Review of the Literature on Community-Based Instruction across Grade Levels

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Abstract: As community-based instruction has been recognized as a variable leading to postschool success for all students with disabilities, early transition planning has become vital in students’ preparation for adulthood. Based upon the need and importance of students receiving community-based instruction, this literature review examined 23 transition intervention studies to identify vocational, community, daily living, and recreation skills taught across grade levels using CBI. The majority of studies included in the review showed positive results for all participants while more than half of the studies were conducted at the high school level. In addition, findings indicated mixed generalization and maintenance results. These findings suggest the need for practitioners to use evidence-based strategies in the community across grade levels.

Adult outcomes for students with disabilities are dismal (Blackorby & Wagner, 1996; Gaylord & Hayden, 1998; Wagner & Blackorby, 1996). Findings from the original National Longitudinal Transition Study (NLTS) suggest that adults with disabilities are employed at lower rates than those without disabilities (Blackorby & Wagner; Wagner & Blackorby). Although the employment rate of youth with disabilities increased by 2003, youth were not anymore likely to be competitively employed (Wagner, Newman, Cameto, & Levine, 2005).

The NLTS data also show that youth with disabilities do not live independently in the community after high school (Brown, 2000; Gaylord & Hayden, 1998). Only one in eight youth with disabilities lived independently two years after leaving high school and changes in living arrangements did not occur between 1987 and 2003 (Wagner et al., 2005). Students with disabilities are also not adjusting to the community once they leave high school (Sample, 1998). For example, only 25% of youth with disabilities belonged to a community group after high school (Wagner et al.). These findings indicate that there is still a need to better prepare youth with disabilities to successfully transition from school to adulthood.

Numerous studies have been conducted to determine the variables that lead to better postschool outcomes for students with disabilities (e.g., Baer et al., 2003; Heal & Rusch, 1995; Kohler, 1993; Phelps & Hanley-Maxwell, 1997; Rabren, Dunn, & Chambers, 2002; Repetto, Webb, Garvan, & Washington, 2002; Sample, 1998). Variables that have been consistently identified as contributing to successful outcomes for students include paid work experience while in school (Sample), employment support from Vocational Rehabilitation and/or Mental Health/Mental Retardation at time of graduation (Rabren et al.), interagency collaboration (Kohler; Sample), work study participation, vocational education, and regular academics (Baer et al.) and community-based instruction (CBI; Repetto et al.). For example, Repetto et al. found that interagency characteristics, transition programs, services, and supports were positively correlated with increased numbers of students in post-secondary education in 1997. Results in-
dicated that in 1997, 85% of school districts included community training as part of their transition program and 90% of these districts included life skills instruction. These results indicated that these experiences lead students to learn valuable knowledge and gain necessary supports to be successful after high school.

CBI, also referred to as community-referenced instruction or life skills instruction, is a form of instruction in which the community serves as the classroom (Kluth, 2000). The purpose of CBI is to teach students functional skills in natural environments (Hamill, 2002). That is, instruction occurs in settings that are practical and facilitate meaningful experiences so that students can practice skills in places they would most likely use them (Kluth). Some skills that have been taught using CBI include purchasing, pedestrian safety, riding a bus, and community social skills (Beakley & Yoder, 1998; Burcroff, Radogna, & Wright, 2003; Kluth). For example, students might be taught how to make purchases at a department store and restaurant. Further, students could learn pedestrian safety by crossing streets in their neighborhood or navigating the parking lot at a local mall. Students could also learn to read a bus schedule and develop appropriate social skills for riding the bus. Providing instruction in the community prepares students for life after high school, promotes students’ ability to function independently, and enhances their quality of life (Hamill).

As CBI has become a valuable component of transition programs, early transition planning (Agran, Snow, & Swaner, 1999; Cummings, Maddox, & Casey, 2000; deFur, 2003; Neubert, 2003; Sitlington, Frank, & Carson, 1992) has been identified in the literature as an emerging variable leading to successful outcomes for students with disabilities. deFur stated that educational decisions made about a student with a disability will impact his/her postschool life. Decisions made in elementary school will affect programming in middle school, which, in turn, affect decisions about high school courses (deFur). Each subsequent decision is impacted by previous educational planning decisions.

Brolin and Gysbers (1989) also indicated that early transition planning is essential for all students with disabilities. Brolin and Gysbers also consider career development, the process by which students become aware of the different careers available to them, to be a major part of transition planning that should begin as early as elementary school. As students move through their education, they become increasingly prepared for adulthood by exploring careers and building occupational competencies that prepare them for the world of work. Because successful adult outcomes for students with disabilities depend on school programming, it is important that all decisions made about a student’s course of study focus on the transition from school to adult life (Kohler, 1993). Since community-based instruction is one variable that leads to successful postschool outcomes (Fabian, Lent, & Willis, 1998), it stands to reason that it might be important for students to receive this type of instruction at all levels of their education. Therefore, the purpose of this article is to review the transition intervention literature to identify the vocational, community, daily living, and recreation skills that have been taught using CBI to students with disabilities across grade levels.

**Method**

A comprehensive review of the literature was conducted on interventions that taught functional life skills to students in the community since 1990, the year Individuals with Disabilities Education Act (1990) first stated that when students reach age 16 they must have transition services included on their Individualized Education Plans (IEP) to 2007. Using this start date, an electronic database search using Educational Resources Information Center (ERIC), MasterFILE Premier, and Academic Search Premier was conducted. First, search terms included full and truncated forms of community based instruction, community, disability, vocational, daily living, community living, community participation, transportation, mobility, orientation, street crossing, pedestrian traffic, safety, grocery, shopping, math, budget, saving, account, banking, ATM, money, laundry, cleaning, restroom, recreation, leisure, play, sport, movie, club, social skill, functional, academic, residential, home, emergency, hygiene, self-care, bath, health, meal preparation, cooking, and dining. Second, the
reference lists of the articles included in this review were analyzed to determine additional articles. Third, Morse and Schuster’s (2000) literature review of grocery shopping skills, Lancioni and O’Reilly’s (2002) review of food preparation skills, and Xin, Grasso, Dipipi-Hoy, and Jitendra’s (2005) review of purchasing skills were analyzed. Fourth, authors also reviewed the literature map of transition research articles developed by Alwell and Cobb (2006). Finally, the first three authors conducted a hand search of the following journals, Education and Training in Developmental Disabilities, Career Development for Exceptional Individuals, Journal of Vocational Special Needs Education, Journal of the Association for Persons with Severe Handicaps/Research and Practice for Persons with Severe Disabilities, Exceptional Children, Focus on Autism and Other Developmental Disabilities, Journal of Applied Behavior Analysis, Journal of Positive Behavior Interventions, Behavior Disorders, and American Journal on Mental Retardation.

Inclusion/Exclusion Criteria

Articles included in the review: (a) were published in a peer reviewed journal from the United States; (b) were published after 1990; (c) reported quantitative results; (d) included participants who were students in elementary school, middle school, high school, or an 18-21 program; (e) included students who received instruction during school at a community setting, including articles that taught skills at both school and the community; and (f) described studies that aimed to teach a functional skill in one of four domain areas, including vocational (e.g., work skills), daily living (e.g., grocery shopping), community (e.g., eating at a restaurant), and recreation (e.g., participating on a basketball team).

Each study was analyzed to determine the type of skill being taught in the community and the corresponding domain. For example, eating at McDonald’s was categorized as daily living if the skill being taught was purchasing (e.g., money handling skills) or community if the skill being taught was using a fast food restaurant (e.g., entering store, ordering food, eating food). Since not all articles included both a grade level and age for participants, grade levels were defined as follows: (a) elementary school, including kindergarten through sixth grade (i.e., ages 5-11), (b) middle school, including seventh and eighth grades (i.e., ages 12-14), and (c) high school, including ninth through twelfth grades (i.e., ages 15-21).

We excluded articles that examined the relationship between leisure/recreation skills and personal skills, promoting achievement, or reducing inappropriate behaviors since these studies were not designed to directly teach a leisure/recreation skill (e.g., youth development programs; Keller, Bost, Lock, & Marcenko, 2005). Studies were also excluded from this review if the instruction took place in the classroom and only generalization probes occurred in the community (e.g., Frederick-Dugan, Test, & Varn, 1991; Hutcherson, Langone, Ayres, & Clees, 2004).

Analysis of Literature

Twenty-three articles met the search criteria. The first two authors agreed on the inclusion of 95.8% of the articles based on the inclusion criteria. Review forms were completed for each article and included the following information: (a) authors and date; (b) purpose; (c) participant demographic information including grade, age, and disability; (d) setting; (e) domain and skill; (f) research design; (g) dependent and independent variables; and (h) results. Interrater reliability was conducted by the first three authors for 20% of the articles on information included on these forms. Reliability was established by adding the total number of agreements and dividing this sum by the total number of possible responses. Disagreements in reliability were addressed by the third author who reviewed the article in question to gain consensus on information on the review forms among all authors. Reliability ranged from 86.7% to 100%, with a mean of 95.6%.

Results

Twenty-three studies met the inclusion criteria. Six (26.1%) studies were at the elementary school level, eight (34.8%) at middle school, and fourteen (60.1%) at high school (studies may have included more than one grade level). The domains included 10 (43.5%)
studies dealing with daily living skills, 8 (34.8%) related to community skills, 4 (17.4%) studies dealing with vocational skills, and 2 (8.7%) related to recreation skills [Rynders, Schleien, & Mustonen (1990) included two domains: vocational and recreation] (see Table 1).

The studies included 161 participants with ages ranging from 5 to 21. Individuals in the studies had a variety of disabilities, including mental retardation \((n = 20, 87.0\%)\), autism \((n = 4, 17.4\%)\), multiple disabilities \((n = 2, 8.7\%)\), orthopedic disability \((n = 1, 4.3\%)\), behavior and emotional disability \((n = 1, 4.3\%)\), and traumatic brain injury \((n = 1, 4.3\%)\).

**Setting**

The majority of studies taught skills at a community site only \((n = 15, 65.2\%)\). However, a few of the studies included simulation in the classroom either as a comparison to CBI \((n = 4, 17.4\%)\) or before teaching the skill in the community \((n = 7, 30.4\%)\). Alberto, Cihak, and Gama (2005) used video modeling and picture prompts in the classroom before CBI. In Bates, Cuvo, Miner, and Korabek (2001) one group received community-based training only to teach grocery shopping skills, while the other group received community-based training after simulated instruction. Branham, Collins, Schuster, and Kleinert (1999) used three techniques to teach daily living skills, (a) classroom simulation plus CBI, (b) videotape modeling plus CBI, or (c) videotape modeling plus classroom simulation plus CBI. Cihak, Alberto, Taber-Doughty, and Gama (2006) used static pictures and video prompting in the classroom before instructing students in the community.

Cihak, Alberto, Kessler, and Taber (2004) used four techniques to teach vocational skills including (a) simulation only, (b) CBI, (c) simulation and CBI on consecutive days, and (d) simulation and CBI on the same day. Students were taught using all techniques over four skills. Collins, Stinson, and Land (1993) compared classroom simulation plus CBI with CBI only. For classroom simulation activities, the teacher used materials similar to those found in the community. Cuvo and Klatt (1992) used three instructional methods, flash cards in school setting, videotaped recordings in school setting, and naturally occurring signs in community to teach community-referenced sight words; all students received instruction with all three methods. Domaracki and Lyon (1992) taught students janitorial and housekeeping skills in a simulated setting (i.e., special education facility) before teaching in a community setting. Next, Haring, Breen, Weiner, Kennedy, and Bednesh (1995) gave students videotaped training on how to purchase items either before, after, or during in vivo training at different types of stores in the community. Pattavina, Bergstrom, Marchand-Martella, and Martella (1992) used photos of streets to teach street crossing in the classroom before CBI to ensure safety. Finally, Taber, Alberto, Hughes, and Seltzer (2002) taught students how to call for assistance in the classroom before moving instruction into the community.

Most studies were conducted at more than one location \((n = 15, 65.2\%)\). The settings included 10 studies \((43.5\%)\) at grocery stores (Alberto et al., 2005; Cihak et al., 2006; Bates et al., 2001; Berg et al., 1995; Cihak et al., 2004; Ferguson & McDonnell, 1991; Haring et al., 1995; Morse & Schuster, 2000; Taber et al., 2002; Taber, Alberto, Seltzer, & Hughes, 2003), 4 studies \((17.4\%)\) on public streets (Branham et al., 1999; Collins et al., 1993; Pattavina et al., 1992; Taber et al., 2003), 3 studies \((13.0\%)\) at department stores (Taber et al., 2002; Taber et al., 2003; Westling, Floyd, & Carr, 1990), 3 studies \((13.0\%)\) at shopping malls/centers (Berg et al.; Cuvo & Klatt, 1992; Taber et al., 2003), 2 studies \((8.7\%)\) at restaurants (Bates et al.; Berg et al.), 2 studies \((8.7\%)\) at convenience stores (Haring et al.; Westling et al., 1990), 2 \((8.7\%)\) at bowling alleys (Schloss et al., 1995; Vandercook, 1991), 2 studies \((8.7\%)\) at home (Hall, Schuster, Wolley, Gast, & Doyle, 1992; Murzynski & Bourret, 2006). One study each \((4.3\%)\) was conducted at each of the following settings: a (a) pool (Schloss et al.), (b) laundromat (Bates et al.), (c) on hiking and biking trails (Schloss et al.), (d) library (Taber et al., 2002), (e) public restroom (Bates et al.), (f) post office (Branham et al.), (g) bank (Branham et al.), (h) hotel (Domaracki & Lyon, 1992), (i) camp (Rynders et al., 1990), (j) jobsite (i.e., food preparation facility; Davis, Brady, Williams, &
# TABLE 1

## Study Characteristics

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<thead>
<tr>
<th>Reference (Domain)</th>
<th>Purpose</th>
<th>Participants</th>
<th>Setting</th>
<th>Design</th>
<th>Skill (DV)</th>
<th>IV</th>
<th>Results</th>
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<tbody>
<tr>
<td>Alberto, Cihak, &amp; Gama (2005) (Community)</td>
<td>To compare the effectiveness of classroom simulation strategies in combination with in vivo instruction.</td>
<td>8 participants; Middle school; Ages: 11-15; Moderate cognitive disabilities</td>
<td>School resource classroom and a local grocery store</td>
<td>Alternating treatments design</td>
<td>Use of a debit card to withdraw $20 and Use of a debit card to purchase two items (Percent of correct responses, number of errors, and number of sessions to acquisition)</td>
<td>Static picture prompts and video modeling</td>
<td>All students acquired and maintained skills necessary to use a debit card to (a) withdraw $20 and (b) purchase two items. Students made fewer errors and attained mastery in fewer instructional sessions when static pictures were used in simulated instruction rather than video modeling. Seven of eight exhibited the same success with static picture prompts and video modeling; however, one student was more successful with static picture prompts. Overall, combined with CBI, students were more successful with (a) static picture prompts over (b) video modeling. Maintenance: All students maintained skills (no time reported).</td>
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To examine simulated and community-based instructional arrangements across a common set of functional living tasks and across two levels of retardation (moderate and mild).

40 participants; High school and adults; Ages: Mean age for participants with moderate mental retardation: 17.4 Mean age for participants with mild cognitive disabilities: 16.9

Large national chain grocery store, a commercial laundromat, community restaurant, public restroom in a local rehabilitation facility

Grocery shopping, use of a commercial laundromat, purchasing a soft drink in a restaurant, janitorial skills associated with cleaning a restroom.

(Percent of steps completed independently on task analyses)

Least to most prompt hierarchy

Both persons with mild and moderate MR performed better in the community following community-based instruction. In comparison to the intervention phase, both groups decreased in performance at follow-up; however, the follow-up scores were still significantly better than the pre community performance.

Generalization:
Both groups performed significantly better in one of the two sites (grocery, laundry, and janitorial) for each of the tasks.
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<tr>
<td>Berg, Wacker, Ebbers, Wiggins, Fowler, &amp; Wilkes (1995) (Daily living)</td>
<td>To examine the applicability of generalization training procedures in combination with community-based instruction in promoting the acquisition, generalization, and maintenance of performance of age-appropriate skills.</td>
<td>4 participants; Middle &amp; High school; Ages: 13-17; Profound mental retardation and multiple handicaps</td>
<td>A sandwich counter at a shopping mall, a fast food restaurant, a cookie store at a shopping mall, a deli counter at a grocery store</td>
<td>Concurrent and noncurrent multiple baseline experimental designs</td>
<td>Ordering and purchasing items (Percentage of task steps completed independently and correctly)</td>
<td>Treatment package consisting of multiple training examples in community setting and instruction using verbal and physical prompting</td>
<td>Ordering items: All participants increased the percentage of steps performed independently within six sessions. Maintenance: Two students maintained skill at 100% accuracy over 20 weeks after an initial decline in performance. Generalization: Generalized skill to new setting, materials, and motoric response. Purchasing items: Data showed high variability in training. Maintenance: Two students maintained skill at same rate as intervention over 20 weeks. Generalization: Generalized skill to new setting, materials, and motoric response.</td>
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<td>Branham, Collins, Schuster, &amp; Kleinert (1999) (Daily living)</td>
<td>Will the constant time delay procedure used with the combined techniques of classroom simulation plus CBI, videotape modeling plus CBI, and classroom simulation plus videotape modeling plus CBI result in generalization in community settings for the skills of cashing a check, crossing a street, and mailing a letter?</td>
<td>3 participants; High school; Ages: 14-20; Cognitive disabilities</td>
<td>Post offices, banks, and streets.</td>
<td>Multiple probe across behaviors</td>
<td>Cashing a check, crossing a street, mailing a letter (Percent correct of steps performed on the task analyses)</td>
<td>Constant time delay procedure with one of the following techniques: (a) classroom simulation plus CBI, (b) videotape modeling plus CBI, (c) videotape modeling plus classroom simulation plus CBI</td>
<td>Each student showed an immediate increase in the target behavior after intervention. Classroom simulation plus CBI was the most efficient of the 3 techniques. Generalization: All participants generalized the skills to different settings with 100% accuracy.</td>
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<td>Cihak, Alberto, Kessler, Taber (2004) (Vocational)</td>
<td>To examine the impact of four instructional scheduling arrangements (i.e., simulated-only instruction, community-based instruction only, combination of simulated and CBI instruction on the same school day, and combination of simulated and CBI instruction on consecutive school days) on functional and vocational skills.</td>
<td>5 participants; High school; Ages: 17-19; Moderate cognitive disabilities</td>
<td>School resource classroom, local grocery store</td>
<td>Multiple probe across students</td>
<td>Task completion of functional and vocational skills</td>
<td>System of least prompts</td>
<td>All students acquired, generalized, and maintained the four skills. Overall, students exhibited highest scores in the skill taught in the combination of simulated and CBI setting on the same day, followed by the skill taught in the CBI-only setting. Students exhibited lower scores on the skill taught with simulated and CBI instruction on consecutive days. Lowest scores were identified for the skill taught in the simulated-only setting. Maintenance: All students maintained 100% accuracy over 4 weeks. Generalization: All students generalized skill to new setting.</td>
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Cihak, Alberto, Taber-Doughty, & Gama (2006)

To determine the effects of static picture prompts or video prompts taught in a group instructional format on the ability of students to withdraw money from an ATM and purchase items.

- 6 participants; Middle school; Ages: 11-15 years old; 6 Moderate cognitive disabilities, 2 ADHD (secondary diagnosis)
- Classroom and grocery stores
- Adapted alternating treatments design
- Use of a debit card to withdraw $20
- Use of a debit card to purchase two items

All students acquired the skills of using a debit card to withdraw money and purchase items. No differences were found between the static picture prompts and video prompts for four of six students. The two students with a secondary diagnosis with ADHD performed better with picture prompts.

Maintenance: All students maintained skills over 2 weeks.

Collins, Stinson, & Land (1993) (Community)

To compare in vivo and simulation prior to in vivo instruction on street crossing and pay telephone use.

- Experiment 1: 4 participants; High school; Ages: 15-19 years old; Moderate disabilities
- Corner of the street and public telephones adjacent to street
- Experiment 1 & 2: Multiple probe design across subjects with a counterbalance of treatments and skills trained
- Safety skills – street crossing and pay telephone use (Experiment 1 & 2): Number of unprompted correct responding of steps in task analysis

All participants increased number of correct responding after instruction, regardless of task or setting. Data did not support simulation instruction prior to in vivo instruction. Maintenance: Three students maintained skill for one month. Generalization: Not reported.

- Experiment 1: All participants increased level of responding after instruction.
- Experiment 2: All participants increased level of responding after instruction. Maintenance: Not completed due to lack of time.
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<td>Cuvo &amp; Klatt (1992) (Community)</td>
<td>To compare the effects of 3 instructional methods (flash cards in school setting, videotaped recordings in school setting, and naturally occurring signs in community) on acquisition of community-referenced sight words.</td>
<td>6 participants; Middle school; Ages: 13-17 years old; 5 Moderate cognitive disabilities, 1 Mild cognitive disabilities</td>
<td>Room adjacent to special education room and community (school building, school grounds, and shopping center)</td>
<td>Multiple baseline across students</td>
<td>Sight words (9 signs % of correct responses)</td>
<td>Constant time delay</td>
<td>Correct response: Attained criterion of 100% correct shortly after intervention. Maintenance: 5 of 6 students maintained 100% correct responding (except one student who missed 1 sign during 1 probe) for 3-5 weeks after intervention ended. 6th student needed retraining.</td>
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<td>Davis, Brady, Williams, &amp; Burta (1992) (Vocational)</td>
<td>To determine the effects of auditory prompting tapes on fluency of performance.</td>
<td>3 participants; High school; Ages: 16-20 years old; 2 BED, 1 orthopedic impairment</td>
<td>Community-based food preparation facility</td>
<td>Multiple baseline across students</td>
<td>Filling salt and pepper shakers Drying and lining serving trays (Shakers ½ full, number filled correctly lined on collection table Tray drying and lining number of trays completely dry with liner in position Fluency-Number of correct of each task divided by duration of task)</td>
<td>Auditory prompts interspersed throughout music.</td>
<td>All students increased fluency once prompts were introduced. All students made no errors. Only 1 student increased fluency to normative rate of production (4 shakers/min).</td>
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Domaracki & Lyon (1992) (Vocational)

To compare the effect of general case simulation and in vivo instruction on janitorial and housekeeping work skills.

4 participants; High School; (no age given); Moderate and severe cognitive disabilities

Hotel and restaurant complex and special education facility

Multiple probe across behaviors.

Janitorial and housekeeping skills (Percentage of steps performed independently)

Prompting using a graduated assistance hierarchy

Simulation training: All participants increased percentage of steps performed independently, but did not reach criterion.

Naturalistic training: Students reached criterion and took 12-15 sessions to reach.

Generalization: Students did not generalize skills to a new setting (percentage of steps performed independently ranged from 1% to 65%).
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<td>Ferguson &amp; McDonnell (1991) (Daily living)</td>
<td>To compare the relative efficacy of serial and concurrent sequencing strategies in teaching a community-based activity.</td>
<td>6 participants; High school; Ages: 16-18; Moderate to severe cognitive disabilities</td>
<td>3 grocery stores</td>
<td>Two-level multiple baseline across subject</td>
<td>Grocery shopping (Percent of items correctly located in generalization probe stores) (Topography and frequency of specific errors made during generalization probe session) (Number of item presentations during training and minutes of instruction to criterion)</td>
<td>Concurrent and serial sequencing</td>
<td>Students who received serial sequence training on average located 69% of the items in the generalization probe stores. Students who received concurrent sequence training on average located 86% of the items in the generalization probe stores. Errors: Data showed students had less aisle errors when they received the concurrent sequencing intervention. Item presentations: Student trials ranged from 70 to 125 and 140 to 200 minutes of instruction in the serial training phase. Trials ranged from 32 to 290 and 60 to 520 minutes of instruction in the concurrent training phase.</td>
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<td>Study</td>
<td>Participants</td>
<td>Location</td>
<td>Multiple probe across behaviors</td>
<td>Skill</td>
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<td>Hall, Schuster, Wolery, Gast, &amp; Doyle (1992)</td>
<td>4 participants; High School; Ages: 16-18 years old; Moderate to severe cognitive disabilities</td>
<td>Kitchen in a home</td>
<td>Cooking (Correct response: independently completing task within 20s of previous step; Incorrect responses: Initiated step within 4s but (a) did not complete within required time, (b) completed task out of order, or (c) performed incorrect motor response; No response: Did not initiate step within 4 s)</td>
<td>0-4 s constant time delay. Students worked in dyads and had to perform half of the tasks required for the cooking.</td>
<td>All students increased correct responses after instruction. The time to criterion ranged from 7 to 22 sessions above the minimum required.</td>
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<td>Haring, Breen, Weiner, Kennedy, &amp; Bednersh (1995)</td>
<td>6 participants; Elementary, Middle, and High schools; Ages: 10-16; Severe cognitive disabilities and Autism</td>
<td>Bookstores, convenience stores, drugstores, gift shops, grocery stores, hobby shops, and record stores</td>
<td>Purchasing skills (Percent of task analysis steps with correct responding and cumulative number of independent purchases)</td>
<td>Modeling of training conducted in 3 ways: (a) in vivo instruction followed by videotape training, (b) videotape training followed by in vivo instruction, and (c) concurrent videotape and in vivo instruction</td>
<td>All participants showed increases in the percent of correct steps on the task analysis in the in vivo training phase. When participants received in vivo training in one store and videotape training in 1 to 3 additional stores, participants made more independent purchases. Maintenance: All students maintained purchasing skills (no time reported). Generalization: All students generalized skill to a new setting at same rate of responding during intervention.</td>
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<td>Morse &amp; Schuster (2000) (Daily living)</td>
<td>To examine the effectiveness of in vivo training with constant time delay and simulation training using pictorial storybook on the acquisition of grocery shopping skills.</td>
<td>10 participants; Elementary school; Ages 5-12 years old; Moderate cognitive disabilities</td>
<td>Grocery store</td>
<td>Multiple probe across students</td>
<td>Grocery shopping (Percentage of steps performed correctly)</td>
<td>Constant time delay</td>
<td>(2 students did not start training program) 6 students reached criterion after intervention. Maintenance: 6 students maintained criterion of critical steps 6 weeks after intervention ended. Generalization: 6 students generalized skills to a unique grocery store and performed critical steps of TA with 90-100% accuracy.</td>
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<tr>
<td>Murzynski &amp; Bourret (2006)</td>
<td>To compare video modeling plus least-to-most prompting and least-to-most prompting alone on juice-making, sandwich-making, and shirt and pant folding.</td>
<td>2 participants; Elementary school; Ages 9 and 11 years old; Autism</td>
<td>Home</td>
<td>Parallel-treatment design</td>
<td>Juice-making Sandwich-making Shirt and pant folding (Number of steps performed independently)</td>
<td>Least-to-most prompting with video modeling or least-to-most prompting alone</td>
<td>Students increased the number of steps performed correctly across all skills after intervention. Students acquired the skills in fewer trials with least-to-most prompting with video modeling.</td>
</tr>
<tr>
<td>Pattavina, Bergstrom, Marchand-Martella, &amp; Martella (1992) (Community)</td>
<td>To investigate a strategy to teach a student to successfully cross streets in the community.</td>
<td>1 participant; Middle school; Age: 12; Traumatic brain injury</td>
<td>School setting, and streets in the community</td>
<td>AB design</td>
<td>Crossing streets in the community (Number of steps performed independently)</td>
<td>Verbal and visual prompts</td>
<td>Correctly crossed street after 6 weeks of instruction. Maintenance: Maintained skill at 2, 4, and 16 week checks. Generalization: Generalized skill to new streets in town.</td>
</tr>
</tbody>
</table>
Rynders, Schleien, & Mustonen (1990) (Vocational) (Recreation)

To determine the effects of an intensive integrated camping experience on social interactions and skill development.

3 participants; Elementary school; Ages: 9-11 years old; 1 Autism, 2 Severe cognitive disabilities

Camp, including lodges, dining hall, farm, greenhouse, orchard, and beach.

Quasi-experimental (pre/post)

Social interactions:
- Reinforcement of appropriate behavior and contingent reinforcement of peer social interactions

Skills:
- Task analytic approach (test-teach) – leaders taught steps that were not completed independently through prompting

Table clearing
- Swimming preparation (Social interactions:
  - (a) appropriate social behavior (engaged in goal-directed activity, appropriate use of materials)
  - (b) Inappropriate social behavior (nongoal-directed behavior, inappropriate use of materials, not participating in activity)
  - (c) Initiating social interaction (touching, gesturing, vocalizing, or talking to peer; interaction was initiated between 2 children who had not interacted for previous 3 s)
  - (d) Receiving social interactions (child is touched, gestured, given directions, or questioned by peer; interaction coded if initiations were separated by 3 s)

However, significance was not tested because of small number of participants.

Review of Community-Based Instruction / 257
<table>
<thead>
<tr>
<th>Reference (Domain)</th>
<th>Purpose</th>
<th>Participants</th>
<th>Setting</th>
<th>Design</th>
<th>Skill (DV)</th>
<th>IV</th>
<th>Results</th>
</tr>
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<tbody>
<tr>
<td>Schloss, Alper, Young, Arnold-Reid, Aylward, &amp; Dudenhoefller (1995) (Community)</td>
<td>To investigate the effectiveness of a direct instruction procedure in involving modeling and guided practice on the acquisition of functional sight words.</td>
<td>3 participants; Elementary and middle school; Ages: 12-14; Mild cognitive disabilities</td>
<td>Public swimming pool (direct instruction), a 32-lane automated bowling alley (control), an arcade (direct instruction), a state park hiking trail (control), a multiplex theater (direct instruction), a movie rental chain, a Department of Conservation bike trail (direct instruction), a public tennis facility (control), and a public lake</td>
<td>Parallel treatment design: Multiple baseline replications across sight words and Alternating treatment to compare instructional procedures</td>
<td>Functional academics (Number of words identified)</td>
<td>Two instructional conditions: (a) direct instruction with in vivo word find which included verbal instruction, modeling, guided practice, and feedback; (b) control with in vivo word identification which involved the authors reading key passages to participants during a recreational activity</td>
<td>Each participant reached criterion of 100% within nine weeks of the direct instruction condition being implemented. Results showed each participant had limited acquisition of the sight words when the control condition was implemented. Maintenance: Each participant maintained performance throughout the 4-week maintenance probe.</td>
</tr>
</tbody>
</table>
Souza & Kennedy (2003)  
(Daily living)

<table>
<thead>
<tr>
<th>To increase a student's social interactions in community settings within the context of activities and routines associated with the Individualized Education/Transition Plan (IETP).</th>
</tr>
</thead>
</table>

| 1 participant; High School; Age: 20; Severe cognitive disabilities |

| Bus & cafeteria |

| Multiple baseline across settings/people |

| Social skills (Number of social interactions lasting 15 minutes or longer in each setting and quality of interaction) |

| Process which included: (a) identifying a person without disabilities who frequented the setting when the student was present, (b) approaching the person and asking if they would like to meet the student, (c) the teacher introducing the person without disabilities to the student and discussing possible scheduled interactions, (d) scheduling activities, times, and days in which both visited a particular setting, (e) teacher monitoring interactions between the student and the person without a disability |

<p>| Increases in social interactions occurred during the 17 week period when the interaction strategy was implemented. Quality of interaction resulted in an increasing trend between weeks 13 and 17. |</p>
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<tr>
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</tr>
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<tbody>
<tr>
<td>Taber, Alberto, Hughes, Seltzer (2002) (Daily living)</td>
<td>To determine if students could identify when they were lost and then use a cell phone to call for assistance.</td>
<td>14 participants; Middle school; Ages: 11-14 years old; Moderate cognitive disabilities</td>
<td>School</td>
<td>Concurrent multiple probe across groups</td>
<td>Calling for assistance (Percentage of task analysis steps performed independently)</td>
<td>Five-level least intrusive prompting system with total task presentation</td>
<td>All students were able to correctly perform 80% of task analysis after 3 sessions of intervention at the school. When the intervention moved to the community, all students sustained 100% accuracy. Generalization: Students were able to call for assistance with a person other than the investigator.</td>
</tr>
<tr>
<td>Taber, Alberto, Seltzer, &amp; Hughes (2003) (Community)</td>
<td>To determine if students could assist an adult who recognized the student was lost and use speed dial to call for assistance.</td>
<td>6 participants; High school; Ages: 14-18 years old; Moderate cognitive disabilities</td>
<td>Secondary schools and community settings (grocery store, discount department store, main street, and suburban mall)</td>
<td>Multiple probe across students</td>
<td>Calling for assistance (Event recording to mark level of prompt student needed on each step of TA)</td>
<td>Five level, least-to-most prompts with task analysis</td>
<td>Students reached 80% criterion after intervention. Only 1 instance of overlap between baseline and intervention.</td>
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<tr>
<td>Study (Year)</td>
<td>Participants</td>
<td>Setting</td>
<td>Tasks</td>
<td>Measures</td>
<td>Outcomes</td>
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<tr>
<td>Vandercook (1991) (Recreation)</td>
<td>5 participants; High school; Ages: 18-21 years old; Multiple disabilities</td>
<td>Bowling alley</td>
<td>Multiple probe across activities</td>
<td>Bowling and pinball (Skill demonstration with instructor) (Skill generalization with peer) (Social interactions of peers while engaged in activity) (Attitudes of peers without disabilities toward persons with disabilities)</td>
<td>Skill demonstration with instructor resulted in increased skill level for each student for each activity (bowling and pinball). Skill generalization with peer occurred. Social interactions of peers while engaged in activity. Cooperative participation increased</td>
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<tr>
<td>Westling, Floyd, &amp; Carr (1990) (Community)</td>
<td>15 participants; High School; Ages: 13-19 years old; Moderate, severe, or profound cognitive disabilities</td>
<td>Department stores and convenience stores</td>
<td>Quasi-experimental</td>
<td>Purchasing items (Correct number of behaviors (e.g., enter through correct door, looks on correct shelf, takes out money) and social (e.g., asks for help to find correct section, waits turn at check out stand, greets cashier) Functional criterion scores –necessary behaviors performed Number of sessions to reach three consecutive criterion on operational behavior Pre-community - Role playing, discussion, and demonstration of skills needed in the community setting Training sites –least-to-most intrusive prompt system of task analysis: single (one department store) Multiple (3 different sites)</td>
<td>Functional criterion: No significant differences. Number of sessions: No significant differences. Maintenance: All students maintained skills for 2 months post-intervention.</td>
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</table>
Design

The majority of the studies used a single subject design (n = 19, 82.6%). Of these, 10 (52.6%) used multiple probe design, 5 (26.3%) used a multiple baseline design, 2 (10.5%) used an alternating treatments design, 1 (5.2%) used a parallel-treatment design, and 1 (5.2%) used a multiple baseline and alternating treatment design. The remainder of the studies used a quasi-experimental design (n = 3, 13.0%) or a multi-factor mixed design (n = 1, 4.3%).

Skill/Dependent Variable

Results showed a variety of dependent variables across the four domain areas (i.e., vocational, daily living, community, and recreation). Purchasing grocery items was the most common dependent variable (n = 6, 26.1%). Safety skills were measured in four studies (17.4%). Three studies each (13.0%) measured purchasing non-grocery items and cleaning (e.g., janitorial skills, housekeeping skills, and clearing a tray after eating). Community-referenced sight words and using a debit card to withdraw money were taught in two studies each (8.7%). Cashing a check, planning and preparing a meal, purchasing in a restaurant, mailing a letter, dressing, folding shirts and pants, social skills, using a Laundromat, juice and sandwich making and leisure skills (e.g., riding a bicycle, bowling, playing tabletop games, horseshoes, and pinball) were measured in one study each (4.3% each). One study (4.3%) measured job skills (i.e., filling salt and pepper shakers and lining trays) on a work site.

Independent Variable

Fourteen studies (60.9%) used prompting to teach the target skill. Four studies (17.4%) used constant time delay to teach the target skill. Modeling was used in two studies (8.7%) to teach the target skills. One study used progressive time delay (4.3%) and one study (4.3%) used direct instruction. One study (4.3%) used concurrent and serial sequencing and one study used contingent reinforcement (4.3%). One study (4.3%; Souza & Kennedy, 2003) introduced the participant to an individual to increase social interactions. Three studies (13.0%) used two methods to teach skills. Rynders et al. (1990) used contingent reinforcement and task analysis to teach two different skills, including social skills and table clearing. Next, Alberto et al. (2005) used picture prompts and video modeling to teach community skills. Murzynski and Bourret (2006) used least-to-most prompting with video modeling to teach daily living skills.

Results

The interventions resulted in increases in the target skill. All studies showed positive results for all participants, except for two studies. Morse and Schuster (2000) stated that two students out of eight did not reach criterion as a result of the intervention. Domaracki and Lyon (1992) indicated that all students increased the target skill, but students only reached criterion in the naturalistic training phase, not the simulation training phase. It is also important to note that the Davis et al. (1992) study showed increases in the target skill, but only one student met the normative production rate.

Twelve studies (52.2%) collected generalization measures. Nine of these studies (75.0%) had participants generalize the skill at a new site, two (16.7%) measured generalization with a new person, and one (8.3%) measured generalization with new materials and motoric movements and at a new site (Berg et al., 1995). Ten of the 12 studies (83.3%) that measured generalization had positive results (Berg et al.; Brantham et al., 1999; Cihak et al., 2004; Collins et al., 1993; Ferguson & McDonnell, 1991; Haring et al., 1995; Morse & Schuster, 2000; Pattavina et al.,
One study had mixed results (Bates et al., 2001), while students in one study did not generalize the skill (Domaracki & Lyon, 1992). Finally, 11 studies (47.8%) collected maintenance data, ranging from 1 week to 20 weeks. All studies showed positive maintenance results, except for Cuvo and Klatt (1992) where one of six students did not maintain the skill.

Discussion

Results from the 23 intervention studies provide additional evidence that students with disabilities can learn skills in natural environments (Phillips, Reid, Korabek, & Hursh, 1988; Wehman, 1990). The studies included in this literature review span from 1990 to 2006 and reveal that various skills such as purchasing items, grocery shopping, and banking skills can be taught in the community. Results showed daily living skills as a common domain in which students were taught functional life skills in the community. For example, Branhman et al. (1999) used a time delay procedure to teach students of high school age banking, street crossing, and mailing skills in the community. As a result, each participant showed an increase in the target behavior as well as generalized the skill to different settings. Similarly, Berg et al. (1995) used training and prompting to teach middle and high school students how to order and purchase items in various settings in the community such as the shopping mall and grocery store. Results showed that students increased the number of steps performed independently and that several students were able to maintain the skills. Additionally, recreation, community, and vocational skills were also taught across grade levels. For instance, Davis et al. (1992) used auditory prompting to teach the vocational task of filling salt and pepper shakers to students in a community-based food preparation facility. Findings showed that students were able to increase their fluency of performing this task after auditory prompting tapes were introduced.

Although the studies included in this review span from 1990 to 2006, the results are similar to previous literature reviews. According to a meta-analysis conducted by Xin et al. (2005), researchers found 9 out of 28 studies provided in vivo instruction, with a median of 87% non-overlapping data (PND) points. In addition, Browder and Grasso (1999) conducted a literature review of studies that taught money skills to students with mental retardation. Results showed that of the 43 studies reviewed, 74% of the studies implemented the instruction in the classroom and the community or implemented instruction in the classroom and conducted probes in the community. However, only a few studies taught all skills in the community. Overall, results showed that students with varying levels of mental retardation could learn the skills to make purchases independently.

Limitations

Although evidence has shown that CBI is effective in teaching functional skills, results of this literature review should be viewed with caution due to several limitations. First, since the purpose of the review was to look at studies that taught skills to students in the community, the exclusion criterion resulted in eliminating any studies in which adults were the only participants. There have been several studies that taught functional skills to adults in community settings (e.g., Taylor & O’Reilly, 2000; Test, Howell, Burkhart, & Beroth, 1993.) It is possible that these skills could be taught to students with disabilities during community-based instruction. A second limitation to the current review was only studies in which participants were affiliated with a school were included. For example, Arnold-Reid, Schloss, and Alper (1997) included 3 high school aged participants who lived in a group home. The study was conducted in the group home and therefore was not included in the current review. Finally, studies included in this review only dated back 15 years. This date was selected since it was the first time that federal law mandated transition services to be included on IEPs.

Implications for Future Research

The purpose of this review was to determine the extent of research using community-based instruction across grade levels. The majority of the studies (n = 14) were conducted at the
high school level, while eight studies were at the middle school level, and six studies were at the elementary school level. These results indicate a need for additional research with students in the primary and middle grades. Additionally, students with mental retardation were most common in terms of disability category (87.0%) across the studies included in this review. Therefore, there is a need for CBI studies in which participants with other disabilities are included. Finally, of the 23 studies, 10 taught skills in the daily living domain, 8 in the community domain, 4 in the vocational domain, and 2 in the recreation domain area. The large number of studies in the daily living domain demonstrates a need for more research in the vocational, community, and recreation domain areas in a community setting.

In addition, results showed that slightly more than half (52.2%) of the studies collected generalization data. In order to help facilitate students learning and increase their ability to use their skills in different settings, with different people, or with different items, students should be taught these skills in the community and generalization probes should be administered to determine their ability to draw from their newly acquired skills. Finally, since less than half (48%) of the studies collected maintenance data, it would be beneficial if future researchers included maintenance data in their studies. Particularly, as functional life skills are intended to help students gain the skills needed to help them become independent adults, students who have these skills are likely to be more successful in the real world.

Implications for Practice

The findings of this review offer practitioners many ideas for teaching functional skills in the natural environment and in providing additional simulated instruction across the vocational, daily living, community, and recreation domain areas. Furthermore, skills may be taught to students ranging in age from childhood to adulthood. Specifically, more teachers can teach elementary-aged students skills in the community. For example, teachers can teach social skills to elementary age students in recreational settings such as on the playground during recess. There also appears to be a need for practitioners at the middle school level to teach job skills. Further, research suggests that practitioners at the elementary, middle, and high school levels teach safety skills.

Results of this literature review show that of the 23 studies included in this review, 15 (65.2%) were published before the passage of No Child Left Behind (NCLB) in 2001. The result of this mandate has encouraged more students with disabilities to access the general curriculum. According to Wagner, Newman, and Cameto (2004), NLTS2 data showed 21 percentage point decrease in the number of students with disabilities taking courses in the special education setting. Because of the importance of students with disabilities accessing the general curriculum, students may not be taught functional skills which have been documented in the literature as leading to postschool success (Spooner, Dymond, Smith, & Kennedy, 2006). Additionally, teachers may face challenges such as a lack of (a) community resources to design these experiences, (b) administrative support, or (c) manpower to provide instruction. Therefore, teachers may need to refer to literature reviews such as this one for examples of previous researchers who have used evidence-based strategies to effectively conduct community based instruction. It is also important to note that although the purpose of this literature review was to identify the skills taught in the community across grade levels, practitioners may teach pre-requisite skills in the classroom prior to teaching the intended skill in the community. For example, if a teacher wanted to teach purchasing skills to a student that is unfamiliar with the value of coins he/she may teach the student the values of each coin in the classroom prior to teaching purchasing an item in the community. These and other techniques will help facilitate students’ acquisition of skills and knowledge that are essential to their success after high school.

References

(References marked with an “*” were included in the literature review)
Agran, M., Snow, K., & Swaner, J. (1999). A survey of secondary level teachers’ opinions on communi-


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