

CHAPTER 3

Teaching Problem Solving and Decision Making

A student's capacity to solve problems is critical to his or her success in education and in life. This capacity has become even more important in the context of educational reform efforts. Peterson (1996) noted that an increased focus on teaching critical thinking and problem-solving skills has been central to school curriculum reform, as such skills provide the basis for all learning. Indeed, the ability to retrieve and process information and, in turn, propose a solution to a discernible problem represents a skill that greatly advances a student's competence and independence. Another critical thinking skill is the capacity to make decisions. Tymchuk (1985) noted:

People, regardless of whether they have learning or behavior problems or are developmentally disabled, are capable of understanding consequences of their actions and can learn how to make effective decisions. Effective decision making is easily the most critical skill that anyone can learn. (p. 4)

These two skill areas—problem solving and decision making—are equally important for students to address if they are to become self-determined. Beyth-Marom, Fischhoff, Jacobs Quadrel, and Furby (1991) suggested that programs that address these skills can be classified according to (1) their focus (social or cognitive) or (2) their scope (general or specific). General social programs address interpersonal problem-solving skills, like coping strategies, assertiveness, and decision-making methods. Specific social programs focus on specific problems, such as

smoking, peer and family relationships, sexuality, and physical health. Cognitive programs stress thinking skills related to the decision-making process. General cognitive programs teach decision making and problem solving among many critical thinking skills, while specific cognitive programs teach only decision making or only problem solving. This chapter will cover both social and cognitive decision-making and problem-solving strategies.

CONCEPTUALIZING PROBLEM SOLVING AND DECISION MAKING

Problem Solving

Problem solving involves using available information to identify and design solutions to problems. A “problem” is a task, activity, or situation for which a solution is not immediately identified, known, or obtainable. Solving a problem, therefore, is the process of identifying a solution that resolves the initial perplexity or difficulty. Most of the research in teaching problem solving has derived from the work of D’Zurilla (D’Zurilla, 1986; D’Zurilla & Goldfried, 1971) and Spivack, Shure, and colleagues (Shure, Spivack, & Jaeger, 1972; Spivack & Shure, 1974). D’Zurilla and Goldfried (1971) suggested a four-step training model: (1) describe the problem; (2) generate multiple response alternatives; (3) select the best solution; and (4) verify the effectiveness of the selected solution. Foxx and Faw (2000) challenged the efficacy of this cognitively based model in situations in which one must respond quickly:

Such problems include a cashier overcharging subjects for items purchased . . . and accusations of defacing, stealing or deliberately bumping into someone. In situations such as these, the process of problem identification, goal definition, solution evaluation, evaluation of alternatives, and selection of a best solution may prove to be somewhat cumbersome and impractical. (p. 77)

Foxx and Faw (2000) suggested that an alternative is to teach students to ask a series of three questions: Who should I talk to? Where should I look for help? What should I say?. These approaches to teaching problem solving reflect different perspectives on its nature. The first views the process as primarily cognitively based, and the second as a strategy similar to self-instruction. Each has generated ideas for practice.

Decision Making

A “decision” is a process involving a broad set of skills that incorporate problem solving and choice making to select one of several already identified options. Beyth-Marom and colleagues (1991, p. 21) suggested that the decision-making process includes some basic steps:

1. Listing relevant action alternatives.
2. Identifying possible consequences of those actions.
3. Assessing the probability of each consequence occurring (if the action were undertaken).
4. Establishing the relative importance (value or utility) of each consequence.
5. Integrating these values and probabilities to identify the most attractive course of action.

These steps are similar to those identified in the problem-solving process by D’Zurilla and Goldfried except that they start by listing already identified action alternatives—that is, the decision-making process begins with the problem already solved. In addition to these core steps, there are several others that are specific to particular circumstances, including an initial step in which the individual distinguishes between different decision-making models based on circumstances. Simply put, while the core steps remain constant no matter what decisions are made, there are differences in the process based on issues of certainty/uncertainty and degree of risk.

Beyth-Marom and colleagues (1991) pointed out that uncertainty is a basic element in many decisions. Research indicates that adults and children alike tend to underestimate uncertainty in most decisions, often leading to less than optimal outcomes. There are numerous sources of uncertainty in any decision. Identifying the consequences of any given alternative is usually a best-guess situation, which may result from a lack of information about a particular option or may be a factor of the type of alternative. It is also often the case that there is uncertainty as to whether a particular alternative is actually available or will be available after a decision is made. The degree of uncertainty in each of these steps should be treated as a factor in reaching a decision, and the fact that such uncertainty typically exists should be a topic of instruction for students with disabilities.

Beyth-Marom and colleagues (1991) suggested that instruction that focuses on teaching students about uncertainty should address questions like

1. What is uncertainty?
2. What are the different kinds of uncertainty?
3. What is the relationship between uncertainty and amount of information?

Another factor that affects the decision-making process is the amount of risk involved in making a particular decision. Schloss, Alper, and Jayne (1994) detailed four levels of risk taking associated with making a choice:

1. *The alternative involves limited potential for immediate risk but little possibility of long-term harm to the individual or others.* Examples include choosing what to eat or wear. This first step also emphasizes that almost no choice is risk-free. For example, choosing to wear one’s hair in a nontraditional manner may

result in others making judgments and holding expectations that are limiting or unfair.

2. *The alternative involves mild risk with minimal possibility of long-lasting harm to the individual or others.* An example is choosing to spend one's lunch money on a video game and, as a result, having to go without lunch (Schloss et al., 1994, p. 218).
3. *The alternative results in a moderate probability for long-lasting harm to the individual or others.* Examples include becoming sexually active without adequate birth control (moderate risk of becoming pregnant) and choosing to smoke cigarettes (moderate risk of cancer or other illness).
4. *The alternative involves an almost certain outcome that includes personal injury.* Schloss and colleagues (1994) identify daily use of addictive substances as an example of this level. Another example might be unprotected sexual contact with multiple partners over a long period of time (risk of HIV infection).

PROBLEM SOLVING AND STUDENTS WITH INTELLECTUAL AND DEVELOPMENTAL DISABILITIES

Like research efforts with students and individuals without disabilities, investigations of problem solving for individuals with intellectual disabilities have moved from impersonal to personal contexts. Much of this research has examined the capacity of individuals with intellectual disabilities to solve problems and has suggested that people with intellectual disabilities exhibit a largely inflexible pattern of problem-solving skills (Ellis, Woodley-Zanthos, Dulaney & Palmer, 1989; Ferretti & Butterfield, 1989; Ferretti & Cavelier, 1991; Short & Evans, 1990). This pattern "is characterized by repetition of past strategies to solve current problems without adapting to new stimuli or new task demands" (Short & Evans, 1990, p. 95). Wehmeyer and Kelchner (1994) examined the social problem-solving skills of adults with intellectual disabilities and found that this group generated fewer potential solutions to social problems and that a greater proportion of the solutions generated were irrelevant. Gumpel, Tappe, and Araki (2000) compared the social problem solving of adults with and without developmental disabilities and found that adults with developmental disabilities exhibited greater difficulty solving social problems related to employment and vocational outcomes than did nondisabled peers. In summary, educators should be aware that students with intellectual and developmental disabilities may approach problems with a limited repertoire of potential solutions and a more rigid approach to the process (e.g., relying on past strategies) and may generate more irrelevant solutions. This said, there is evidence that people with intellectual and developmental disabilities can learn more effective problem-solving skills.

Castles and Glass (1986) found that training improved social problem-solving skills of youth with mild and moderate mental retardation. Browning and Nave

(1993) used a video-based curriculum to teach social problem-solving skills to youth with mild mental retardation and learning disabilities. Bambara and Gomez (2001) taught adults with moderate to severe intellectual impairments a self-instruction process incorporating problem-solving skills. They embedded problems within the context of each person's daily routine. Participants were able to use the self-instruction sequence to solve the problem during training sequences, then generalized that experience to untrained situations. O'Reilly, Lancioni, and Kierans (2000) successfully implemented a social skills problem-solving intervention to teach leisure skills to adults with intellectual disabilities.

These findings were tempered by mixed results on the effectiveness of such programs when the outcome measure was an observed behavior. Coleman, Wheeler, and Webber (1993) found that social problem-solving training does not automatically result in students applying learned strategies to their everyday lives. Park and Gaylord-Ross (1989) found that the need to pair skills training with social problem-solving training is reciprocal. That is, skills instruction needs to accompany social problem-solving training in order for students to generalize problem-solving skills and social skills. Park and Gaylord-Ross (1989) compared social skills training without problem-solving training to a general social program that incorporated problem-solving training for youth with developmental disabilities. They found that the social problem-solving training procedure increased generalization and maintenance of the targeted social behaviors.

There are a few demonstrations of the efficacy of teaching problem-solving skills to promote educational or academic outcomes for students with intellectual or developmental disabilities. Agran, Blanchard, Hughes, and Wehmeyer (2002) taught four students with intellectual disabilities to use problem-solving skills to achieve self-set educational goals that related to increasing contributions to classroom discussions and increasing direction-following behavior. All students showed immediate and dramatic improvement in goal attainment as a function of their use of the problem-solving strategy. Similarly, O'Reilly, Lancioni, Gardiner, Tiernan, and Lacy (2002) implemented a problem-solving intervention that successfully taught students with intellectual disabilities appropriate classroom participation skills.

Finally, while there is ample research documenting the importance of social skills for positive adult outcomes for students with disabilities, little of that research has focused specifically on social problem solving. Healey and Masterpasqua (1992) examined the social problem solving of elementary school students with disabilities as a function of those students' adjustment to regular education classrooms. These researchers hypothesized that strong social problem-solving skills would be related to more positive peer relations and behavioral adjustment in the classroom. They found that this was the case and that classroom adjustment could be predicted by interpersonal cognitive problem-solving skills. Basquill, Nezu, Nezu, and Klein (2004) found that males with intellectual disabilities who were more aggressive had less effective problem-solving skills than their peers who did not engage in problem behavior, suggesting an inverse rela-

tionship between problem-solving capacity and engagement in problem behaviors.

DECISION MAKING AND STUDENTS WITH INTELLECTUAL AND DEVELOPMENTAL DISABILITIES

There has been relatively little research pertaining to the capacity of people with intellectual and developmental disabilities to make decisions. The exceptions involve research and model development by Tymchuk (Tymchuk, 1985; Tymchuk, Andron, & Rahbar, 1988) and by Hickson, Khemka, and colleagues (Hickson, Golden, Khemka, Urv, & Yamusah, 1998; Hickson & Khemka, 1999; Khemka, 2000; Khemka & Hickson, 2000; Khemka, Hickson, & Reynolds, 2005). This research and development illustrates the relevance of linking instruction in decision making to real-world issues and contexts.

Tymchuk and colleagues developed and evaluated the efficacy of interventions to teach women with intellectual disabilities parenting skills. Tymchuk and colleagues (1988) taught nine women with intellectual disabilities decision-making skills in a group setting, utilizing vignettes illustrating common child-raising situations. The participants' capacity to identify elements of the decision-making process and their use of these components to make decisions presented in the vignettes was significantly improved by the intervention. Tymchuk, Yokota, and Rahbar, (1990) examined the decision-making capacities of two groups of women, one group with intellectual disabilities, and found that the group with intellectual disabilities did not differ from the control group in the appropriateness of their decisions, but also did not utilize available information fully in coming to those decisions.

Hickson, Khemka, and colleagues conducted their research and intervention development in the context of decision making by women with intellectual disabilities at risk for domestic abuse. In preliminary research with males and females with intellectual disabilities, Hickson and colleagues (1998) found that adults with intellectual disabilities were at risk in scenarios involving potential risk due to making less vigilant decisions pertaining to interpersonal interactions (e.g., not determining well when the potential for harm or loss outweighed the possibility of gain). Khemka and Hickson (2000) also examined the decision-making performance of men and women with intellectual disabilities across three types of abusive situations: physical, sexual, and psychological/verbal. Participants were able to identify options that prevented these forms of abuse in roughly 65% of scenarios, but they were much more effective at making vigilant decisions in scenarios involving physical or sexual abuse than they were in scenarios involving psychological/verbal abuse. In summary, these studies found that adults with intellectual disabilities had some capacity to make decisions about their response to potentially abusive situations but clearly were at risk for abuse as a function of their less vigilant strategy use.

In a series of studies following these initial findings, these researchers showed that women with intellectual disabilities could learn independent decision-making skills that enabled them to be more vigilant in simulated situations of interpersonal interactions that contained elements of risk for abuse. Khemka (2000) developed a decision-making training approach that involved both cognitive and motivational components, finding that combining these aspects resulted in more positive outcomes. These women were able to acquire decision-making skills as a result of the training and performed significantly better choosing options that contained less risk. Khemka, Hickson, and Reynolds (2005) conducted a randomized-trial control-group-design study of a curriculum to teach women strategies to make more effective decisions and found that this process was very effective, enabling women with intellectual disabilities to acquire and use decision-making strategies that minimized their risk for potential abuse.

Both these lines of research suggest that, not surprisingly, people with intellectual disabilities who are not provided explicit instruction on decision-making skills are not as capable of making effective decisions and, in high-risk situations (such as those involving abuse) or in situations where decisions may have considerable consequences (such as parenting), are at risk for negative outcomes. It should be emphasized, however, that even in high-risk situations, which tend to be where research has been conducted, people with intellectual disabilities have been shown to have some capacity, a finding often ignored. Attention has been directed to health-care-related decisions by people with impaired capacity to make decisions, and research has begun to confirm that people with intellectual disabilities have more capacity to understand treatment options and identify appropriate courses of action pertaining to health care than previously assumed (Cea & Fisher, 2003).

Both lines of research also show that, given explicit instruction, people with intellectual disabilities can acquire the decision-making skills that enable them to perform much more effectively, even in these high-risk situations. Two recent studies on the ability of people with intellectual disabilities to make financial decisions further illustrate the growing consensus that people with intellectual disabilities have the capacity to become effective decision makers. Suto, Clare, Holland, and Watson (2005a, 2005b) examined the financial decision-making abilities of people with intellectual disabilities and nondisabled peers. These researchers found that IQ level was only partially related to a person's capacity to make financial decisions and that while the decision-making abilities of study participants with intellectual disabilities were generally weaker than those of their nondisabled peers, these differences were not dramatic.

There is, unfortunately, no research examining school-based interventions to promote the decision-making skills of students with intellectual disabilities, and while there are several interventions supported by evidence to increase decision-making skills of individuals with intellectual and developmental disabilities, they have not been evaluated in the context of educational settings. There are, however, models evaluated with other populations of students with disabilities that hypothetically would have utility with students with intellectual and developmental

disabilities. Both models evaluated with adults with intellectual disabilities and with students with disabilities are discussed in the following section.

PROMOTING PROBLEM-SOLVING AND DECISION-MAKING SKILLS

Returning to the classification of the types of decision-making training approaches and strategies suggested by Beyth-Marom and colleagues (1991), this section will describe specific instructional programs and strategies that can be employed to promote student problem-solving and decision-making skills.

General Social Approaches and Strategies

General social approaches and strategies teach a wide number of interpersonal problem-solving skills, like coping strategies, assertiveness, and decision-making methods. The most common of these strategies are assertiveness-training programs and social skills-training programs. Assertiveness-training strategies consist of a number of multicomponent packages built upon behavioral rehearsal and including the basic elements of modeling, coaching, feedback, and homework assignments to teach assertive behavior. Social skills-training programs incorporate instructional elements that are also involved in the assertiveness-training process, like role playing, modeling, and rehearsal, but typically share fewer components than do different assertiveness-training programs. Social skills-training programs are often linked as much by their content (e.g., teaching social skills) as their approach. Assertiveness and effective communication skills are covered in Chapter 5.

Benjamin (1996a, 1996b) developed two general social programs that address a wide range of social and problem-solving skills at school and at work. Benjamin introduced a problem-solving plan designed to get students thinking about problems they encounter. Students are taught the following four steps (Benjamin, 1996a, p. iv):

1. *Understand*: Ask yourself, "What is the problem? What do I need to find out?"
2. *Plan and solve*: Ask yourself, "What do I already know? How will I solve this problem?" Then use problem-solving skills to help you carry out your plan.
3. *Check*: Look at what happened. Ask yourself, "Have I solved the problem? Does my plan make sense?" If there's still a problem, look over your plan. Change your plan. Try another problem-solving skill to solve the problem.
4. *Review*: Look at what you did to solve the problem. Ask yourself, "What have I learned? How can I use my plan to solve problems like this in the future?"

Areas of instruction in which this plan is applied are listed in Table 3.1. As this table shows, the skills addressed involve a wide range of social and self-advocacy

TABLE 3.1. Problem-Solving Areas in the School Environment

Unit	Instructional area
Unit 1: Preparing for School	Planning your day. Getting dressed. Morning chores. Getting to school.
Unit 2: Managing in School	Being on time. Following your schedule. Finishing your schoolwork. Taking notes. Doing homework. Studying. Class time and personal time.
Unit 3: Communication Skills	Talking with a teacher. Talking with a friend. Listening. Asking questions. Oral reports.
Unit 4: Making Judgments and Decisions	Peer pressure. Problems with students. Problems in school. Changes at school. Setting goals. School and work. Planning what schoolwork to do first.
Unit 5: Managing Money	Budgeting. Paying. Saving.

Note. From Wehmeyer, Agran, and Hughes (1998). Copyright 1998 by Michael Wehmeyer, Martin Agran, and Carolyn Hughes. Reprinted by permission.

skills, including goal setting, money management, effective communication, and planning. Benjamin (1996b) has also applied the same problem-solving plan to social skills, vocational skills, and self-advocacy skills training in the work environment, as seen in Table 3.2.

Specific Social Approaches and Strategies

Unlike general social skills approaches and strategies, which are broadly focused, specific social approaches and strategies focus on specific problems encountered by youth, such as smoking, peer and family relationships, sexuality, or physical health. Problem-solving and decision-making skills instruction occurs only as a component of addressing the specific social problem. There are numerous examples of specific social approaches and strategies used with individuals with disabilities to address problems like anger control or community living.

TABLE 3.2. Problem-Solving Areas in the Work Environment

Unit	Instructional area
Unit 1: Preparing for Work	Getting ready. Getting dressed. Getting to work.
Unit 2: Managing Time	Being on time. Your workday. Organizing work time. Work time and personal life.
Unit 3: Managing Job Duties	Completing forms. Job duties. Planning which job to do first. Completing jobs on time. Dressing for work. Finding information.
Unit 4: Communication Skills	Talking with a boss. Talking with coworkers. Talking with customers. Listening. Asking questions.
Unit 5: Making Judgments and Decisions	Peer pressure. Problems on the job. Personal issues. Change at work.
Unit 6: Managing Money	Reading a pay stub. Payday. Budgeting.

Note. From Wehmeyer, Agran, and Hughes (1998). Copyright 1998 by Michael Wehmeyer, Martin Agran, and Carolyn Hughes. Reprinted by permission.

Foxx and Bittle (1989) developed a curriculum called Thinking It Through for use with students with intellectual and developmental disabilities that teaches a problem-solving strategy for community living. The curriculum focuses on several areas that the authors identify as important to successful community adjustment, including (1) emergencies and injuries, (2) safety, (3) authority figures, (4) peer issues, (5) community resources, and (6) stating one's rights. The program "is designed to teach a problem-solving strategy by presenting trainees with commonly experienced problems and by guiding them to consider a sequence of problem-solving questions in formulating their solutions" (Foxx & Bittle, 1989, p. 4).

Instead of containing instructional activities focused on teaching students a specific cognitive process, Thinking It Through teaches students to ask a series of questions in order to formulate solutions to specific problems. There are four prob-

lem situations in each of the six areas mentioned above. The questions are listed below, and one problem situation from each area is listed in Table 3.3:

1. When will the problem be solved?
2. Where would you or a friend look for help?
3. Whom would you or your friend talk to?
4. What would you or your friend say?

Training involves the use of cue cards with one problem situation per card and is configured in a manner similar to direct instruction. The facilitator works with three participants, who each select cue cards and, based on the community-living-related problem, are asked to provide a solution. Through practice and self-monitoring for appropriate solutions, individuals build a repertoire of solutions to community-living-based problems.

Tymchuk (1985) developed an instructional process to teach decision making to persons with developmental disabilities based primarily on research in child development. Tymchuk’s process identified 11 steps to effective decision making, listed in Table 3.4. Tymchuk organizes lessons around each of the steps in the process. In teaching the decision that needs to be made (Step 1), the person is presented with multiple scenarios in which a decision must be made, all of which are grounded in real-world situations (e.g., a friend asks you to smoke, someone teases you). Participants learn to brainstorm potential decisions (Step 3) and to identify

TABLE 3.3. Sample Problem Situations from Thinking It Through

General category	Sample problem situation
Emergencies and injuries	You feel very dizzy. What should you do?
Safety	You are walking outside and get caught in a thunderstorm. Your friend says, “Let’s get under a tree.” What should you do?
Authority figures	You just broke your supervisor’s favorite mug. He is going to be angry. What should you do?
Peer issues	Whenever you go out with your friend, he burps loudly and then laughs. You are really getting embarrassed. What should you do?
Community resources	A child walks up to you at the fair and says she is lost. What should you do?
Stating one’s rights	You have a friend who keeps asking you to go out on a date. You don’t want to go. What should you do?

Note. From Wehmeyer, Agran, and Hughes (1998). Copyright 1998 by Michael Wehmeyer, Martin Agran, and Carolyn Hughes. Reprinted by permission.

TABLE 3.4. Steps to Effective Decision Making

Step	Action
1	Identify the decision to be made.
2	Identify who should be involved in making this decision.
3	Identify alternative decisions.
4	Identify the chain of events.
5	Identify if/then statements.
6	Identify the immediate consequences.
7	Identify the ongoing consequences.
8	Identify the long-term consequences.
9	Make a decision.
10	Evaluate whether the decision went the way you predicted.
11	Change the decision, if necessary.

Note. From Wehmeyer, Agran, and Hughes (1998). Copyright 1998 by Michael Wehmeyer, Martin Agran, and Carolyn Hughes. Reprinted by permission.

consequences associated with each decision. These consequences are both positive and negative and include immediate (Step 6), ongoing (Step 7), and long-term (Step 8) consequences. Participants are taught to consider psychological, academic, vocational, leisure, family, health, financial, and social benefits associated with the consequences. Participants also learn to consider negative consequences that involve risks in these same areas.

Bullock and Mahon (1992) developed an approach for teaching students with disabilities a decision-making process specific to leisure decisions. They began instruction with a leisure awareness–training program in which students with disabilities were introduced to five components important to leisure awareness.

1. Concepts of leisure
2. Self-awareness in leisure
3. Knowledge of leisure opportunities
4. Leisure resources
5. Leisure barriers

After students completed the leisure awareness–training module, they were taught the Decision Making in Leisure (DML) model, composed of four steps.

1. Identify a desired leisure experience.
2. Consider alternatives that satisfy the experience desired.
3. Describe the consequences for each alternative, including the amount of enjoyment, whether a partner is required, the cost, where the activity takes place, and the equipment needed.
4. Choose an alternative that satisfies the desired experience.

Instruction using the DML model involves five instructional steps.

1. *Introduce the four-step model:* Steps are introduced using both oral and pictorial presentation of each step.
2. *Teach child to use four steps to make a decision:* Students are taught to use a schematic representation of the model each time they are asked to make a decision.
3. *Teacher offers assistance when necessary:* The teacher or facilitator allows the student to work through the decision-making process but provides verbal cues to support him or her as necessary.
4. *Teacher provides verbal praise as student proceeds through decision.*
5. *Remove schematic of DML model.*

Using the DML model, Bullock and Mahon (1992) taught students with intellectual disabilities to make decisions independently about their leisure activities in classroom settings. They suggested, however, that the teaching approach could be implemented in a physical education setting or in students' homes.

General Cognitive Approaches and Strategies

Social problem-solving and decision-making approaches and strategies teach problem solving and decision making as one aspect of teaching general or specific social skills. Cognitive problem-solving and decision-making approaches and strategies focus exclusively on teaching critical thinking skills, with problem solving or decision making as one of many critical thinking skills or as the sole critical thinking skill. In reality, there is considerable overlap between cognitive and social approaches, and in many cases the assignment of a particular strategy to one or the other is somewhat arbitrary. The primary difference is one of emphasis—social skills training versus critical thinking skills training. General cognitive approaches and strategies teach problem solving and decision making as two of many critical thinking skills. One empirically validated general cognitive approach that has been validated for use with students with intellectual and developmental disabilities involves the use of the Self-Determined Learning Model of Instruction (Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000), covered in Chapter 9.

Another example of a general cognitive approach is the IDEAL Problem Solver (Bransford & Stein, 1993), a program that teaches individuals critical thinking, memory, and problem-solving skills. In this particular approach, problem-solving skills take center stage. Through the program, students learn a five-step problem-solving strategy to approach any problem. The acronym for the strategy is IDEAL, and the steps involve teaching students to:

- I = Identify problems and opportunities.
- D = Define goals.
- E = Explore possible strategies.

- A = Anticipate outcomes and act.
- L = Look back and learn.

What characterizes the IDEAL Problem Solver approach as a cognitive program is its focus on coupling other thinking skills with the IDEAL problem-solving strategy. In the course of completing the program, participants work on strategies that target several critical thinking skills, like memory. Participants learn categorization strategies (grouping like items in order to remember them) and visualization techniques, like the method of loci, where items to be remembered are visualized in a familiar location, or interactive imagery strategies, where items to be remembered are paired and visualized in a manner that will be easy to recall (e.g., a dog talking on the telephone). The program then focuses on critical thinking skills, like using basic comprehension strategies. Bransford and Stein (1993) employed a wide range of instructional strategies to teach these thinking skills, including case-based instruction (organizing instruction around a situation the student is likely to encounter), project-based instruction (organizing instruction around a student project), debates, simulations, cooperative learning, and student-directed learning strategies.

Specific Cognitive Approaches and Strategies

Instructional approaches and strategies classified under this final category are cognitive programs that teach only (or, in reality, primarily) problem-solving or decision-making strategies. Quite a few of these programs have evolved from the work of D’Zurilla (1986) and Spivack and Shure (1974) discussed previously. For example, Elias, Branden-Muller, and Sayette (1991) summarized the theoretical approach adopted by D’Zurilla as it applied in educational settings. D’Zurilla’s problem-solving model involved five specific stages: (1) problem orientation, (2) problem definition and formulation, (3) generation of alternative solutions, (4) decision making, and (5) solution implementation.

According to Elias and colleagues (1991, p. 168) the problem orientation stage has four functions:

1. To increase awareness of problems and to introduce the idea of problem solving.
2. To encourage positive expectations for problem solving and divert attention from negative or preoccupying thoughts.
3. To encourage persistence against emotional stress and difficult situations.
4. To facilitate a positive emotional state.

Several cognitive variables are targeted within the first phase. First, instruction focuses on problem perception, or the recognition and labeling of problems. Second, instruction focuses on problem attribution skills (e.g., problems attributed to internal or external factors) and problem appraisal skills (the individual’s judg-

ment as to the importance of the problem). Participants also learn how to estimate the time they will need to solve a problem during this phase.

In the second phase, problem definition and formulation, participants learn to gather as much information about the problem as possible, set problem-solving goals, and reexamine the importance of the problem's resolution to their well-being. In phase three, individuals learn to generate alternative solutions to the problem. The generation of alternatives is a step that is often problematic for students with disabilities. As previously mentioned, students with mental retardation and learning disabilities often generate fewer appropriate alternatives than same-age peers without disabilities. Many students with disabilities tend to perseverate on alternatives that are either ineffective or share a common theme or characteristic. So, for example, students with emotional or behavioral disorders may generate multiple alternatives, all involving aggressive responses. Most people derive options based on a combination of learning and experience. Students with disabilities too often do not have the experience base from which to draw when generating alternatives, and instruction in this area may be as simple as expanding a student's experiences in areas of importance, like work or leisure.

The emergence of the ability to generate alternative solutions typically follows a specific sequence (Beyth-Marom et al., 1991). The first stage is the generation of a single alternative. Students who are not able to do so should be provided instructional opportunities that enable them to generate at least one alternative for a problem relevant to their lives. At the next stage, students learn to generate a small list of alternative solutions. Again, this may be primarily a rote exercise, learning about and memorizing several alternatives to common problems. At the next stage, students learn how to brainstorm alternatives. The final stages involve the generation of alternative solutions by classification and criteria standards (e.g., actually inventing alternatives based on characteristics of the problem situation and past experiences).

The fourth stage of the D'Zurilla problem-solving model involves decision making. Specifically, participants are taught to consider the value and likelihood of the anticipated consequences, decide whether the alternatives are feasible and acceptable, and examine the costs and benefits of the alternatives. The final stage, solution implementation and verification, incorporates several cognitive-behavioral features (as opposed to strictly cognitive features), including self-monitoring, self-evaluation, and self-reinforcement, all of which are considered in greater detail in other chapters in this text.

The approach developed and validated by Khemka and colleagues (Khemka, 2000; Khemka & Hickson, 2000; Khemka et al., 2005) falls into the category of a specific cognitive approach, although the focus on decision making is included within the context of goal setting and increasing knowledge about abuse and neglect. Their curriculum, titled an Effective Strategy-based Curriculum for Abuse Prevention and Empowerment (ESCAPE), focuses on teaching women with intellectual disabilities to make decisions in the context of interpersonal situations that pose some risk for abuse. A subsequent version, ESCAPE-DD, was developed for use

with males as well as females. Within the ESCAPE process, the decision-making strategy instruction is preceded by lessons on abuse concepts to provide participants with knowledge about healthy and abusive relationships and types of abuse. The process contains both a cognitive component and an emotional/motivational component.

Instruction on decision making begins with teaching participants four steps in critical thinking pertaining to making a decision. These steps are:

1. Deciding if there is a problem and how you feel.
2. Thinking about all the choices you have.
3. Knowing what will happen with each choice and deciding if the choice meets your goals.
4. Deciding which choice is best for you and making a decision.

These cognitive steps are taught in the context of vignettes accompanied by visuals that illustrate scenarios in which a protagonist is at risk for abuse. Through scripted discussion points and brainstorming activities, participants decide if the scenario depicts a problem, talk about how they feel about the problem, and consider options the protagonist might have in the situation. The instructor repeats this process in a series of lessons that go from guided practice to collaborative group practice to participant-guided practice to independent performance.

A current application of the ESCAPE curriculum being pursued by Hickson, Khemka, and colleagues is the use of the curriculum with people with Williams syndrome, who, because of characteristics associated with their condition, including an outgoing and trusting nature, may be particularly at risk for abuse.

SUMMARY

Although the cognitive and metacognitive demands of the problem-solving and decision-making process have resulted in a generally held assumption that many individuals with intellectual and developmental disabilities cannot learn to make decisions or solve problems, research and model development have shown otherwise. It is clear, however, that unless they receive explicit instruction in these critical thinking skill areas, students with disabilities will not be able to meet the problem-solving or decision-making demands in their educational or other environments. There are numerous validated approaches and strategies to teaching problem solving and decision making, within both social and cognitive frameworks and either embedded with other social or critical thinking skills or taught individually. In all contexts, though, these are skills that should be taught addressing contexts and situations that are both meaningful and anchored in reality so as to encourage generalization.