

AMS COMMITTEE ON EDUCATION
Meeting held Friday-Saturday, October 25-26, 2002, Washington DC

Summary Report

The Committee discussed the impacts that President Bush's "No Child Left Behind" law may have on K-12 mathematics education, the professional training and development of teachers of mathematics, and the funding of research in mathematics education through the National Science Foundation and the Department of Education. Visitors included representatives from the NSF, the Department of Education, and other mathematical and educational groups. Panels of mathematicians involved in education offered inside views on teaching mathematics courses designed for future K-12 teachers, and the impact of NSF's VIGRE program on US mathematics departments. Chairs of doctorate-granting departments of mathematics were again invited to participate in the meeting. A total of 39 participants were involved in the meeting.

National Science Foundation

Judith Ramaley, Assistant Director of the NSF's Directorate of Education and Human Resources (EHR), outlined the new Math and Science Partnerships (MSP) program, created to implement an important part of the President's "No Child Left Behind" initiative. NSF will be the lead funding agency, with some funding coming through the Department of Education. Janice Earle, of NSF's Elementary, Secondary and Informal Education Division, also provided details on the MSP program's goals: 1) to ensure that all students have access to, are prepared for, and are encouraged to participate and succeed; 2) to enhance the quality, quantity and diversity of teachers; and 3) to develop evidence-based outcomes. Ramaley discussed the projects funded in the first round of awards (7 comprehensive projects, 17 targeted, and 12 smaller awards for development of an MSP Learning Network). Successful proposals were partnership-driven, in addition to addressing teacher quality and quantity, offering challenging courses, promising evidence-based design and outcomes, and providing evidence of likely institutional change and sustainability. 2003 will see the creation of the Learning Network, the second round of awards, and development of teacher institutes. Solicitations had not yet been written and Ramaley and Earle invited CoE input, especially on the proposed teacher institutes and the Learning Network. Deadline for proposals is January 7. More information can be found at www.ehr.nsf.gov/msp. Ramaley is putting together a committee to examine mathematics education for pre-K through grade 12+ to consider questions such as: What are the most important challenges and opportunities, and where is additional knowledge most needed? Where can NSF investments have the most impact? How well do NSF's current investments fit? What are the effects, intended or unintended? How can we assess the quality of the NSF portfolio, and what is the estimated impact? What areas deserve greater attention? Ramaley will send more information to the CoE chair.

Earle also described the Centers for Learning and Teaching program, and mentioned the opportunities and the frustrations of NSF's current focus on large partnership-oriented programs.

Calvin Williams, Division of Undergraduate Education, and Eric Sheppard, Division of Graduate Education, discussed details of programs within their divisions. There was discussion of the impact of increased stipends in the graduate research fellowship program.

U.S. Department of Education

Patricia O'Connell Ross described the Department's participation in the Math and Science Partnerships Program, which will provide more money to state and local authorities, but also require accountability. There will be a major rethinking of Title I programs, with schools held to much more rigorous standards in mathematics and reading. Teacher development will receive more funding. President Bush will announce a major initiative in mathematics and science in early December. A concern is that, unlike reading, there is not a strong research base in mathematics education, and one of the Department's goals is to develop a major research program on successful learning in mathematics. There was discussion about a design proposal approved in September to examine the mathematical preparation of teachers, the people to be involved in that project, and its connection to the CBMS Mathematics Education of Teachers project. Ross announced that OERI (Office of Education Research and Improvement) will be replaced by an Institute for Educational Sciences, created as a more autonomous organization to conduct program evaluation.

Although both NSF and the Dept of Education FY2003 appropriations are still held up in Congress, Ross noted that the 50 percent increase for research in the Department's budget has held up so far in the federal budget process.

Panel discussion on teacher development

Scott Baldrige (Indiana University), Sybilla Beckmann (University of Georgia), and Gary Jensen (Washington University) talked about courses and methods used in their departments for education majors, and stimulated discussion on the thought necessary for course design, development of materials, the mathematical content, the importance of knowing the students' backgrounds, teaching future teachers what they will need in their classrooms, and the issues of grading.

Panel discussion on NSF's VIGRE (Vertical Integration of Graduate Research and Education) program.

Richard Hain (Duke University) and Robert Lazarsfeld (University of Michigan) discussed the impact of VIGRE programs on their departments. CoE members also received the report from a recent workshop on the program. Both visitors felt the VIGRE program had been a positive experience for their institutions, but they discussed with CoE members some concerns and possible consequences -- for instance, the long-term stability of the program, and the impacts on a department that suddenly loses such a large award, the sustainability of support for post-doctorates, the emphasis on change rather than quality of instruction, and changes in the VIGRE management team and the possibility of changes in the criteria for evaluation.

Participation of research mathematicians in mathematics education.

Roger Howe distributed a draft proposal to develop a cadre of mathematicians experienced and willing to act as professional consultants on mathematics education, to provide support for them on successfully interacting with educators, and to introduce educational administrators to the support that mathematicians can provide. The idea had arisen as a result of the many ad hoc requests he and other mathematicians receive for help on educational projects, and would be a way of professionalizing and recognizing this activity. Howe invited CoE members to comment on the draft proposal.

Brookings Institution

Tom Loveless discussed the recent Brown Center Report, "How Well are American Students Learning?" His analysis of trends in NAEP (National Assessment of Education Progress) test data (for ages 9, 13 and 17) led him to conclude that computation skills (especially fractions) have either stagnated or lost ground since 1990. Discussion included possible reasons, including the impact of NCTM standards and the use of calculators.

Achieve, Inc.

This group was created in 1996 after a Governors' summit meeting on education, as an independent body working to achieve agreement across states on strategies to improve K-12 education. Fifteen states are currently involved. Matt Gandal described the problems of misalignment of standards, tests and assessment. State standards demonstrated coverage of content, but not focus, tests are not measuring what is being taught, and therefore cross-state comparison of results is not possible. Maria Santos discussed the further challenges posed by the new "No Child Left Behind" law, which requires every state to test in mathematics in grades 3-8, and high school. Achieve's Mathematics Achievement Partnership (MAP) focuses on middle school grades, offering support to states on standards, professional development for teachers, testing and assessment, and cross-state comparisons. CoE members received a consultation draft of "Foundations for Success: Mathematics Expectations for the Middle Grades", and sample items from the MAP proto-test. Many mathematicians have been involved in the advisory panel for the development of the "Foundations for Success" report. CoE members were interested in plans for the long-term continuation of this very ambitious undertaking.

MAA Guidelines for Programs and Departments in Undergraduate Mathematical Sciences (rev 2000)

MAA has requested the committee's endorsement of this report. After discussion, CoE approved the endorsement of the principles on which the report, "MAA Guidelines for Programs and Departments in

Undergraduate Mathematical Sciences”, was based, and recommended that the AMS Council make a similar endorsement. This recommendation has been submitted to the Council.

Mathematical Sciences Education Board (MSEB)

Carole Lacampagne reported on MSEB’s planned activities for the next ten years. Priority areas include learning, instruction, assessment, equity, attracting and retaining students, evidence of effectiveness, teacher development, and public perceptions. Current projects include a review of evaluation data on effectiveness of curriculum materials. She will send information to the Committee on the texts to be reviewed, and on forthcoming workshops and conferences.

MAA Committee on Undergraduate Programs in Mathematics.

Michael Pearson reported that CUPM was working on an update of curriculum guidelines, to appear in 2003, and outlined some general recommendations in the current draft (a publicly releasable draft was not available at the time of the meeting). Several CoE members had provided reactions to the draft guidelines at the summer 2002 MathFest in Burlington, and Pearson said that the current draft reflects reviews received at that time, although further rewriting was still to be done.

Review of AMS educational activities.

CoE established a five-year cycle of reviews, beginning with a review of the Young Scholars Program in 2003, to be conducted by a subcommittee appointed by the chair. In 2004, CoE will look at graduate education, and in 2005 will review education committees in which AMS is involved (AMS-MAA Comm on Research in Undergraduate Mathematics Education, AMS-MAA Comm on Teaching Assistants and Part-time Instructors, and AMS representatives on the MAA Comm on the Undergraduate Program in Mathematics). Areas for review in 2006 and 2007 will be decided at a future time.

CoE activities at Baltimore Joint Mathematics Meetings, Jan. 2003

Lisa Traynor reported that CoE will sponsor a panel discussion (later entitled “Successfully Recruiting Mathematics Majors”), on Saturday, January 18, 8:30-10:00 am.

Date of next meeting.

The next meeting of CoE will take place Friday-Saturday, October 24-25, 2003.

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