ReMSTEP

RECONCEPTUALISING
MATHEMATICS
AND SCIENCE
TEACHER EDUCATION PROGRAMS

Australian Government

Office for Learning & Teaching

THE ROLE OF THE OLT

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Branch Manager, Office for Learning and Teaching

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Office for Learning & Teaching

OVERVIEW

Prof
STEPHEN
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University of Melbourne

OVERVIEW

There have been consistent concerns over maths and science in Australia

- Some primary teachers lack confidence and competence in teaching maths and science
- Student attitudes and achievement powerfully predict performance in the secondary years
- Up to one third of secondary students are taught maths and up to one quarter of secondary students are taught science by an out-of-field teacher
- This situation is worse in government, low SES and regional and remote schools and contributes to the achievement gap.

OVERVIEW

- Too few students are attempting the higher level courses in maths and science in the senior secondary years
- Too few students enrol in undergraduate maths and science subjects and courses
- Many university maths departments have closed or shrunk
- There are shortages of maths and science pre-service teaching candidates
- Lack of cooperation between education and maths and science faculties
- This is a cycle that needs to be broken

OVERVIEW

The Program

The purpose of the Program, Enhancing the Training of Mathematics and Science Teachers, is to drive major improvement in the quality of mathematics and science teachers by supporting new pre-service programs in which faculties, schools or departments of science, mathematics and education collaborate on course design and delivery, combining content and pedagogy so that maths and science are taught as dynamic, forward-looking and collaborative human endeavours.

OVERVIEW

The ReMSTEP project

This project will develop new teacher education practices that align contemporary mathematics and science with innovative and engaging pedagogy through a focus on practice. Teacher education activities will be integrated across a range of educational settings and world-class research sites. There will be a legacy of new courses, resources and productive alliances but most importantly, a cohort of better equipped, more confident and competent primary and secondary teachers of maths and sciences.

OVERVIEW

Success through Seven Innovations

Innovation 1: Contemporary science and mathematics in integrated science and pre-service units of study.

Innovation 2: Undergraduate science students engaging with schools.

Innovation 3: Science specialisations within primary pre-service programs.

Innovation 4: Specialist Science and Technology Centre collaborations.

Innovation 5: Practicum opportunities in world class research environments.

Innovation 6: Building on existing student expertise in science and mathematics.

Innovation 7: Building a recruitment pipeline of high potential mathematics and science teachers.

Prof
RUSSELL
TYTLER

Assoc Prof
STUART
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Deakin University

DEAKIN

- Contemporary science and mathematics in integrated science and pre-service units of study.
- Undergraduate science students engaging with schools.
- Science specialisms within primary pre-service programs.
- Specialist Science and Technology Centre collaborations.
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- Building on existing student expertise in science and mathematics.
- Building a recruitment pipeline of high potential mathematics and science teachers.

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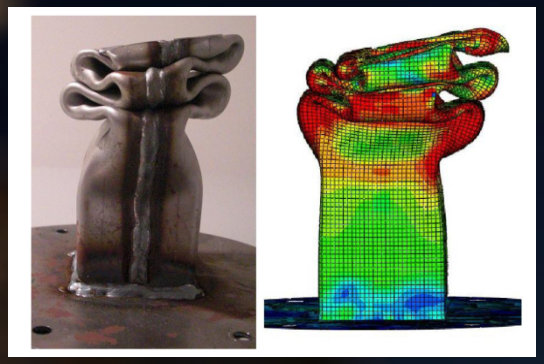
Research, Design & Engineering @ Institute for Frontier Materials



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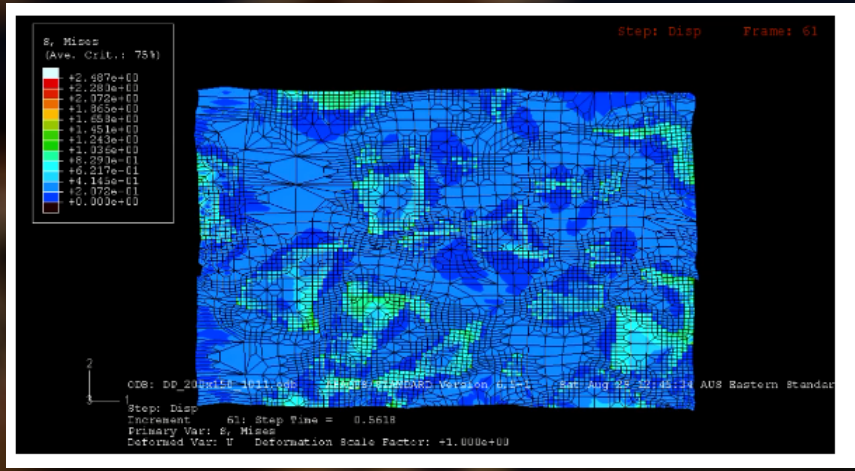
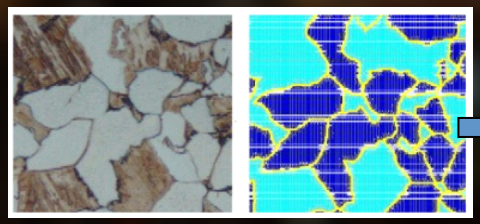
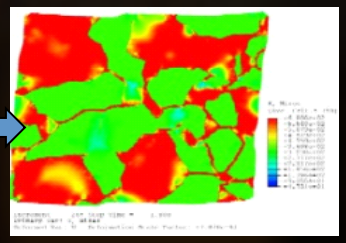
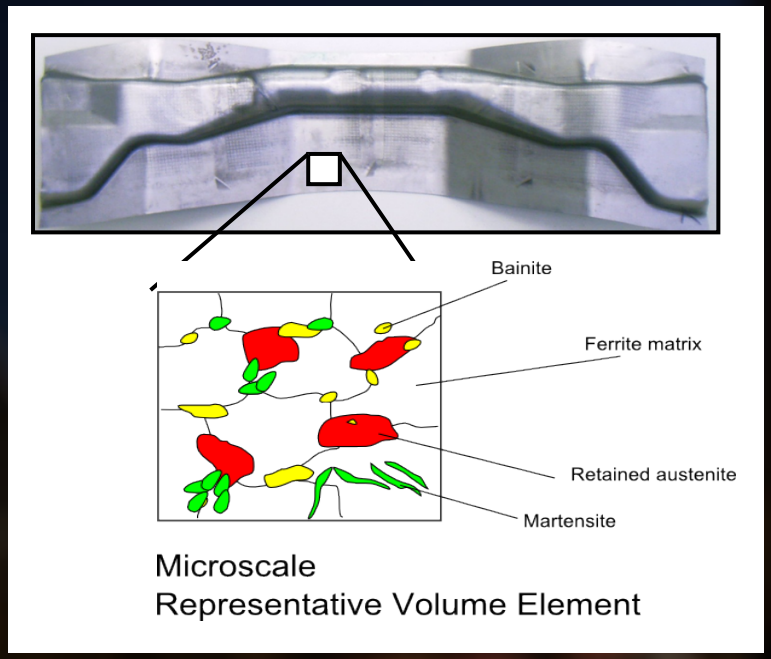
Modelling material behaviour - Multi-scale Modelling









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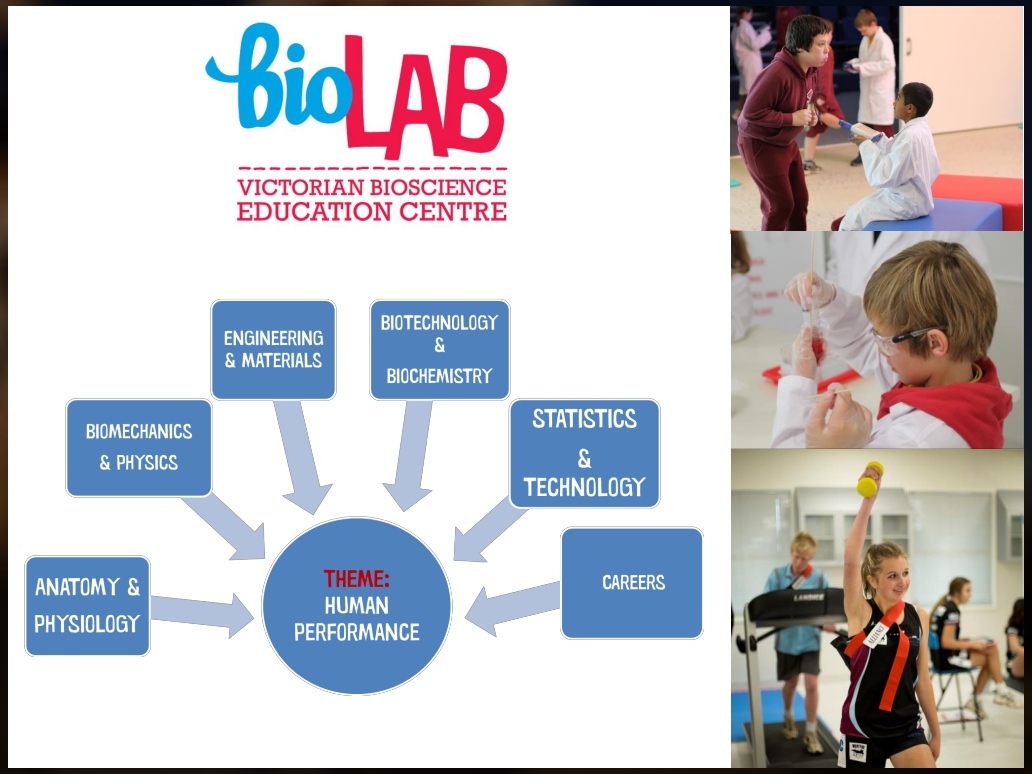
Specialist science & mathematics centres



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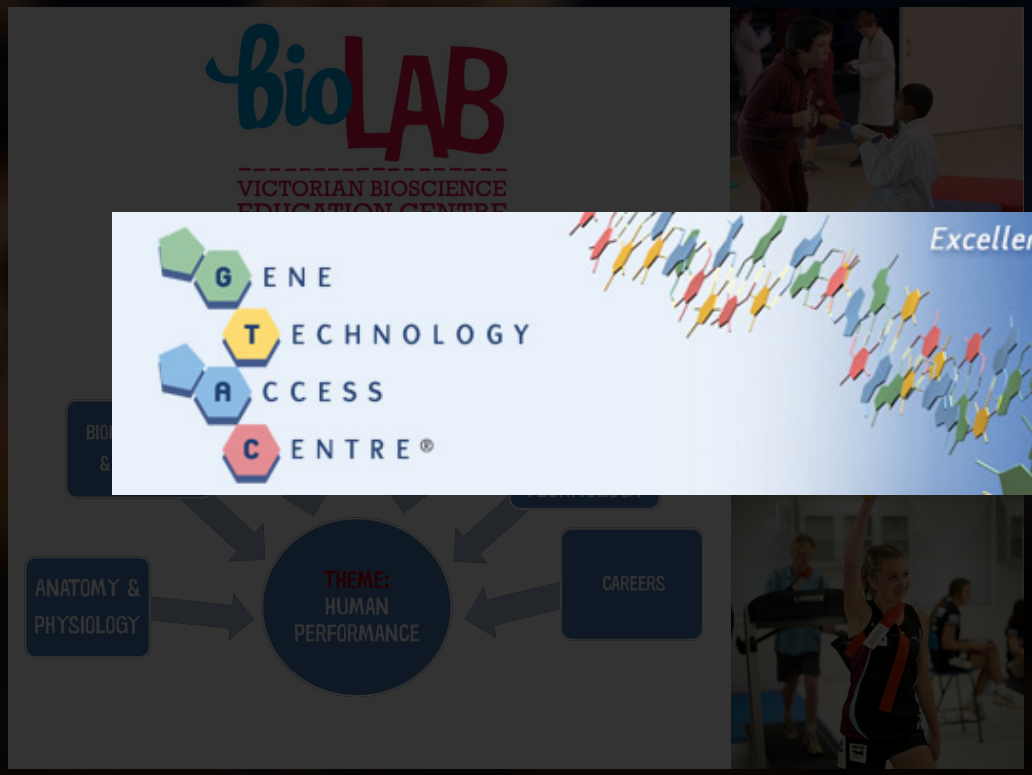
Specialist science & mathematics centres



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Specialist science & mathematics centres

Museum Victoria

- Scienceworks
- Melbourne Museum

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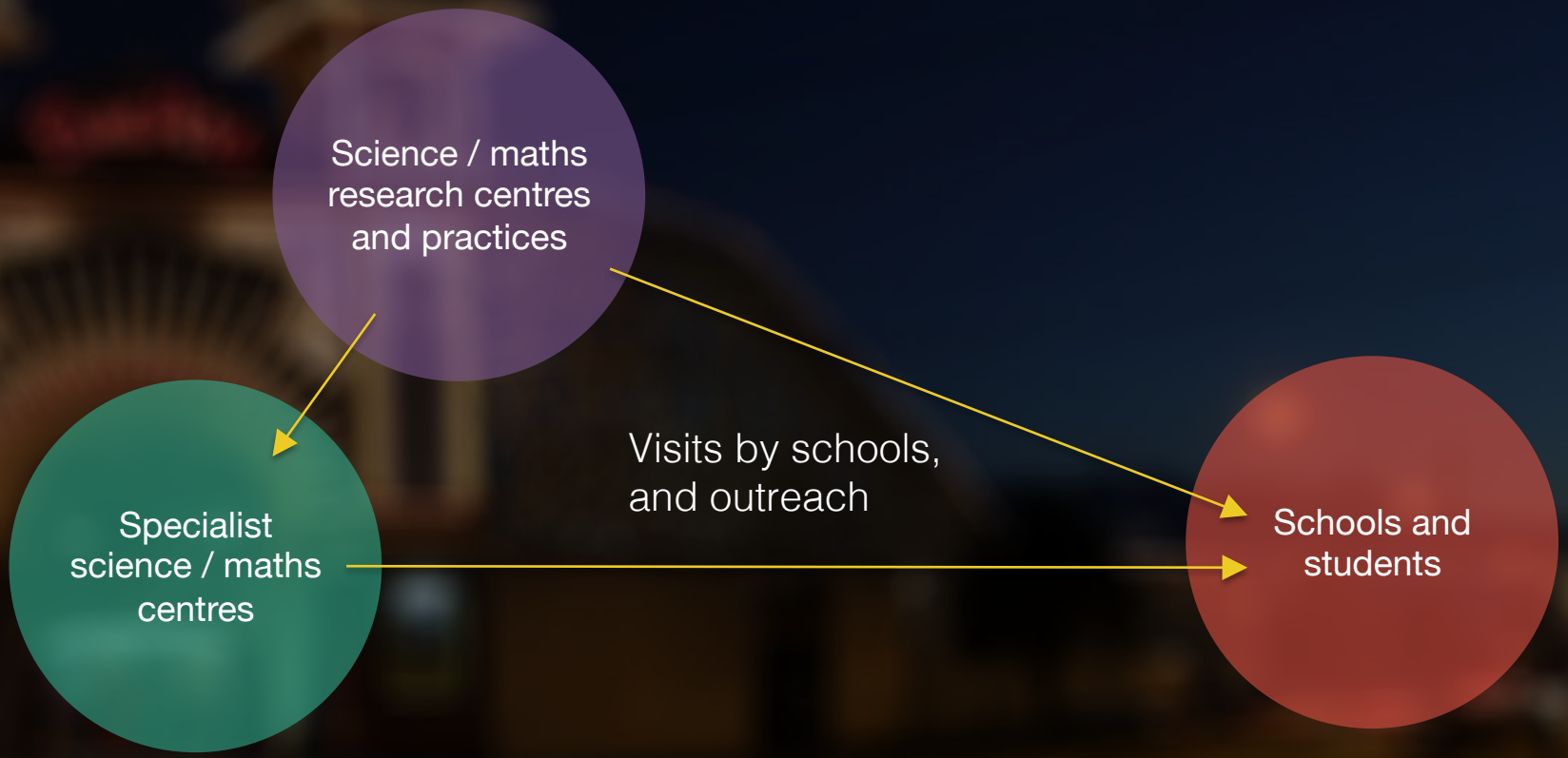
Inserting what's missing into the equation: Teacher education



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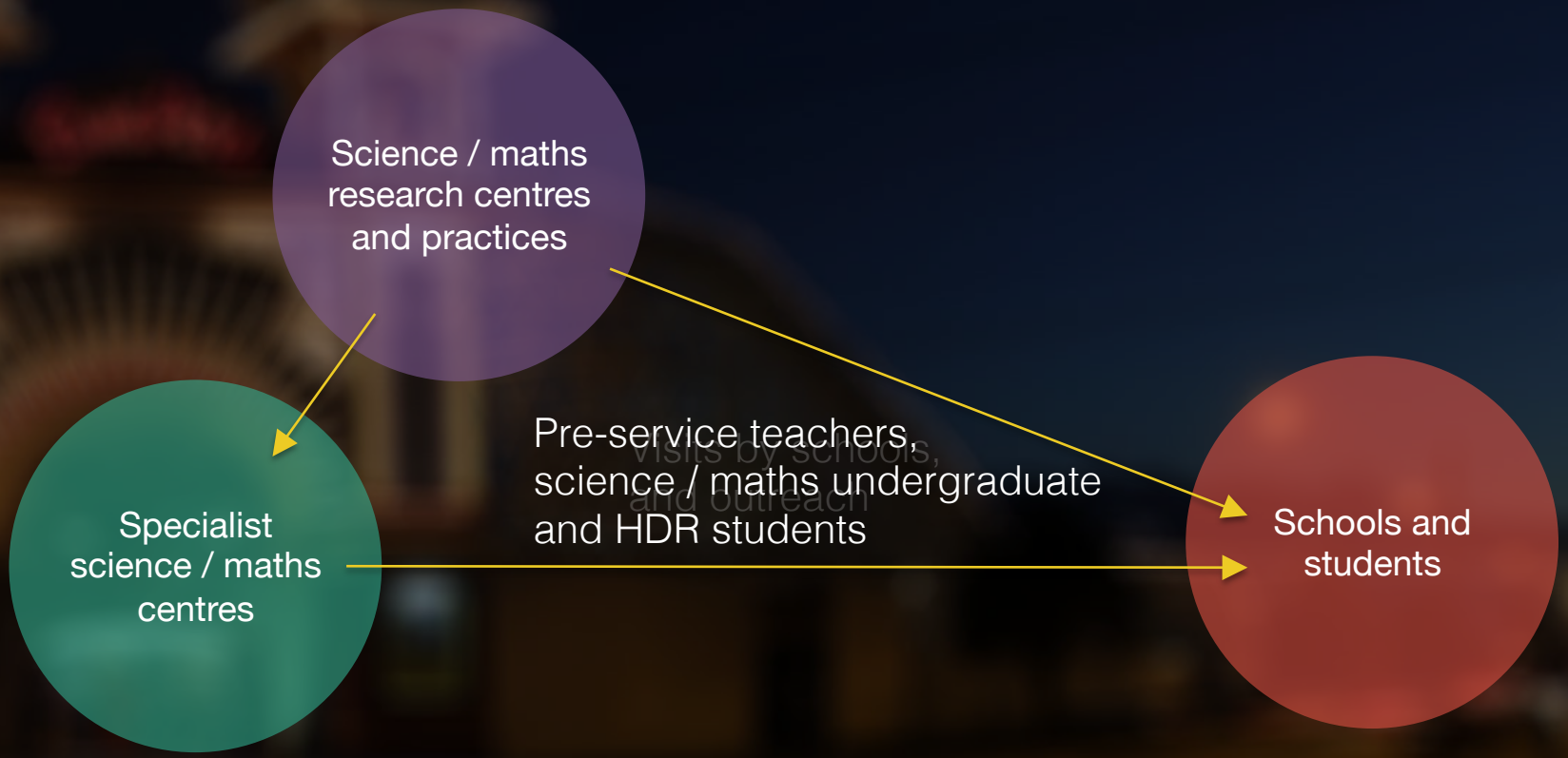
Inserting what's missing into the equation: Teacher education



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Inserting what's missing into the equation: Teacher education

- Collaboration between PhD and undergraduate science students, producing outreach resources/activities
- Refinement of these using REMSTEP specialists.
- Further refinement and trialing of activities and resources in science and mathematics method units
- Ongoing use of resources and activities in teacher education, in university classes and in schools.
- Involvement of PSTs and science students in specialist centre activities including school visits

Assoc Prof
LIZ
JOHNSON

Prof
VAUGHAN
PRAIN

La Trobe University

LA TROBE

Innovation 1: pre-service teachers working with early career scientists to construct curriculum

Our Partners

Faculty of Education

Faculty of Science, Technology & Engineering

Quantum Victoria

ReMSTEP partners

Our Approach

Active collaborations

Personal relationships

Multiple settings: regional & metropolitan

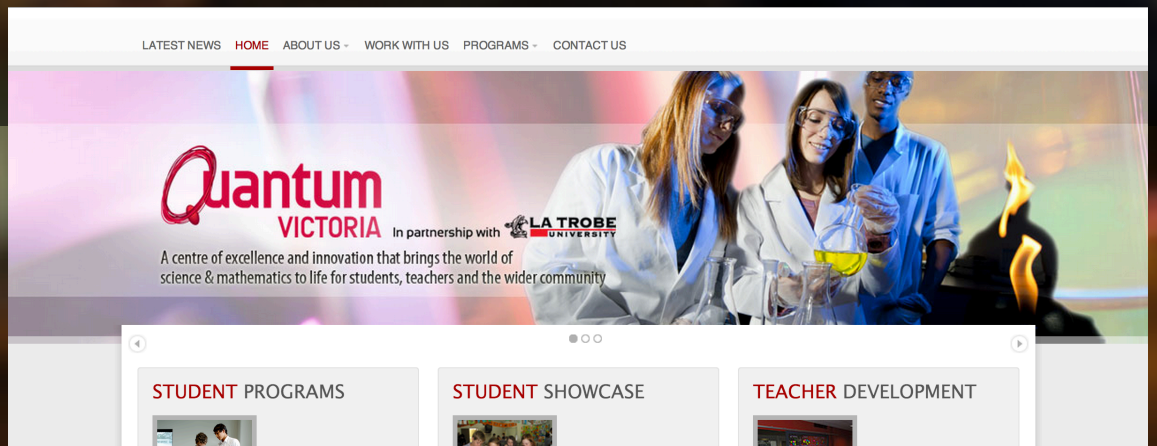
LA TROBE

Innovation 4: pre-service teachers working with Quantum Victoria

Focus on games technology, virtual reality, gesture-based computing, 3D printing, robotics and the physical sciences

Projects with La Trobe University: program development, outreach for schools

www.quantumvictoria.vic.edu.au



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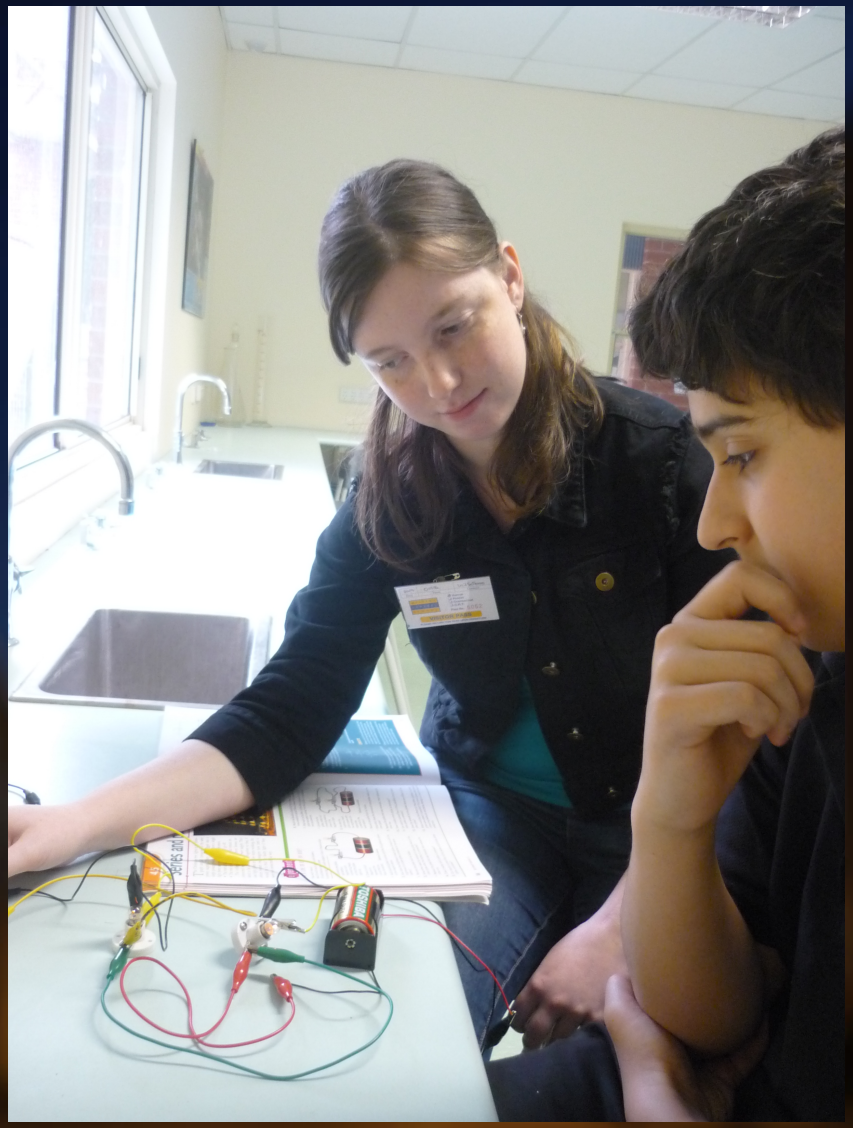


Q & A

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Worldly