Embedding Science Facts in Leisure Skill Instruction
Conducted by Peer Tutors

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Abstract: This investigation evaluated the effectiveness of using peer tutors to teach a chained leisure skill (i.e., UNO card game) to three middle school students with disabilities using a simultaneous prompting procedure within a multiple probe design. The investigation also assessed whether the students with disabilities would acquire four unrelated science core content facts presented as nontargeted information during instructive feedback. Results indicated that all students met or made progress toward criterion on the leisure skill. In addition, two of the three students acquired all four core content facts.

A number of researchers have conducted investigations to address the effectiveness of response prompting procedures, such as system of least prompts (SLP) and constant time delay (CTD), when teaching individuals with intellectual disabilities (Collins, 2012; Wolery, Ault, & Doyle, 1992). In particular, numerous studies have focused on the effectiveness of using a simultaneous prompting (SP) procedure when teaching students with various disabilities, including those with significant cognitive disabilities, because of the ease with which the procedure can be implemented. Schuster, Griffen, and Wolery (1992) described the SP procedure as “pairing the discriminative stimulus with a controlling prompt as it occurs during zero second delay trials when using time delay procedures” (p. 307) while Maciag, Schuster, Collins, and Cooper (2000) described the SP procedure as one in which “a controlling prompt (one that ensures a correct response) is used during all instructional trials to promote near-errorless learning” (p. 307).

Morse and Schuster (2004) analyzed 18 studies that investigated the effectiveness of the SP procedure. The studies reviewed included more than 70 participants with and without disabilities, ranging in age from preschool to adult. In the studies, researchers used the SP procedure with individualized controlling prompts (e.g., verbal, physical) to teach functional skills (e.g., dressing, washing hands, making juice, opening a key lock on a locker, stating grocery information) across a variety of settings. The researchers concluded that, in 13 of the studies, all participants acquired targeted skills. In the remaining five studies, more than 50% of the participants learned the targeted skills. The majority of studies in the review included maintenance and generalization measures. As noted in the literature review, the SP procedure has been effective in teaching both discrete (e.g., MacFarland-Smith, Schuster, & Stevens, 1993) and chained (e.g., Fetko, Schuster, Harley, & Collins, 1999; Schuster & Griffen, 1993; Parrott, Schuster, Collins, & Gassaway, 2000) tasks. The SP procedure has also been effective in concurrently teaching skills with different stimuli to small heterogeneous groups of students with and without intellectual disabilities (Fickel, Schuster, & Collins, 1998; Parker & Schuster, 2002); students were able to learn their target skills as well as some of the skills targeted for other students in the group through observational learning.
In comparing the implementation of the SP procedure with and without error correction following the delivery of the controlling prompt in teaching secondary students to read science words, Johnson, Schuster, and Bell (1996) found that the SP procedure with error correction was slightly more efficient for 3 of the 5 participants, and 4 of 5 participants made fewer errors in that condition. When Riesen, McDonnell, Johnson, Polychronis, and Jameson (2003) compared the SP and CTD procedures in teaching tasks (i.e., science sight words and definitions, German number words, history sight words) to middle school students with moderate to severe disabilities (MSD), they found both procedures to be effective. Finally, when Schuster et al. (1992) compared SP and CTD procedures in teaching sight words to elementary students with disabilities, they found that the SP procedure resulted in fewer training sessions and instructional time than the CTD procedure. These investigations have demonstrated that the SP procedure can be effective in teaching different tasks to students with varying levels of abilities across age groups.

There is evidence that peer tutors without disabilities can reliably conduct systematic instruction using response prompting procedures with students with disabilities to teach both discrete (Collins, Branson, & Hall, 1995; Miracle, Collins, Schuster, & Grisham-Brown, 2001) and chained (Collins, Hall, & Branson, 1997; Godsey, Schuster, Lingo, Collins, & Kleinert, 2008) tasks. Miracle et al. (2001) compared teacher-delivered instruction to peer-delivered instruction in using a CTD procedure to teach sight words to secondary students with MSD and found that both teacher-delivered and peer-delivered instruction were effective. Collins et al. (1995) used peer tutors to teach cooking sight words to students with MSD. They increased the efficiency of instruction by having the peer tutors add definitions of words as instructive feedback when they praised or corrected responses of students with disabilities and found that the students learned the definitions and were able to apply them during a subsequent generalization probe within a cooking activity. Collins et al. also found an increase in positive attitudes toward students with disabilities in the majority of the peer tutors (26 students from an Advanced English class) over the course of the investigation, as documented through anonymous statements that students wrote prior to and following the peer tutoring experience and in assignments they wrote with a focus on disabilities for their writing portfolios.

Providing opportunities for interactions between peers with and without disabilities is important because it can facilitate friendships that extend beyond the school setting. Manley, Collins, Stenhoff, and Kleinert (2008) attempted to facilitate friendships through interactions when they taught elementary students with mild to moderate intellectual disabilities to make social phone calls to peers without disabilities. In an effort to facilitate friendships between secondary peers with and without disabilities, Collins et al. (1997) taught peers without disabilities to use the SLP procedure when engaging in leisure skills (i.e., playing a card game, selecting and watching a television program, viewing a sports tape, playing a computer game) with secondary students with MSD based on the rationale that the opportunity to have fun in recreational age-appropriate activities might be more likely to result in friendships than the traditional tutor-tutee relationship established in academic skill instruction.

Recreation and leisure skills are an important area of education for students with disabilities. Dattilo (1991) suggested that individuals with disabilities often have an excess of free time and difficulty filling that time with beneficial, age appropriate activities. Dattilo and Schleien (1994) found that recreation and leisure skills often are not included in curriculum taught to students with disabilities; skills that are taught are typically taught in isolation (e.g., crafts) or within a group of individuals with disabilities (e.g., bowling). According to Dattilo and Schleien, “individuals with [disabilities] need to develop a repertoire of leisure skills that (a) is appropriate to their chronological age, (b) is based in their community, and (c) will facilitate successful integration into the community” (p. 56). Teaching specific, age appropriate recreation and leisure skills could lead to successful inclusion with peers without disabilities. As students with disabilities grow older, academic inclusion becomes more difficult; finding recreation and leisure skills enjoyed by same age
peers can promote social inclusion where friendships can be formed.

Although limited, there is research to support teaching age-appropriate recreation and leisure skills to students with disabilities. Blum-Dimaya, Reeve, Reeve, and Hoch (2010) taught students with disabilities to play Guitar Hero II, a video game played via Sony Play Station, using video modeling and picture schedules. Keogh, Faw, Whitman, and Reid (1985) taught adolescents with severe mental retardation to play commercially available board games using trainer modeling, dyad training with corrective feedback, and free play intervention. Collins et al. (1997) used SLP to teach students with moderate and severe disabilities to watch TV, play video games, and play card games. McAvoy, Smith and Rynders (2006) taught various outdoor activities (e.g., camping, canoeing) to 23 adults with mental retardation using a commercial program.

While SP is an effective procedure for teaching many skills, no research to date has focused on using the SP procedure to teach leisure skills to students with disabilities. In the current investigation, the SP procedure was used to teach the leisure skill of playing the card game, UNO, to middle school students with disabilities. Since peers have been effective in teaching secondary students with MSD to play UNO using systematic instruction (i.e., SLP; Collins et al., 1997), the investigation included peers without disabilities in the activity in an effort to facilitate friendships. Playing UNO is age appropriate for adolescents and has the benefit of allowing students to practice turn taking and fine motor skills, as well as allowing them to practice color, number, and sight word identification, while having fun.

Since teaching core content to students with MSD has become a priority under No Child Left Behind (NCLB, 2002), it can be difficult to justify the devotion of instructional time to teaching non-academic skills. One way to increase the acquisition of core content is to embed those skills across all areas of instruction, including leisure skills. Research-based procedures for combining the instruction of functional and core content are just beginning to emerge in the professional literature (Collins, Evans, Creech-Galloway, Karl, & Miller, 2007; Collins, Hager, & Galloway, 2011). Collins, Hall, Branson, and Holder (1999) found that students with MSD can acquire nontargeted information that is both related and unrelated to the instructional activity (i.e., acquisition of social studies facts and grammar rules during composition class). Thus, as in the investigation by Collins et al. (1995), the researchers in this investigation taught peer tutors from a general education class to use systematic instruction with core content embedded as nontargeted information during instructive feedback while teaching a leisure skill activity. Specifically, this investigation addressed the following questions: (a) Will students with disabilities learn a leisure skill taught by peers using a SP procedure? (b) Will students with disabilities maintain this leisure skill? (c) Will the students also learn core content added as nontarget information? and (d) Will peers implement the procedure with a high degree of fidelity?

**Method**

**Participants**

Students with disabilities. A special education teacher (first author) implemented the investigation with three middle school students with disabilities ranging in age from 12 to 14 years. Two male students were identified as having moderate intellectual disability and were served in a resource room for students with functional mental disabilities (FMD; the classification used for providing services for students with MSD in KY) with the exception of one period per day spent in a collaborative general education classroom. One female student was identified as having an emotional and behavioral disorder (EBD) and was served in a collaborative general education classroom with the exception of one period per day spent in a resource room for students with learning and behavioral disorders (LBD); this student visited the FMD resource room to participate in the leisure activity during this investigation only, with the goal of learning an age-appropriate leisure skill that had the potential to result in friendships, while also addressing core content instruction.

Graham, age 12 years 3 months, was diagnosed with Myotonic Dystrophy, a moderate
intellectual disability, and communication delays in the areas of receptive and expressive language. Graham spent 150 min daily in the resource room working on reading, math, and writing, and 100 min daily in the resource room working on self-sufficiency. On the Kaufman Brief Intelligence Scale (2004) riddles, picture vocabulary, and matrices, Graham scored 56 on the verbal portion, 63 on the nonverbal portion, and 58 on the full scale. Graham’s individualized education program (IEP) goals and objectives focused on communication, self-sufficiency, reading, math, and writing. He demonstrated strengths in reading, using computer skills, working with others, and completing independent work; he had weaknesses in sustaining a conversation for an extended period, following directions without prompting, communicating through writing, engaging in age-appropriate behaviors, and comprehending materials read. Graham liked to interact with peers with and without disabilities. He could be easily distracted and required multiple verbal directions to redirect him. Graham received speech and occupational therapy on a weekly basis and physical therapy on a consultative basis.

Walker, age 14 years 6 months, was diagnosed with Down syndrome, a moderate intellectual disability, and communication delays in the areas of fluency and language. Walker spent 150 min daily in the resource room working on reading, math, writing, and vocational skills. His IEP goals and objectives focused on communication, vocational, reading, math, and writing skills. Walker demonstrated strengths in working simple math problems, using the computer, working with and helping others, and completing independent work; he had weaknesses in solving problems, communicating verbally, and staying on task. Walker liked to interact with peers both with and without disabilities. He could be easily distracted and needed verbal prompts to redirect him. He received speech therapy on a weekly basis.

Lauren, age 13 years 1 month, was diagnosed with Asperger’s syndrome and attention-deficit hyperactivity disorder (ADHD). Lauren spent 90 min daily in the resource room working on math, writing, and behavior. Her IEP goals and objectives focused on math, writing, and work skills. Lauren demonstrated strengths in performing activities that relied on creativity, such as drawing, free writing, and cutting and pasting; she had weaknesses in performing self-care skills, staying on topic, following directions, communicating through writing, and solving problems. She had developed a small group of friends, who seemed to boost her self-esteem.

To participate in the investigation, Graham, Walker, and Lauren demonstrated the following inclusion criteria: (a) auditory and visual acuity, (b) motor imitation of simple movements, (c) on-task behavior for 15 min, (d) a wait response (i.e., wait for a peer-delivered prompt), (e) ability to follow simple commands, and (f) school attendance of at least 85%.

Peers without disabilities. The teacher selected three middle school peers (two males and one female) without disabilities from a middle school general education class to participate in the investigation based on recommendations from their guidance counselors along with their stated desire to work with students with disabilities. They also had to be passing all of their current courses and have a sufficient attendance record. All peers were in the seventh grade, and their ages ranged from 13 years 1 month to 13 years 6 months.

The teacher and a paraeducator (a graduate student in special education who worked in the resource room) conducted one training session with the peers as tutors in this study during their team time. Training included explanations of the importance of the study and the SP procedure guidelines. In addition, the teacher provided students with a list of non-targeted core content to add into praise statements as instructive feedback during leisure skill instruction. The training session concluded with the trainers practicing the procedure with the peer tutors until they met 100% criterion on desired instructor behaviors and providing tutors an opportunity to ask questions.

Setting

Screening, baseline, training, probe, maintenance, and generalization sessions took place in the FMD resource room of an urban middle school. There were four other students with MSD and two paraeducators (including
the one who collected reliability data) present in the classroom during the investigation. The researcher controlled for distractions by having the other students work on independent jobs or with a paraeducator while instruction for the investigation was occurring.

**Materials/Equipment**

The teacher used the following materials during the investigation: (a) deck of UNO playing cards, (b) data sheets, (c) list of core content information to be included in praise statements, (d) timer, and (e) writing utensil. The teacher determined that playing UNO was an age-appropriate leisure activity based on the fact that other middle school students without disabilities played the game.

**Data Collection**

The classroom teacher collected data using a task analytic measurement system. During baseline sessions, daily probe sessions, and maintenance sessions, she recorded a response as “correct” if it was accurate and occurred within the designated response interval, she recorded a response as “incorrect” if it was inaccurate and occurred within the response interval, and she recorded “no response” if the response interval passed without a student response.

During training sessions, the teacher collected instructional data while the peers implemented instruction. During training sessions, she recorded a “prompted correct” if the student demonstrated the correct skill within the response interval after receiving a controlling verbal/gesture prompt, she recorded a “prompted incorrect” if the student performed the skill incorrectly within the response interval after the prompt, and she recorded a “no response” if the student did not initiate a response within 5 s of the controlling prompt.

**General Procedure**

During the investigation, peer tutors without disabilities used a SP procedure to teach students with disabilities how to play UNO following a task analysis (see Table 1) developed by Collins et al. (1997). Prior to intervention,

<table>
<thead>
<tr>
<th>Step</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cut (split) deck in half</td>
</tr>
<tr>
<td>2.</td>
<td>Shuffle cards</td>
</tr>
<tr>
<td>3.</td>
<td>Deal 7 cards to each player</td>
</tr>
<tr>
<td>4.</td>
<td>Remaining cards middle</td>
</tr>
<tr>
<td>5.</td>
<td>Flip first card</td>
</tr>
<tr>
<td>6.</td>
<td>Wait for turn</td>
</tr>
<tr>
<td>7.</td>
<td>Lay down card or draw</td>
</tr>
</tbody>
</table>

the teacher conducted baseline probe sessions to assess performance on the target skills. Following three stable baseline probe sessions, daily instructional sessions began in which the three students with disabilities (one at a time) participated in a daily probe session followed by a training session; this continued until each student met criterion of 80% accuracy for four consecutive sessions. Prior to each session, the teacher shuffled the cards, allowing for the order of the cards to vary each time the students played UNO.

**Baseline sessions.** The teacher conducted baseline sessions with each student in the morning for a minimum of three sessions in a 1:1 instructional format in the FMD resource room. She gave the task direction, “(Student name), it is now time to play UNO.” Students were given 5 s to initiate and 15 s to complete each step in the task analysis. If the student performed a step incorrectly or failed to respond during a baseline session, the teacher ended the session (single opportunity format). She did not provide reinforcement for correct responses during baseline sessions.

**Daily probe sessions.** In the SP procedure, daily probe trials preceded daily training trials. The teacher conducted one probe session each school day before the training session, using the same procedure as in baseline sessions except that she performed incorrect steps correctly for each student (multiple opportunity format). Using the same response intervals as in baseline sessions, she recorded each response as “correct,” “incorrect” (i.e., topography, duration, or sequence error), or “no response” and then gave the student 5 s to initiate the next step. She reinforced correct
responses with verbal praise during probe sessions and ended the UNO game after 15 min of play if the game had not concluded before then.

Training sessions. All daily training sessions occurred in a 1:1 instructional format (one peer tutor with one student with a disability) and took place in the afternoon following daily probe sessions. The peer tutors took turns leading the training sessions; when they were absent or unavailable (e.g., participating in the state’s accountability testing), the teacher led the training sessions. At the beginning of each training session, the instructor (peer tutor or teacher) provided the task direction, “(Student name), it is now time to play UNO.” The instructor immediately gave the student a verbal/gesture prompt following the task direction by verbally stating the direction for each step (e.g., “Draw two”) while gesturing the desired move (e.g., pointing to the draw pile) and allotted the same response interval as during probe sessions (i.e., 5 s to initiate the step and 15 s to complete the step). The teacher collected data on the first occurrence of each step in the task analysis. After each correct response, the instructor delivered verbal praise along with a core content fact (e.g., “Good job! A host is an organism in which a parasite lives.”) added as nontargeted information. Following an incorrect response or no response, the instructor completed that step for the student without reinforcement. The instructor waited an intertrial interval of 5 s before proceeding to the next step of the task analysis after each step in the task analysis was completed. The instructor ended the UNO game after 15 min of play if the game had not concluded. At the end of the training session, the teacher reinforced the students for attending by giving them a choice from preferred reinforcers.

Nontargeted information. The core content included as nontargeted information in this investigation came from four grade-level core content standards in science, unrelated to the game of UNO, and consisted of the following: (a) a host is an organism in which a parasite lives; (b) a meter is the basic unit for volume in the Metric system; (c) an asteroid is a giant, rocky ball of ice that orbits the sun; and (d) chromosomes are threadlike structures in the nucleus that contains genetic information. The instructor presented the core content as instructive feedback during training trials. The classroom teacher conducted a pre-test and post-test with each student in a 1:1 instructional format to assess the acquisition of core content during the intervention. The pre-test and the post-test consisted of the teacher asking questions (e.g., “What is an organism in which a parasite lives?”) about the core content.

Maintenance and Generalization

Maintenance probe sessions occurred in a 1:1 format after a student had met criterion (i.e., at least 80% correct responses for four consecutive sessions). The classroom teacher conducted maintenance probe sessions with the first student 5, 10, and 15 sessions after criterion had been met and with the second student five sessions after criterion had been met; the school year ended before the third student reached criterion. The researchers facilitated generalization by having different instructors (e.g., peers without disabilities) work with the students during intervention sessions.

Experimental Design

The researchers used a multiple probe design across students to evaluate a functional relationship between the SP procedure and learning to play UNO (Gast & Ledford, 2010). In this design, intervention is introduced for one student; when mastery criteria are reached, probe data are collected for all students. If pre-intervention levels are maintained for the students not receiving intervention, intervention is applied for the second student. This continues until all students have received intervention. The researchers also controlled for a threat of history in the design by ensuring students were not playing UNO or receiving tutoring on science content outside of school during the investigation.

The researchers used a visual analysis of data (Gast & Spriggs, 2010) to answer the questions regarding student acquisition of leisure skills via the SP procedure taught by peers. This consisted of a within-condition analysis of data (e.g., descriptions of condition length, level, trend) and a between-conditions analysis of data (e.g., descriptions of level and
trend direction change, percentage of non-
overlapping data [PND]) from one condition
to another.

Reliability
A graduate student (paraeducator), collected
interobserver and procedural reliability data
for at least 20% of the sessions across condi-
tions (i.e., baseline sessions – 33%, daily probe
sessions – 22%, daily training sessions – 20%,
maintenance sessions – 33%). The research-
ers established an a priori minimum of 80%
agreement required to continue the study.

Dependent variable reliability. The research-
ers calculated dependent variable reliability
agreement using the point-by-point method
with the following formula: number of agree-
ments divided by total number of agreements
plus disagreements multiplied by 100 (Wolery,
Bailey, & Sugai, 1988). Dependent variable
reliability agreement was 100% across stu-
dents and conditions.

Independent variable reliability. The re-
searchers calculated independent variable re-
liability agreement using the following for-
mula: number of observed instructor
behaviors divided by number of planned in-
structor behaviors multiplied by 100 (Billings-
ley, White, & Munson, 1980). During baseline,
daily probe, and maintenance sessions, the
researchers collected data on the following
behaviors: (a) preparation of materials, (b)
delivery of attentional cue, (c) provision of
appropriate response interval, and (d) deliv-
ery of appropriate consequence for correct or
incorrect responses. During training sessions,
the researchers collected data on the follow-
ing behaviors: (a) preparation of materials,
(b) delivery of attentional cue, (c) delivery of
verbal/gesture prompt, (d) correct delay in-
terval, (e) delivery of correct consequence, (f)
delivery of nontargeted core content informa-
tion, and (g) delivery of verbal praise follow-
ing each correct response.

Mean independent variable reliability
agreement was 96% (range = 80–100%) across students during baseline condition with
the only error being failure to wait the appro-
priate response interval (mean = 91%). Mean
independent variable reliability agreement
was 96% (range = 91–100%) across students
during daily probe sessions. Errors included
failure to wait the appropriate response inter-
val (mean = 96%) and failure to deliver the
correct consequence for incorrect responses
(mean = 95%). Mean independent variable
reliability agreement was 95% (range = 92–
100%) across students during daily training
sessions. Errors included failure to deliver
controlling prompt (mean = 86%), failure to
deliver core content (mean = 96%), and fail-
ure to deliver verbal praise (mean = 93%).
Mean independent variable reliability
agreement was 100% across students during main-
tenance sessions.

Results
Effectiveness of SP to Teach UNO
Figure 1 illustrates the results for percent cor-
rect responses in playing UNO. Walker and
Lauren reached mastery criteria (e.g., 80% accu-
rate over four consecutive sessions). Al-
though Graham improved his ability to per-
form some of the steps in the UNO task anal-
ysis, he did not reach mastery criteria prior to
the end of the school year. All three students
had stable, zero-celerating baseline levels of
0% accuracy in all baseline sessions. Walker
tier 1) and Lauren (tier 2) both had imme-
diate and abrupt changes in level with with ac-
celerating trends, reaching criteria in 11 and 15
sessions respectively. Graham (tier 3) had a
delayed increase in level with a variable trend
in the 14 sessions in which he received instruc-
tion.

Walker (Figure 1, tier 1) performed the first
step of the task analysis incorrectly in all three
initial baseline sessions, ending the sessions.
When a peer introduced the SP procedure,
Walker had an immediate and abrupt change in
level with an accelerating trend, stabilizing
at or above 80% accuracy for four trials. The
PND between baseline and intervention for
Walker was 100%. He reached mastery criteria
in 11 training sessions; total time to criterion
was 29 min 30 s (mean = 2 min 27 s, range =
1 min 54 s to 3 min 37 s) (Note that this is
actual instructional time and not how long it
took to play the full game following instruc-
tional trials; the teacher stopped the game
after 15 min if the game had not ended).

Tier 2 in Figure 1 illustrates Lauren’s per-
cent correct responses when playing UNO.
Figure 1. Acquisition data for playing UNO.
During the initial and follow up baseline sessions (N = 6), Lauren performed the first step in the task analysis incorrectly, terminating each session. The SP procedure, introduced by a peer, resulted in an immediate and abrupt change in level with a slightly variable trend, stabilizing at or above 80% for four consecutive sessions. PND between baseline and intervention for Lauren was 100%. She reached mastery criteria in 15 sessions; total time to criterion was 20 min 22 s (mean = 1 min 27 s, range = 50 s to 2 min 15 s).

Graham (Figure 1, tier 3) performed the first step in the task analysis incorrectly during all nine pre-intervention baseline sessions, ceasing the sessions. Upon introduction of the SP procedure by a peer, Graham’s performance did not change (0% accuracy) for two trials. His data were variable (range 0%–40%) for the 14 sessions he received intervention. PND for Graham was 78.5% between baseline and intervention. Sessions and time to criteria were not calculated as Graham did not reach mastery criteria prior to the end of the school year.

Acquisition of Nontarget Information

Figure 2 illustrates the acquisition of nontargeted information by the students. Walker answered questions with 0% accuracy during pre-test and post-test conditions, not acquiring the nontargeted information. Lauren answered 0% questions correctly during pre-test conditions. She was able to answer questions with 100% accuracy during the post-test condition, acquiring all nontargeted information. Graham answered 0% questions correctly during the pre-test conditions. Although he did not reach mastery criteria for percent correct responses in playing UNO, he was given the post-test for nontargeted information acquisition. He answered questions with 100% accuracy, acquiring all nontargeted information.

Discussion

The primary purpose of this investigation was to determine if students with disabilities could learn and maintain a leisure skill taught by peers using a SP procedure. Two of the 3 students involved in the study learned how to play UNO through peer-delivered instruction using a SP procedure. They both maintained skills learned during follow-up probes. The third student showed acquisition of at least some steps in the task analysis, but failed to meet criterion by the end of the school year. A secondary purpose of this study was to evaluate acquisition of nontargeted science core content facts. Two of the 3 students learned the four science core content facts presented as non-targeted information; one student failed to demonstrate learning any of the four science core content facts. It is interesting to note that one of the students with a moderate intellectual disability (Graham) did not meet criterion on percent correct responses when playing UNO by the end of the school year but learned 100% of the core content information. The other student with a moderate intellectual disability (Walker) reached criterion on percent correct responses when playing UNO but acquired 0% of the core content. The student with a learning and behavioral disorder (Lauren) learned 100% of both the skill of playing UNO and the core content.

Based on these data, it appears that a SP procedure delivered by middle school peers can be effective in teaching a leisure skill to middle school students with disabilities and that some students with disabilities may acquire nontargeted core content facts included as instructive feedback by peers during instruction. In addition, middle school peers can implement the SP and instructive feedback procedures with 80–100% fidelity.

The researchers encountered several challenges during the investigation. These included (a) the loss of a student with a moderate intellectual disability who was originally
selected to participate in the investigation due to moving; (b) difficulty in selecting a new student to replace the one who moved, resulting in a student with LBD being included in the investigation; (c) the possibility that a single game of UNO could last for an extended time, taking up valuable instructional time; (d) the limited number of the general education peers who could participate in the investigation due to scheduling conflicts and the limited availability of those selected; and (e) the school year ending prior to one student reaching criterion. The teacher found that there was not a specific time that the peer tutors could be available each day. Since sessions had to be scheduled around the availability of peers, the teacher often had to interrupt other instruction in the resource room to conduct the leisure skill instruction for the investigation. Future researchers might consider involving more peers across several classes instead of relying on peers without disabilities from a single class. This would increase peer availability when conflicts arise (i.e., mandated testing) without taking several students away from a single class at the same time and possibly making it easier to set a specific time designated for peer instruction. General education teachers might be more amenable to having their students participate as peer tutors if peers are involved on a rotating basis, thus alleviating the fear that the same students will be repeatedly absent from class, missing course material. Another possibility could be including core content that peer tutors need to learn during peer instruction so that the peers are learning alongside the students with disabilities.

In spite of the challenges, peer tutoring in this investigation appeared to be beneficial to all involved. The peers included 2 seventh grade male students and 1 seventh grade female student. One of the peers chose to participate in the investigation due to familiarity with a student with a disability in the class who was a neighbor (but not a participant in the investigation); thus, this student may have had an interest in working with students with disabilities based on prior interactions. The other two peers who participated in the investigation were recommended by their guidance counselor. There is anecdotal evidence that friendships between the students with disabilities and the peer tutors began to develop during the investigation. Two of the peers without disabilities chose to continue involvement in the FMD resource room during the school year following the investigation. All of the peers without disabilities continued to interact with the students with disabilities outside of the FMD resource room (i.e., school hallways, school cafeteria). Although peer interactions remained positive during and following the investigation, the female peer without a disability appeared to lose interest in participating in the investigation over time and began to participate less frequently. This could have been caused by the novelty of being in an investigation wearing off or the redundancy of playing UNO became less “fun” as time passed.

In summary, the investigation was successful in its intent. The three students with disabilities engaged in a leisure skill they could enjoy with their peers without disabilities with more accuracy than prior to the investigation. Two of the students with disabilities acquired some science core content facts. Researchers should continue to evaluate the effectiveness of a SP procedure to teach leisure skills; it is an easy procedure to implement and leisure skills can facilitate inclusive opportunities as well as friendships. In addition to teaching core content in science, future research should focus on the inclusion of core content across math, reading, and social studies during leisure activities. Including core content in an activity that is perceived as “fun” can be intrinsically motivating; there are many leisure activities, such as board games, arts and crafts projects, music, or computer games, where core content can be included naturally as it relates to the activities. Including core content during leisure skill instruction can help balance the need to learn both academic and functional skills.

References


when teaching a heterogeneous group of high school students. *Education and Training in Mental Retardation and Developmental Disabilities*, 37, 89–104.


Received: 19 April 2012
Initial Acceptance: 14 June 2012
Final Acceptance: 12 September 2012