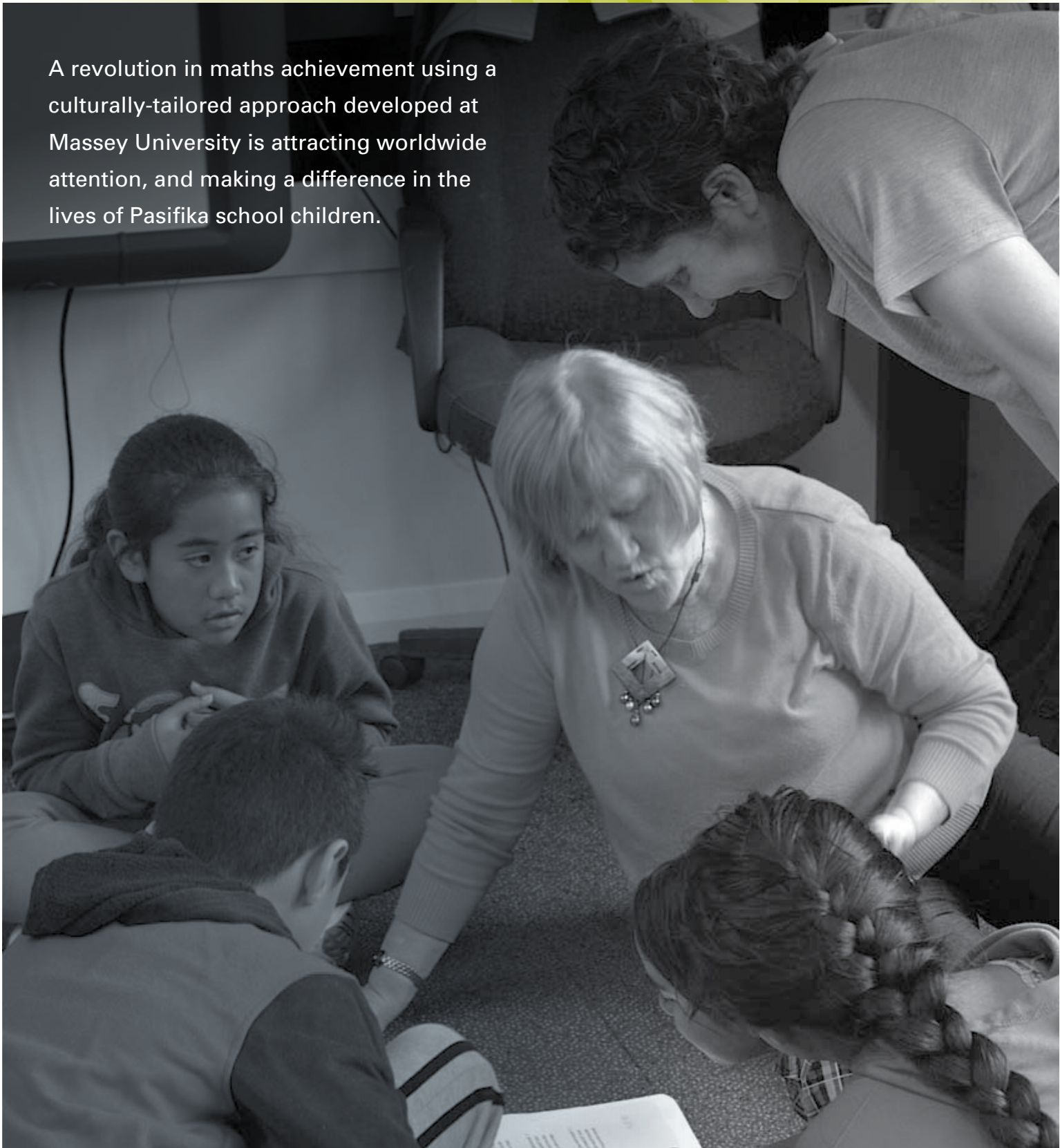


# THE NEW CULTURE OF MATHEMATICS TEACHING AND LEARNING

A revolution in maths achievement using a culturally-tailored approach developed at Massey University is attracting worldwide attention, and making a difference in the lives of Pasifika school children.



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Associate Professor Roberta (Bobbie) Hunter and her daughter Jodie Hunter are delivering an inquiry-based teaching approach aimed at raising maths achievement in low decile schools with predominantly Pasifika students.

In this 'communities of mathematical inquiry' approach pupils work together to unravel a problem. Children are encouraged to solve problems on their own, draw on their cultural backgrounds and even speak in their home language. And instead of defaulting to Westernised examples when applying mathematical concepts, teachers might refer to the weight of a taro, or dimensions of a tapa cloth. This culturally-tailored feature is a major factor in breaking down barriers that inhibit many from engaging and achieving in maths, says Dr Bobbie Hunter of Massey's Institute of Education.

With funding support from the Ministry of Education, the programme is currently being implemented across schools in Auckland, Christchurch and Porirua, reaching over 370 teachers and 7,000 children. The aim is to see the programme implemented in low decile schools nationwide.



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In addition to changes in attitude and perceptions, the programme is delivering improved academic results.

“Part of what we are doing is raising the level of challenge and expectation being given to the students. By pushing past of old notions and limitations we allow them to reach and achieve at much higher levels. It’s been amazing to see what the students can do,” says Dr Jodie Hunter, a senior lecturer at Massey’s Institute of Education.

Academic results have seen many of the children involved with the programme shift from well below to well above the national standards.

Dr Hunter notes that although the change doesn’t come overnight, teachers that are consistent with it experience rewarding results. For example, Otumoetai Intermediate in Tauranga won the Supreme Prime Minister’s Award for Education in 2014, with accelerated mathematics achievement based on Dr Hunter’s approach noted as one of the attributes they were commended for. The improvements resulted from a three-year period of Skype and face-to-face professional development sessions with teachers.

The Ministry of Education’s Chief Education Advisor Adrienne Alton-Lee this year congratulated Massey University in a letter on the “extraordinary educational improvement work that Dr Roberta Hunter is leading in New Zealand”, noting the research and development in her doctoral study was hailed as among the best in the world by a Harvard Professor Emerita.

The teaching model is based on getting children to work collaboratively in groups to question, argue and reason their way through mathematical problem solving, using culturally-based examples and contexts. Its success hinges on training teachers to understand the approach and to learn how to facilitate it through drawing on cultural contexts that reflect the lives of their students. This means involving parents and communities too.

“It’s about bringing in real world common sense to maths inquiry,” says Dr Bobbie Hunter.

The approach can have benefits for student learning across all subjects, and can be adapted to students of diverse cultures in New Zealand or any country, she says.

But it requires some radical re-wiring in the minds of teachers about their role and how they relate to the class. “It’s not easy for teachers out in Mangere. They’ve had to learn a completely new way to look at the children they teach,” she says. “If a child is not learning, you have to look at the teacher.”

The importance of evaluating the method and measuring results is critical, she adds.

“I believe if you improve things from the bottom up, the New Zealand figures will improve overall.”

*Dr Jodie Hunter is a senior lecturer in the Institute of Education at Massey University. She completed her PhD at Plymouth University in the UK and was recently awarded a Fulbright New Zealand Scholar enabling her to investigate a culturally informed, mathematics teaching concept developed by researchers and educators at the University of Arizona in the US.*

*Dr Roberta (Bobbie) Hunter is an Associate Professor in the Institute of Education at Massey University. Her knowledge of culturally responsive teaching is in demand worldwide, from Singapore and Hawa’ii to Canada and the United Kingdom. She recently received a special award recognising excellence in her field from the Cook Islands’ government, which marked its 50th anniversary of self-government.*

*Professor John O’Neill is the Director for Massey University’s Institute of Education. He has lived in New Zealand and worked at Massey since 1994. His research expertise centres on the relationships between education policy and teachers’ work and learning. Professor O’Neill is a strong advocate for social equity in education. In 2012 he was awarded a Teacher Education Forum of Aotearoa New Zealand career excellence award and a Massey University Research Excellence medal.*