
Chapter 1: Introduction

The National Mathematics Advisory Panel

The President established the Panel via Executive Order 13398 (Appendix A), in which he also assigned responsibility to the U.S. Secretary of Education for appointment of members and for oversight of the Panel. While the presidential charge contains many explicit elements, there is a clear emphasis on the preparation of students for entry into, and success in, algebra.

Over a period of 20 months, the Panel received public testimony as a committee of the whole but worked largely in task groups and subcommittees dedicated to major components of the presidential charge. Questions like the following illustrate the scope of the Panel's inquiry:

- What is the essential content of school algebra and what do children need to know before starting to study it?
- What is known from research about how children learn mathematics?
- What is known about the effectiveness of instructional practices and materials?
- How can we best recruit, prepare, and retain effective teachers of mathematics?
- How can we make assessments of mathematical knowledge more accurate and more useful?
- What do practicing teachers of algebra say about the preparation of students whom they receive into their classrooms and about other relevant matters?
- What are the appropriate standards of evidence for the Panel to use in drawing conclusions from the research base?

Each of five task groups carried out a detailed analysis of the available evidence in a major area of the Panel's responsibility: Conceptual Knowledge and Skills, Learning Processes, Instructional Practices, Teachers and Teacher Education, and Assessment. Each of three subcommittees was charged with completion of a particular advisory function for the Panel: Standards of Evidence, Instructional Materials, and the Panel-commissioned National Survey of Algebra Teachers. Each task group and subcommittee produced a report, all of which are compiled here in this document.

The Panel took consistent note of the President's emphasis on "the best available scientific evidence" and set a high bar for admitting research results into consideration. In essence, the Panel required the work to have been carried out in a way that manifested rigor and could support generalization at the level of significance to policy. One of the subcommittee reports covers global considerations relating to standards of evidence, while individual task group reports amplify the standards in the particular context of each task group's work. In all, the Panel reviewed more than 16,000 research publications and policy reports and received public testimony from 110 individuals, of whom 69 appeared before the Panel on their own and 41 others were invited on the basis of expertise to cover particular topics. In addition, the Panel reviewed written commentary from 160 organizations and individuals, and analyzed survey results from 743 active teachers of algebra.

In late 2007, the Panel synthesized the Final Report by drawing together the most important findings and recommendations, which were issued with the Panel's full voice. The task group and subcommittee reports in this volume carry the detailed analyses of research literature and other relevant materials from which the Panel synthesized its major findings. These supporting reports cover work carried out as part of the Panel's overall mission, but they are presented by only those members who participated in creating them. The Final Report represents findings and recommendations of the Panel as a whole.