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Weaving Culture and Mathematics

An Evaluation of Mutual Interrogation as a Methodological Process in Ethnomathematical Research

Noor Aishikin Adam

Abstract

This thesis discusses an attempt to implement the methodology of mutual interrogation in an ethnomathematical research study. Mutual interrogation was proposed by Alangui (2010) as a way of resolving issues of ideological colonialism and knowledge decontextualisation in investigations of mathematical knowledge in cultural practice. The process involves implementing a critical dialogue between holders of a specific cultural knowledge domain and mathematicians in order to investigate the interactions that occur between their knowledge systems, and to look at how the diverse ways of thinking about quantities, relationships and space can help broaden or transform our conception of mathematics.

The thesis describes an adaptation of the above methodology to a study of food cover (tudung saji) weaving among the weavers of Malaysia. These conical-shaped covers are woven using a specific technique called triaxial or hexagonal weave, where the strands are interlaced in three directions. A three-phase dialogue between several weavers and mathematicians was implemented, with the researcher playing the role of the mediator. Ethnographic techniques of participant observation, audio and video recording, field notes and interviews (both unstructured and semi-structured) were employed to document the dialogue and explore weaving limitations and possibilities. A computer-generated weaving template was also created to mediate investigations. The interactions between the conventions of the weavers and the concepts of the mathematicians uncovered differing perspectives on the construction of the tudung saji and the use of the template. The research findings highlight the role of mutual interrogation in establishing communication between the knowledge systems and the practitioners. Furthermore, mutual interrogation both affected the contemporary practices of the weavers and drew the mathematicians’ attention to the way the process of interpreting a cultural activity can lead to the invention of new mathematical structures.
Dedication

In loving memory of my most beloved mother,
who was always there for me whenever I needed her.

May Allah SWT bestow His mercy on her and forgive all of her sins.
Acknowledgements

First and foremost, I would like to express my deepest gratitude to Almighty Allah SWT for granting me a smooth journey throughout the research process and in the successful completion of this thesis. I would also like to thank the following people and organisations that had contributed in one way or another:

My main supervisor, Prof. Bill Barton and co-supervisor, Dr. Hannah Bartholomew; for their guidance and assistance. I especially would like to thank Bill for his valuable insights, encouragement and advice, and the emotional support that he had kindly given me during the difficult time of losing my mother in 2009;

Pip Neville-Barton; for her help in proofreading my thesis, and inviting me to her home for some delicious home-cooked meals;

The weavers and the mathematicians who had graciously agreed to participate in the study;

Research Management Institute, Universiti Teknologi MARA (UiTM); for the financial support that helped in making the data collection stages a relatively painless affair;

My loving family and friend; for their love, prayers and support from afar;

My friends at the Mathematics Education Unit (MEU), the Department of Mathematics, and the Malaysia-Auckland Postgraduate Students Association (MAPSA); for the friendship and the moral support, and the meals and the laughter shared throughout my stay in Auckland;

And last but not least, my employer, Universiti Teknologi MARA (UiTM) and sponsor, Ministry of Higher Education (MOHE) Malaysia; for awarding me the scholarship to study at The University of Auckland, New Zealand.
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