

**ZMATH 2002f.05408**

**Konold, Clifford; Pollatsek, Alexander**

**Data analysis as the search for signals in noisy processes.**

J. Res. Math. Educ. 33, No. 4, 259-289 (2002).

The idea of data as a mixture of signal and noise is perhaps the most fundamental concept in statistics. Research suggests, however, that current instruction is not helping students to develop this idea, and that though many students know, for example, how to compute means or medians, they do not know how to apply or interpret them. Part of the problem may be that the interpretations we often use to introduce data summaries, including viewing averages as typical scores or fair shares, provide a poor conceptual basis for using them to represent the entire group for purposes such as comparing one group to another. To explore the challenges of learning to think about data as signal and noise, we examine the 'signal/noise' metaphor in the context of three different statistical processes: repeated measures, measuring individuals, and dichotomous events. On the basis of this analysis, we make several recommendations about research and instruction.

*Classification:* K40

*Keywords:* historical analyses; conceptual knowledge

doi:10.2307/749741