

## A more skilled labour force – Improving education and training

Business relevant, high-quality education and training boosts innovation, encourages investment and supports jobs growth. The Government aims to create a world's best practice higher education and Vocational Education and Training (VET) system that provide the skills for jobs of the future.

### Increasing the focus on science, technology, engineering and mathematics (STEM), and innovation in schools

Ensuring there are sufficient graduates in STEM fields is in the national interest and will contribute to the continued development of a globally competitive 21st century knowledge economy. In the face of declining numbers of students taking STEM subjects in senior school years, and hence undertaking higher education in STEM fields, the Government has committed to restoring the focus on STEM subjects in schools as a key tranche of its Students First policy platform. The Government will increase student uptake of STEM subjects in schools and, ultimately, their engagement in STEM higher education and careers through providing:

- ▶ \$7.4 million to develop and implement *Mathematics by inquiry*
- ▶ \$3.5 million towards introduction to computer coding across the curriculum
- ▶ \$0.5 million towards establishing a P-TECH styled education facility
- ▶ \$0.6 million to extend national science and mathematics summer schools to include more girls, disadvantaged and Indigenous school students, including those from regional and remote areas.

### Science, Technology, Engineering and Mathematics (STEM)

With estimations that 75 per cent of the fastest-growing occupations require STEM skills, Australia will depend on a workforce that has the necessary STEM capability to drive innovation and competitiveness in the global economy.

STEM skills are essential in creating and turning new ideas and inventions into lucrative, internationally competitive Australian products, services and exports. STEM studies also develop generic skills such as problem solving, critical thinking and creativity, which are used in a wide range of occupations.

The problem-solving and evidence-based thinking skills a modern economy requires are fostered by studying STEM subjects and, at a more basic level, an ability to understand data and work with technology is increasingly important across the economy.

### Mathematics by inquiry

The Office of the Chief Scientist has identified a critical need for learning resources that will engage students in mathematics, particularly to expand the pipeline of students taking advanced mathematics in senior school years. The *Mathematics by inquiry* maths-in-schools programmes for primary and secondary school students will deliver innovative and engaging teaching and learning resources to support implementation of the Australian Curriculum

### Coding across the curriculum

Information and Communication Technology (ICT) industry feedback consistently emphasises a looming acute shortage of computer coding and programming skills that will impact on a swathe of sectors across the national economy.

Building on the Mathematics by inquiry element, coding across the curriculum will encourage the introduction of computer coding across different year levels in Australian schools.

It is anticipated that a consortia of organisations with appropriate professional capacity and technical expertise will be contracted through tender processes to deliver this and the *Mathematics by inquiry* programmes.

## Implementing a P-TECH styled education facility

Seed funding will be provided for an innovative approach to education having regard to the United States' 'Pathways in Technology Early College High School' (P-TECH) model. This provides a Year 9–14 education that aligns STEM learning with associate degrees in applied science.

Working in partnership with school leaders, employers would be actively involved in the design and delivery of learning and young people will have identified pathways to employment with the school's industry partners.

In the Australian context, and for the purposes of the initial trial, existing school, vocational and tertiary qualifications would be used. The initial P-TECH educational facility would reflect key elements of the US model including strong leadership, collaboration, curriculum design, and industry mentoring and support.

## Summer schools for STEM students

The Chief Scientist has identified the need to provide targeted support to increase the STEM participation of women, disadvantaged and marginalised students, including Indigenous students.

To address these significant concerns, funding of \$0.6 million will be provided to the Australian Mathematics Trust and Australian Science Innovations to provide opportunities for female, disadvantaged and Indigenous school students to attend national science and mathematics summer schools. The funding will support travel and accommodation for participants.