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## **American Statistical Association Report Offers Guidelines for Use of Statistics in Mathematics Education Research**

### ***NSF-funded report responds to the call for scientifically based research in the No Child Left Behind Act of 2001***

**ALEXANDRIA VA, FEB. 27, 2007** – A report released recently by the American Statistical Association (ASA) offers an outline of guidelines for evaluating and reporting mathematics education research. The report, ***Using Statistics Effectively in Mathematics Education Research***, is the result of three years of workshops funded by the National Science Foundation (NSF) and conducted by the ASA's Working Group on Statistics in Mathematics Education Research.

The “No Child Left Behind Act of 2001” (NCLB, now Public Law 107-110) calls for research that “involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs.” The ASA working group, in a series of workshops over a three-year period, reviewed current mathematical research and discussed modern statistical methods that could be applied to such research. The process, according to Richard L. Scheaffer, working group chair, “consisted of amazingly frank and deep debates on issues surrounding the important research questions in mathematics education and the statistical methodologies that might be employed to solve them.”

The key components of a research program, which are discussed and defined extensively in the report, are:

- ***Generate research ideas***: ideas for a good research program come from many sources, and generating ideas is ongoing throughout the research project.
- ***Frame the research program***: clarify the goals of the program, define the concepts and constructs involved, conceptualize measurement tools, and consider logistics and feasibility issues.
- ***Examine the research program***: the hypotheses generated during the framing phase should be examined in a larger community of subjects within a single institution. The main goal is to establish efficacy so that the research program can move on to studies that have the ability to establish causality.
- ***Generalize the research program***: Once small-scale research studies have examined phenomena through observation or intervention and have established the potential for significant effects in the population of interest, more comprehensive studies can be mounted that seek to *generalize* what has been found in order to obtain additional results through larger studies.

- **Extend the research program:** Once a research program has shown significant effects through a rigorous generalized study, the research can be *extended* by activities such as syntheses of multiple studies, longitudinal studies of long-term effects, and the development of implementation policy.

The ASA working group was comprised of statisticians and mathematics education researchers to include a broader perspective and provide a more fruitful result. The complete report is available for viewing or downloading via the ASA web site at [http://www.amstat.org/research\\_grants/pdfs/SMERReport.pdf](http://www.amstat.org/research_grants/pdfs/SMERReport.pdf)

### **About the American Statistical Association**

The American Statistical Association (ASA), a scientific and educational society founded in Boston in 1839, is the second oldest professional society in the United States. For more than 160 years, ASA has been providing its 18,000 members serving in academia, government, and industry and the public with up-to-date, useful information about statistics. The ASA has a proud tradition of service to statisticians, quantitative scientists, and users of statistics across a wealth of academic areas and applications. For additional information about the American Statistical Association, please visit the association's web site at <http://www.amstat.org> or call 703.684.1221.

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