Bibliography of Multicultural Issues in Mathematics Education: Practice

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The bibliography presented here is part of the Annotated Bibliography of Multicultural Issues in Mathematics Education. The latter was the product of work at the University of Georgia from June 1990 - June 1991. We appreciate the advice and contributions of scholars throughout the world who have critiqued the contents and offered entries. We sincerely hope the work will contribute to the promotion of changes in mathematics classroom practices. This could be done by making this bibliography available to critically read the articles and discuss them with other colleagues. We also hope this work will contribute to the international effort that is being made to relate theoretical frameworks and research in diverse fields such as mathematics, history, psychology, sociology, and anthropology to work in mathematics education. The bibliography focuses on both the contributions of many cultures to mathematics and the ways in which culture may affect mathematics teaching and learning.

Bibliography


Ascher and Ascher pointed out that not enough attention is devoted to developments in mathematics in ancient America. They claim we need to overcome this restrictive frame and bias in order to appreciate the background of human intellectual accomplishments. Specifically, the authors were interested in the quipu, an artifact invented by the Incas in Perú. Quipus were colored cords with knots tied in them for recording numerical and relational information. Ascher and Ascher did not address educational issues in this paper, but the information provided could be helpful in designing mathematical activities and a history of mathematics course that include groups or people who are traditionally excluded.


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Frankenstein's mathematics textbook differs a great deal from traditional mathematics texts since it includes not only mathematical content but also approaches to learning mathematics, a social and political context for learning mathematics, and numerous historical insights. The style of the book provides strong support for the idea that mathematics is a human endeavor and mathematics can be a powerful tool for all people. The mathematical topics included were integers, rational numbers, numerical operations, and variables. The author "situates the teaching of mathematics within a rationale that links schooling to the wider considerations of citizenship and social responsibility."


This is a paper on research on classroom environment, focusing on how mathematics teachers might apply ideas from research in guiding practical improvements in mathematics classrooms. In their study, use was made of a new short form of My Class Inventory (MCI). Which was found to be a valid instrument. They then asked a teacher to use the MCI in a systematic attempts to improve a mathematics class. The results were promising. The authors conclude their paper with optimism and they quote Fraser and Fisher and write, “In recent studies of person-environment fit, students were found to achieve better when there was a higher congruence between the actual classroom environment and that preferred by the students”.


This article was in part the result of research in which materials were developed and then trial-tested and evaluated for the teaching of mathematics from a global and multicultural perspective. The thesis used in developing the materials was that the issue of global inequality could be explored while involving meaningful mathematical activities.


Moore presented evidence to support his hypothesis that preliterate tribes people were capable of mathematical thought as exhibited through their invention and mastery of string art figures. This common activity possessed elements of mathematical thought, namely, logic and intuition, analysis and synthesis, and generality and individuality, in accord with a definition of mathematics by Courant and Robbins. This information may impact American Indian students' conception of being mathematically disadvantaged when among Anglo students.


Moore identified iteration, recursion, similitude, tiling, and symmetry as principals of mathematics-like thought used by petroglyph carvers. He supported his claim with examples of carvings which illustrated each principal. He concluded the article with several suggestions for classroom activities.


Materials in this handbook are the result of work of supervisors, administrators, teachers, counselors, and teacher-educators who attended 5 conferences organized by the NCTM in Florida, New Mexico, Maryland, and Minnesota. They included suggestions for conducting mathematics equity surveys, designing and organizing equity conferences and other teacher in-service activities, developing networking strategies, and developing curriculum and instructional strategies which deal with equity issues in mathematics. Also included is a resource list of mathematics equity materials and an appendix with papers that were presented at the conferences on underepresented groups in mathematics.


The authors outlined their work in revising the lower school science curriculum of a school system to take into account today's multicultural society. Their sources for this project were the current curriculum, suggestions from students, and units from the Third World Science Project. The authors' rough draft of the revised curriculum attempted to eliminate gender and ethnic biases and stereotypes by including illustrations from various cultures, not just the
European and North American cultures. The units described in this article allowed students to read and/or write about the topic being studied in real world situations in order to make the material more relevant.


In this book, Tobias examined the myths surrounding mathematics. She reported on intervention techniques that she tried out in an experimental clinic at her university. It is primarily a discussion of how intimidation, myth, misunderstanding, and missed opportunities have affected a large proportion of the population. The principal purpose for writing the book was to convince women and men that their fear of mathematics is the result and not the cause of their negative experiences with mathematics, and to encourage them to give themselves one more chance.


In this short article, the author explored some mathematical ideas developed in Africa outside of ancient Egypt. She claimed that history-of-mathematics books do not include African mathematics; thus leaving the impression that nothing had been accomplished in that part of the World. The main purpose of the article was to present some suggestions for the incorporation of mathematical ideas in the study of African culture, e.g. as a part of a total learning experience. Mathematical ideas related to weaving, knots, networks, divination, gambling, measuring, currency, and gaming were presented.


On June 5, 1991, the Joseph R. Hooten Award for Excellence in Mathematics Education was awarded to Christy Lancaster, an undergraduate mathematics education student. This award was instituted at The University of Georgia in honor of Joseph R. Hooten Jr. for his love of teaching and interest in his students. Dr. Hooten was a faculty member at The University of Georgia from 1965 to 1985. He was a nationally known school mathematics textbook author and an authority on instructional television in the 1960s. He expected a lot from his students and always received praise from them for his teaching skills, his patience, and his concern for students.

The Keynote speaker at this year’s presentation was Dr. Sigrid Wagner. She has been a faculty member at The University of Georgia since 1978 and will be joining the faculty of Ohio State University in the Fall of 1991. She advised the preservice teachers to take care in selecting problems to be discussed in their classrooms since these problems could cause students’ misconceptions. This was an exciting day for these students, particularly for Christy who was presented the award by Dr. Patricia Wilson. It was a day in which they were honored for their hard work and achievement. It seems that it would be beneficial for more students to be honored in this way. The Hooten Award was designated for secondary mathematics education students. Are similar awards being instituted for middle and elementary school preservice teachers?