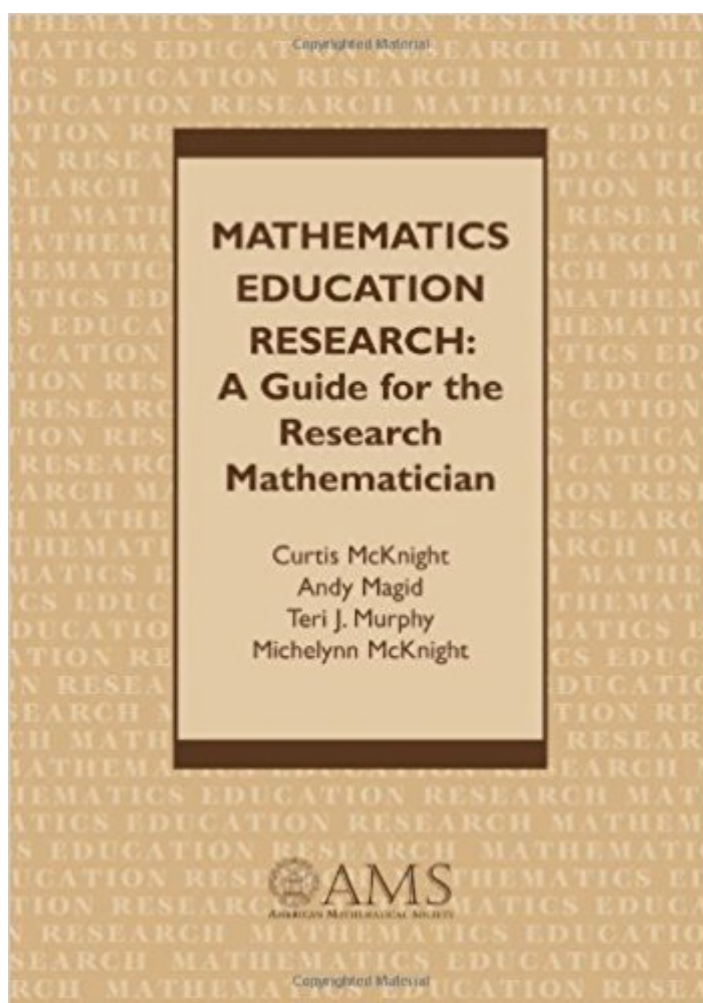


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Mathematics Education Research: A Guide For The Research Mathematician



Synopsis

Mathematics education research in undergraduate mathematics has increased significantly in the last decade and shows no signs of abating in the near future. Thus far, this research has often been associated with innovations in curriculum such as calculus reform, statistics education, and the use of computational and graphing technology in instruction. Carefully conducted mathematics education research is something far more fundamental and widely useful than might be implied by its use by the advocates of innovation in undergraduate mathematics education. Most simply, mathematics education research is inquiry by carefully developed research methods aimed at providing evidence about the nature and relationships of many mathematics learning and teaching phenomena. It seeks to clarify the phenomena, illuminate them, explain how they are related to other phenomena, and explain how this may be related to undergraduate mathematics course organization and teaching. This book--the collaborative effort of a research mathematician, mathematics education researchers who work in a research mathematics department and a professional librarian--introduces research mathematicians to education research. The work presents a non-jargon introduction for educational research, surveys the more commonly used research methods, along with their rationales and assumptions, and provides background and careful discussions to help research mathematicians read or listen to education research more critically. This guide is of practical interest to university-based research mathematicians. It introduces the methodology of quantitative and qualitative research in education, provides critical guidelines for assessing the reliability and validity of mathematics education research, and explains how to use online database resources to locate education research. The book will also be valuable to graduate students in mathematics who are planning academic careers, and to mathematics department chairs and their deans.

Book Information

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Customer Reviews

This book is a manifestation of the mathematics education community's thickheaded identification with its methods rather than its results. The entire book is about delineating what constitutes "adequate research" (p. 12), "legitimate research" (p. 21), etc., and denigrating anything that does not conform to these narrow standards. This stupid method-fetishism is taken to be an end in itself. Not a single result of this so-called "research" is discussed anywhere in the book; a state of affairs that the authors apparently consider to be entirely in order. If you go to graduate school in physics, people do not teach you five hundred "method courses." They teach you substance. And they trust that this substance is impressive enough to intrigue students into learning about the methods that produced such insights. Thus the physics community has not imposed its methodological standards upon itself in order to be able to scorn amateur work. Substantial insights about nature is the one and only goal, and methods are embraced only after they have proved their worth as a means towards this end. Not so in mathematics education. Here "methods" are foremost, and substance nowhere to be found. In order to mask the obvious folly of this state of affairs, an ingenious trick has been devised: namely, the glorification of the vacuous word "research." "Research, research, research," is the mantra of self-justification for these anti-intellectual minions who do not have anything of substance to offer. "Research" is on the one hand assumed superior to anything that is not "research," and on the other hand it is defined as whatever it is that the math. ed. minions do. They can then bask in the glory of having defined their own superiority. If anyone should present a well-argued case for a way of approaching an issue of substance that deviates from the dogma, then one need only remind them that "yes, but that's not research," which automatically nullifies all the arguments put forth. You are doing "research" if and only if you follow the prescribed methodological dicta. Whether your "research" has anything whatever to do with substantial insights regarding education is entirely irrelevant.

We are doing research in problem solving in computer science. So little is known about how the human does this that we had to start at the very beginning. We have had a hard time selling this to all the scientists and engineers because we don't have big numbers and there is a huge amount of flat misinformation out there. This book will help you overcome these obstacles.

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