EDITORIAL

Direction

The junior and senior high school mathematics curricula are being reviewed, and it is assumed that the changes being considered will reflect the recommendations of the Review of Secondary Education report. Of particular importance to mathematics teachers is the statement that students should become critical thinkers. Problem-solving skills and strategies are a component of thinking.

Subsequent to the development of the article "Problem-Solving Relationships in Algebra," I had the opportunity to present the content of the article at two workshops. Preliminary remarks included my view that in the future: (1) problems chosen should introduce the student to thinking procedures and the logical-deductive nature of mathematics; (2) other problems should reflect or show an application of mathematics theory in a nontext problem situation; (3) another category of problems should show the need for intuitive or other thinking skills; and (4) problems should be selected from other disciplines to show that the mathematical problem-solving strategies also apply in other subjects.

During one of the workshops, a teacher asked: "John, do you have any research evidence that the use of different symbols will transfer into the algebraic approach?" The logical-deductive mode of thinking was evident. The question received an honest answer: "No!" I had not, and have not since then, read an article on the potential of this problem in introducing algebraic concepts. An equally academic response could have been: "Do you have any research evidence to show that transfer of thought processes from an intuitive to a deductive approach does not happen?" An issue is defined. Is mathematics purely logical-deductive, or can mathematics be done in other thinking modes? As students become more proficient at organizing thought, they should become more proficient in the logical-deductive mode.

At the University of Lethbridge, I encounter many highly successful education students with grade point averages greater than three (on a four-point scale) who detest mathematics, who view mathematics as a system of rules, and who do not enjoy mathematics. The irony of the situation is that these education students have been taught mathematics in a logical-deductive manner, and those who teach mathematics will probably emulate the teachers who taught them mathematics.

Will the new Alberta secondary mathematics curriculum provide resource materials that encourage a problem-solving approach? Will the problems be coordinated to reflect content? Will the classroom environment be organized to encourage students to think? Both issues are the prerogative of the mathematics teacher.

Comments

The MCATA executive authorized this larger issue of delta-K so that some of the presentations delivered at the NCTM Canadian Conference held in Edmonton, October 16-18, 1986, could be shared with a larger audience.

John Heuver's letter (below) is the first that the editor has received. **Art Jorgensen** provides a tribute to Joan Worth, the second recipient of the Mathematics Educator of the Year Award. **Gary Hill** offers opinions on teaching problem solving. **James Sherrill** analyzes some problems and shows how they can be solved without using mathematical-deductive, algebraic reasoning. Student thinking, often the result of instruction, is analyzed by **Eric Wood**. **Bonnie Litwiller and David Duncan** present a problem-solving situation using an addition table, and explore patterns. Is there an algebraic base for the patterns? **Irvin Burbank** uses inductive thinking to solve probability problems.

Two articles on evaluation of problem solving are presented by **Marie Hauk** and **Gary Flewelling**. Flewelling's article allows teachers to rate themselves on the degree to which they make problem solving a part of their classroom environment.

Marshall Bye and Bob Midyette encourage the use of problems that support the core curriculum. **John Percevault** and **Mary-Jo Maas** demonstrate how problems used at the elementary school level can also be applied at the junior and senior high school levels. Two problems are presented by **Kevin Sherratt** and **Karen Gibling**.

John B. Percevault

LETTER TO THE EDITOR

I noticed that the theme of the next issue of delta-K is to be "Problem Solving in the Junior High School." I would like to point out to you that there appeared in the September 1985 issue of the Mathematics Magazine, published by the Mathematical Association of America, an article entitled "An Example of an Error-Correcting Code" written by Mark Roben Stein, a Grade 8 student at McKernan Elementary-Junior High School in Edmonton. Mark mentions that he attended an enrichment program run by professor Andy Liu from the University of Alberta. In my opinion, it would be a serious oversight if delta-K did not mention this fact. The article gives evidence of the fact that, when some of our students are properly guided, they can achieve a very high degree of skill in mathematics. Coding theory is not a conventional secondary school topic and, therefore, requires the instructor to possess both mathematical knowledge and great pedagogical skills.

I also noticed that in the July 1986 issue, two errors appear in "The Road to Four Villages" problem by L.G. Hoye. A radical sign is missing. It should read "$\sqrt{3}$ + 1 mile(s)," and a reference should be cited: page 23 in the second edition of Coxeter's book.

With kind regards,
John G. Heuver, Grande Prairie

EDITOR'S COMMENT: The error noted by Mr. Heuver was corrected in the October 1986 issue of delta-K.