

13th International Congress on Mathematical Education
Hamburg, 24-31 July 2016

**CRAFTING INFORMAL MATHEMATICS EDUCATION:
LEARNING ABOUT CURVATURE AND BASKET WEAVING**

NEMIROVSKY

San Diego State University

Museums, after-school programs, and summer camps are some of the settings where Informal Mathematics Education takes place: environments designed for mathematics learning that are free to depart from the curricular traditions and testing practices prevalent in formal education. Institutional settings, on themselves, do not pinpoint the occurrence of informal learning. It is not unusual, for instance, that after-school programs are dedicated to the completion of homework, which makes them complementary sites for formal education. Conversely, teachers sometimes organize open-ended projects or family math sessions, which can make the classroom a site for informal mathematics education. We conceive of the main features of informal learning environments as: 1) they are, at least to some extent, ‘free choice’ in that participants volunteer to participate in them; 2) they host activities with fluid disciplinary boundaries, which may drift from mathematics to literature, art, sciences, or other disciplines, as participants pursue their collective initiatives along the lines of their expressive needs and insights; and 3) they do not incorporate standardized forms of academic assessment (Nemirovsky et al, forthcoming). A major challenge that informal mathematics educators face is how to foster investigations interweaving mathematics with the life experiences, emotional overtures, and thematic openness of the learners, in ways that nurture spontaneous, unforeseen, nomadic, and expressive paths to mathematical ideas. In this talk we elaborate on a program of activities designed to explore this challenge and navigate ways of facing it. The participants were 12 children from an after-school program at a Boys’ and Girls’ Club, aged between 9 and 11, who chose to enroll in the program. The children were invited to a sequence of 6 two-hour sessions, half of them in their after school facilities and the other half at the Mingei International Museum, which is a renown museum that conserves and exhibits arts of daily use by ancient and contemporary craftsmen and designers, many of whom are anonymous creators. The program intended to interrelate the mathematics of curvature with basket weaving crafts, as well as the appreciation of basketry styles developed in different cultures. We documented this pilot experience by videotaping all the activities and interviewing the children. In this talk we describe activities, children’s work, and what we have learned regarding the pursuit of genuine and affective experiences for informal mathematics learning.

Nemirovsky , R; Kelton, M. & Civil, M. (Forthcoming). Towards a Vibrant and Socially Significant Informal Mathematics Education. *Third NCTM Research Handbook on the Teaching and Learning of Mathematics*. (Ed.) J. Cai. Charlotte, NC, Information Age