STRATEGIC PLAN FOR RESEARCH AND DEVELOPMENT

Gerald Kulm
Curtis D. Robert Professor of Mathematics Education

This document outlines a framework and plan for the efforts to be undertaken under the auspices of the Curtis D. Robert endowment at Texas A&M University. The hallmarks of this work will include (1) a long-term vision that will not only strengthen mathematics education at TAMU but build a state and national presence, (2) focus on essential and core questions and issues that can have impact on K-12 mathematics teaching and learning, and (3) attention to building links to persons and institutions who have mutual interests in cooperative efforts. These ideas are closely aligned with and essential to the accomplishment of the university’s Vision 2020 plan. The proposed plans and intentions are clarified more completely in the following statements of goals and strategies:

Goal 1: Strengthen the Research and Development Capacity in Mathematics Education.
National recognition is based solidly on the scholarly production and reputation of the faculty. A strong and vibrant faculty will attract high quality graduate students, research and development funding, and will build networks of collaboration with other top universities. A set of short-term strategies is necessary to make early steps toward this fundamental goal. Long-term strategies are also proposed in order to continue this effort over the next decade.

Short-term strategies:

a. Hire two tenure track professors at the assistant/associate level. A university of the size and stature of Texas A&M merits a mathematics education faculty comparable in size and status of similar institutions. Most major universities have from 5 to 10 tenure track mathematics education faculty members (U. Georgia-10, U. Wisconsin-7, U. Michigan-5, Indiana U.-5, U. Texas-5). In order to compete for major grants, maintain scholarly productivity in two or three key areas of study, and attract high quality graduate students, a faculty of at least 5 people is needed.

b. Build the capacity of lecturers and adjunct faculty. Even those who are non-tenured can participate and contribute to the research productivity of the department. Data collection from PDS schools, classes, and other ongoing activities can be used as a way to mentor and co-author presentations and articles.

c. Build the cooperation and capacity of available persons within and outside of the EDCI department to participate in mathematics education research. Faculty from science education, the bilingual and reading programs, the college of science, community colleges, and schools must be included in current activities in order to extend and strengthen current work.
d. Participate in work with other institutions. A great deal of work in mathematics education research and development is taking place at the state SSI project, other universities, and associations. We will seek these opportunities to have TAMU a partner, even if in limited ways.

**Long-term Strategies:**

a. Work toward one or two more tenure-track faculty positions. As the program builds, a minimum of one more faculty position will be necessary to provide a full spectrum of graduate courses, advisement, and meeting other responsibilities.

b. Develop the capacity of the Center of Mathematics and Science Education that is located in the college of science. Research on undergraduate mathematics teaching and learning is a growing field of interest and importance. The faculty members in the mathematics, statistics, computer science, and other mathematics-related departments have the potential to make important contributions in these areas of mathematics education. We will explore seminars and cooperative projects through the Center to build the capacity for doing research.

c. Invite Post-doctoral and Sabbatical faculty to the university. A vital program requires new ideas and activity. The resources that a strong faculty offers can be attractive to nationally and internationally known scholars who will spend a short or long-term visit, contributing to the work of the faculty.

**Goal 2: Develop a Long-term Research and Development Agenda for Mathematics Education at TAMU.**

Any program benefits from a set of common beliefs and goals that can guide the work over an extended number of years. A well-chosen and significant set of research goals has the potential to bring recognition to the university for its contributions to the knowledge base in mathematics education.

**Strategies:**

In 1999-2000, the outcome of the following strategies will be a monograph that sets forth a research agenda for TAMU mathematics education for a period of 5 to 10 years. After the publication of the monograph, these strategies will serve to promote and energize the research agenda into the future. The monograph will serve as a guide to current and future faculty and graduate students as they pursue grants and develop doctoral dissertations and master’s theses. Although the book is not intended to stifle or limit creative new ideas that might arise, it will serve to focus and organize TAMU research on a set of significant areas of mathematics teaching and learning from pre-K to adult level.

a. Sponsor a Visiting Mathematics Educator Scholar Program. Consulting with national and international experts in mathematics education can help the program gain perspectives on the most pressing issues and opportunities in mathematics teaching and learning. Each visiting scholar will confer with faculty, engage in conversations with graduate and undergraduate students, and present a university-wide lecture. The scholars will prepare a brief paper outlining their perspectives on needed research in mathematics education.
b. Sponsor a series of discussions on mathematics education research. Following the Visiting Scholar presentations, TAMU mathematics educators, mathematicians, and B/CS K-12 educators will reflect on the presentations, and identify the most salient and significant implications for a TAMU research program.

c. Attend and participate in professional research activities. Presentations at professional conferences, review of manuscripts, and service on proposal review panels provide opportunities to gain insight into the most pressing needs for research in mathematics education. We will participate as widely as possible in these activities and engage colleagues and students in these as well.

d. Develop teacher scholars and faculty practitioners. If research is to have an impact on mathematics classrooms and policy it must be grounded in practice. We will work to blur the boundaries between practitioners and researchers in mathematics education. Having K-12 teachers and university faculty as partners on research projects, as well as providing opportunities for them to practice in each other’s classrooms, will ensure that the research program it vital and significant.

Goal 3: Build Networks of Expertise and Mutual Interest in Mathematics Education
In order to place TAMU mathematics education in a position of influence and impact at the local, state, and national level, broad networks and partnerships are necessary. These networks of expertise will include school district leaders, faculty from other universities and programs in the state, researchers from top universities and centers across the country, and leaders in professional associations and government. The following strategies, building on the strategies outlined for Goals 1 and 3, will focus on building and maintaining these networks.

Strategies

a. Pursue editorial and review appointments on research journals, appointments to review panels for funding agencies, and memberships on advisory boards of projects at other institutions.

b. Sponsor workshops and seminars for mathematics teachers and faculty on current areas of research on teaching, curriculum, and assessment in mathematics.

c. Engage TAMU and BC/S teachers and faculty in workshops, research seminars, and projects. A broader community of people who have the interest and capacity in mathematics education research will be developed through this effort.

d. Work with the SSI, TEA, and other coalitions and projects. Opportunities for staff development, data collection and evaluation, and curriculum implementation all provide access to people throughout the state with common interests in mathematics education.

e. Continue work with the American Association for the Advancement of Science, the Council of Chief State School Officers, and other professional
organizations, bringing workshops, speakers, and other experts to campus as well as consulting on their projects.

f. Serve on review panels, hearing, and conferences for the National Science Foundation, U. S. Department of Education. Encourage colleagues, teachers, and others to participate in these activities as well.