

THE SIEC EDUCATIONAL (SIEC) MODEL: WORKFORCE DEVELOPMENT FOR THE BUILDING & CONSTRUCTION INDUSTRY

OVERVIEW

‘South Australia can only move forward by changing the key elements of the VET system and the way it functions; the way it connects and the way it delivers and by making more efficient use of the resources we have.’

A Skills Strategy for South Australia’s Future¹

The SIEC project began with a relatively simple goal: to identify the **workforce development needs of the building and construction industry** as it moves to implement sustainable technologies.

The result – reached after extensive research and comprehensive consultation with stakeholders in industry, government, higher education, VET and TAFE – prompted the development of an innovative educational model: a model that not only takes building and construction training into the 21st century but provides a template for large scale workforce development initiatives.

Australia, like countries around the world, faces serious environmental challenges. The adoption of sustainable systems, processes and practices is critical to the nation’s future. But this cannot happen without research and development, industry support and the creation of a highly skilled workforce. The SIEC educational model, with its multi-disciplinary, customer focused approach, purpose designed infrastructure, use of best practice learning methodologies and creation of education and career pathways, is unique in the scope and range of its vision. It provides an opportunity to display leadership – in education and training; in stakeholder collaboration; and, most importantly, in the creation of a sustainable future.

The Sustainable Industries Education Centre (SIEC), described in the Full Business Case, provides South Australia with a model that embodies these sentiments. Rather than tinker with the training and education systems of the past – systems designed for an era of classroom based, lecturer driven delivery – the SIEC offers an innovative, creative and collaborative learning environment structured to equip the building and construction, water and renewable energy industries with the knowledge and skills necessary to lead the nation in the use of sustainable technologies.

The educational model underpinning the SIEC is unique not in the scope and breadth of its vision – others have had similar broad based ideals – but in the nature of its design, the flexibility and responsiveness of its

¹ A Skills Strategy for South Australia’s Future, 2008, pg.2

operation and its marriage of learning, research, business development and industry engagement.

Australia's transition to a low-carbon, sustainable economy necessitates the adoption of new and rapidly emerging clean technologies. This, in turn, requires a highly skilled workforce capable of designing, installing, monitoring and maintaining systems, products and processes significantly different from those in common use; so different, in fact, that many have yet to be developed. The creation of such a workforce (as identified in Chapters 3 and 4 of the Full Business Case) requires a new approach to education and training – an approach that looks beyond the traditional vocational silos and modes of delivery and focuses on:

- inter-disciplinary collaboration;
- VET/university cooperation;
- active industry participation and engagement;
- the extensive use of e-learning; and
- the creation of educational/employment programs and pathways within the sustainable industry sector.

The attainment of this vision requires a purpose built interactive infrastructure that both facilitates learning and is part of the learning experience.

The SIEC educational model – with its integration of learning and work, theory and practice, research and application – not only exemplifies the principles promulgated in the Government's Skills Strategy, it provides an opportunity to display leadership – in education and training, in stakeholder collaboration and, most importantly, in the creation of a sustainable future.

1. Industry Drivers

Complex environmental challenges require creative, integrated solutions. There are four key areas that must be addressed if the State is to realise the Government's plans for a green, sustainable future. These areas find form in four distinct 'hubs' within the SIEC: Water; Renewable Energy; Sustainable Materials and Green Waste; and Design Planning and Development. Each hub, located near related industries in the Sustainable Technologies Park (STP), will deliver training that not only targets specific industry and workforce development needs but provides a focus for innovation, multi-disciplinary collaboration and leadership.

Water

Drought, climate change and industry/consumer demands for consistent, reliable water supplies have resulted in a major shift to new delivery technologies (water recycling, stormwater harvesting, desalination etc.). Implementation, however, requires an appropriately trained workforce. At present the industry is struggling to cope with skill shortages, impending retirements of up to half of its worker cohort in the next 10 years and the need for timely, state of the art training.

Renewable Energy

Given the importance of this strategic area to the State's future, the Government has committed to increasing renewable electricity production by 33% in the next decade and allocated an additional \$20 million to facilitate investment. The industry has been particularly affected by the demand for increased grid connect, an expanded focus on small scale installations (following feed-in tariff) and the uptake of smart grid and smart metering technologies.

Sustainable Materials and Green Waste

The building and construction industry is increasingly focused on the development and deployment of clean, green technologies, products and practices. At a practical level this requires knowledge of materials – selection, specification, handling, recycling, reuse and recuperation – environmental management, planning and auditing industry standards, new product development, understanding and addressing whole of life and supply chain issues and forward planning. The industry's ability to implement this environmentally sustainable focus is severely compromised by critical skill shortages.

Design Planning and Development

Sustainability in all its forms is underpinned by planning and development – tasks that encompass commissioning, design, disassembly, the use of geographic information systems, project planning and management.

2. Sustainability Drivers

Sustainable technologies are being developed, tested and marketed at an ever increasing rate. New products, processes and systems are implemented as the demand for more efficient, eco-friendly services spreads throughout the community. To sustain and support industry development the higher education and vocational training sectors need to be both responsive and proactive.

The location of the SIEC within Sustainable Technologies Park, combined with the close collaboration and cooperation between industry, universities and TAFE, will enable staff within the SIEC to:

- identify the skills required to build and maintain sustainable industries;
- target new and emerging needs within these industries;
- design and develop learning programs to train, upskill, demonstrate and communicate relevant knowledge and skills; and
- embed sustainable skills across all industry sectors.

Furthermore the existence of the SIEC with its research and demonstrator elements will assist in the promotion and deployment of new clean technologies to industry.

3. Training Pathways within SIEC

The innovative co-location of the four hubs (Design, Planning and Development; Renewable Energy; Water; Sustainable Materials and Green Waste) not only breaks down the traditional silos that have separated and isolated disciplines, it physically brings together education sectors and trades around the shared theme of sustainability. This proximity, with its resultant exposure to new ideas, opportunities, enterprises and

workspaces, will foster learner collaboration within and across the disciplines domiciled in the SIEC hubs [FBC, 6.4.3] enhancing training opportunities and pathways in the process.

At the purely practical level, inter hub collaboration will connect students from across different disciplines for the joint delivery of:

- Environmental Sustainability Design (involving all hubs)
- Ground Water Testing (Water and Design)
- Installation Procedures in Building and Construction (Water, Renewable Energy and Sustainable Materials and Green Waste)
- Permeable Paving (Water and Sustainable Materials)
- Waste Management (involving all hubs)
- Scaffolding – Elevated Work Platform (Sustainable Materials and Green Waste)
- Storm Water Capture and Re-use (involving all hubs).

This multi-disciplinary approach to sustainability will create a workforce capable of contributing to the design, development and maintenance of a low-carbon economy [FBC, 3.2.1].

4. Pathways across the Three Education Sectors

Clear, accessible pathways between the school, VET and university sectors have long been a goal of State and Commonwealth governments. The SIEC model acts on this objective. It links school students with entry level qualifications to higher level skills training and employment in clean technologies [FBC, 4.2.6].

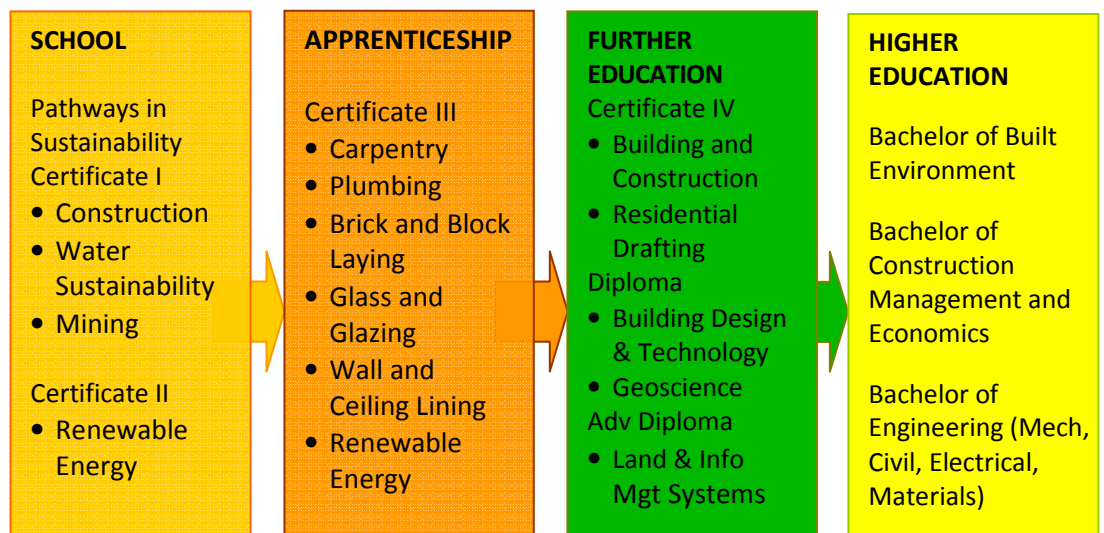


Figure 1: Examples of School to VET to University Pathway

5. SIEC Innovation Model

The SIEC Innovation model, depicted below, combines research, enterprises and training in a unique, collaborative arrangement that will produce substantial benefits not just for the three sectors concerned but for the population of South Australia.

University research, for instance, will inform product development and testing with enterprises supplying the materials, products and systems for analysis, review and improvement. Industry input into current and future directions will be critical.

TAFE, in turn, will interact with enterprises and the universities, providing commentary on products and prototypes, analysing the knowledge and skills required for effective application and identifying possible training implications.

As each sector analyses, reviews and incorporates the comments of their SIEC collaborators, the South Australian public benefits from the advances in sustainable technology, the up skilling and state of the art training of employees, and further refinements and innovations in education and training.

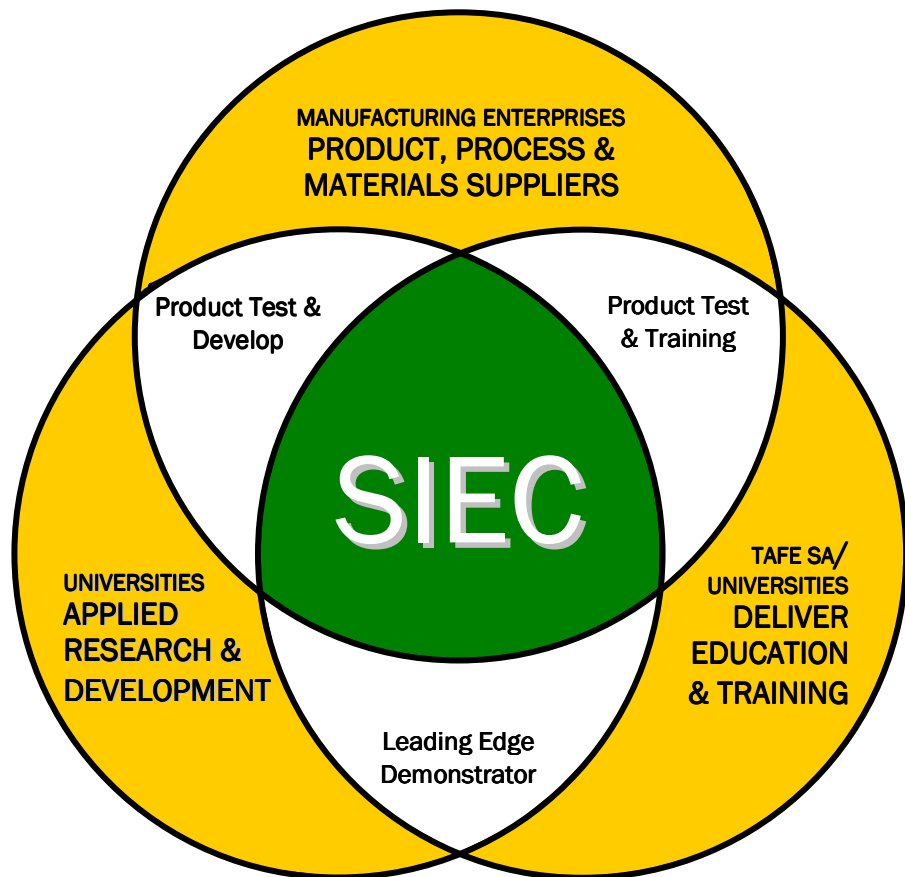


Figure 3: The SIEC Innovation circular model linking research to enterprises to training to research