Innovative new take on spreading the joy of mathematics

Dr Bill Baritompa has just the right formula to get people dancing.

What do you get if you put "X" number of mathematicians in a woolshed in the countryside, add a cross-section of the locals, musicians and a barn dance caller?

An equation that equalled success for University of Canterbury senior lecturer in Mathematics and Statistics Dr Bill Baritompa in the 2004/05 Royal Society of New Zealand Science and Technology Promotion Fund awards.

Dr Baritompa was awarded $22,000 to run six two-day maths dances in small central South Island towns next year.

His project, called The Dance of Mathematics, was recognised as an innovative means to promote science and technology in a creative way.

For Dr Baritompa the project allowed him to link together his passions: maths, music and dance.

He has been involved in dancing for more than 20 years and calls himself a "semi-retired musician" having played the banjo in bluegrass bands.

As a mathematician and dance caller he can't help but see the connections between maths and dance.

"Barn dancing and square dancing are extremely mathematical, though most people don't realise it and it's not the sort of thing you tell people while you are dancing," Dr Baritompa said with a laugh.

"Take, for example, the patterns of the dance — 'Join up hands and circle left; take four steps in and four steps back' — are geometric, symmetric, repetitive cyclic movements. These ideas are the stuff of mathematics!"

Dancers' rhythmical movement, partner changes and circulation around the room is seen by the mathematician as combinatorics, group action and vector field flows, Dr Baritompa said.

During next March and April, Dr Baritompa and a team made up primarily of fellow mathematicians, will head to rural Canterbury and hold community barn dances, primarily as a social event but with an educational bonus.

"The community will meet mathematicians as real people doing interesting things and the following day we will give a mathematical performance with lots of demos and participation."

Dr Baritompa believes that people are often put off, not by the mathematics itself, but by the learning experience which may have been boring and complex.

"If something comes across as too heavily mathematical it will put people off. We plan to offer the rural communities something fun and not make a big deal about the mathematics."

Some "non-technical" and "non-threatening" mathematical activities would be integrated into the dance, statistics and probability would get a mention with traditional barn dance activities like raffles and spot prizes, and the dance venue would be decorated with posters and maths models related to the next day's activities, Dr Baritompa said.

Mathematical visitors to the University and postgraduate students would provide the talent for the mathematical performances, with Dr Burkard Polster, who will be visiting the University of Canterbury as an Erskine Fellow next year, acting as Dr Baritompa's "sidekick".

Dr Polster has a worldwide reputation as a mathematical entertainer and the Monash University lecturer has actively promoted mathematics for the Mathematical Association of Victoria with lively presentations on topics on everything from juggling to origami, Escher's blind spots to the mathematically proven most efficient way to lace your shoes!

The itinerary for The Dance of Mathematics has not been confirmed but Dr Baritompa hopes to target rural communities which are often left out of other outreach programmes. The project will cater for both adults and children.

Numerous projects focus on transmitting specific scientific content, but in contrast the focus of the barn dance project was the mathematical process, Dr Baritompa said.

"We will give the message that maths relates to everyday life experience, rather than an isolated activity involving only mathematicians."

Maria Hand