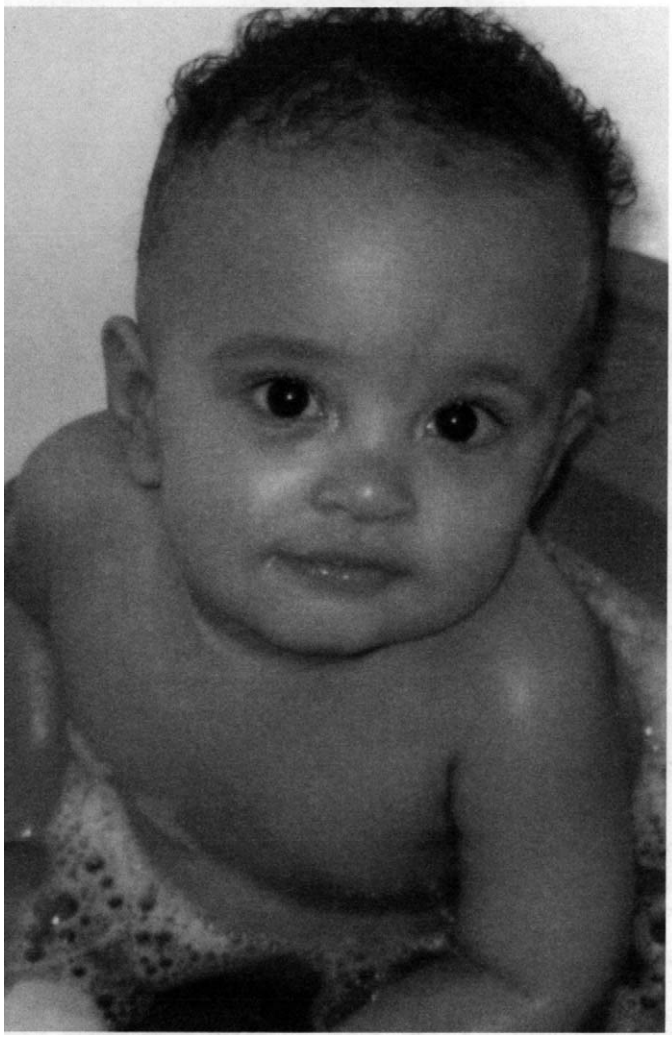

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Teaching the Use of a Problem-Solving Process to Early Childhood Educators

Preservice teachers and current teachers alike face daily challenges that necessitate problem-solving skills. Snell and Janney (2000) note, " ... teaching can be viewed as an ongoing process of problem solving" (p. 472). To this point, DEC's Recommended Practices for personnel preparation include providing preservice teachers with experiences in problem-solving as a recommendation for personnel preparation programs (Miller & Stayton, 2004).

Conducting problem solving as a part of a group of professionals and the child's family can be beneficial because it encourages the offering of many perspectives, which allows for better understanding of the problem context (Webster, Knotek, Babinski, Rogers, & Barnett, 2003). This is likely to lead to better solutions. However, a systematic approach to problem solving is not always used. Indeed, Snell and Janney (2000) found that teachers often informally address problems by acting on them without devoting sufficient time to activities such as brainstorming and evaluating potential solutions.

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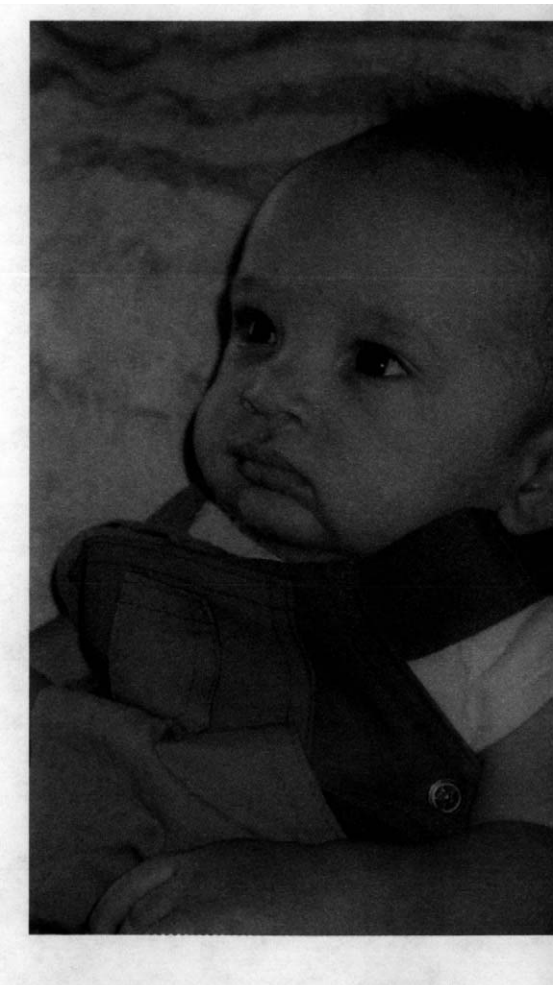
Evidence of Effectiveness

Research suggests that teachers' use of a formal problem-solving model can have many positive effects. For example, Pugach and Johnson (1995) found several benefits when teachers were taught and used a structured problem-solving process to facilitate inclusion including: (1) an increase in teachers' confidence in addressing problems, (2) a more positive outlook by teachers on their classrooms, (3) more positive perceptions of children's acceptable cognitive functioning, and (4) a decrease in teachers' referrals to special education. Johnson and Pugach (1996) also found that teachers' training in and use of a peer collaboration model resulted in the development of specific, simple classroom interventions, which teachers reported were largely successful. Similarly, in a study by Salisbury, Evans, and Palombaro (1997), after teachers participated in a problem-solving training, they indicated that children's social, physical, and instructional needs were better met. Moreover, Hunt, Soto, Maier, Liboiron, and Bae (2004) evaluated teachers' collaborative teaming. Their research indicated positive changes in young children's engaged behavior and social interactions in general education placements when a problem-solving process was implemented. Pohlman, Hoffman, Dodds, and Pryzwansky (1998) found that student teachers often overlooked peers as sources of support in problem solving. Thus, a systematic approach to learning and practicing problem solving also may help preservice teachers to consider peers a resource in developing solutions to their greatest classroom challenges.

Supporting Teachers' Use of Systematic Problem Solving

To ensure that training leads to acquisition and application of knowledge and skills "in the real world," Joyce and Showers (1980) suggest that the strategy to be learned (e.g., a problem-solving strategy) is described in detail followed by modeling or demonstrating the strategy. These authors suggest that student teachers then be provided the opportunity to practice the strategy and receive feedback on their use of the strategy. Finally, it is important that preservice teachers be provided opportunities to apply the problem-solving strategy in the field with assistance.

Many researchers have suggested steps for a problem-solving process (Elliot & Sheridan, 1992; Fishbaugh, 2000; Margolis & Brannigan, 1987; Pugach & Johnson, 1995; Welch, 1999; Zins & Ponti, 1996). Borrowing predominately from the work of Pugach and Johnson (1995, 2002) and Margolis and Brannigan (1987),



we propose a six-step process for problem solving (see Table 1) that can be implemented to address issues that preservice teachers face. Preparing student teachers to use this process in preservice programs has the potential to help future educators consider alternate ideas when confronting problems that need to be addressed or solved.

Six Steps to Solving Problems

In the following sections we describe each of the six steps of the problem-solving process in turn. To assist preservice teacher preparation programs in implementing instruction on and providing opportunities for practicing application of the process, a vignette is provided.

Jessica is one of 10 early childhood special education graduate students who attend a weekly seminar for preservice students enrolled in field placements. The seminar instructor spends part of the first night of class describing and demonstrating the problem-solving process. Over the course of the semester, each student will have at least two opportunities to practice the strategy by bringing in "salient situations" from their field placements. The instructor lists the six steps of the problem-solving process on the whiteboard each class session as a visual reminder for all the students to follow the steps carefully.

Table 1
Six Steps to Solving Problems

Step 1:	Describe the problem
Step 2:	Analyze the problem
Step 3:	Brainstorm ideas for addressing or resolving the problem
Step 4:	Prioritize and evaluate the suggestions in terms of what might work to resolve the problem
Step 5:	Make a decision and implement the suggestion
Step 6:	Report back to the group about the outcome of the solution

Step 1: Describe the Problem

The person who is dealing with an issue (i.e., a "salient situation" to him or her) explains the problem to a group of peers. The presenter states what happened and what he or she thinks or feels about the issue. This presentation of the problem may be done in writing or verbally.

Jessica's preservice practicum classmates and the instructor are sent salient situations by e-mail prior to the seminar so that they can read and reflect on them. Using fictional names to ensure confidentiality, Jessica e-mails the following salient situation to her graduate student colleagues on a Monday evening before Wednesday's seminar:

"Alyssa, a four-year-old girl in my preschool setting, loves to interact with adults and children. When she is engaged in an activity that she wants to do, she is focused and motivated. However, when she is asked to

do something that she is not interested in, she will get a blank look on her face and seems to not listen. For example, she loves to build huge block structures but will not pick up during clean-up time. It is a tremendous struggle to get her to clean up, so much so that she usually misses most of the subsequent group time. The classroom team put Alyssa in charge during clean-up time (e.g., allowing her to ring the bell then help move the props to large group time) and that worked for a while but is not working anymore."

Jessica has identified the problem in general terms as a need for strategies to help Alyssa understand that there are things that people have to do even if they do not want to do them. Specifically, Jessica wants suggestions on how to get Alyssa to clean up without a struggle.

Step 2: Analyze the Problem

The group asks the presenter questions to better understand the problem. Open-ended questions are encouraged to gather more information about the problem, clarify facts, and to learn more about the perceptions of the presenter. Yes/no questions, advice giving, and providing solutions should be avoided during this step of the process. Webster and colleagues (2003) found that advice-giving phrased as questions and statements resulted in hasty solutions because the problem issues were not fully discussed. Welch (1999) suggests asking questions such as the following: "Who is involved?, What is taking place?, Where and when is this occurring?" (p. 364). Additionally, Welch recommends asking about the history of the situation to determine how long it has been occurring and what strategies have been tried in the past. The goal in this step is for the presenter to elaborate on the issue so it is clearly defined and understood by those who will be offering suggestions.

During Wednesday night's seminar, the other student teachers ask Jessica questions, such as: (1) What types of activities usually occur during large group time? (2) What are the adults doing with Alyssa when she misses group time? (3) How does clean-up typically work in the classroom? (4) What do you think Alyssa wants to do instead of participating in large group time? and (5) How might Alyssa's disabilities impact her ability to participate in cleaning up?

Jessica responded to these questions by sharing the following information. During large group the students typically talk about the daily schedule, the weather, who is present/absent, and they listen to a story. Clean-up time is signaled by the "helper of the day" ringing a bell, after which the children are instructed to put away materials in the areas where they played for the past hour. When Alyssa does not help clean up, an adult typically stays with her in the block area and helps her put away the materials, often one block at a time. This teacher then guides Alyssa to large group time and sits behind her in the circle. Instead of participating in large group, Jessica reports that she

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believes Alyssa would be happy playing in the block area for the majority of the day if given the choice. Jessica states that she is not sure if Alyssa's hearing impairment or high activity level impact her reluctance to clean up, for Jessica has seen Alyssa follow directions and move to circle time easily on some days.

Step 3: Brainstorm Ideas for Addressing or Resolving the Problem

The group offers ideas, suggestions, possible solutions, or a course of action regarding the problem that has been described. Snell and Janney (2000) reported that teachers often were under pressure to solve classroom problems and did so prematurely without moving carefully through the problem-solving process; consequently, they generated potential solutions before there was an adequate sharing of ideas. Taking time for brainstorming is vital. In this step, every idea is valued and considered without being evaluated (Welch, 1999). Creativity should not be limited. The intent is simply to identify any possible alternative to what is currently happening.

Interestingly, Pohlman and colleagues (1998) found that at this stage, student teachers' ideas usually focused on actions they could take individually while excluding resources that could be provided by other professionals and partnerships. However, the focus should be on developing new and varied ideas to address the problem, including ideas that tap resources previously not considered. Fishbaugh (2000) suggests recording each idea without reference to who suggested it to stress the group problem-solving process over any one individual.

Once Jessica's seminar classmates feel they have all of their questions answered and they fully understand the situation, they generate possible solutions to address Jessica's concerns about Alyssa. One seminar student volunteers to be the note taker, listing all solutions generated by the group without reference to who suggests which ones. Some of the solutions offered by Jessica's nine peers and the seminar instructor are: (1) using if-then statements whereby Alyssa earns privileges once she is done cleaning up her part of the block area; (2) making clean-up time a game; (3) creating social stories (Gray, 2000) that include a character named Alyssa in the stories; (4) collaborating with Alyssa's parents to see what works at home and implementing a similar strategy at school; (5) showing a visual picture schedule to Alyssa 3 minutes prior to clean-up time as a warning that center time will soon end; (6) using time-out when Alyssa does not help clean up; and (7) finding a space where Alyssa can save her block creation and continue working on it during the next center time period. As the group engages in brainstorming, their instructor reminds them to refrain from evaluating the proposed solutions.

Step 4: Prioritize and Evaluate the Suggestions

The group next focuses on prioritizing the suggestions and evaluating each in terms of what might work to resolve the problem. The presenter states his or her preferences from among the suggestions, articulating the criteria with which the solutions are evaluated. Criteria might reference how "do-able" or feasible the solution is, ethical issues, and the philosophy of the classroom. Other criteria might be the allocation of resources, such as people, information, technology, physical resources, and finances (Welch, 1999). Snell and Janney (2000) found that teachers evaluated suggestions based on what they knew about the child, their beliefs about the child and learning, and the classroom situation.

Jessica evaluates the potential solutions, describing to the group of student teachers her discussions with Alyssa's parents about their frustrations in attempting to get their daughter to help clean up at home. She also describes past efforts at making clean-up time a game and having Alyssa earn special responsibilities if she participates in clean-up. Jessica tells her classmates that her cooperating teacher does use a visual schedule with Alyssa, and that she forgot to mention this when describing her salient situation. Jessica also reports that time-out is not used in her classroom, and there is such limited space that she seriously doubts if her cooperating teacher would agree to allow Alyssa and the other students to "save their creations" until another time. Jessica particularly likes the idea of social stories and since Alyssa is extremely fond of books, Jessica thinks that this strategy might produce the type of results she hopes to achieve. She decides that she will present the list of ideas to her cooperating teacher in the morning and see if Mrs. Finnigan supports her in writing a social story for Alyssa. Given that Mrs. Finnigan is aware of the problem-solving process used in the seminar, Jessica feels comfortable sharing her peers' ideas with her cooperating teacher.

Step 5: Make a Decision and Implement It

The presenter describes the solution that will be tried and implements the suggested solution. Specific plans for intervening are developed along with a timeline and a means for keeping track of the solution's effectiveness. It is extremely important to evaluate the impact of the solution on the problem situation. As Giangreco (1993) notes, professionals should "Look at problems as opportunities. Every 'problem' we encounter has something to teach us" (p. 18).

When Jessica returns to her classroom, she makes a plan with her team (her cooperating teacher, Mrs. Finnigan, and the teaching assistant) to develop three social stories about clean-up time, with a character named Alyssa assuming a primary role

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in the stories. They decide to take anecdotal notes for three days on Alyssa's typical behavior during clean-up as a way to document current performance and to compare changes (should they occur) following implementation of the social story strategy.

The team tries the social story strategy across multiple days, keeping notes on how often and how much Alyssa assists in clean-up time after hearing the story. Several variations of the story are created to provide some novelty, and photographs as well as child drawings are used in the various creations of the story line. After two weeks of using social stories, Jessica is able to see reflected in her anecdotal notes that the stories appear to have positively impacted Alyssa's participation in clean-up time. Jessica and her classroom team decide to continue to monitor Alyssa's progress, adding new stories occasionally to maintain the novelty.

Step 6: Report the Outcome of the Solution

Based on data collected during implementation, the presenter gives an account of the success or failure of the solution, evaluates whether the proposed solution has had its intended effect, and seeks additional input, if needed, from the group. If the implemented strategy was unsuccessful, the group can look again to the list brainstormed (Fishbaugh, 2000) in Step 3 and begin problem solving again. In addition to deciding if the strategy successfully addressed the problem, Johnson and Johnson (1997) suggest that the group talks about the extent to which the solution was easily and successfully implemented. For student teachers learning about this process in a seminar, this discussion might occur at mid-term and at the end of the semester, as well as any time in between. This step provides student teachers with the opportunity to reflect on the positive outcomes of the ideas that they generate or the opportunity to design new interventions.

Jessica is happy to report to her seminar classmates that Alyssa's participation in clean-up time has increased dramatically since the classroom team began using social stories.

Conclusion

A problem-solving strategy such as the one described in this article teaches acceptance for diversity of opinion, and it values shared decision making as well as perspective taking (Englert, Tarrant, & Rozendal, 1993; Johnson & Johnson, 1994; Mattessich & Monsey, 1992; Parnes, 1988; Salisbury, Evans, & Palombaro, 1997). The process relies on a willingness to change current practices. When implemented by teams of professionals, the problem-solving process also teaches the value of reaching consensus. This problem-solving strategy can help preservice and practicing teachers address the notion that their own behavior is changeable and is the first place to look when routine practice is not successful (Good & Brody, 1987).

This process can encourage current and future education professionals to recognize that simple changes in the way they teach can greatly increase their ability to address the classroom challenges they face (Johnson & Pugach, 1996), bearing in mind that the time needed to solve a challenge typically is related to its complexity (Giangreco, 1993).

Teachers then have the potential to address a wider range of student problems than may have previously seemed possible as they apply these newly acquired skills to the range of instructional challenges they encounter in early childhood settings (Giangreco, 1993). Finally, assisting teachers in questioning what constitutes appropriate practice when they encounter students who are not responsive to existing classroom expectations should help develop teacher confidence in making and sustaining change, especially if those changes result in student success and are found to be well within a teacher's expertise (Johnson & Pugach, 1991; Pugach & Johnson, 1995). Ideally, after student teachers work through the problem-solving process with their peers and it becomes intuitive, they will find themselves using it naturally as new issues emerge. As these student teachers enter the teaching profession and develop relationships with trusted colleagues, they are likely to share the problem-solving process and continue to benefit from the process.

Whether applied to classroom practices, teaming issues, or school policies, gathering input from colleagues using the six-step problem-solving process offers opportunities to change the classroom and school culture in ways that benefit everyone (Salisbury et al., 1997). The results are surely worth the investment of time to teach future early childhood educators such a process.

Notes

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References

Elliot, S. N., & Sheridan, S. M. (1992). Consultation and teaming: Problem-solving among educators, parents, and support personnel. *The Elementary School Journal, 92*, 315-338.

Englert, C. S., Tarrant, K. L., & Rozendal, M. S. (1993). Educational innovations: Achieving curricular change through collaboration. *Education and Treatment of Children, 16*, 441-473.

Fishbaugh, M. S. (2000). *The collaboration guide for early educators.* Baltimore: Paul H. Brookes.

Giangreco, M. F. (1993). Using creative problem-solving methods to include students with severe disabilities in general education classroom activities. *Journal of Educational and Psychological Consultation, 4*(2), 113-135.

Good, T. L., & Brody, J. E. (1987). *Looking in classrooms* (4th ed.). New York: Harper & Row.

Gray, C. (2000). *The new social stories.* Jenison, MI: Future Horizons.

Hunt, P., Soto, G., Maier, J., Liboiron, N., & Bae, S. (2004). Collaborative teaming to support preschoolers with severe disabilities who are placed in general education early childhood programs. *Topics in Early Childhood Special Education, 24*, 123-142.

Johnson, D. W., & Johnson, F. P. (1997). *Joining together: Group theory and group skills.* Boston: Allyn & Bacon.

Johnson, R. T., & Johnson, D. W. (1994). An overview of cooperative learning. In J. S. Thousand, R. A. Villa, & A. I. Nevin (Eds.), *Creativity and collaborative learning: A practical guide to empowering students and teachers* (pp. 31-44). Baltimore: Paul H. Brookes.

Johnson, L. J., & Pugach, M. C. (1996). Role of collaborative dialogue in teachers' conceptions of appropriate practice for students at risk. *Journal of Educational and Psychological Consultation, 7*(1), 9-24.

Johnson, L. J., & Pugach, M. C. (1991). Peer collaboration: Accommodating students with mild learning and behavior problems. *Exceptional Children, 57*, 454-461.

Joyce, B., & Showers, B. (1980). Improving inservice training: The message of research. *Educational Leadership, 37*(5), 379-385.

Margolis, H., & Brannigan, G. G. (1987). Problem solving with parents. *Academic Therapy, 22*, 423-425.

Mattessich, P. W., & Monsey, B. R. (1992). *Collaboration: What makes it work.* St. Paul, MN: Amherst Wilder Foundation.

Miller, P. S. & Stayton, V. D. (2004). DEC recommended practices: Personnel preparation. In S. Sandall, M. L. Hemmeter, B. J. Smith, & M. E. McLean (Eds.), *DEC recommended practices in early intervention/early childhood special education* (pp. 189-211). Longmont, CO: Sopris West.

Parnes, S. J. (1988). *Visionizing: State of the art processes for encouraging innovative excellence.* Buffalo, NY: Creative Education Foundation.

Pohlman, C., Hoffman, L. B., Dodds, A. H., & Pryzwansky, W. B. (1998). Utilization of school-based professional services: An exploratory analysis of perceptions of mentor teachers and student teachers. *Journal of Educational and Psychological Consultation, 9*, 347-365.

Pugach, M. C., & Johnson, L. J. (2002). *Collaborative practitioners, collaborative schools.* Denver, CO: Love Publishing.

Pugach, M. C., & Johnson, L. J. (1995). Unlocking expertise among classroom teachers through structured dialogue: Extending research on peer collaboration. Exceptional Children, 62, 101-110.

Salisbury, C. L., Evans, I. M., & Palombaro, M. M. (1997). Collaborative problem solving to promote inclusion of young children with significant disabilities in primary grades. *Exceptional Children, 63*, 195-209.

Snell, M. E., & Janney, R. E. (2000). Teachers' problem solving about children with moderate and severe disabilities in elementary classrooms. *Exceptional Children, 66*, 472-490.

Webster, L., Knotek, S. E., Babinski, L. M., Rogers, D. L., & Barnett, M. M. (2003). Mediation of consultee's conceptual development in new teacher groups: Using questions to improve coherency. *Journal of Educational and Psychological Consultation, 14*, 281-301.

Welch, M. (1999). The DECIDE strategy for decision making and problem solving: A workshop template for preparing professionals for educational partnerships. *Journal of Educational and Psychological Consultation, 10*, 363-375.

Zins, J. E., & Ponti, C. R. (1996). The influence of direct training in problem solving on consultee clarification skills and attributions. *Remedial and Special Education, 17*, 370-376.