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A Century of Leadership in Mathematics and Its Teaching

Rethinking Purposes and Best Practices of Mathematics Education

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NOTES FROM THE FIELD

Some Career Reflections on Research and Scholarship in Mathematics Education

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Context for Reflections

I received my doctorate in mathematics education from the University of Missouri (MU) in 1966; since that time, I have edited or co-edited ten books and authored or co-authored over 20 books and over 240 articles in refereed journals. During my over 50 years as a faculty member at MU I served as an undergraduate advisor to more than 500 undergraduates preparing to become secondary mathematics teachers and 100 master's and doctoral students in mathematics education. These students kept me grounded, challenged my thinking, provided direction for much of my research, and overall contributed greatly to my career growth and professional development.

Since beginning my career in mathematics education, I met and worked with mathematics educators nationally and internationally. I also witnessed many changes that impacted the mathematics education community. It is said that life is made up of choices. In my own career, often casual or even random events resulted in uncharted paths for my career which often led to new and exciting directions. In this article I share some lessons learned through these experiences that might be useful to future generations of mathematics educators pursuing a career in higher education.

Mathematics Education is an Exciting Career Field

No one can predict the opportunities that arise or the many career paths that might be taken. When I earned my doctorate at the University of Missouri, I never anticipated that I would spend my entire academic career there. Once your doctorate is completed, your first decision is where to work. If you choose higher education, your initial job choice is very important because most mathematics educators stay at the institution that initially hired them throughout their career. Additionally you must ask yourself, do you want to work in a teaching institution or a research-oriented institution? Each of these choices can be rewarding but provide very different career paths.

Sustained Research

While sustained research is important, your research focus may change and be directed by unseen forces or opportunities. In my case, my dissertation provided a start, and reporting on the assessment of mathematical knowledge of entering kindergarteners provided some initial visibility. My experience as a member of two interpretative teams of National Council of Teachers of Mathematics for the first two mathematics assessments of the National Assessment of Educational progress lasted over a decade and provided knowledge and valuable experience. Our research on calculator use in elementary classrooms led to work with estimation, mental computation, and number sense for nearly 20 years, and these topics were of interest to mathematics educators nationally and internationally. The last 20 years of my career included work in helping to implement innovative mathematics curricula, along with a continual focus on doctoral programs in mathematics education. Fresh ideas and innovation are always needed to push thinking and research to address the constantly changing world of mathematics education and sustained research is a powerful vehicle.

Report Research Results in Peer-reviewed Journals

Respected journals provide a mechanism to share results and introduce your work to people on your campus, in your state, in the United States, and around the world. Your writing may inform and stimulate interest in a topic that is new for a reader. It may alert others who want to learn more about your work. You never know when or where an article you have written stimulates interest among the readers and what kind of collaboration may result.

Do Not Give up on a Good Idea

While I was successful in getting multiple proposals funded by external agencies, many of them were funded after second or third reviews. Each time, we used feedback from the reviewers to strengthen the proposal and communicate more clearly its objectives and detail how the project would reach the stated goals. Similarly, many articles that were published in peer-reviewed journals were submitted and initially rejected. Sometimes the feedback from the reviews was useful in rewriting the papers for resubmission to the same journal. In other cases it became clear that the paper should be submitted to a different journal better-aligned with the content of the paper. The moral of this reflection is to believe in yourself and trust that with patience and continued work, your idea will be well received.

Focus on Long-Term Projects

My first funded project was for one year—too short to have any lasting impact. Research, and service efforts to improve teaching, curriculum, and learning in schools, need to be long-term (i.e., multiyear) if any significant results are to be forthcoming. While planning multiyear projects is challenging and competition for long-term funding is keen, the potential rewards are great.

Mathematics Education Programs Can Grow

MU is a public and state-supported institution, and member of the Association of American Universities (AAU). For the last 60 years there have been peaks and valleys in state support for higher education. However, every year department chairs, deans, and provosts made decisions that either enhance or reduce support for specific programs. At MU, mathematics education became a priority area because its faculty members had an established track record of success in scholarly publications, securing external funds, and growing the number of full-time master's and doctoral students. These elements, along with strong and sustained support from the administration, brought national visibility to the mathematics education program and allowed our faculty to grow from two to ten tenure track positions over 20 years.

Mathematics Education Community

In higher education, the mathematics education community is quite small and provides opportunities to develop close personal relationships. It is essential to get to know, learn from, and work with people. I have been fortunate to meet and work with undergraduate and graduate students from MU, graduate students from other institutions, classroom teachers from many different schools and districts, and faculty at a range of national and international institutions of higher education. These interactions helped stimulate my thinking, learn new knowledge, and grow professionally.

Opportunities Arise in Many Places

Opportunities arise from many, often unexpected places. The opportunity might be an internal announcement for research funds at your institution; it might be a call for proposals from your state; it might be a new initiative from funding agencies, such as the National Science Foundation (NSF) or the Department of Education; it might be an invitation of where to spend your sabbatical; it might be encouragement to enter the Fulbright Program; or it might be a letter from a colleague or mathematics educator you do not know that leads to some exciting collaboration. The moral here is that if opportunity knocks at the door, answer and investigate it!

Enjoy Every Day and Try to Learn Something

Enjoy every day and try to learn something new from reading or from someone. The days, semesters, and years go by rapidly. One thing I wish I had done throughout my career was to keep a regular journal, capturing memorable happenings. It might have been something that happened in a class, perhaps how a student's response to a question was different than what was anticipated. It might have been an encounter with a colleague, a presentation that went well or one that was a disaster. It might have been an acceptance or rejection letter for a submitted manuscript or proposal. Such a log will keep you grounded to reality and may lead to exciting places. At the least, the journal provides a record of personal milestones and memories.