9% with AU; NLTS 2, 2009). However, youth and young adults may lack certain financial skills that would allow more independence in the community (e.g., determining whether they have enough money available in their accounts to make a purchase) or may lack the automaticity of these skills. Given these statistics, financial skills are imperative for successful outcomes of students and should be taught to students before exiting high school.

Personal finance education is an increasing priority for states. The Council for Economic Education (CEE) reported that 44 states have personal finance content standards, an increase of 23% between 1998 and 2009. Of these 44 states, 34 require schools to implement those standards, a 20% increase from 1998, 15 states require a personal finance course to be offered, a 15% increase from 1998, 13 states require a personal finance class be taken for graduation, and 9 states require testing in personal finance, an average of 10% increase from 1998 (CEE, 2009).

Personal finance skills are vital to managing a household, paying bills, and engaging in leisure activities, among other daily living activities that require money to participate. Previous research with students with disabilities has focused primarily on components of personal finance, such as using a checking account (Davies, Stock, & Wehmeyer, 2003) and purchasing (Xin, Grasso, Dipipi-Hoy, & Jitendra, 2005). The two most common strategies to teach basic finance skills (e.g., purchasing) are community-based and simulated instruction.

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Community-based instruction (CBI) is defined as instruction of functional skills that takes place where target skills would naturally occur (Brown et al., 1983). CBI has been used as a strategy to teach functional skills (e.g., grocery shopping; Bates, Cuvo, Miner, & Korabek, 2001). Although CBI has been found to be an effective intervention to teach skills, it may not always be the appropriate strategy to use. In some cases, CBI does not allow for sufficient training or testing opportunities. It may also not be feasible due to other barriers such as cost and transportation to community sites. An alternative to CBI is simulated instruction.

Simulated instruction is defined as the use of simulations in the classroom that approximate the natural stimulus conditions and response topographies associated with performing functional skills (Bates et al., 2001). Benefits of simulated instruction include (a) efficiency, students can engage in repeated practice over a short period of time; (b) cost-effective, artificial materials can be reused; (c) less time-consuming; and (d) more allowance for error correction (Vogelsberg, Williams, & Bellamy, 1982).

The primary argument for using CBI as a teaching strategy is to maximize the potential for skill generalization (Bates et al., 2001). If simulations adequately represent the variety of stimuli and responses associated with the community setting, then theoretically generalization should occur (Bates et al., 2001). Nietupski, Hamre-Nietupski, Clancy, and Veerhusen (1986) established guidelines for designing simulations. According to Nietupski et al., community settings first must be examined to determine the range of stimulus and response variations students could potentially face. Simulation should include as many stimulus and response variations presented in community settings to maximize skill generalization. The next step is to systematically manipulate the simulations to provide sufficient number of training examples. The last step is to measure performance in community settings and use assessment data to modify simulations as necessary. If students experience difficulty in a particular step of the task in the community or sequence of steps, simulation should be used to provide repeated practice and error correction.

Mechling, Gast, and Barthold (2003) incorporated these guidelines in an investigation of a computer-based program for teaching students to make a purchase using an automated debit machine. They specifically examined whether students who were taught using simulated instruction only would generalize use of the debit card to community stores. Results indicated that simulated instruction was effective in teaching students with moderate intellectual disability to generalize the skills of using a debit card to make a purchase in the community.

Personal finance skills are needed to acquire and manage income, including using these skills to make wise decisions regarding how one spends and saves. A limitation of studies examining use of debit cards is that only a small subset of skills related to finance (e.g., purchasing) have been examined. Studies did not take into consideration the broader context of managing money that requires individuals to track expenses and deposits and make decisions about spending based on knowledge of amount in banking accounts (Mechling et al., 2003).

Only one study could be found that examined purchasing in conjunction with a more complex skill (i.e., tracking expenses; Rowe, Cease-Cook, & Test, 2011). Rowe et al. (2011) examined the effects of simulation on teaching students to use a debit card to make a purchase and track expenses by subtracting amounts of purchase from total amount in check registers. Results indicated that simulation was effective in teaching students with mild intellectual disabilities to make purchases using a debit card and track expenses. However, this study was limited in that it only addressed subtracting expenses and did not teach students about deposits. Another limitation of previous research is that the use of skills learned for financial decision making is not examined. Teaching finance skills and how to use skills for purchasing decisions is necessary. Therefore, the purpose of this study was to examine the effects of simulation to teach students to make a purchase with a debit card and track expenses and deposits in a check register. This was a systematic replication and extension of Rowe et al. The research questions that guided this study were as follows:

Research Question 1: What was the effect of classroom simulation on acquisition and generalization of skills to use a debit card and track expenses?

Research Question 2: What were the students', teachers', and parents' perceptions of the use of a simulated debit card intervention as a method for learning money management skills?

Participants

Participants were four students enrolled in 10th grade at a rural high school in the northwestern United States. Students were selected based on the following criteria: (a) student and parent consent to participate; (b) identified disability in the area of LD, AU, or emotional and behavioral disorder; (c) ability to read and copy words and numbers; (d) ability to add and subtract decimals in their head or using a calculator; (e) ability to identify more than and less than; (f) did not currently have a debit card or know how to use one; and (g) had a source of income to open a banking account.

A record review was completed to verify disability and identify present levels of performance in math and reading. Students and their parents were interviewed prior to beginning the study to determine whether students currently had a debit card or knew how to use one and to inquire about a source of income to open and sustain a checking account. None of the participants had a debit card or bank account prior to participating in this study nor had participants ever participated in tracking expenses or deposits. According to the interviews, both parents and students felt this was a valuable skill to learn to become more independent in the community and wanted to learn how to use a debit card and track their expenses and deposits.

Ashton

Ashton was a Caucasian, 16-year-old female identified as having LD and a communication disorder. Ashton was participating in the standard course of study on track to receive a standard diploma. She had not met the benchmark score for the state math assessment. She could add and subtract three- and four-digit numbers with decimals in her head but often used a calculator to double-check her math. She also was able to identify more than and less than.

Devon

Devon was a Caucasian, 16-year-old male identified as having LD. Devon was participating in the standard course of study on track to receive a standard diploma. He had not met the benchmark score for the state math assessment. He could add and subtract three- and four-digit numbers with decimals in his head but often used the calculator to double-check his math. He also was able to identify more than and less than.

Jared

Jared was an African American, 16-year-old male identified as having AU and ED. Jared was participating in the standard course of study on track to receive a modified diploma (i.e., same credit requirements as standard diploma with modified coursework). He had not met the benchmark score for the state math assessment. He could add and subtract three- and four-digit numbers with decimals in his head but often used a calculator to double-check his math. He also was able to identify more than and less than.

Candace

Candace was a Caucasian, 16-year-old female identified as having LD. Candace was participating in the standard course of study on track to receive a standard diploma. She had met the benchmark score for the state math assessment. She could add and subtract three- and four-digit numbers with decimals in her head but often used a calculator to double-check her math. She also was able to identify more than and less than.

Setting

Intervention and data collection took place in the students' high school transition office. Within the office, two centers were created. The first center was for teaching students to make purchases. It consisted of a table and two chairs and a researcher-made, simulated debit card machine. The second center was considered a banking center where students went to record purchases and deposits in their check registers. It consisted of a small desk and a chair. It was equipped with a pencil, calculator, and each student's check register.

Generalization probes were conducted in community locations students frequently visited. Community sites within a 10-mile radius of the high school were examined to determine which stores accepted debit cards as a form of payment (i.e., to ensure students could be transported to and from the site during one school period). The researcher provided students with a list of stores that accepted debit as a form of payment and asked students to choose five places they visited most often. The top five rated sites were used to collect generalization probe data during this study (e.g., Safeway, Walgreens). No store was visited twice during the study. Generalization of the track expense portion of the task analysis was conducted in a small workroom located within the transition office. The workroom had a table, four chairs, pencil, calculator, and student's check register.

Materials

Materials used in this study included a researcher-made simulated debit card machine, instructional scripts, check register, student debit cards, receipts, calculator, and a pencil. Lessons were scripted to control instructional content and ensure high levels of procedural fidelity (Cooke, Galloway, Kretlow, & Helf, 2011). To maximize instructional effectiveness of simulation, the researcher followed guidelines for effective use of simulation suggested by Nietupski et al. (1986). General case analysis was used to develop the debit card machine and design materials used in simulation (i.e., receipts, deposit slips; Horner, Sprague, & Wilcox, 1982). See Table 1 for abbreviated general case analysis form.

First, the researcher examined all stimulus situations in which students could use a debit card to make a purchase within a 35-mile radius of the school to include a range of stimulus situations. The stimulus situations included chain stores found throughout the country (e.g., Walmart) as well as stimulus situations unique to the geographical area (e.g., Safeway). The researcher visited locations and examined the various stimulus and response variations needed to operate each debit machine accurately and determine the amount and type of behavior required to make a purchase using a debit card. The researcher also examined the different response topographies used to activate the debit card machine (e.g., direction to swipe card, touch screen).

Next, the researcher conducted a general case analysis of receipts obtained from making a debit card purchase. Receipts were examined to determine the placement of store name, date, total sale, as well as variations of words used to describe the total amount purchased. Receipts were obtained

Table 1. Abbreviated General Case Analysis of Debit Card Machines

Generic Response	Walmart	Safeway
Answer cashier's question of debit or credit?	Cashier didn't say anything. The machine said please slide card. Then a screen came up to choose what type of payment (e.g., debit, credit, EBT)	Cashier didn't say anything. The machine said please choose method of purchase (e.g., debit, credit, EBT, gift). Once debit was pressed then prompt to slide card was given
Swipe card	Machine had screen that listed items purchased said please slide card. Card had to be swiped down the side. Card on its side. Magnetic strip facing toward machine and down, numbers facing out	Machine had screen that said please swipe card. Card had to be swiped down the right side. Card lying flat. Magnetic strip facing down, numbers facing right
Enter PIN number	PIN screen could either use fingers or attached pen to type the numbers of my PIN and press enter	Had to use touch screen to enter PIN and press enter button
Check amount of purchase to see if it is correct	Screen showed amount ok? And had a yes box or a no box to choose	Screen showed amount ok? And had a yes box or a no box to choose
Choose whether you want cash back or not	Cash back amount could select from 4 boxes (US$20, US$50, none, other)	Cash back amount could select from 4 boxes (US$20, US$50, none, other)
Wait for approval	Showed approved	Showed approved
Get receipt from cashier	Cashier gave me a receipt	Cashier gave me a receipt

Note: This process was used for all debit card machines in the instructional universe (i.e., stores typically visited by youth in community that accept debit cards as form of payment), as well as receipts found from each of these stores.

from various locations in the community within the 35-mile radius. The researcher also examined receipts for irrelevant information included and varied this information across teaching examples to minimize the probability responding would come under the control of these irrelevant stimuli (e.g., phone numbers, logos, sweepstake advertisements).

Interventionist and Observer

Instruction on debit card usage and tracking expenses was provided by the paraprofessional assigned to provide transition services through the Youth Transition Program (YTP; Benz, Lindstrom, & Latta, 1999) in the school district. The paraprofessional was a female with 3 years experience as a transition specialist in YTP. She had completed 1.5 years at a University and participated in 60 hr of training as a professional coach. She had been a life coach for the past 17 years. The researcher in this study was a 3rd-year doctoral student in special education with a primary focus of secondary transition. The researcher had a master of arts degree in special education and 12 years experience in public high schools including 8 years as a transition specialist.

Data Collection Procedures

Dependent Variable

The primary dependent variable for this study was using a debit card to make a purchase and tracking expenses in a check register. The dependent variable was measured by counting the total number of steps completed correctly on a 20-step task analysis of debit card usage and expense tracking (see Table 2). The 20-step task analysis involved four distinct skills—determining whether enough money was in the account to make a purchase, using a debit card, tracking debits, and tracking deposits in a check register. Step 1 was related to determining whether there was enough money in the account to make a purchase. Students were given either the cost of a product or multiple products and asked to determine whether they had enough money in their accounts to make the purchase. Steps 2 through 8 were for making a purchase using the debit card. Steps 9 to 15 related to entering expenditures into a check register. Steps 16 through 20 were related to entering deposits into your check register.

Generalization Measures

Generalization of using a debit card to make a purchase was assessed at various community-based sites (e.g., Safeway) using the same task analysis used in instruction. After making a purchase using their debit card, students returned to school and completed the remaining steps of the task analysis, entering their debit into the check register and calculating the balance in a small workroom located in the transition office.

Interobserver Reliability

Interobserver reliability data were gathered by the researcher. The interventionist scored the student on the primary dependent variable (i.e., student acquisition of use

Table 2. Task Analysis of Debit Card Usage and Expense Tracking

Step	Task
Making a decision based on amount of money in account	
1	Determines correctly if enough money is in account to make a purchase of "x" amount of dollars
Making a purchase with debit card	
2	Answers cashier's question of debit or credit
3	Swipes card
4	Enters pin number and press enter
5	Checks amount of purchase to see if it is correct. Yes for correct, No for incorrect
6	Selects yes or no for cash back
7	Waits for approval/takes receipt
8	Puts receipt in wallet
Tracking expenses (recording purchases)	
9	Walks to banking center
10	Takes receipt out of wallet
11	Under 1st column, labeled number or code, writes card for a debit
12	Under the 2nd column, labeled date, writes the date of the transaction
13	Under the 3rd column, labeled transaction description, writes a description of the transaction
14	Under the 4th column, labeled payment, fee, withdrawal (–) writes the amount of the debit
15	Under the last column tallies results using the correct operation in checkbook register (+ deposits and – for card)
Tracking expenses (recording deposits)	
16	Finds deposit amount in check register
17	Writes date of deposit
18	Writes deposit under transaction description
19	Writes amount of deposit in deposit, credit (+) column
20	Under the last column tally results using the correct operation in checkbook register (+ deposits and – for card)

of debit card and expense tracking) during each probe session. At the same time, the researcher scored the student on the primary dependent variable. Interobserver reliability data were collected for 69% of probes conducted during baseline, 70% of probes conducted during intervention, and 88% of generalization probes conducted postintervention. Overall, interobserver reliability data were collected on 76% of study probes. An item-by-item comparison of agreements and disagreements was conducted. Agreements were divided by 20, the total number of steps on task analysis, and multiplied by 100 to yield a reliability coefficient. Interobserver reliability was 100% for all phases of the study.

Social Validity

Data were gathered to determine the social importance of the effects of the intervention and appropriateness of procedures (Schwartz & Baer, 1991). To evaluate intervention acceptability, information was solicited from direct consumers (i.e., students), indirect consumers (i.e., parents), and members of the immediate community (i.e., teachers; Schwartz & Baer, 1991). To validate the importance of the effects of the intervention, data were collected by surveying students and parents using a questionnaire. The student questionnaire asked each student his or her perception of procedures used to teach skills, usefulness of skills learned, and extent to which he or she planned to use skills in the future. The questionnaire consisted of 14 questions requiring students to respond with yes, no, or not sure (e.g., 1 = *no*, 3 = *yes*), as well as questions that asked students to rate themselves (e.g., 1 = *no ability*, 3 = *complete ability*). Parents were given a five-item questionnaire asking about the importance and effects of the intervention. They were asked to rate the importance of learning personal finance skills on a Likert-type scale (e.g., 0 = *not important*, 2 = *extremely important*) and to rate their child's ability to use the debit card and track expenses in a check register (e.g., 1 = *not at all*, 4 = *definitely*). They were also asked whether they would like their son or daughter to participate in more lessons about purchasing and money management (i.e., 1 = *no*, 2 = *yes*). To validate the appropriateness of procedures, two secondary special education and two general education math teachers were asked to review the instructional manual and provide feedback on the acceptability of the intervention. A modified version of the Primary Intervention Rating Scale (Lane et al., 2009) was used to assess the acceptability of the procedures. Teachers were given the title and purpose of the study and time commitment for reviewing materials.

Experimental Design

The experimental design was a multiple probe across participants design (Cooper, Heron, & Heward, 2007). Baseline data were collected for all students initially in the transition office. Following a minimum of three baseline data points, or once a stable level and trend was established, the intervention was introduced to the student demonstrating the greatest need. After the first student's performance reached criterion-performance (20 out of 20 steps on the task analysis) two consecutive times, the student entered postintervention, where generalization data only were collected, and the remaining students were administered another baseline probe. The student with the lowest score entered intervention next. This sequence continued until all students entered and completed intervention.

Procedures

Baseline

Baseline data were collected in the transition office using the simulated materials. In addition, a generalization data point was collected in a community setting. In the transition office, students were given materials needed to complete tasks prior to beginning each probe. The interventionist followed a script. She began each probe session by stating, "Today you are going to use your debit card to make a purchase and track your expenses. I want you to show me the steps you would take." The interventionist began by reading a scenario included in the day's probe script and asked the student to determine whether he or she had enough money in their account to make the purchase. The interventionist continued by stating a purchase amount followed by the question, "Will that be credit or debit?" (e.g., "$8.65, will that be credit or debit?"). No additional prompts, instruction, or feedback were given. If the student did not respond within 5 s, the instructor asked, "Are you finished?" If the student replied yes, then the interventionist walked the student to the banking center and skipped to Step 10 on the probe script. No additional prompts, instruction, or feedback were given. If the student did not respond within 5 s, the instructor asked, "Are you finished?" If the student replied yes, then the trial was complete.

In the community setting, the interventionist stated, "Choose something and make the purchase using your debit card. We will return to school to enter the transaction into your check register." No additional prompts, instruction, or feedback were given. Once a student chose an item to purchase and walked to the register, the probe began. If the student did not respond within 5 s, the instructor asked whether he or she was finished. If the student replied yes, then the interventionist completed the purchase with the student's debit card and returned to school to complete the remaining portion of the task analysis. Once at school, they proceeded to a workroom located in the transition office and the interventionist provided the prompt, "Enter the transaction into your check register." If the student did not respond within 5 s, the instructor asked whether he or she was finished. If the student replied "yes," then the trial was complete.

Intervention

During intervention, the interventionist followed an instructional script. Students were provided all necessary materials to make a purchase and track withdrawals and deposits. During instruction, the interventionist sat across from the student. The researcher-made debit card machine was placed in front of the student and the student was handed his or her debit card. Instruction followed a model-test format. The interventionist read the case scenario included in the day's instructional script and stated the purchase total. Instruction began by asking the student to look and listen as she completed each step. She demonstrated one step of the task analysis as she verbally said the directions and then asked the student to complete the step independently. This sequence was repeated for each step of the task analysis. If an incorrect response was given, the interventionist repeated the step and asked the student to demonstrate the step. If a correct response was made, the interventionist provided immediate praise and pulled out the picture prompt in the simulated debit card machine to reveal the next screen. This model-test sequence was followed until all steps of debit card transaction were complete. After the student completed the debit card transaction steps, the student was given a receipt. The student was instructed to place the receipt in his or her wallet or pocketbook. After the student made the purchase, the task analysis was continued at the banking center in the transition office. The student was instructed to go to the banking center and enter his or her expenses in his or her check register. The student was also given a deposit slip to use at banking center. During instruction, the interventionist modeled tracking expenses by getting out her receipt and writing in her register. She then prompted the student to get out his or her receipt and write in his or her own register. If no response was given within 5 s, the interventionist provided a verbal prompt (e.g., "Where should we start recording our transaction?"). If an incorrect response was given, the interventionist repeated the step, and the student was asked to demonstrate. If the correct response was given, the interventionist provided verbal praise and continued to the next step of the task analysis. The interventionist said to student, "We will first enter our debits into our check registers and then enter our deposits. Let's begin with our debits." The interventionist modeled in her own check register. She stated, "Now it's your turn. What do you write in the box? What does this mean?" If no response was given within 5 s, the interventionist provided the verbal prompt, "What should we write?" If the incorrect response was given, the interventionist repeated the step and asked the student to demonstrate. If the correct response was given, the interventionist provided verbal praise and continued to the next step of the task analysis. Finally, the interventionist modeled steps of adding deposits into the check register. She asked the student to demonstrate. If no response was given within 5 s, the interventionist provided the verbal prompt, "What is the date?" If an incorrect response was given, the interventionist repeated the step, and student was asked to respond. If a correct response was given, verbal praise was provided and the interventionist continued to the next step. This sequence continued until all steps on the task analysis were complete and transactions were correctly entered in registers.

Generalization

Generalization data were collected at five different community sites once during baseline and four times postintervention (i.e., 1 day, and 1st, 3rd, and 5th week after the end of intervention) using the same task analysis used during instructional probes. Students were able to purchase an item of their choice costing no more than US$5.00. The cost restriction was necessary to ensure enough money remained in the student's real bank account for the duration of the study. On two occasions during generalization, students deposited money into their actual bank accounts. Bank associates set up a teller in the school cafeteria once a week to allow all students an opportunity to use their services. The transition specialist provided participants money to deposit into their bank accounts on two occasions. Students then used the real deposit receipt given to them by the bank to calculate the balance in their accounts.

Procedural Fidelity

Procedural fidelity data were gathered on both the probe and instructional procedures. The researcher scored the probe steps delivered by the interventionist using the probe script as a procedural fidelity checklist. Procedural fidelity data were collected on 69% of baseline probes, 70% of intervention probes, and 88% of postintervention generalization probes, for an average of 76% of study probes. The number of checked boxes were added, divided by 40, and multiplied by 100 to calculate the percentage of procedural fidelity during probe sessions. Procedural fidelity for probes was 100%.

During instruction, the researcher scored instructional steps delivered by the interventionist using the instructional script as the procedural fidelity checklist. The number of checked boxes were added, divided by 91, and multiplied by 100 to calculate percentage of procedural fidelity during instructional sessions. Procedural fidelity for instructional sessions was 100%.

Results

Results for each participant are presented in Figure 1. The graph shows the number of steps performed correctly on a task analysis of debit card usage and tracking expenses and deposits for all four participants across baseline, classroom simulation, and postintervention.

Participant Data

Ashton. During baseline, Ashton's scores ranged from 3 to 5 with a mean of 4.5 correct responses. During classroom simulation, Ashton's scores ranged from 18 to 20 with a mean of 19.5. In generalization settings, her baseline score was 7 and her postintervention generalization scores at 2 days and 1, 3, and 5 weeks were all 20.

Devon. During baseline, Devon's scores ranged from 3 to 6 with a mean of 5.2 correct responses. During classroom simulation, Devon's scores ranged from 18 to 20 with a mean of 19.5. In the generalization settings, his score for baseline was 10, and his postintervention generalization scores at 1 day and 1, 3, and 5 weeks were all 20.

Jared. During baseline, Jared's scores ranged from 2 to 6 with a mean of 4.0 correct responses. During classroom simulation, Jared scored 20 out of 20 in the first two consecutive sessions. In the generalization settings, his score for baseline was 6, and his postintervention generalization scores at 2 days and 1, 3, and 5 weeks postintervention were 20, 19, 20, and 20. During generalization, he was able to use three of the four untrained debit card machines independently. On the community probe conducted 1-week postintervention, he required assistance in determining which way to swipe the card.

Candace. During baseline, Candace's scores ranged from 4 to 9 with a mean of 6.6 correct responses. During classroom simulation, Candace scored 20 out of 20 during the first two consecutive sessions. In the generalization settings, her score for baseline was 10, and her postintervention generalization scores (i.e., 1 day, and 1, 3, and 5 weeks) were all 20.

Social Validity

Direct consumer perceptions. All four students agreed that this would be an acceptable lesson for high school; however, Ashton added "it may be a little hard for some." All

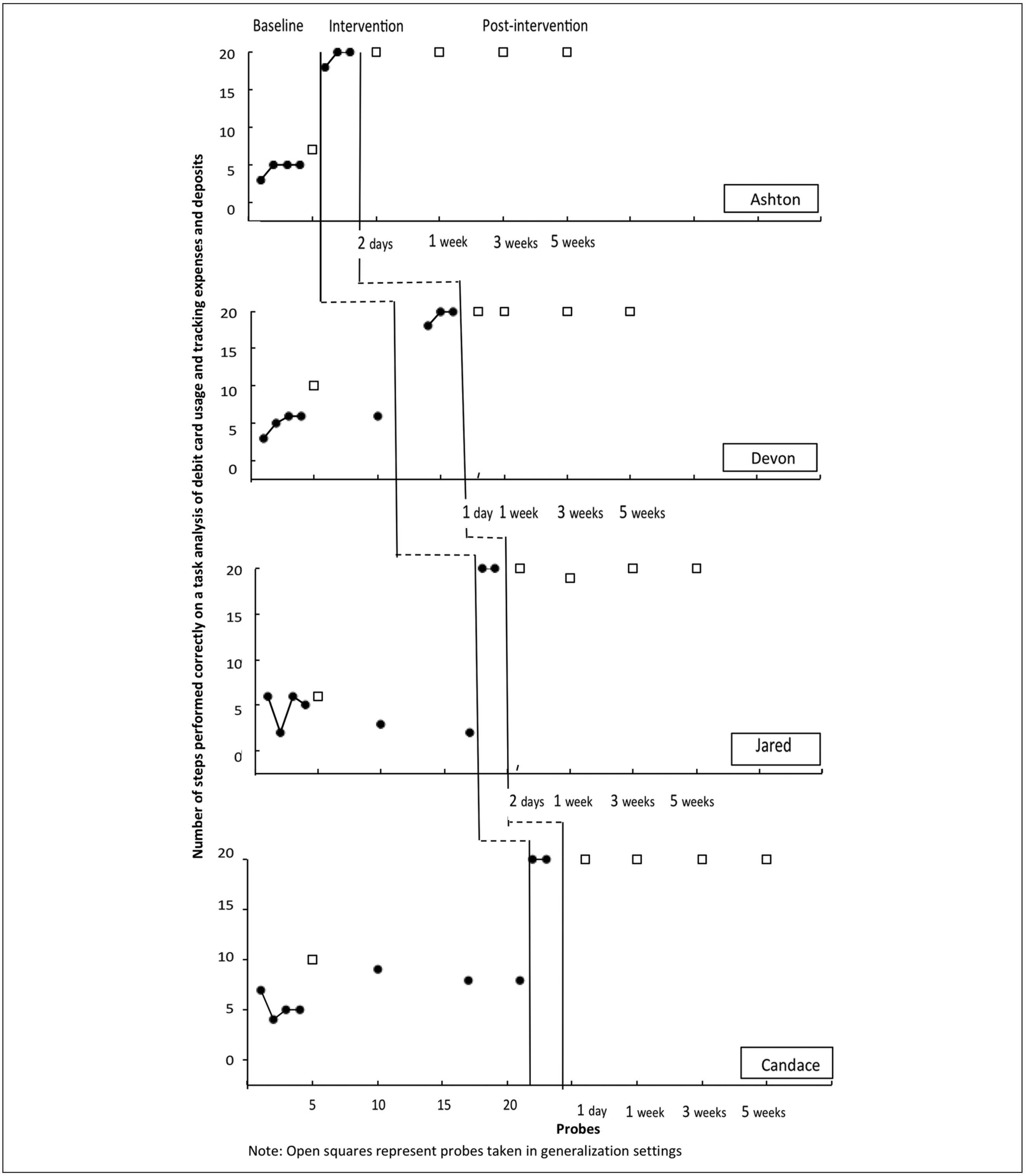

Figure 1. Number of steps correct on a task analysis of making a purchase and tracking expenses
Note: • = simulation; ☐ = generalization probe.

but Candace felt that most high school students would participate in this type of lesson. Candace felt that many high school students "didn't really care for learning this type of skill" and that "maybe high school seniors" would be most likely to participate in these types of lessons. All students felt that lessons would prove to be effective in teaching students how to use a debit card and track their expenses. They felt lessons would be appropriate for a variety of students including students with disabilities and said they would suggest lessons to other students. All students liked the procedures used to teach lessons and felt it was a good way to teach money management skills. All students thought the time and effort they invested into each lesson was acceptable and had expressed interest in participating in other lessons similar to ones in this study.

The way in which students perceived their ability to use a debit card and to track expenses in a check register was consistent across students. Candace felt she had "complete ability" to use her debit card, and the remaining three students felt they had "some ability" to use their debit card. Ashton felt she needed "practice in order to remember to press the enter key each time." Jared and Devon said they were "still getting the hang of it, I want more practice." Candace and Ashton felt they had complete ability to track their expenses in a check register. Devon and Jared, on the other hand, felt they only had some ability. Again they expressed a need for further practice. When asked to rate the usefulness of the skill, all four students rated the skill as very useful. When asked how often they would use the skill, all students said sometime. Ashton said, "I won't use it when I am not in the community." Devon said, "Some places don't take debit cards. It depends on the situation." Jared said, "Depends on the amount of money I have and what I am buying. I may use cash." Candace said, "Sometimes I just may use cash."

Indirect consumer perceptions. All four parents felt learning personal finance skills and knowing how to use a debit card and track one's own expenses was extremely important to living independently. Ashton's mother felt Ashton's ability to use a debit card and track her own expenses had definitely increased as a result of participating in the study, but she did not express an interest in her daughter participating in any more lessons about purchasing and money management. Devon's and Jared's parents were unsure whether their child's ability to use a debit card and track his own expenses had increased as a result of participating in this study; however, they expressed interest in Devon and Jared participating in more lessons about personal finance. Candace's mother felt Candace's ability to use a debit card and track expenses had definitely increased and expressed interest in Candace participating in more lessons about personal finance.

Members of the immediate community. Both general and special education teachers rated the intervention as acceptable for high school students. All four teachers liked the intervention and "strongly agreed" that the intervention would be effective in teaching debit card use and expense tracking. Three of the four teachers were "somewhat sure" they would be willing to use this intervention. One general education teacher was "unsure." Both special education and one general education teacher agreed the intervention would be appropriate for a variety of students. Both general and special education teachers agreed the progress monitoring procedures were manageable, and this was a good way to teach personal finance skills.

Discussion

The purpose of this study was to examine effects of simulated instruction on students' ability to make a purchase using a debit card and track expenses and deposits in a check register, as well as to determine whether the effects of the intervention generalized to community settings. Results indicated a functional relation between simulated instruction and students' ability to complete a 20-step task analysis of basic finance skills, skills that will enable them to make informed decisions regarding the use and management of their money in the future. All participants generalized the skills of using a debit card to make a purchase to four untrained debit card machines in four separate community settings, as well as demonstrated the skills of tracking expenses and deposits up to 5 weeks following the removal of the intervention.

Overall, results support previous research related to teaching basic finance skills, while making three unique contributions to the body of research. First, previous research on basic finance skills has been implemented with students with an intellectual disability participating in functional curriculums and not on track to graduate with a standard high school diploma. Typically, participants were high school students with a moderate intellectual disability (e.g., Mechling et al., 2003). The current study extended the literature on teaching basic finance skills by including participants with LD, ED, and AU who were participating in the standard course of study and on track for earning a standard high school diploma.

Second, previous studies of teaching basic finance skills were limited to teaching purchasing (Mechling et al., 2003), and only one study combined purchasing with a debit card and tracking expenses (Rowe et al., 2011). Although Rowe et al. (2011) examined the effects of simulation on teaching students to make a purchase with a debit card and subtract the amounts of their purchase from the total amount in their check registers, it did not account for other skills necessary to manage one's money (e.g., deposits). As a systematic replication of Rowe et al., this study taught additional skills including making decisions about spending based on a student's calculations in check registers and adding deposits into the check register.

Finally, previous research on basic finance skills has taught students with disabilities using instructional strategies that may have been too complex for classroom personnel to use (Mechling et al., 2003). This study addressed this limitation by using scripted lessons that included reinforcement and error correction procedures. As a result, a "typical agent," a paraprofessional with minimal education training, implemented the intervention. Also, procedural fidelity data collected before and during intervention indicated that the paraprofessional was able to implement the intervention with a high level of fidelity.

When teaching finance skills, especially purchasing and money management, while the use of real money is optimal, it is difficult to plan for the amount of money that may be needed for a young person to acquire the skill of purchasing and balancing his or her account. Also, unless a student is employed and receiving a paycheck on a regular basis, it is a challenge to have a continuous flow of money into an account to provide students enough opportunities to withdraw and deposit money in the account to independently begin managing their own accounts without the risk of overdrawing. For this reason, simulation combined with general case strategies for selecting instructional content was used as the method of instruction in this study. As a result, this study created a simulation of a debit card machine that approximated the natural stimulus conditions and response topographies and allowed students to complete as many trials as necessary to master the skill without the risk of overdrawing their accounts.

Cooper et al. (2007) defined setting/situation generalization as "the extent to which a learner emits the target behavior in a setting or stimulus situation that is different from the instructional setting" (p. 617). According to Cooper et al., if a behavior change produced in the classroom has occurred multiple times in a generalization setting, there is evidence of response maintenance. Given the outcomes of students with disabilities and the particular skill being taught in this study, setting/situation generalization was important, and a good measure of whether a student's ability to demonstrate the skill will be durable over time (i.e., response maintenance). Not only did this study plan for generalization of the skill to a setting other than the instructional setting (i.e., community) but also for other stimuli (i.e., untrained debit card machines) by using general case analysis to develop and design instructional materials used in the simulation (i.e., debit card machine, receipts, deposit slips; Horner, Sprague, & Wilcox, 1982). By conducting the general case analysis, the amount of behavior required to use a debit card to make a purchase and the variation in stimulus situations (i.e., untrained debit card machines in community) were determined. This allowed the paraprofessional to teach students to discriminate between stimulus and response classes and perform the newly learned skill (i.e., use of debit card, expense tracking) across materials and settings (Horner et al., 1982; Nietupski et al., 1986).

Where previous research on basic finance skills has not included measures of social validity, this study addressed all the social validity quality indicators identified by Horner et al. (2005). Quality indicators include the following: (a) dependent variable must be socially important, (b) magnitude of change in the dependent variable resulting from the intervention must be measured as socially important, (c) implementation of the independent variable must be described by the author as practical and cost-effective, and (d) social validity is enhanced by implementation of the independent variable by typical intervention agents, in typical physical and social context.

In this study, data were collected from students and parents to determine the importance of learning how to use a debit card and track expenses and deposits into a check register. Both parents and students felt the skill was very useful and extremely important to living independently. Although students felt that their skills had improved as a result of the intervention, they still desired more practice using their debit card and documenting their expenses and deposits. In addition, two of the four parents had noticed a definite increase in their son or daughters skills as a result of the intervention. The remaining two parents were unsure of their student's abilities to use their debit card and track their expenses.

According to the results of the intervention acceptability survey, the methods used in this intervention were practical and appropriate for high school students with and without disabilities. Both general and special education teachers agreed the procedures used were appropriate for teaching basic finance skills and could be implemented in a school setting. In addition, cost involved in creating instructional materials and providing instruction was minimal. See Table 3 for cost analysis of intervention.

Finally, Horner et al. (2005) stated that social validity can be enhanced by implementation of the independent variable by typical intervention agents, in typical physical and social context. This study used the school transition specialist, a paraprofessional, as the interventionist. The intervention also took place in a typical high school office that students visited regularly to participate in career awareness and preparation activities with the transition specialist. As a result, this study met all four social validity quality indicators suggested by Horner et al.

Limitations and Future Research

As with any study, there were limitations. First, this study included three 16-year-old Caucasian students with LD and one 16-year-old African American student with AU and ED who lived in a small rural community in northwest United States. Future researchers should include students with other disabilities from all cultural backgrounds, as well as from rural, suburban, and urban areas. Future researchers may also consider adapting this intervention to meet the needs of youth

Table 3. Cost Analysis of Intervention

Task	Hours	Hourly Rate	Cost
Materials for debit card machine	NA	NA	US$5.00 (one-time expense)
Constructing of debit card machine	0.5	US$7.25 (plus fringe benefits)	US$8.63 (one-time expense)
Training in scripted lessons	2.0	US$7.25 (plus fringe benefits)	US$20.30 (one-time expense)
Instructional time for students to reach mastery	1.0	US$7.25 (plus fringe benefits)	US$10.15

Note: Rates based on using a paraprofessional.

and young adults who have not acquired high-level math and reading skills (e.g., mild, moderate intellectual disabilities).

Another limitation of this study was Step 1 of the probe script. To allow students to proceed through the entire task analysis during probe sessions, only purchases less than the amount in check registers were presented. If students were presented with amounts more than the total amount documented in check register, they would not have been able to complete the entire task analysis. However, during instruction, students were provided examples where they did and did not have enough money to purchase an item to allow opportunities to make decisions about future purchases based on amounts documented in check registers. Future researchers should not restrict purchasing options and allow students to proceed through the entire probe script but have purchases be rejected due to insufficient funds to complete the transaction. This would allow students to demonstrate that they could independently make appropriate decisions about spending based on what is in their accounts.

A final limitation to this study is the lack of long-term follow-up. To ensure the generalized use of skills learned will prove durable over time, it is important to follow students over longer periods of time. Although generalization data in this study were collected up to 5 weeks after completion of intervention, future research should follow student's progress for longer (e.g., 6 months, 1 year). Information gathered from follow-up probes would allow researchers to examine whether the intervention was in fact effective in helping students acquire, generalize, and maintain the skill taught.

Future researchers should seek feedback on instructional materials from a variety of general and special education teachers, including Career Technical Education (CTE) teachers. Personal finance concepts are typically included in CTE courses (e.g., entrepreneurship). These teachers could provide valuable feedback regarding feasibility and usability of the instructional materials, as well as ease of incorporating this type of instruction into the general education curriculum.

Finally, future researchers should be conducted to examine what strategy used in this instructional package (i.e., simulation, instructional script) is instrumental in student acquisition of skill. As with previous studies (e.g., Cooke et al., 2011), this study presents anecdotal evidence that the scripted lessons were easy to follow providing a systematic and consistent way of delivering instruction, prompting, and feedback. Further research is needed to examine the role of the script in the instructional package.

Implications for Practice

The results of this study have several implications for practice. First, in this time of standards-based education, teachers struggle to find opportunities to teach students with disabilities both academic and transition-related skills to assist students with achieving their postsecondary goals. Teachers are often required to document how each lesson relates to content standards. Content taught in this study can be tied directly to national personal finance content standards (CEE, 2009; Jump$tart Coalition for Personal Financial Literacy, 2007).

The instructional scripts used in this study taught students to discriminate when they could and could not make a certain purchase based on the amount of money that they had documented in their check registers. Students learned that when using their debit card, they could only make purchases that cost less than the amount in their checking accounts; otherwise, the card would be denied. When making purchases in the community, students began considering alternatives and consequences of spending certain amounts of money. For example, one student chose to spend less than his allotted US$5.00 so that he would have more money left in his account.

This study also assisted students in developing a system for keeping financial records and taught students how to use those records for decision making. Students were taught to use a check register to keep track of all debit card purchases and money deposited into accounts. They were taught to refer to this check register to know how much money they had at their disposal, all prerequisite skills to monitoring a banking account and reconciling an account statement.

Another implication for practice is this study provides practitioners with an inexpensive strategy (i.e., simulated instruction) to teach students basic finance skills. The lessons took no more than 30 min and were taught by a paraprofessional. Because of the limited time involved in instruction, low cost of materials, and ease of use of materials, these lessons could be easily incorporated into any math course.

The final implication for practice is the ease of use of the instructional materials. Each lesson was scripted providing the paraprofessional a systematic and consistent way of delivering instruction, prompting, and feedback. The scripts were designed to act as a treatment fidelity checklist and a progress-monitoring tool. This allowed the paraprofessional to document the followed instructional procedures and track student responses for progress monitoring.

Conclusion

Resources are available to assist in teaching finance skills, but typically need to be modified, especially for students with disabilities (Coit & Benjamin, 2007). This study included scripted lessons that included reinforcement and error correction procedures. The lessons proved to be easy to follow and effective in teaching students how to use a debit card and track their expenses.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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