ETHNOMATHEMATICS IN PAPUA NEW GUINEA: PRACTICE, CHALLENGES AND OPPORTUNITIES FOR RESEARCH

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The diversity of 800 languages and cultures in Papua New Guinea provides the challenge and the opportunity of usingIndigenous mathematics and bridging to English schooling. Documenting and analysing the various aspects of Indigenous mathematical systems is a further challenge.

Papua New Guinea has 800 languages with 800 mathematical conceptual developments. Conserving and using these systems is a challenge in practice as most cultures are impacted upon by neighbouring languages, cross-cultural relationships, Tok Pisin (linguaa franca) and English. Glendon Lean collected and analysed many documents on the counting systems from the 1800s and 1900s, linguists, students and teachers. For Lean the challenge was in collating this information given that any one language or dalect might have many names, many versions, and rapidity of change in a few cases. Lean classified the counting systems into body-part tally systems and those with cycles of 2, 5, 10 and/or 20 with a few cycles of 3, 4, 6 and 8. Many 2 cycles also had 5 and 20 cycles. These were frequently digit-tally systems. Saome 10 cycles have 6 as 5+1 and 7 as 5+2, whereas others have 6 as 2 x 3, 8 as 2 x 4 while others have 7 as 10-3, 8 as 10-2. Will these assist learning b ase 10 arithemtic stragegies in English? Some communities rely on non-counting ways of quantifying.

At the Glen Lean Ethnomathematics Centre, the data collated and analysed by Lean have been entered onto a database and will be made availabe on a website and CDs. To do this is a challenge as the data are very extensive. A secondary challenge is making the data available to schools in remote areas without power (no telephones or computers) and minimal training opportunteis. Other papers are also collected and research is being stimulated. Opportunities arise in having as much variety in on country and in the fact that elementary schools are using the vernacular for teaching.

A challenge for researchers is to continue the research on arithmetic and document and analyse the other aspects of Indigenous mathematics. For example, consistent oral reports indicate that land size is generally determined by pacing across and down the land, and the total number of paces (lineaer units) indicates the land size. This is not congruent with a view of area as the number of area units. Other comments relate to volume and ratio but the challenge of understanding mathematics sense and problem-solving is hardly recognised as existing and being useful to develop more internaional mathematical concepts. Another challenge is in using traditional ideas in shcools to enhance undestanding of mathematical concepts. So far, some secondary and primary student teachers have recorded and used these ideas in classrooms.