

Problem Child—Ways to Help Your Students to Become Better Problem Solvers!

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The goal of this presentation was to teach and demonstrate methods to help students build problem-solving strategies while still addressing the Indiana Academic Standards. The presenters demonstrated methodology and teaching strategies that teachers could use in their classrooms.

When participants first entered the room, they were each given a different problem to solve. The presenters then began the session with a discussion of the problems and how they use similar daily tasks in their classrooms as warm-up activities. The rest of the session focused on two different types of problems and strategies that could be used to solve them.

The first problem was finding relatively prime numbers. Given the fractions $1/10$ to $10/10$, participants were asked to cross out the fractions that could be reduced. The fractions that were left were used to describe what it means when two numbers (here, the numerator and denominator) are relatively prime. The presenters talked about how to use prime factorization of a number to determine the smaller numbers that are relatively prime to the given number. Then they gave a sample word problem for which this strategy might be used. In this problem, adapted from a problem in *Mathematics Teaching in the Middle School*, in an apple harvest, every third, fourth, and tenth apples cannot be used.

The second type of strategy that was presented was the use of Venn diagrams. The presenters used three different word problems from *The Art of Problem Solving: Introduction to Counting and Probability*, by David Patrick, <www.artofproblemsolving.com>, to talk about the ways that Venn diagrams could be used. All three tasks ask students to find the number of items in each of two or three overlapping groups; one involves basketball players and the foreign language classes they take, one involves longhaired and shorthaired cats and kittens, and the third is about dogs at an obedience school and which of three tricks they have learned.

Participants were given handouts with all of the problems and strategies presented, as well as twelve problems on finding averages and nine miscellaneous problems that could be used as daily board problems.