Working Group 7: "Equity and Ethnomathematics"
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Recent research about gender and mathematics as well research on differences between social groups on the bases of economy and intellectual resources will be critically examined and discussed based on a common consensus that everyone should have an equal opportunity to understand, participate in and appreciate mathematics. We will study areas of learning, attitudes and participation in mathematics from an equity perspective. The structure and culture in mathematics teaching in schools, universities and colleges are to be challenged in this process. Equity in mathematics has to be based on an acceptance of differences while encouraging a coming together to understand factors that influence participation as well as attrition in mathematics. We will explore different ways to reach the goal of equity in mathematics, keeping in mind that personal values dominate the doing and interpretation of research in the field.

Reports from Sicily Working Groups 2002

An awareness and acceptance of differences in relation to culture, economy, background and gender and how to give everyone the opportunity to understand, participate in and appreciate mathematics formed a basis for Working Group 5.
We explored pluralism and multiculturalism and the ways in which they work upon mathematics understanding, and ways of accepting differences while encouraging the learning of mathematics. A number of participants presented their work, which contributed to our understanding of mathematics in different cultural contexts as well as of gender and mathematics. Our concern was the areas of learning, attitudes and participation in mathematics. We studied the new paradigms of research that purport to provide insight into why gender differences occur, keeping in mind that personal values dominate the doing and interpreting of research in gender and mathematics as well as in multiculturalism and ethno-mathematics. Factors that might have contributed to the high attrition in mathematics for women and cultural and ethnic minority men and women were discussed from a number of viewpoints. Aspects of the structure and culture of mathematics teaching in schools, universities and colleges that inadvertently encourage attrition and impede retention efforts was also examined. We experienced great differences between countries in the way they have planned and implemented the teaching and learning of mathematics in schools and in secondary education. The problems we face however are very much the same. We all have a way to go before everyone has an equal opportunity to understand, participate in and appreciate mathematics.

We will explore pluralism and multiculturalism, the ways in which they work upon mathematics understanding, and ways of accepting differences while encouraging a coming together. We will also examine critically recent research into gender and mathematics, in the areas of learning, attitudes, and participation in mathematics. We will study the new paradigms of research that purport to provide insight into why gender differences occur, keeping in mind that personal values dominate the doing and interpreting of research in gender and mathematics as well as in multiculturalism and ethno-mathematics. Factors that might contribute to the high attrition in mathematics for women and cultural and ethnic minority men and women will be discussed. Aspects of the structure and culture of mathematics teaching in schools, universities and colleges that inadvertently encourage attrition and impede retention efforts will also be examined.

Since its introduction by U. D'Ambrosio, in 1985, the term *ethnomathematics* has been the object of a continuous discussion about its real meaning. D'Ambrosio wrote that ethnomathematics is *the mathematics practiced among identifiable cultural groups, such as national-tribal societies, labor groups, children of a certain age bracket, professional classes, and so on*, but now the concept has been so greatly widened to be considered as an educational programme.

Referring to ethnomathematics at least three strands of investigation can be clearly identified:

History of Mathematics - Mathematics & Anthropology/Ethnography - Mathematics Education

The core idea of the ethnomathematical programme is that each cultural group, whichever its dimension, includes mathematical activities carried out and developed by the men to cope with their real life needs.

Among these activities, the following ones are judged by A. Bishop as both necessary and sufficient to develop any mathematical idea: *counting, locating, measuring, designing, playing and explaining.* These activities are universal as they are part of the *indigenous knowledge* of each specific group, society, etc.; unfortunately, this knowledge is mostly not overlapping to the school mathematics one and very often the two knowledge appear deeply contrasting.

The lack of bridging the indigenous and the academic knowledge could be judged as the main responsible for the poor school achievement in mathematics of a large number of students.

The present pedagogical trends finally put the single pupil at the centre of the educational system: the final task is to teach the individuals, not the whole class. In this view, the ethnomathematical programme could offer a powerful educational tool.

The implementation of the ethnomathematics ideas in the classroom is greatly helpful in the new professional challenge that mathematics teachers are facing in many *western* countries, as well. In fact, the multiculturality is a matter of fact almost everywhere and teaching methodologies and didactical approaches are therefore to be reconsidered: *even* in mathematics (yet surprisingly to many teachers…), we have to aim to an education which is respectful of the diverse cultural backgrounds in the classroom (the language is the most clear example!), which acknowledges and evaluates the different indigenous mathematical activities. The final goal being a real *intercultural education*, through which each pupil can benefit from the others' culture.