

# RECONCEPTUALISING MATHEMATICS AND SCIENCE TEACHER EDUCATION PROGRAMS

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## BACKGROUND

Reconceptualising Mathematics and Science Teacher Education Programs (ReMSTEP) is a project established under the *Enhancing the Training of Mathematics and Science Teachers Programme* of the Office for Learning and Teaching (OLT). The OLT programme was established in 2013 in response to recommendations made by Australia's Chief Scientist, Professor Ian Chubb, in his 2012 report *Mathematics, Engineering and Science in the National Interest* (Chubb, Findlay, Du, Burmester and Kusa 2012). The projects funded in this programme focus on new strategies in pre-service teacher education to improve the quality of teaching of science and mathematics. Some observers of the Science, Technology, Engineering and Mathematics (STEM) education sector, as highlighted in the 2012 report, perceive a lack of transfer from contemporary science research practice to current pre-service teacher preparation.

## DESCRIPTION OF THE PROJECT

ReMSTEP is a three-year collaboration between the University of Melbourne, Deakin University, La Trobe University and Monash University, fostering partnerships between educators and researchers in education, science and mathematics from each institution. These partners are developing new teacher education programmes and practices that align contemporary approaches to STEM, particularly science as practised, with engaging teaching and learning methods.

At ReMSTEP's core is the development of new and enhanced science and mathematics subjects at university where a wider range of student pathways develop pedagogical skills and understanding of contemporary science and mathematics. These pathways are built upon collaborative relationships between universities, faculties, specialist science and maths centres, and linked schools. The partnerships aim to drive major improvements in the quality of mathematics and science learning and teaching by creating programs where undergraduate STEM students and pre-service teachers work collaboratively to create new learning materials, units of study and expertise in inquiry-based classroom practices.

## PROJECT METHODS AND OUTCOMES

The following project activities exemplify particular facets of the ReMSTEP program involving the collaborations described above:

- the enhancement of the expertise of metropolitan, rural and regional pre-service K-6 teachers in science content and the pedagogies of 'learning by doing', with the involvement of science, mathematics and education staff in collaborative curriculum design and co-teaching;
- development of new degree pathways, e.g. primary science and mathematics specialisations, new science/education double degree programs and science students gaining school experience within their science degrees;
- collaborations between the universities and specialist science centres (e.g. Gene Technology access Centre, Quantum Victoria, Melbourne Museum) to develop pre-service teachers' curriculum development skills in the context of current science and mathematics research projects (e.g. the bionic eye);
- links between scientists in specialist research labs and institutes and pre-service teachers within teacher education programmes; and

- involvement of science undergraduates and pre-service teachers in existing projects involving outreach, to critically evaluate the processes of engagement and inquiry involved.

These common facets reflect collaborations across institutions and faculties of science and education which are in themselves important and explicit objectives of the ReMSTEP project.

## REFERENCES

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