TEACHING & LEARNING RESEARCH INITIATIVE
NĀU I WHATU TE KĀKAHU, HE TĀNIKO TAKU

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Mathematical reasoning and knowledge in primary initial teacher education programmes: MaRKITE

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Introduction

This innovative project investigates the development of critical awareness, confidence and competence in mathematical thinking that primary student teachers require for the full breadth of their professional work - teaching across the curriculum, collecting and interpreting student achievement data, and undertaking administrative tasks.

Aims

Aiming to support independent learning into the future, the project has two levels of focus: individual student-teacher learning and the system that supports this learning. Specifically the study aims to consolidate, build and deepen understandings of how to develop the Mathematical Thinking and Reasoning Proficiency (MTRP) student-teachers will need in their role as teachers. It aims to find how student-teacher MTRP changes over the course of an ITE programme when they are provided with supported and self-regulated opportunities to learn. The study will also investigate the benefits of embedding and making explicit MTR across the breadth of their ITE programme. Some student-teachers will be tracked into their first two years of teaching. Working with other universities the project aims to be scalable and transferable.

Why is this important?

Teachers' capacity to foster students' mathematical thinking and reasoning is a matter of strategic interest. Mathematical understanding is fundamental for effective participation in society, and delivers significant social and economic benefits. Self-regulation and participation in learning communities are important skills for teachers if they are to equip all learners with the knowledge, skills and values needed to be successful citizens in the 21st century.

What we plan to do

Data

The research intervention/data collection will consist of seven components:

1. Curriculum mapping of school and university MTRP requirements and opportunities for learning with lecturers and schools.
2. Pre and post assessment of student-teacher MTRP.
3. Student-teacher reflective e-portfolios and interviews.
4. Mathematical thinking mentor (MTM) reflective logs and document collection.
5. ITE lecturer focus group interviews and individual reflective notes on explicit embedding of opportunities to learn and use MTRP across the ITE programme.
6. A record of the Maths Hub website activities and resources access and use, including that from other universities.
7. Interviews and document collection with a sub-group of student-teachers as beginning teachers as they work towards full registration.

Analysis

Data will be collated and analysed to answer the research questions on the impact of the intervention on student-teacher learning, the nature of student-support use and effectiveness, and the transferability of the intervention design.

Our partners:

The project will involve partnership with:

- lecturers as they work collaboratively with the research team and each other to identify and reinforce MTRP within their courses;
- schools to identify the MTRP required of beginning teachers and how the development of this can be supported;
- student-teachers who take up the self-directed opportunities to learn and work with the MTM;
- the MTM and the mathematics education team to develop and quality assure resources and web-based materials; and
- organisations offering initial teacher education.

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