Theme 5 Plenary Lecture

Past, Present and Future: The Fruitful Interweaving of Cultural Mathematics

Kay Owens, Charles Sturt University (Australia)

Co-presenters: Vagi Bino and Charly Muke

Kay Owens was awarded her PhD in 1993 in mathematics education at Deakin University, and was Senior Lecturer at Western Sydney University before moving to Charles Sturt University in Dubbo where she is an Adjunct Associate Professor. Prior to this, Kay spent 15 years in Papua New Guinea where she held a lectureship in mathematics at the PNG University of Technology and a Head of Department position at Balob Teachers College. She has held an exchange position at Gothenburg University in Sweden and taught a Masters program at the Inter-University Institute in Macau and Visiting Scholar on several occasions at the University of Goroka. Kay has continued her research working with colleagues in Papua New Guinea over many years with a focus on the relationships between mathematics, language and culture, and on space, geometry and measurement education. She continued her interest in visuospatial reasoning recognising the importance of ecoculture on this capability. Having lived through many changes in PNG education, she and her colleagues have focused on mathematics and technology and mathematics education from earliest time (at least 10,000 years ago) into this current period of history recognising the history behind neocolonialism and its impact. She has held professional positions such as Vice-President of the Mathematics Education Research Group of Australasia, Editor and Executive member for The Mathematics Association of NSW, and President of the Orana cluster of the Australian College of Educators.

Abstract:

Gaining a grasp on cultural mathematics in Papua New Guinea required a study of multiple sources from archaeology, linguistics, records by Europeans' first contacts, cultural artefacts, ways of living, our own lived experiences, and oral histories. Highly integrated were technology, science, folk lore, and mathematics. Together with Elders, colleagues, and students we could synthesise numerous mathematical activities involving measurements and ratios, time, number systems, engineering principles such as in cantilever balance, agricultural science, mathematical approaches to physical phenomena especially around movement and direction on water, and economic trade. Essential to understanding these mathematical practices were the strengths of visuospatial, embodied reasoning. A further exploration of linking cultural mathematics and school mathematics involved linguistic analysis with common practice. Several constraints were identified in terms of implementation together with possible ways forward.