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Trends

Mathematics

STEPHEN S. WILLOUGHBY

New Mathematics Television Program

In August 1983 I heard that Children's Television Workshop was planning a new series about mathematics. I reacted negatively. Mathematics is not a spectator sport—it's something we learn by actively doing. Television encourages passive viewing. The two did not appear to be compatible.

Now, three years later, the Children's Television Workshop program for middle school children is approaching completion. The first of 75 half-hour programs, entitled "Square One TV," will be shown on the Public Broadcasting System on 26 January 1987.

Is the series going to be as bad as I had originally predicted? No. Will it be perfect? No, but Children's Television Workshop has put a great deal of effort into making "Square One TV" a useful supplement to the middle school mathematics classroom. Joel Schneider, the content supervisor for the series, is a competent mathematician with substantial interest and experience in education (he worked with GEMREL in developing the excellent CSMP experimental mathematics program). The producers have also assembled an advisory panel of nationally prominent mathematics educators and mathematicians.

The program is committed to three goals: (1) motivating children toward enthusiasm and interest in mathematics, (2) encouraging the use of problem-solving strategies, and (3) presenting a variety of mathematics content in an interesting and accessible way, particularly to support the first two goals.

"Square One TV" will use a magazine format that will include magic (provided by Blackstone), animation, music, and parodies of game shows, weather forecasts, detective shows, sports commentaries, and even station breaks.

While there will still be a fair amount of passive viewing, the pro-

gram will seriously and continually attempt to involve viewers in thinking mathematically. In the game shows, for example, viewers will have the opportunity to compete against the actors (who actually play the games rather than having their moves scripted), and, with very little additional effort, continue playing the games themselves after the television show is over.

"Mathnet," a detective show parody, will be a continuing part of the program involving the characters in mathematical reasoning to solve mysteries. Again, the audience will be encouraged to think along with the characters and even think ahead of them when possible.

Blackstone's magic will often be explained in terms of its underlying mathematical principles, and viewers will have opportunities to analyze the concepts further as well as to perform the magic tricks themselves. Children's Television Workshop is encouraging children to become involved in mathematics, rather than to behave like passive sponges.

Obviously, Children's Television Workshop does not intend to replace the mathematics class with "Square One TV," and the home audience is the primary expected audience. However, teachers may wish to tape parts of the program to show in their classes (permission is granted for them to do so) and to encourage pupils to view the programs outside of school. Although written materials for the teacher will not be available immediately, Children's Television Workshop plans to make such materials available in the future to help teachers decide what they want children to look for while watching the program and, in general, to help teachers make better use of the show.

From the information now available, and on the basis of excerpts of programs I have seen, I believe that children, teachers, and others will find

"Square One TV" fun to watch and a worthwhile adjunct to the middle school mathematics classroom. □

Stephen S. Willoughby is past president, National Council of Teachers of Mathematics, Reston, Virginia, and professor, Mathe-

tics and Mathematics Education, New York University, New York, NY 10003.

Science

ROBERT E. YAGER AND CONNIE MUTHER

A Way Out of the Textbook Dilemma

Real science for K-12 students exists when their curiosity is piqued by problems and when they raise questions about them. Students need to be active detectives, debaters, analyzers, interpreters, hypothesizers, and problem solvers. They need to see the power of direct observation, the necessity of relying on expert information, and the use of evidence in resolving questions.

Expert information can come from a smorgasbord of written sources (including many different textbooks) as well as from people practicing science within or near the community. All these sources should provide different perceptions, interpretations, and viewpoints.

The science/technology/society (STS) approach to teaching science uses local issues, questions, and problems as a starting point, then gets students involved in exploring and formulating explanations or possible solutions to issues in their own neighborhood. Rustum Roy, director of the National Science Foundation project, has called STS the science education megatrend for the remainder of the twentieth century.

The National Science Teachers Association has mounted searches for *transportable* exemplary programs across the entire U.S. that use STS approaches (Penick and Meinhard-Pellens 1984, Yager 1983). For example:

1. *Green Acres School District*, 966 Bostwick Ln., Santa Cruz, CA 95062.

Here students apply science and technology to their everyday environment by planting and cultivating vegetables in a central garden, then cooking and learning about the chemical reactions involved in cooking. One result has been changed eating habits

for the total school community—students, teachers, and parents. Yet this is only one of many STS projects at this school.

2. *East Douglas Elementary School*, East Hamilton Ave., P.O. Box 1028, Douglas, WY 82633. (307) 358-3502 (Robert Pesicka).

Anchorage School District, 4600 DeBarr Ave., P.O. Box 196614, Anchorage, AK 99517. (907) 269-2274 (Emma Walton).

Both these schools began with the Elementary Science Study (ESS)

hands-on, discovery-based science materials, then added a central materials supply and delivery system and teacher training program, effectively solving the three most critical problems encountered with any hands-on elementary science program. Wyoming goes beyond this published program by challenging students to solve real problems within the community.

3. *New Lincoln School*, 210 East 77th St., New York, NY 10021 (212) 879-9200 (Irma Jarcho).

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