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The Future Problem Solving Program

Students learn to think creatively and to communicate effectively as they develop proposed solutions to world problems.

• The summer of 1988 saw many regions of the United States parched by drought. Meteorologists speculated that the change in climate was due largely to the Greenhouse Effect, a warming of the earth's atmosphere caused by man-made pollutants. The Greenhouse Effect was a startling new concept to many—but not to students who had studied the topic in the 1984–85 Future Problem Solving Program.

• When a barge heaped with garbage left Islip, New York, to sail aimlessly in search of a dumping ground, it gained worldwide notoriety. The youngsters who had studied garbage disposal in the 1986–87 Future Problem Solving Program could have predicted such an episode. In fact, more than one team of Future Problem Solvers had suggested a comparable scenario as a way to draw public attention to the issue.

For the past 15 years, students from all over the United States and the world have been participating in the Future Problem Solving Program, tackling some of the most complex challenges facing society. These challenges have ranged from those with an emphasis on science (robotics, acid rain, shrinking tropical forests, energy sources, industrialization of space, genetic engineering, nutrition) to those oriented toward the humanities (poverty, youth and the law, education, the elderly, new forms of employment, immigration, terrorism). Each year the program focuses on five different topics. These are selected by tens of thousands of students around the world who vote for the topics of greatest interest to them.

Beginnings

In 1974, E. Paul Torrance, working with a group of high school students in Athens, Georgia, created the Future Problem Solving Program. Torrance had two major concerns: (1) he believed that the schools needed to do more to help students develop their creative talents, and (2) he believed that students should be looking to the future and becoming aware of issues they would encounter as they entered adulthood. To address both concerns, Torrance taught his students to use the creative problem-solving process developed for business and industry by Alex Osborn (1967) to examine problems related to the future.

The high school students with whom Torrance first worked were enthusiastic and requested more problems to solve, so Torrance agreed to develop additional materials for the next year. As students told other students and teachers told other teachers, more and more people became interested in the project. Within 10 years, the project created as a month-long curriculum unit in one high school had developed into a yearlong program reaching approximately 175,000 young people all over the world.

The Process

The offerings and the materials of the program have been refined over the

Photograph by Paul Barker, Deseret News

As part of their Community Problem Solving effort, 6th graders from Jackson Elementary School in Salt Lake City inspected a local dump site where over 40,000 barrels, some containing residue of hazardous wastes, were rusting in the open air.

years, but the problem-solving process taught by Torrance in the first days of the program is essentially unchanged:

1. Research and learn as much as possible about the general topic.
2. Brainstorm problems related to the specific situation presented.
3. Identify a major underlying problem from the list of brainstormed problems.
4. Brainstorm solutions to the underlying problem.
5. Develop a list of criteria by which to evaluate the solutions.
6. Evaluate the solutions according to the criteria to select the best solution (Crabbe 1988a).

Working in teams of four, students complete three practice booklets during the year. These booklets contain the results of the team's problem-solving efforts. By designated dates, the teams send their work to trained evaluators to be scored and returned with comments to help the team improve. The third effort is competitive, and the highest-scoring teams receive invitations to participate in State Future Problem Solving Bowls held in the spring. The winning teams from State Bowls are invited to participate in the International Future Problem Solving Conference held each June at the University of Michigan.

Practice Problems

Each practice problem begins with a Fuzzy Situation, a description of a specific situation related to the general topic. The "fuzzies" are futuristic scenarios based on information extrapolated from general knowledge about the topic.

After brainstorming problems that might arise in the Fuzzy Situation (of which 20 may be included in the booklet submitted for evaluation), the students then turn to identifying a major underlying problem. This should be a problem that, if solved, may directly or indirectly solve several other problems. Once agreed upon by the team members, the underlying problem is put into question form, beginning with one of two phrases, "How might we . . . ?" or "In what ways might we . . . ?" When writing their underlying problems, teams should include whatever conditions they consider important.

There are no "right" answers in this step—or in any of the other steps, for that matter. Based upon their research, the Fuzzy Situation, and their own insights, the students themselves must decide on the best responses. The lack of right or wrong answers is often disturbing to students who have become dependent on the fill-in-the-blanks short answers common in schools today. This "grayness," however, is one of the primary strengths of the Future Problem Solving Program. The lack of a right answer forces students to make choices—and decision making is a skill they will definitely need if they are to be successful in the future.

The next step, that of generating solutions to the underlying problem, requires students to combine the information gleaned from their research with their own creative ideas. They must think of novel ways to solve their problem and are, in fact, rewarded for originality. Evaluators give extra points for each solution that is unique and still within the realm of possibility.

After the students have brainstormed many solutions, they record the 20 most promising ones in their booklet to be reviewed by evaluators. Then they reduce the list still further to 10 solutions to be considered for the best solution. These 10 are then evaluated against five criteria developed by the team. The criteria may be generic (such as "Which solution will be the least costly to implement?" or "Which solution will be the most widely accepted by the residents?"), or specific to the situation (such as "Which solution will require the least use of cumbersome space suits?" or "Which solution might be accomplished using the least amount of imported goods?").

After all 10 solutions have been evaluated according to each of the five criteria, the scores for each solution are added, and the highest-scoring solution is identified as the best. The students complete their booklet by describing their best solution as a proposal for solving the underlying problem.

Determined to clean up the waste dump, the students visited the Utah State Capitol to learn how to lobby from their local house representative.

Photograph by Gary McKellar, Deseret News.

Program Components

The Future Problem Solving Program serves students K-12, plus college students as well. A variety of components have been developed to pro-

vide services for students in diverse circumstances.

The Regular Program now serves young people in grades 4 through 12, with divisions based on grade levels (juniors, grades 4–6; intermediates, grades 7–9; and seniors, grades 10–12). The Primary Division offers a similar format for younger students, as well as for students who are just beginning in the program and for whom the Regular Program materials might be too complex. In this division, both the problem-solving process and scoring procedures are simplified and abbreviated. These children also complete and mail in three practice problems for evaluation and feedback; however, the emphasis is purely instructional, and there is no competition in this division.

Another component of the program is the Community Problem Solving Division, which challenges students with experience in the program to solve real problems in their own communities. This division is growing in popularity and is affecting communities in dramatic ways. To illustrate: an experienced team of 6th grade problem solvers at Jackson Elementary School in Salt Lake City were concerned about the 40,000–50,000 barrels of toxic waste that were stored only three blocks from their school, especially because this area was a site many children had used as a "playground." The team contacted the Division of Environmental Health to learn how to get the barrels removed and to offer their help. They were told, "There is nothing children can do to affect the situation."

But these kids had come to believe that they could indeed have an impact. Before these 6th graders were done, they had:

- visited with the mayor and other city officials about the problem;
- initiated a movement that resulted in the removal of the barrels at the rate of 1,500 barrels per week;
- worked with a state legislator to draft legislation to create a state contributory fund to clean up hazardous waste in the state;
- attended, as special guests, the governor's signing of the state bill creating a clean-up fund; and

An experienced team of 6th grade problem solvers initiated a movement to remove 40,000–50,000 barrels of toxic waste stored only three blocks from their school.

- contributed the first sum of money to the clean-up fund (raised through a white elephant sale and contributions from local businesses).

The "Clean-Up Kids" became local celebrities: they appeared on television several times and were the subjects of several newspaper and magazine articles. Their efforts not only helped the city and state but had an uplifting effect on their school and, of course, on them personally. These kids had learned that they *could* make a difference and refused to accept otherwise (Crabbe 1988b).

Skill and Attitude Development

Besides learning about topics that will affect their future, the young people in Future Problem Solving learn skills crucial to their success in the future. Primary benefits of participation include learning a problem-solving model that can be applied to any facet of life and learning the skills necessary to work as a productive member of a team, skills that are promoted on athletic fields but usually ignored in classrooms. Students also strengthen their communication skills when they find that having a good idea is not enough; they must be able to convey the idea orally to their teammates and in writing to the evaluators who score their work. Students also learn to analyze and evaluate information directly or indirectly related to a problem; they quickly learn the difference between fact and opinion as they become detectives in their pursuit of knowledge.

Perhaps most important, participation in the program teaches young people that they can exert a substantial degree of control over decisions that affect their futures. They learn that there is more than one option open to them in almost every situation and that the selection of the best option is up to them. They also learn that if they do not make the choices that will govern their lives, someone else will. With the skills and knowledge gained from participation in Future Problem Solving, students are far better equipped to take control of their personal futures.□

Author's note: Readers can obtain more information about the Future Problem Solving Program by contacting FPSP, St. Andrews College, Laurinburg, NC 28352; (919) 276-8361. The topics for the 1989–90 program are Shrinking Tropical Forests, the Arms Race, Poverty, Medical Advances, and Crime.

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Suggested Reading

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