

# *Pennies from Heaven — Nickles from Where?*

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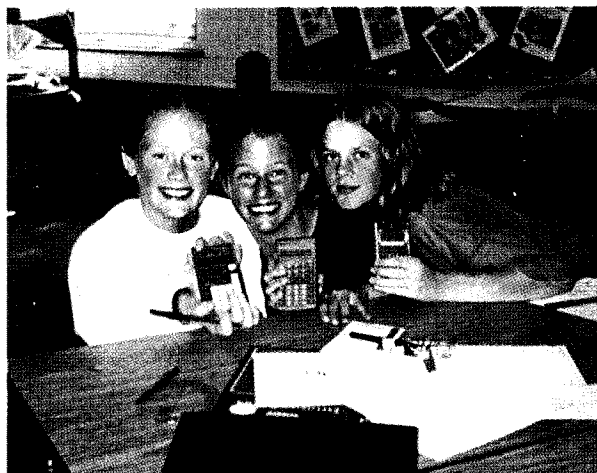


**M**AJOR EFFORTS TO INCREASE THE ATTENTION THAT STATISTICS receives in school mathematics have been under way since the appearance of NCTM's *Curriculum and Evaluation Standards for School Mathematics* (1989). The issue is what and how statistics should be integrated into the mathematics curriculum. The Standards promote the notion that students should be involved in all phases of statistical investigations and problem solving rather than focus on calculation and technique. **Figure 1** proposes a model (Kader and Perry 1994) that displays the five components of the statistical problem-solving process.

The Standards also encourage teachers to give students experiences that "connect" mathematics to other subjects and to the world around them. Statistics provides a natural environment for promoting interdisciplinary connections, but because statistics is a relatively new subject in middle-grades mathematics, few instructional and assessment materials are available. An essential need exists for materials and strategies that promote the "whole process" view of statistical inquiry and that give students opportunities to connect mathematics to situations from a variety of disciplines.

Collecting coins is a popular hobby. For each coin denomination, collectors want to obtain complete sets of coins from each mint location and for each year minted. Anomalous coins that are inadvertently placed into circulation are especially valued by collectors. United States mints are currently located in Denver, Colorado; Philadelphia, Pennsylvania; and San Francisco, California. New coins are placed into circulation by first distributing them to major depositories at federal banks. These banks dispense the coins to smaller banks, and eventually the coins find their way to retail businesses, which use the coins as change for their customers. Once a coin is in circulation, it changes hands many times before eventually wearing out. According to the United States Mint, the life expectancy of a coin is approximately thirty years. Once placed into circulation, how do coins disperse throughout the country? Do coins tend to stay in the region where they were minted, or are coins minted in one region commonly found in others?

A seventh-grade mathematics class at Blowing Rock School in Blowing Rock, North Carolina, in-



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vestigated these questions. Some of the graphs, tables, and interpretations presented here resulted from their investigation, which involved two related rounds of inquiry using the model shown in **figure 1**.

### The Investigation

BEFORE BEGINNING THE INVESTIGATION, THE teacher asked coin collectors in the class not to give away any answers before the investigation was completed. Initial questions for class discussion fol-

**Fig. 1** The process of statistical problem solving

