

Archived Information

American Association for the Advancement of Science DEVELOPING A RESEARCH BASE

The American Association for the Advancement of Science (AAAS) offers numerous programs designed to increase the body of knowledge surrounding issues in mathematics and science education. Some of these programs have focused specifically on evaluating curriculum materials and producing tools to help materials developers; these programs are listed under their own subheading below. The programs listed here have been developed primarily through AAAS's Project 2061 directorate.

Center for Curriculum Materials in Science. Project 2061 and its partners are developing an ambitious research agenda through the Center for Curriculum Materials in Science, a National Science Foundation Center for Learning and Teaching. The Center teams Project 2061 with three research universities to conduct research and develop graduate and teacher education programs following Project 2061's core principles. Each of the partner universities is expanding its graduate and postdoctoral programs in science education to include coursework and research opportunities in the analysis, design, and use of science curriculum materials. The Center has also created a Knowledge Sharing Institute that will allow researchers, faculty, and doctoral students from the partner institutions—and from the larger education community—to exchange information, resources, and expertise. In its first year of operation, the Center is currently recruiting graduate students and postdoctoral fellows and developing new courses based on Project 2061's curriculum materials analysis procedure. For more information, visit <http://www.ScienceMaterialsCenter.org>.

Factors that Improve Student Learning in Mathematics: An Interagency Education Research Initiative Study. In partnership with the University of Delaware and Texas A&M University, Project 2061 is examining how curriculum materials, teaching practices, and professional development can best be coordinated to improve student learning of key mathematics ideas and skills. The study examines these interactions in the context of middle grades mathematics and also considers how technology can help to provide ongoing teacher support and professional development on a large scale.

Standards-Based Assessment Study. Project 2061 is developing new strategies and tools to help educators understand and design assessments that are well aligned with national, state, and district standards and benchmarks for K-12 science and mathematics. In 2004 this valuable resource will become operational and ready for use by commercial developers and publishers of assessment materials.

Curriculum Materials Evaluation. One of Project 2061's most extensive and innovative research projects has been an investigation into the quality of science and mathematics textbooks. The goal was to develop a rigorous standards- and research-based analysis procedure and then to use it to provide teachers and administrators with information about the quality of available textbooks. The evaluations looked for content aligned to specific learning goals and for research-based instructional strategies that support those goals. A series of evaluations examined middle grades science, high school biology, middle grades mathematics, and high school algebra textbooks. The results rated all popular middle-school science books as "unsatisfactory," finding them "full of disconnected facts that neither educate nor motivate" students. In a later analysis, not one of the 10 widely used high-school biology texts received a high rating. While mathematics textbooks fared better in general, reviewers of high school algebra programs and middle grades mathematics materials still found some serious shortcomings. The findings are available online at www.project2061.org. **Conferences.** Project 2061 hosted a series of landmark textbook conferences bringing together scientists, teachers, researchers, curriculum developers, state officials who set statewide standards, and textbook authors, editors, and publishers. The first conference focused on the critical features of highly rated materials. The second addressed how the research communities could contribute more productively to improving K-12 science teaching and learning on a large scale. At the third conference, policymakers and educators discussed the role of state and district decision-making in supporting the development and use of high quality materials. Conference papers are available online at www.project2061.org. **Publications and Online Resources.** A forthcoming book about selecting and developing high quality curriculum materials is scheduled for publication in 2004 and will help educators, developers, and others to select, design, and use science and mathematics textbooks based on principles derived from years of research about how students learn.