

Stepping up achievement in science education (primary)

Evidence that this provision is needed can be found in the following:

The most recent results from Trends in International Mathematics and Science Study (TIMSS) shows that New Zealand Year 5 students' achievement in science, which had improved from 1994/95 to 1998/99 and again to 2002/03, dropped back in 2006/07 to levels similar to those in 1994. In 2006/07, New Zealand Year 5 students had significantly lower science achievement on average than those in England, the United States and Australia. On this evidence it appears we are not laying a strong foundation for a broad range of our student population. In the 2006 report 13% of New Zealand Year 5 students who participated in the data collection did not reach the low benchmark of 'some elementary knowledge of life science and physical science.' Countries with similar proportions of students reaching the advanced benchmark generally had fewer students unable to reach the low benchmark than New Zealand.

In TIMSS New Zealand students did perform better on questions that involve demonstrating knowledge than on questions that assess reasoning or applying knowledge. In New Zealand there appears to be a stronger relationship between socio-economic background and achievement than in most participating TIMSS countries. Ethnicity, immigration status and language spoken at home are also linked with achievement. The 2010 ERO report 'Science in Years 5 to 8: Capable and Competent Teaching found that most schools faced some challenges in implementing high quality science education.

Outcomes sought through possible procurement of PLD:

- A nationally coherent and cohesive provision of science education in English medium settings that is regionally based and targeted, tailored and responsive to the identified needs of particular settings.
- A system lift in science achievement for every student, particularly those currently underserved that results in:
 - Increased progress and achievement in science in years 1 – 8
 - Reduced disparities in science achievement for every student, particularly Māori students, Pasifika students and students with special educational needs
 - Improved teachers' pedagogical knowledge of culturally responsive practice
 - Improved teacher enthusiasm and confidence, content and pedagogical content knowledge in science to enable them to be effective science teachers
 - Teachers actively connecting with the current understanding of the nature of science and scientific practices and knowledge
 - Science community engagement in classrooms (including through the use of ICT)
 - Improved teacher knowledge, pedagogical content knowledge and knowledge of transfer to practice of the literacy and numeracy demands of science learning
 - Principals and teachers leading and championing science teaching and learning in their schools (and with other schools in clusters)
 - Increased numbers of principals and teachers with pos-graduate qualifications in science education

Notes:

The focus of the support is for primary (years 1 – 8) schooling
PLD provision should include a strong focus on *The New Zealand Curriculum* (2007), the principles of Timperley et al (2007) *Teacher Professional Learning and Development*, and Bull et al (2010) *Inspired by Science*.

To ensure outcomes are met, facilitators delivering these services should have the appropriate expertise and knowledge in the domain area, and in teacher professional learning and development.