

Using Creative Problem-Solving Methods to Include Students With Severe Disabilities in General Education Classroom Activities

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Increasingly, students with intensive educational needs are receiving special education services in general education classes. This level of heterogeneous grouping poses curricular and instructional adaptation challenges. Variations of the Osborn-Parnes Creative Problem-Solving process are presented as methods for meeting the educational needs of diverse groups of students within general education activities. Specific examples are provided based on field testing in elementary schools. An evaluation component and future implications are discussed.

There was a time when most people assumed that the intensive educational needs of students with severe disabilities could be met only in settings such as special schools or special classes. Over the past few years this assumption has been challenged as students with intensive educational needs have been educated successfully in typical classrooms in neighborhood schools (Biklen, 1988; Forest, 1987; Gaylord-Ross, 1989; Giangreco, Dennis, Cloninger, Edelman, & Schattman, 1993; Giangreco & Meyer, 1988; Giangreco & Putnam, 1991; Lipsky & Gartner, 1989; Meyer, Peck, & Brown, 1991; Porter, 1988; S. Stainback & W. Stainback, 1992; W. Stainback & S. Stainback, 1990; Thousand et al., 1986; Vandercook, Wolff, & York, 1989; Villa, Thousand, W. Stainback, & S. Stainback, 1992; Williams et al., 1986; York, Vandercook, MacDonald, Heise-Neff, & Caughey, 1989; York, Vandercook, MacDonald, & Wolff,

1989). This article describes problem-solving methods that address the curricular and instructional challenges presented when students with diverse characteristics are educated together with general education class activities. These problem-solving methods are discussed from the perspectives of both teachers and students.

The parameters of any student's education can be broadly characterized by the environments in which learning occurs (e.g., general education class, community), the student's program (e.g., learning outcomes, curricular content), and instructional supports (e.g., personnel, peer tutoring, materials, equipment, instructional approaches/adaptations; Giangreco & Putnam, 1991). Within a general education class setting, any student may require varying types and amounts of program and support accommodations to meet his or her individual educational needs. Providing program and support accommodations for students with intensive needs in general education classes is consistent with the federal definition of special education as "specially designed" instruction and with the federal mandate to provide students with supplemental supports and aids in the least restrictive environment prior to considering removal from the general education classroom. Traditionally, special education and special classes have been synonymous, especially for students with severe disabilities. Schools across the country have demonstrated that this need not be the case.

When a student with severe disabilities is placed in general education academic classes, she or he might be pursuing some or all of the same curriculum content as other students. She or he may be working at individually appropriate levels within the same curriculum areas as other students. More frequently, students with severe disabilities have at least some different learning outcomes than other students—this often has led unnecessarily to their separation for instruction. One way of conceptualizing meaningful inclusion of diverse learners in general education classes is through *curriculum overlapping*.

Curriculum overlapping exists when students pursue individually appropriate learning outcomes from different curriculum areas within the context of a shared activity (Giangreco & Meyer, 1988; Giangreco & Putnam, 1991). For example, during science lab, a heterogeneous group of students are dissecting a model of a frog. In this case the group consists of one student with intensive educational needs and three students without disabilities. These three students have science objectives pertaining to anatomy and physiology (e.g., parts and functions of the alimentary canal, respiratory system, and circulatory system). The same activity can address communication objectives for the student with intensive educational needs (e.g., following one-step instructions such as "Pick up the ___" or "Give me the ___", describing objects/events,

responding to questions). In this example, the curriculum areas of science and communication are overlapped within the same activity, thus the phrase curriculum overlapping. Curriculum overlapping shifts the focus from merely including the student with disabilities in general education activities to meeting individually determined educational objectives for the student and his or her classmates by explicitly clarifying individually appropriate learning outcomes for each student and rearranging instruction accordingly within shared activities.

Although many schools give lip service to teaching students problem-solving skills, few schools actively teach such skills or provide sufficient opportunities for their use. Inclusion of students with intensive educational needs in general class activities creates opportunities for meaningful problem solving by both teachers and students to occur on an ongoing basis. The problem-solving methods that students learn also may be applied to academic work in content areas (e.g., science, social studies, language arts, music) and nonacademic challenges. In addition, teachers who expand their own problem-solving abilities may apply newly acquired skills to a range of instructional challenges they encounter in the classroom. Using problem-solving approaches is consistent with the goals of inclusion-oriented education because it holds potential benefits for all class members, academically and socially (Giangreco, 1992).

A persistent concern voiced by some educators is that the pressure on teachers to accommodate heterogeneous groups may become too concentrated or intense. The fear exists that inclusion of students who have intensive educational needs may interfere with teaching nondisabled students (Jenkins, Pious, & Jewell, 1990, p. 485). Some schools use this speculation as a rationale for excluding certain students; others approach the same set of circumstances as a challenge to be met by drawing on the creative powers of the very heterogeneity that is perceived as the problem (Giangreco, Edelman, Cloninger, & Dennis, 1993). Extending problem-solving methods beyond the teacher or planning team to include student members dramatically increases the number of contributors to problem-solving efforts, thus distributing the pressures of inventing individualized accommodations and decreasing the pressures on the classroom teacher. Group problem solving of this sort can contribute to the sense of cohesiveness within a class as members develop shared ownership and a personal investment in the operation of the classroom. In addition, the use of problem-solving skills by class members provides a mechanism to build a support infrastructure within the classroom, thus decreasing dependency on external supports (e.g., support teachers, integration specialists, consultants). This article describes a generic problem-solving method and variations that have been applied to instructional challenges in inclusion-oriented public schools.

OSBORN-PARNES CREATIVE PROBLEM-SOLVING PROCESS

The problem-solving approach described in this article is based primarily on the Osborn-Parnes Creative Problem-Solving (CPS) process (Osborn, 1953; Parnes, 1981, 1985, 1988). As depicted in Table 1, this

TABLE 1
Overview of the Osborn-Parnes CPS Process

<i>Process Step</i>	<i>Major Points/Concepts/Strategies</i>
The "mess" or objective	Make an active effort to be aware of challenges and <u>opportunities</u> through imagining, wishing, dreaming, fantasizing. Be divergent by considering a variety of potential challenges and then be convergent by selecting <u>the one you wish to solve first.</u>
Fact-finding (gather data)	Use all your senses and perceptions to <u>gather information</u> about the challenge or problem you have selected. Ask who, what, where, when, why, how questions. Be divergent by considering multiple facts, then <u>select the facts you believe are most relevant.</u>
Problem-finding (clarify challenge)	<u>Clarify the challenge</u> and consider new/different ways of viewing it. Phrase the challenge as a question, "In what ways might I/we . . . ?" Then ask the question "Why?" Rephrase the question using the "In what ways might I/we . . . ?" format. Ask yourself, "What do I/we really want to accomplish? Repeat this process until you have identified the problem in a way that makes sense to you. As John Dewey said, "A problem well defined is half solved."
Idea-finding (generate ideas)	Brainstorm to <u>generate a quantity of ideas while deferring judgment.</u> Encourage playful, even wild ideas. Stretch beyond the obvious. Try to make new relationships, analogies, associations, connections between ideas, objects, and so on that at the surface may seem unrelated. Use forced relationships to manipulate ideas (e.g., magnify, minify, rearrange, reverse, eliminate). Hitchhike on ideas to make new associations by building on someone's idea.
Solution-finding (evaluate ideas)	<u>Evaluate the ideas generated by comparing them to criteria.</u> Select criteria based on what you want and need the potential solution to do. <u>Select one or more potential solutions that meet your criteria.</u>
Acceptance-finding (refine ideas)	Explore ways to <u>make your solutions more workable and effective.</u> Ask who, what, where, when, why, how questions to develop details and set out a plan of action. <u>Turn your ideas into action.</u> Continually evaluate your solution and cycle through the process to discover new challenges and ways of meeting them.

Note. Based on Osborn (1953) and Parnes (1981, 1985, 1988, 1992).

process begins with an awareness of challenges and the selection of an objective or a "mess" to solve. The CPS process proceeds through five additional stages designed to (a) gather data (fact-finding), (b) clarify the problem (problem-finding), (c) generate ideas (idea-finding), (d) evaluate the ideas (solution-finding), and (e) refine selected ideas and develop a plan for action (acceptance-finding).

A common strategy that runs through the entire process and within each stage is the alternating use of divergent and convergent thinking. The process encourages conscious separation of creative, free-wheeling thoughts from judgmental, evaluative thoughts. This point is illuminated in the following except from the fable *Why Didn't I Think of That?* (Firestien, 1989):

The color director leaned forward in his chair, "Cyril, do you drive your car with one foot on the gas and the other on the brake at the same time?"

"Of course not. That would ruin the car, and besides if it didn't ruin the car I wouldn't get very far."

"My point exactly," said the color director as he nodded his head. "And that is precisely what you are doing when you try to generate ideas and evaluate them at the same time. You ruin the fun in the creative process and you usually don't get ideas that are very interesting. So just as you don't drive a car with one foot on the gas and one foot on the brake at the same time, it's important to separate your imaginative thinking from your judgmental thinking. You need to suspend your judgment while you are generating ideas." (pp. 62-63)

Using the Osborn-Parnes CPS process, Firestien (1989) offered 10 tips for encouraging creativity (see Table 2). The information presented in Tables 1 and 2 should not be considered comprehensive; the tables are basic summaries of major points regarding the CPS process.

APPLYING THE CPS PROCESS TO CURRICULUM OVERLAPPING IN GENERAL EDUCATION ACTIVITIES

In their work on the use of metaphor and analogy in the problem-solving process, Gordon and Poze (1979) explained that learning of already known ideas occurs when we "make the strange familiar" (p. 10). Conversely, creativity and invention are facilitated when we "make the familiar strange." Looking for new connections and associations can be stimulated by using a technique called "forced relationships" (Parnes, 1988, p. 158). Forced relationships are achieved when two objects or

TABLE 2
Creativity Tips

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1. Capture ideas whenever and wherever they come to you. Many of our best ideas are "free" and they often come to us when we're relaxed and not working on a problem. Record your ideas immediately.
 2. Model openness and acceptance of ideas. Watch your verbal and nonverbal behavior. Much of how and what we communicate about ideas is expressed in the verbal and nonverbal ways we treat the ideas of others.
 3. Redefine your problem in many ways. Ask yourself "why?" Many times we set out to solve the wrong problem. Challenge your assumptions.
 4. Go outside the problem area. Look for connections for solving the problems from other areas. Ask yourself, "What ideas can I get for solving this problem from a completely different world?" Remember that the history of science is filled with breakthroughs in which two different worlds, originally considered unrelated, were combined to form a new idea.
 5. Develop creative habits. When working on a challenge or opportunity ask yourself, "How else can I do this?" "What if?" "How can I use something that doesn't fit with this at all?"
 6. Separate your imaginative thinking from your judgmental thinking. When generating ideas, don't criticize your ideas or the ideas of others. After you have generated a number of ideas, then evaluate them, but don't try to generate and evaluate at the same time.
 7. Evaluate ideas by considering the Pluses or strengths of the idea first; then list the Potentials in the idea; then list the Concerns (PPC). When you determine your concerns about an idea, phrase your concerns as you would phrase a question or problem statement. This way your mind will immediately begin to look for ways to overcome the concern instead of disregarding the entire idea.
 8. When working to solve a problem, set a quota of at least thirty to thirty-five ideas and strive to reach the quota. To get new ideas, it is important to stretch beyond the obvious ways for solving a problem. The creative person knows that there are many ways to solve a problem, market a product, discipline a child; the more ways you have of accomplishing your goal, the greater are your chances of doing it.
 9. We are all creative, but it is important to realize that creativity requires practice and development like any other skill.
 10. Look at problems as opportunities. Every "problem" we encounter has something to teach us. As Richard Bach, author of *Illusions* said, "There is no such thing as a problem without a gift for you in its hand. . . . We seek problems because we need their gifts."
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Note. From *Why Didn't I Think of That? A Personal and Professional Guide to Better Ideas and Decision Making* (pp. 6-7) by R. L. Firestien, 1989, East Aurora, NY: United Educational Services, Inc. Copyright 1989 by D.O.K. Publishers. Reprinted by permission.

ideas that appear to have little or no relationship to each other are combined or rearranged in some way to generate a new idea to solve a problem. These connections between apparently unlike entities are made by looking for similarities, analogies, or other comparisons between the two. Some famous inventions or discoveries may have occurred when people accidentally noticed comparisons between apparently unrelated situations (e.g., a prehistoric person devising a fishing

net after observing a spider catch flies in its web); problem-solving processes are designed to actively encourage the identification and application of those comparisons (Gordon, 1987).

Inventing new ways of meeting the individual educational needs of students within widely heterogeneous groups might be considered a naturally occurring forced relationship. On the surface, basic curricular and support needs (e.g., orienting toward a person who is speaking, activating an adapted microswitch, making requests, range of motion at the shoulder and elbow joints) would apparently have little relationship to traditional academic curricula (e.g., math, science, social studies, language arts). To solve the problem of meaningful instructional inclusion given this level of heterogeneity, we must take a situation that is strange to us and make it familiar by looking for the likenesses and potential connections between these two sets of diverse facts.

The following examples are composites based on field testing in elementary schools where problem-solving methods were used by adults and children. When considering the involvement of classmates in problem solving, it is important to include the students for whom potential solutions are being generated and to offer them age-appropriate choices when decisions that will affect them are being made. It is also important to clarify who (e.g., individual, teacher, class) will have the authority to decide which of the potential solutions will be used. Participation by the students with disabilities in such decision making is designed to avoid stigmatizing or embarrassing them or intruding on their privacy. In some cases, it may be difficult for students with severe expressive communication disabilities to offer opinions or give consent. When we know the person's ability to express ideas is compromised but do not know how much the person understands, we suggest that the least dangerous decision is to assume that the person understands all that is being said and done (Donnellan, 1984). Team members can further safeguard the rights and dignity of those with expressive communication challenges by (a) discussing the possibility of classmate participation with their parents, (b) closely observing their responses to our actions in an attempt to understand their wishes, and (c) continuing to explore alternative modes of communication that will allow them to exercise choice.

CPS Process Applied to a General Inclusion Challenge

The first and most obvious option available to users of the CPS process is to use the process in the sequence described by Osborn (1953) and Parnes (1988); this is where we started. During one early effort in a rural school, each stage of the CPS process was applied to the general mess,

"How can we include Amy (student with intensive needs) more as part of our class." The lesson was facilitated by the joint efforts of a second-grade classroom teacher, paraprofessional, and me after the class had been together for 2 months. (I am familiar with the CPS process.) Each stage of the CPS process was explained prior to its application. Using large chart paper and a round-robin method, the class engaged in fact-finding about Amy, her 20 classmates, the classroom, and school by using all of their senses to record a series of observations.

During problem-finding, the class was asked "Why do you want Amy to be more included in our class? What do we really want to accomplish?" Based on their answers, these second-graders clarified the problem and rephrased it as, "In what ways might we help Amy feel more welcome in our class?" Prior to having the class generate potential ideas, the second-grade teacher was asked if 30 seemed like a reasonable quota to set for the number of ideas the students would be expected to generate during the 10 min that were to be devoted to idea-finding. The teacher said that she would be happy with 20! The class was then divided in half, with the adults facilitating the groups' effort. Students were asked to offer ideas to meet the challenge of having Amy feel more welcome in the classroom.

Students were reminded that any idea was acceptable and that fun and wild ideas were encouraged. When the rate of idea generation slowed, randomly selected magazine pictures were shown to the students to purposefully stimulate ideas by searching for forced relationships between the photograph and the challenge. Students were encouraged to consider possible similarities, associations, and connections between the features of the picture and the challenge to generate potential solutions. Although some of the ideas ultimately were not used, the use of the forced relationships technique spurred others that were more usable. For example, when shown a picture of a tropical beach scene, one student enthusiastically blurted out, "Let's take her to Bermuda!" The next student said, "I could ask her to play with me in the sandbox during recess." This student apparently "hitchhiked" on the previous idea by identifying the similarities between the beach in Bermuda and facts she knew about her own schoolyard (e.g., both have sand used for play). When the 10 min were over, the class had generated 74 ideas!

Many of the ideas were directly related to information that had been identified during fact-finding. The teachers repeatedly referred students to their chart paper list of facts to stimulate ideas. For example, some of the facts generated by the class included (a) Amy uses a wheelchair to get from place to place, (b) kids have class jobs, (c) lunch is eaten in the cafeteria, and (d) Lucille the bunny is played with during recess by some

children. These observations by the students led to welcoming ideas that required a relatively small conceptual leap. Students said they could (a) push Amy in her wheelchair when she needed to go somewhere, (b) do their class job with Amy and that she could have a class job, (c) eat lunch with Amy, and (d) invite Amy to play with the rabbit with them during recess. This highlights the important relationship between facts and ideas.

During solution-finding analysis of the 74 ideas, it was determined that more than 50 of the ideas were usable by considering criteria like cost, time, opportunity, Amy's likes and interests, and classmates' likes and interests. As an aspect of acceptance-finding, the class decided to post the usable ideas that they generated in the classroom to encourage their use. As Alex Osborn said, "A fair idea put to use is better than a good idea kept on the polishing wheel" (cited in Parnes, 1988, p. 37).

In the days and weeks following the problem-solving activity, the classroom staff reported an increase in the frequency and types of interactions among Amy and her classmates. After a few weeks, the posted list of ideas was no longer necessary. Generalization occurred for some students who recognized that other students, those without disabilities, might benefit from being more actively welcomed in school (e.g., new students who move into the district and join the class later in the school year). The students formed this new connection by engaging in perspective-taking and initiating a new challenge, "In what ways might everyone in our class feel welcome?"

Although the use of the entire CPS process was perceived as beneficial by the classroom team, two major limitations were identified. First, the process took approximately 1 hr to complete for a relatively simple challenge. The time needed to solve a challenge typically is related to its complexity. Small challenges may be solved within a few minutes; complex challenges (e.g., environmental protection) may take years. As one teacher said, "While we do our best to plan ahead, many of our decisions about instruction are made on the fly; we need strategies for inclusion we can use on the fly." This concern spawned a new challenge, "In what ways can we integrate CPS methods into ongoing classroom activities so that they are quicker?"

The second limitation was that the welcoming activity did not deal with the nitty-gritty challenges faced by teachers such as, "What do I do with this student during the social studies lesson when her objectives are from totally different curriculum areas?" The following variations were designed to reduce the amount of time required to generate ideas and to address specific instructional challenges.

Idea-finding by students. One of the quickest and easiest variations we tried was to have the teacher define and present the challenge (mess

and problem-finding), give students their objectives and directions for the activity (partial fact-finding), and then ask them to generate ideas (idea-finding). For example, a class of third graders was preparing a mural as a culminating activity to their social studies unit on cities. The class was divided into four small groups of five students each. One group included Betty, a girl with intensive educational needs. The teacher assigned each group a different part of the city to draw and paint (e.g., downtown business/commerce area, residential neighborhoods, waterfront, industrial sites).

Using cooperative group skills (Johnson, Johnson, & Holubec, 1986) that the class had practiced throughout the year, each group was asked to reach a consensus about what would be included in their part and to decide who would be responsible for each aspect. Each group also had to coordinate with every other group so that when finished, the four pieces could be joined together to form a large mural of a city to be displayed in the hallway. The teacher told the students they should each be prepared to explain what they did within and between groups and why.

The teacher asked the class, "How can we make sure that Betty has ways to participate in this activity?" Mark said, "She's up there in her wheelchair and we're here on the floor with this big paper; we could get her out of her chair and bring her down here with us." Karen suggested, "It's good for Betty to have her arms moved, and I know blue is her favorite color; we could help her hold and move the paint brush to paint the sky and water." Janet said, "Betty could help carry our list of ideas to the other groups so that we can see how our parts will fit together." Justin said, "I like music when I paint; I think it would be cool if Betty used her switch to play some music on her tapeplayer while we work together." "Hey, that makes me think, maybe we could have Betty tape our list rather than writing it!" said Joe.

Merely given the opportunity and 1 or 2 min, students generated a variety of immediately useful ideas. Without formally considering the educational implications, students adeptly generated ideas that were consistent with their own needs and met some of Betty's goals (e.g., switch activation, accept assistance from others) and general support needs (e.g., range of motion, repositioning). Although knowing the CPS process is desirable so students can deliberately practice behaviors to encourage idea generation (e.g., deferring judgment, feeling free to give unusual ideas, stretching beyond the obvious), it is not essential because CPS uses and extends naturally existing human behaviors.

Idea-finding with a fact-finding back-up. When a teacher solicits input from students via idea-finding, as described in the previous

section, sometimes the students respond with sufficient quantity and quality to solve simple challenges, but this is not always the case; at times, students may get stuck for ideas. When this happens, backing up to fact-finding will often jar ideas loose. Using the previous example, the teacher may say, "Okay, what do we know about this activity?" As the students use their powers of observation to fact find, ideas are spurred. The teacher may continue to ask or rephrase probing questions to assist students in identifying facts. As a result, Andrea said, "We need to get paper and paints from the supply room (fact-finding); Betty could go to the supply room with us and help carry back the stuff and give it to the other kids" (idea-finding). Marc added, "We'll be painting with a lot of different colors; hey, maybe Betty could use her switch to turn on a fan. Then the paint would dry faster, and we could do more painting."

This option has appeal because of its quick, easy, and often effective nature. Its major limitation is that it may not explicitly address the educational goals of the student with intensive educational needs or those of the other students. The following variation attempts to maintain the short time expenditure so valued by many teachers while more explicitly addressing the need to ensure educational relevance.

Short-focused option of CPS for instructional inclusion. The following variation can be used cooperatively by students and teachers to plan instruction or individually by educators or support personnel. This variation is referred to as the *short-focused option* because it can often be completed in less than 10 min, and it is focused specifically on instructional inclusion challenges within heterogeneously grouped general education activities (see Table 3).

This variation begins with a preset challenge that combines the mess and problem finding in one step. The challenge is, "In what ways might we arrange this activity so that it addresses educational needs of the students with disabilities (e.g., individualized educational program [IEP] goals, other learning outcomes, and general support needs) and addresses the educational needs of other students?" The nature of the problem statement addresses a persistent challenge facing teachers who attempt to include all students in class varying activities and allows for a multitude of substitutions to match varying circumstances (e.g., students with different needs, different activities).

The focused aspect of this option refers to the fact-finding stage in which the types of facts come directly from the problem statement. Three major information categories referred to in the problem statement include the lesson/activity being taught (e.g., What is happening for class members during the activity?), the educational needs of the student with disabilities (e.g., learning outcomes, general supports),

TABLE 3
Short-Focused Option of the CPS Process: Basic Steps

Preparation	Be aware of the basic principles of CPS and apply them throughout this variation (see Table 1).
Step 1	Individualize the mess/problem using the start-up question, "In what ways might we arrange this activity so that it addresses educational needs of the students with disabilities (e.g., IEP goals, other learning outcomes, and access/instructional management needs) and addresses the educational needs of other students?"
Step 2	Focus fact-finding on three categories of information: (a) the lesson/activity being taught (e.g., What is happening for class members during the activity?), (b) the educational needs of the student with disabilities, and (c) the educational needs of other students. Other facts may be useful.
Step 3	Engage in idea-finding by exploring the associations, connections, similarities, and so on among the three categories of information by taking advantage of the naturally occurring forced relationships. Steps 2 and 3 may occur in a fluid, alternating manner rather than all facts first, then all ideas.
Step 4	Solution-finding is based on three basic criteria: (a) Does the idea address identified educational needs of the child with disabilities, (b) does the idea address identified educational needs of nondisabled students, and (c) is the idea perceived as usable by the classroom teacher? Select the solution(s) you wish to try.
Step 5	As part of acceptance-finding, set out a plan to implement the selected solutions and do it! Evaluate the implementation plan, and be open to new challenges to solve.

and the educational needs of other students. Although additional facts about the setting, characteristics of the students, or other categories would undoubtedly be relevant, this variation encourages focusing on these three sets of instructional information.

Once the facts have been identified, idea-finding is encouraged by referring directly to facts and by taking advantage of the naturally occurring forced relationships that exist among the educational needs of the student with disabilities, the educational needs of the other students, and the activity. Searching for similarities and connections among the facts and actively seeking possibilities that benefit all the students can generate solutions.

It is important that the mechanics of using the process do not interfere with its use. You may be consciously and unconsciously identifying facts and generating ideas and connections faster than they can be recorded; therefore, you may choose not to write every idea identified. In addition, you may decide to write some ideas immediately as they are prompted by the facts; this may result in a fluid process of naturally

alternating between fact-finding and idea-finding rather than the more linear approach of writing all the facts first and then writing all the ideas. If a sufficient number of usable ideas is not generated using the short-focused option, you may decide to devote more time to the challenge at a different time and use the CPS process in a more complete format.

Using the short-focused option, solution-finding includes three basic criteria: (1) Does the idea address identified educational needs of the child with disabilities, (b) does the idea address identified educational needs of other students, and (c) is the idea perceived as usable by the classroom teacher? Although users of the short-focused option may modify or add criteria, the basic criteria consider whether the idea is perceived as beneficial for students in the class, not exclusively the one with a disability label, and whether the teacher thinks the ideas are practical. Acceptance-finding completes the process as the teacher/class/team refine the selected ideas and plan to put them into action.

The following examples describe how the short-focused option was used to generate solutions to curriculum-overlapping challenges during a large group language arts lesson (see Table 4), a music class (see Table 5), and a spelling test (see Table 6).

The examples depicted in Tables 4, 5, and 6 are similar to many situations in which students with severe disabilities are placed in general education classes but may be uninvolved or separated within the classroom. The examples illustrate how the facts about a student, his or her classmates, and the lesson activity can be rearranged to create new experiences for the entire class.

Not every lesson activity will meet every need, yet in these examples, several were addressed. During the language arts activity (Table 4), Sam benefited because he would have opportunities to interact with materials between turns, respond to the presence of others, have range of motion done on his arms by giving students materials, use his switch, and following a series of instructions to engage in these various acts.

His classmates benefited because instruction was rearranged because of Sam's presence in class. While the teacher called on 1 student at a time for a turn, the other 22 students were not participating. It is conceivable that any of the 8 students who were not called on during the lesson could have answered all or many of the teacher's questions incorrectly, yet the teacher had no way of knowing. By shifting from a consecutive one-to-one approach to a whole-group game format, the teacher actively engaged each student in each of the 15 teaching trials. When the students were cued to raise their cards, the teacher had a quick and reliable method for determining whether students were

TABLE 4
Short-Focused CPS Option Example 1: Large Group Language Arts—Grade 3

Class activity: Large group language arts lesson on the parts of speech (e.g., noun, verb).

Student characteristics: Sam, an 8-year-old boy, communicates by others interpreting his facial expressions and vocalizations; gets from place to place being pushed in his wheelchair; has limited use of his arms and hands; requires adaptations and/or assistance to participate in most activities; does respond to sights and sounds, but inconsistently; likes to have his body moved because he has difficulty doing this himself.

Mess/problem-finding statement: "In what ways might we arrange this language arts activity so that it addresses some of Sam's educational needs and addresses the educational needs of his nondisabled classmates?"

Fact-finding

Sam's educational needs: Learning outcomes = makes choices about leisure activities using switch, responds to the presence of others by turning toward a person speaking to him, follows simple one-step instructions, sustains interactions with peers by maintaining facial orientation; general support needs = tube feeding, care for personal needs (e.g., dressing), range of motion to avoid joint contractures, teaching others about Sam's communication.

Lesson information: Students are arranged at desks in a U shape facing chalkboard; the teacher writes a sentence on the board and calls on a student to label the part of speech that matches a word the teacher is pointing to; the student responds verbally, and the teacher writes the correct answer on the board under the word. Twenty-three students are in the class; 15 each get one turn during the lesson. Sam sits passively at his desk throughout the lesson with an aide by his side. The lesson ends with the teacher offering suggestions for themes (e.g., a recent holiday) and asks pairs of students to develop a sentence that uses as many parts of speech as possible.

Other students' educational needs: Learning outcomes = identify/label parts of speech (e.g., noun, verb, adjective, adverb, pronoun, participle, and conjunction), define parts of speech (e.g., a noun is a person, place, or thing), have opportunities to practice, have opportunities for feedback.

Idea-finding (partial listing)

1. Have large tactile cards (each with a letter to represent each of the parts of speech) on Sam's desk for him to interact with during the lesson.
 2. When the teacher calls on a student he or she gets the appropriate card from Sam, giving him many opportunities to respond to the presence of the others by turning toward them.
 3. Have the aide or classmates help him hold and extend the card to the classmate as a way to address range of motion for his arms; the student tapes the card under the word.
 4. Each student in the class can have a set of smaller cards like Sam's tactile set. While the teacher continues to call on individual students to respond, he also asks members of the class to secretly select what he or she believes is the correct answer using their cards. He then has everyone hold his or her cards up at the same time as the student putting the card on the board.
 5. Rather than creating sentences from the holiday theme, students get a magazine photo from Sam and use it as a stimulus to create their sentences. Because the rate of completion varies widely, those who finish early will join Sam to tape record their sentences to be played by Sam to the large group when the teacher reviews the students' work.
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TABLE 5
Short-Focused CPS Option Example 2: Large Group Music—Grade 2

Class activity: Choral singing; French folk songs.

Student characteristics: Ann, a 7-year-old girl, communicates by reaching toward or pushing away objects, people, and so forth; gets from place to place being pushed in her wheelchair; requires adaptations and/or assistance to participate in most activities; responds visually to things within 1 ft, unknown hearing abilities; likes to be around other children and will try to touch or lean against others to interact.

Mess/problem-finding statement: "In what ways might we arrange this music activity so that it addresses some of Ann's educational needs and addresses the educational needs of her nondisabled classmates?"

Fact-finding

Ann's educational needs: Learning outcomes = functional object use, sustains interactions with others, establishes/maintains visual attention toward activity, imitates functional skills, works/plays at a task independently, summons others, uses switch to activate communication and leisure devices, increases tolerance to wearing head phones, increases tolerance to wearing glasses; general support needs = tube feeding, care for personal needs (e.g., dressing), repositioning.

Lesson information: Students arranged in two rows (nonassigned seats); the class comes to music after lunch, recess, and physical education. The teacher introduces a French folk song that is new to the class; song sheets are distributed and the students take turns reading the lyrics. One boy (Larry) encourages three others to misbehave in the second row. The teacher asks students for the meaning of certain words in the song (e.g., etiquette, fertile, pronunciation). The teacher turns on a tape with instrumentals to accompany the lyrics and sings the song through once before asking the class to join in. Finally, materials are collected. Throughout the lesson, Ann sits passively listening to whatever she is able to hear.

Other students' educational needs: Learning outcomes = choral singing, exposure and understanding of folk music within a different culture (French), vocabulary development.

Idea-finding (partial listing)

1. Parts of the reading of the song prior to singing could be prerecorded by a student and played by Ann using her switch and tape player.
 2. The switch and tape could also be used to play the instrumental music to accompany the class singing.
 3. The vocabulary words used during the lesson could be looked up in the dictionary by students who need extra work on their dictionary skills; Ann could be assisted with recording the words and the definition(s) using her switch and tape player; after the teacher has offered the class opportunities to define the vocabulary words, she could ask Ann to give the dictionary definition from her tape.
 4. Before he had an opportunity to misbehave, Larry could be given the important job of repositioning Ann's headphones she is learning to wear and glasses when she pushes them off.
 5. Ann could be assisted in the use of rhythm instruments while others are singing.
 6. Ann could increase interactions with peers by distributing and collecting some of the class materials.
 7. Through these activities she could practice object use, imitation skills, and visual attending.
-

TABLE 6
Short-Focused CPS Option Example 3: Large Group Language Arts--Grade 4

Class activity: Large group weekly spelling test

Student characteristics: Lynn, a 10-year-old girl, communicates by others interpreting her facial expressions; gets from place to place being pushed in her wheelchair; needs to be repositioned frequently to maintain physical comfort; has no functional use of her arms and hands (head and face movements are her only consistent voluntary movements); requires adaptations and/or assistance to participate in all activities; does respond to sights and sounds, but inconsistently; likes to have her body moved because she has difficulty doing this herself; seems to respond enthusiastically (e.g., smiles, wide eyes) to Elvis Presley recordings; enjoys having her long hair brushed.

Mess/problem-finding statement: "In what ways might we arrange this spelling test activity so that it addresses some of Lynn's educational needs and addresses the educational needs of her nondisabled classmates?"

Fact-finding

Lynn's educational needs: Learning outcomes = responsive to any type of stimuli including the presence of others, makes choices by eye or head turning or smiling, indicates the desire for the continuation of an activity, drinks liquids provided to her, eats soft foods, uses a switch (e.g., plays with toys, uses single response software on computer, listens to music), engages in class job with assistance; general support needs = personal care (e.g., eating, dressing, washing), physical needs (e.g., range of motion, repositioning).

Lesson Information: Teacher gives 15 new spelling words to students on Monday; during the week they practice reading and writing the words alone and in sentences, stories, and so forth. On Friday, the teacher gives the spelling test by saying the word, using it in a sentence and repeating the word; this sequence is completed for each of the 15 words. Students attempt to spell each of the words correctly by writing them on their paper; because this activity was perceived as too unrelated for Lynn to participate in she is seated at a table in the back of the room practicing the use of her head switch to listen to an Elvis tape. Some students consistently do well on their spelling tests and others do not.

Other students' educational needs: Learning outcomes = correctly spell the 15 assigned words.

Idea-finding (partial listing)

1. Prior to Friday, the teacher could identify a small group of students who may need extra help on the spelling words for the week to work with the classroom aide and Lynn. The students could practice together and receive adult feedback while Lynn tape records their efforts using her head switch and the tape recorder/player.
 2. Because spelling tests of this sort are typically a teach to the test situation, the teacher could provide the aide and students with the exact sentences to be used in the spelling test (they already have the words). Once the students have some practice, they can tape the test exactly as it will be given using the word-sentence-word format with the aide available to ensure quality and clarity.
 3. When the test is given, Lynn can help give the test using her switch. Because she is still learning and not that reliable yet, the switch could be attached to a timer to ensure that a test item would be presented in its entirety even if Lynn's head fell off the switch.
 4. The switch could be arranged so that Lynn is listening to Elvis tapes while the students are writing their answers (via a different electrical configuration).
-

achieving their objectives. By slightly rearranging the activity, students' motivation to attend was increased. The suggested changes in each of the three example activities allowed some students to get extra feedback from an adult and provided them with additional practice opportunities (e.g., dictionary use, spelling, speaking, parts of speech).

The ideas generated not only met student goals but also allowed the student with disabilities to be observed engaging in competent behaviors made more competent by the use of individualized adaptations (e.g., switches and timers). This is consistent with the definition of partial participation of Baumgart et al. (1982), which states in part, "Partial participation in school and nonschool activities should result in a student being perceived by others as a more valuable, contributing, striving, and productive member of society" (p. 19). Therefore, the use of CPS variations to promote curriculum overlapping may result in improved perceptions of students with disabilities and subsequent indirect benefits.

Although not listed in the three examples, the short-focused CPS option continues with solution finding as ideas are analyzed based on criteria. Analysis of the ideas indicated that they clearly met the first two criteria (i.e., meeting the educational needs of the student with disabilities and those of his or her classmates) and potentially met the third (i.e., being considered usable by the teacher). Accepting-finding completes the process as selected solutions are refined and a plan of action is set in motion. For example, acceptance-finding for the language arts lesson (Table 4) might consist of setting out a plan to make the tactile cards and the set of cards for each student, having a blank tape and Sam's switch materials ready, and cutting out magazine photos. These tasks could be done by classmates to overlap some of their other educational needs.

EVALUATING EFFECTIVENESS OF CPS

In any educational innovation, it is crucial to evaluate the effectiveness of an approach to determine whether it is achieving its intended outcomes. As outlined in the problem statement and the criteria used during solution-finding, the use of CPS for instructional inclusion is designed to (a) increase the frequency and quality of instructional involvement within heterogeneous groups, (b) meet the educational needs of the student with disabilities, (c) meet the educational needs of other students, and (d) provide a support mechanism and instructional adaptations for the teacher.

Use of standard measurement techniques such as frequency counts,

time samples, and item-by-item ratings of specific target behaviors may be useful to answer certain evaluation questions, and teachers may augment such data collection with more user-friendly forms of measurement to gather different types of information (Meyer & Janney, 1989). Table 7 provides an example of a user-friendly approach to evaluating CPS variations as methods to facilitate inclusion. For example, the music teacher in Example 2 (Table 5) could check the PRE space and fill out the Evaluation of Intervention Impact on Inclusion form (Table 7) based on music classes conducted over the last month. This could serve as a quick overview of the current situation without interfering with instruction. Once the CPS strategies had been learned and applied for a sufficient amount of time, the teacher could check the POST space and fill out the same Evaluation of Intervention Impact on Inclusion form. This would offer a relatively simple and quick pre- and postmeasure of intervention impact as perceived by the teacher or other appropriate persons based on intended outcomes.

Such an evaluation component does not necessarily produce reliable responses among team members (e.g., teacher, parent, students, integration specialist, principal). Therefore, the evaluation form could be used to establish or enhance the team's collective understanding of the educational program and development of a shared framework for adjusting instruction. If various team members independently complete the evaluation form and subsequently explore the reliability among their responses, they can identify and discuss similarities and differences in an effort to solidify their common understanding and, as a result, improve their teamwork.

FUTURE DEVELOPMENT

The use of CPS variations to facilitate instructional inclusion within heterogeneous groups offers exciting possibilities to tap the creative abilities of all team members and develop mechanisms for internal classroom supports. These approaches can provide new alternatives in settings where educators, parents, and students are willing to try new ideas and be flexible in their approaches to education. Adults must be willing to allow constructive input from the most important consumers, our students. The CPS variations are unlikely to thrive in situations where teachers exclusively use didactic teaching approaches (e.g., monolog lectures, programmed workbooks).

A question raised by some advocates is whether the use of CPS variations applied to inclusion challenges unnecessarily draws attention to the student with disabilities when classmates participate in the

TABLE 7
Evaluation of Intervention Impact on Inclusion: ____ PRE or ____ POST

Student name _____ Grade/placement _____

Lesson/activity _____

Lesson/activity time of day _____ Length of lesson/activity _____

Observation dates: from _____ to _____ Number of observations _____

Teacher(s) of the lesson/activity _____

Name of respondent _____

Describe the extent of involvement (e.g., how, what) for the student with special needs in the lesson/activity: _____

Average number of minutes of participation: ____ min out of a total of ____ possible minutes

Average number of opportunities/turns for participation per lesson: ____

Compared to classmates, the time and opportunities for participation by this student typically are:

____ significantly less ____ slightly less ____ about the same ____ more

Based on your observations of the lesson/activity prior to _____ (list intervention):

1. How involved was the student in the lesson/activity?

Not involved											Very involved
1	2	3	4	5	6	7	8	9	10		

Comments:

2. How much did the student benefit educationally (based on his/her individual educational program) from participation in the lesson/activity?

Not at all											Very much
1	2	3	4	5	6	7	8	9	10		

Comments:

3. Did you have a clear idea which of the student's individual goals and objectives could be addressed during this lesson/activity?

Not at all clear											Very clear
1	2	3	4	5	6	7	8	9	10		

Comments:

(Continued)

would be desirable, if the child's wishes are unable to be understood; and (c) not limiting the use of the tool to challenges relating only to the person with disabilities. If we ask the relevant people, offer them choices, and apply the same standards of privacy to all students, we can significantly decrease the risks that may be present when including students in problem-solving activities.

The CPS variations should be viewed as one of a number of strategies available to educators who wish to pursue inclusive education. In combination with supportive organizational structures, collaborative planning and implementation, transition planning, home-school collaboration, and the continued improvement of exemplary educational practices, tools like the Osborn-Parnes CPS process can play a vital role in school restructuring to educate all students in neighborhood schools (Fox & Williams, 1991). Although the Osborn-Parnes CPS process has been used and researched for more than 3 decades in advertising, business, and education (Parnes, 1988, 1992), its application as a tool to facilitate inclusion is in its infancy. The ideas presented in this article are not well-defined guidelines but initial attempts to stimulate further development and variations that might assist teachers in becoming increasingly competent at curricular and instructional adaptation.

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