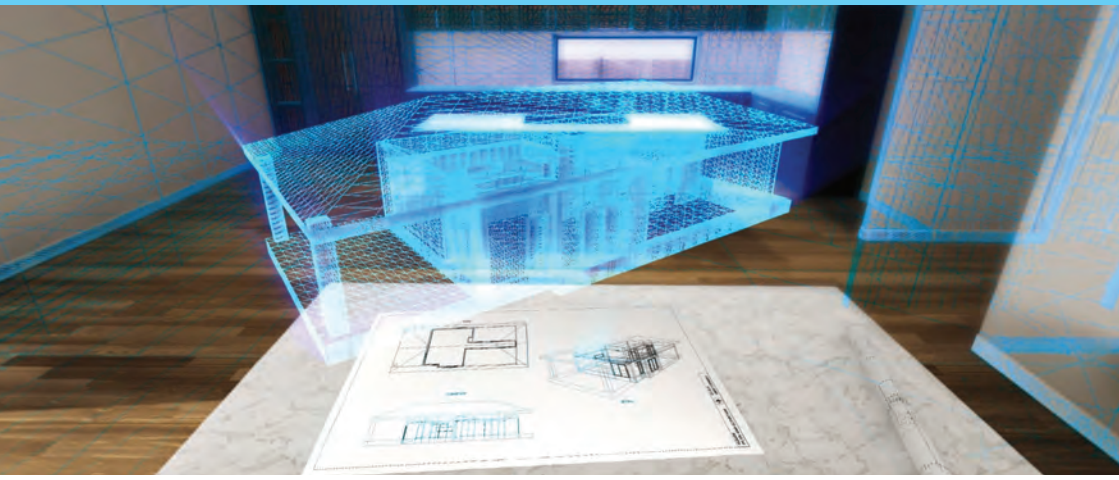
Workforce Training Innovation Fund Projects

Case Studies



VICTORIAN TAFE ASSOCIATION

Introduction

Innovation in the context of the Workforce Training Innovation Fund, as described in the funding guidelines, is directed at challenging existing practices in skills development, training methods and product design. The planned outcomes of the funded projects will improve skill and employment outcomes for learners, and business growth and productivity for industry.

The case study projects are focused on designing and delivering improved training opportunities for priority industry sectors. They also pay attention to the adoption of course design and learning strategies that will engage new and existing workers in the development of skills that are closely aligned to industry needs. Active and sustainable partnerships and close collaboration with industry stakeholders are critical to the success of each project.

Also critical for the sector is the active communication of the outcomes and lessons learned from each project to promote further opportunities for training innovation across the state of Victoria.

Emerging themes

Common to all projects is the partnership with industry stakeholders that include state and national peak bodies, local enterprises and regional business organisations. In several of the case studies, for example, the two projects undertaken by Box Hill Institute, the role of the industry partners is to provide advice on the nature of the industry, its direction and emerging training requirements. For other projects, such as those undertaken by SuniTAFE and RMIT, local enterprises provide a site for the pilot of the new training strategy as well as current and accurate information related to their business and workforce needs. Several projects have also included specialist consultancy and development groups to bring specific knowledge and technical skills to the project team. This approach may be seen, for example, in the Exner Group and the South West TAFE projects, both of which have engaged experts to guide and/or support specific project components such as the underpinning research and development or the project evaluation.

While all projects address the training needs of priority industries, six of the case studies have focused on the use of emerging technologies to build learner knowledge and skills and promote employment outcomes. While the use of a simulation lab within a nursing program is not new, RMIT has added learning resources that allow the learner to access simulations online. SuniTAFE and Exner Group have developed training scenarios using Virtual Reality to improve learner engagement and training outcomes. Holmesglen's HVAC Centre of Excellence has included Augmented Reality as a component of the training program, and both construction industry projects at Box Hill Institute use Augmented and Virtual Reality in the delivery of the training program.

Another opportunity for innovation in training is that offered by a multidisciplinary approach in which learners from diverse yet connected industry areas tackle an open-ended problem co-operatively with learners from several other courses. Both The Gordon's Design Centre of Excellence and Box Hill Institute's Building Information Modelling projects provide advice on the use of this learning approach. South West TAFE can be argued to have a similar interest in the links across diverse industry courses and employment outcomes. Their project is founded in the concept of skill clusters that are shared across job roles, providing multiple career paths for workers.

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Maker Immersion Training Program

Presenters: Rachel Burke, Operations Director, Exner Group
Professor Valerie Francis, Chair in Construction, University of Melbourne

As part of Australia's construction and infrastructure industry, the Exner Group is engaged in construction consultancy services as well as training for the industry. Its work as an RTO, combines practical industry insight with technical expertise to inform the development of innovative approaches to the delivery of training in building and construction.

The entire construction technology sector is experiencing a current skill shortage with low entrants and training course completion rates. The shortage is predicted to continue and the demand for skilled workers to increase. In addition, graduates' skills are often failing to meet the current and future needs of the industry. Exner Group, therefore, has turned its attention to the design of training resources that are relevant to both industry and to the learner cohort.

The Maker Immersion Training Program has focused on the development of new educational resources for the Certificate IV and Diploma in Building and Construction in consultation with industry and, also with VET providers, Holmesglen Institute and Federation University. The innovation apparent in the project is the collaboration with Virtual Reality (VR) developer and spatial

gamification specialist 'Real Serious Games' in the production of the world's first immersive learning resources for the targeted courses. The approach is likely to be well received by learners as it plays to their digital experience and expertise; Exner's Rachel Burke describing the experience as 'one that appeals to the younger cohort'. The learner is immersed into a simulated construction site where the entire outside world is shut out, so they can focus on the learning outcomes presented.

To underpin the immersive nature of the VR resources, the competencies have been grouped into modules that are mapped against the detail of the required content and outcomes of the training packages. Each module addresses a specific content area through a series of scenarios that challenge the learner to engage with the basic content, to practise in a safe environment, learning and taking responsibility, and eventually becoming skilled at completing the scenarios at levels of increasing complexity. They learn by doing. For example, the Health and Safety module starts at a basic level of encountering everyday hazards and then increases in complexity addressing 200 risks, hazards and controls on a construction site.

The Virtual Reality resources are not designed to be stand alone, nor do they replace the practical components of the learning and assessment program.

With the advice and support of the TAFE partners, the resources have been planned as an integral part of a modified flipped classroom approach in which the trainer's role is more accurately described as that of a facilitator. The face to face and self-paced learning components of the courses are maintained, supported by interactive and immersive VR components, activities, mapped notes, discussion topics, case studies, quizzes and assessments. All are accessible through on a Learning Management System providing any-time access for the learner; the trainer can track details of the engagement and outcomes for each learner across each module. A Trainer Guide has also been developed emphasising the opportunities for trainers to actively engage with and support learners using the resources. A linked Train the Trainer program is also included, in order to skill trainers or IT departments in utilising VR.

The project team believes that the new resources will better prepare learners for employment in the industry. They also cite evidence that immersive learning increases the attention span of students by 100%, can be delivered three times faster than traditional classroom learning and reduces training costs. Engagement of learners is also argued to be more reliable.

A pilot group of building and construction learners began their course using the new immersive resources on August 26, 2019. Their experiences and those of their trainers and employers will be reviewed and evaluated by a team from the University of Melbourne, led by Professor Valerie Francis. The evaluation team is interested in gathering evidence of the impact of the program on outcomes for both learners and industry. They will also review the detail and outcomes of the development process and its translation into delivery and assessment of the training package courses.

Their insights and conclusions will inform the framework that has been developed to guide the selection and development of further VR learning resources at both basic and more advanced levels. The evaluation report will also use quantitative and qualitative evidence to assess the contribution and effectiveness of the VR resources within the learning program.

Further details of the Maker Immersive Training Program can be found at

https://www.exner.com.au/

https://www.makerimmersion.com.au/

HVAC Centre of Excellence

Presenter: Ross Digby, Dean, Faculty of Building, Construction and Engineering, Holmesglen Institute

A critical component of the function of a building is attention to its heating, ventilation and air conditioning infrastructure and services, hence the acronym, HVAC. Together they provide the required thermal conditions for a building. Many buildings or enclosed spaces have special requirements in respect to temperature, particulate size and type, humidity, rate of air change, and chemical composition. For example, horticulture sites, research centres, manufacturing enterprises and IT businesses need to maintain a specific environment as a foundation of a successful workspace.

Holmesglen Institute specialises in training for the mechanical and services aspects of HVAC. Their experience and the advice of industry partner, the Air Conditioning and Mechanical Contractors' Association (AMCA), is that the industry is experiencing a skill shortage exacerbated by rapid changes in the required technology.

Two initial challenges were apparent in addressing the shortage: an up to date, comprehensive and industry endorsed training qualification and a simulated training environment providing an efficient learning and assessment space

for trade and post trade learners. Ross Digby, Dean of the Faculty of Building, Construction and Engineering at Holmesglen Institute is clear that a training provider can't 'borrow a building for a few days'.

The concept of a HVAC Centre of Excellence offered a sound beginning for generating the inspiration and governance to address the nominated challenges as well as the allied opportunities. The Centre, therefore, addressed the industry need for workers with the required technology skills to operate in the current business environment through the development and accreditation of a new Certificate IV in Balancing and Commissioning. Graduates are practically trained in balancing and commissioning, and assessed on both their skills and underpinning knowledge to balance and commission an HVAC installation. The new course replaces the previous theory-based course and assessment that was based on United States' standards (NEBB).

The new Australian qualification provides a great opportunity to promote careers in the industry and the Centre has addressed the opportunity in several ways. A career progression chart for schools sets out the options from pre-apprenticeship courses through to the Certificate IV with new information that gives an accurate road map. The Centre provides both trade and post trade training and information for industry entrants, qualified trades practitioners and employers.

In addition to the accredited course, the development options include master classes, conferences, workshops, product launches and trade nights. Trade teachers are similarly offered professional development focusing on changes to the industry and insight into the use of new training resources including those that include Augmented Reality (AR). A final option under development is training targeted at the international market.

Of course, many of the options are dependent on the presence of a comprehensive and current simulated environment to efficiently deliver and assess the new course and, also, to provide a site for industry short courses and information sessions. The HVAC Centre of Excellence is a result of several years of work between AMCA and Holmesglen Institute to raise the profile of mechanical services and skills of Mechanical Services Contractors. The collaboration and joint commitment gave suppliers to the industry the confidence to donate equipment and expertise to the construction of the HVAC Centre of Excellence. To date, industry has donated $500,000 for equipment and new formal agreements are in place to support facilities upgrades and trade nights.

The HVAC Centre of Excellence is the key physical output of the project. But industry stakeholders also contribute as part of the Centre's steering committee to ensure the ongoing viability and sound management of the initiative. The Committee is working to oversee the development of high quality and technologically advanced learning and assessment resources and the further development of information for careers practitioners on study and work options in Mechanical Services. An allied initiative relates to the options for applied research based within the Centre's scope of influence and activity with both industry and education sectors.

Further details of the HVAC Centre of Excellence can be found at https://holmesglen.edu.au/Services/Holmesglen-HVAC-Centre-of-Excellence/


ARU-HEATING WATER

The Gordon Design Centre of Excellence

Presenters: Wayne Ketchen, Acting Director, Education
Juliet Williams, Project Officer, Skilling the Bay, The Gordon

The Gordon has long played a critical and central role in vocational education and training for western Victoria. Its profile of training courses is designed to address the needs of urban, industrial, pastoral and rural industries. As its regional population and industry base grows, The Gordon is committed to reviewing the way in which it builds the skills of its constituents to better address emerging industry and employment opportunities.

The Gordon Design Centre of Excellence is a new example of its commitment to innovation in course design and the expansion of learner outcomes. The Centre is well situated in Geelong given the city's status as a UNESCO City for Design. It is designed as the focal point for students from across the Institute to collaborate with others who are undertaking training programs that have a design component. The Centre enables students from diverse fields such as engineering, advanced building and design, fashion, ICT, and graphic design to work collaboratively on industry-based design challenges.

The initiative represents a new cross-discipline approach to the delivery of vocational education and training. A traditional approach to learning is typically structured around an industry specific training package with limited or no cross-discipline collaboration. The Design Centre of Excellence, however, employs a problem-based learning approach in which students learn about a subject through the experience of solving an open-ended problem co-operatively with learners from several other courses. The co-operative approach is based on the selection of courses that incorporate a design aspect.

Currently, the Design Centre of Excellence brings together four industry partners with manufacturing, marketing and IT expertise and teachers from six different program areas. The group and the project steering committee have been charged with identifying and developing the foundational design and problem-based learning skills needed for students studying in the selected range of courses.

Industry stakeholders have identified the importance of specific technical skills and knowledge as well as working in teams across specialisations. The importance of breaking down a silo approach to industry specialisations, employment and work roles was recognised and promoted as a starting point for designing learner outcomes from the Centre's programs.

The project to develop and implement the project vision and design was complex, requiring several concurrent activities. To ensure that the project staff learned as they worked, an evaluation plan was designed and implemented from the beginning of the project.

As a foundation for the project, the team worked with the Curriculum Maintenance Manager to develop and accredit a course through the VRQA. Learner enrolment in the resulting new Victorian Course in Multidisciplinary Design is in addition to enrolment in the learner's primary training package or accredited course. Its 2 core and 2 electives competencies are applicable across a range of learners in a range of courses; learning resources have been informed by industry advice and developed to address diverse industry profiles. Industry based projects are the core of the learning approach.

A multi-disciplinary approach is adopted that enables team work and collaboration skills to be developed as learners work on design solutions, supported by industry specialists, sites and experiences to solve real industry problems. As learners work on their industry projects, they concurrently complete the newly accredited set of foundational design units of competency that also may provide credits for their parent qualifications.

The delivery methodology includes the use of new technologies such as Base Camp, Padlet, Zoom and Sparks, all of which are widely used in workplaces. Where required, the course can also include the use of standard specialist equipment.

The planned outcome of the course is increased learner engagement, retention, course completion and employment.

Teachers in the program are provided with targeted professional development that includes insights into the course content and its outcomes, opportunities for the development of professional currency in terms of the delivery and assessment methodology and mentoring from industry subject matter experts to develop their industry currency. This is currently provided as a program that runs across 1.5 days.

The outcomes of the project are planned for dissemination through VET and TAFE networks.

The Centre itself, as a physical space, is designed for use by learners for collaboration, study and meetings. It is envisaged as a critical component of the rollout of project-based learning, providing a designated and inspirational area for learners to collaborate. Learners are also planned to be provided with the opportunity to use new technology such as 3D printers, spark boards and other advanced technologies that are integrated into the learning program.

The business model for the Centre is focussed on the enrolment of learners in the course as well as use of the Centre for industry events. The evaluation project is expected to further describe opportunities for increased liaison and co-operation with industry stakeholders that will build the viability of the Centre as a business enterprise.

The evaluation of the project was planned to provide advice to the project as part of the project implementation process. From the start, feedback was sought from industry, learners and teachers to inform the action of further stages of the project. It has been conducted by independent consultants who were selected through a tender process. The high-level advice from the project manager to others undertaking innovation projects points to the importance of flexibility in managing the project to allow the space to respond to emerging opportunities and threats and to respond to unforeseen complications.

Further details of The Gordon Design Centre of Excellence can be found at https://www.thegordon.edu.au/blog/august-2018/the-future-of-design-is-here-now

Transforming Enrolled Nurse Education

Presenter: Debbie Reynolds, Director of Industry Initiatives and Engagement, School of Vocational Engineering, Health and Science, RMIT University

An Enrolled Nurse (EN), a graduate of the Diploma of Nursing, provides patients with basic nursing care, often working beside a Registered Nurse who is responsible for more complex procedures. Current employment for ENs is largely in the aged care and services industry. Data indicates that in 2012, Enrolled Nurses accounted for about 18% of the Nursing workforce with the proportion estimated to rise to 25% in 2020. Research, however, suggests that Diploma of Nursing graduates lack the desired level of work readiness and that they may particularly benefit from increased skills for work in the acute care environment.

A worrying trend is the relatively high attrition rate of ENs during the course. A similar trend in their first year of work is argued as potentially linked to a lack of exposure to the work environment during training. A further factor that underpins the importance of high-quality training for new ENs is the ageing profile of the current workforce with more than 25% over the age of 55 in 2019. The demand for both Registered and Enrolled Nurses is predicted to increase sharply over the next 10 years.

To address these factors, RMIT has worked to develop a new approach to training for Enrolled Nurses. In May 2017, in partnership with local healthcare provider, Northern Health, a transformed approach to EN training was launched. The new training model involves a shift from classroom-based learning to a situated learning model where all delivery is conducted at a dedicated education unit, a clinical school, located at a health care service.

The new EN training program is available at Northern Health's three campuses in Bundoora, Broadmeadows and Epping. The learning is therefore embedded within the physical and cultural environment of a modern healthcare organisation, with learners completing at least 400 hours of clinical placement. The increased practical experience results in ENs who are aware of and practised in their work requirements, so they are employable and ready for work at the end of their studies.

The delivery model includes face to face engagement with teachers, simulation laboratories and online materials including a new web-based simulation experience that can be accessed by learners online at any time to reinforce a self-directed approach to the learning program. The simulation experience, combined with focused work placement, ensures that learners are well prepared as work-ready graduates.

Learners in the program were recruited through a process that resembles a job interview to reinforce their commitment to and knowledge of their proposed work context. The recruitment process attracted more males than usually apply for the program.

Feedback from Northern Health throughout the program has shown that the student group was patient-centred, proactive in developing professional skills and resilient in practice; qualities that closely aligned to Northern Health values and supported their mission of outstanding healthcare to the community.

The first graduates of the new delivery model began their course in August 2017 and completed their studies in May 2019; a new group has since commenced their enrolment. The positive impact of the new model was clearly evidenced by the fact all 17 graduating students in the first group were offered employment by Northern Health.

Debbie Reynolds, Director of Industry Initiatives and Engagement in RMIT's School of Vocational Engineering, Health and Science believes that the model can be used in other locations, including regional sites, to promote a similar outcome of engaged, knowledgeable and employable ENs. In addition, the graduates' knowledge, skills and practice in the training program can be directed to practice and employability in aged care, acute care, critical care, emergency and mental health services. The EN graduating from this model of the program delivery will be an all-rounder and ready for work. Graduating ENs are also offered 12 months credit into the RMIT Bachelor of Nursing program.

Further information can be found at https://www.rmit.eu/content/dam/rmit/documents/college-of-science-engineering-and-health/health-and-biomedical-sciences/nursing-flyer2018.pdf

Building Information Modelling

Presenter: Tony Watson, Executive Manager Business Development (Apprenticeships and Traineeships), Box Hill Institute

Construction is a major growth sector for Victoria and has been a consistent focus of training and industry engagement at Box Hill Institute.

Building Information Modelling (BIM) refers to a set of processes, technologies and policies that enables multiple stakeholders to collaboratively design, construct and operate a facility in a virtual space. It provides a shared knowledge resource of information about a facility, building or infrastructure, forming a reliable basis for building performance decisions during design, costing, construction and over the asset's lifecycle through to demolition. Another more detailed operational framework describes BIM as providing the opportunity to visualise the building, facilitate programming, calculate and adjust the budget, address facilities management, provide environmental and energy efficiency solutions, and embed emergency plans and prevent security issues.

The WTIF funding is being used to develop, accredit and pilot two Victorian accredited courses, an Advanced Diploma in BIM and skill sets through a course in BIM. The qualifications address the application of BIM across the construction supply chain and were developed with the active support of the state Curriculum

Maintenance Manager for Engineering. Forty fully sponsored places are offered at the pilot program stage in 2019 – 2020. Qualitative vocational research is planned to investigate the pilot program outcomes and provide advice for the future of the program.

In addition, the project is building a blended and online learning platform to support Virtual Reality (VR) and Augmented Reality (AR) simulation through a BIM contract. The planned learning resources are 100% online and flexible addressing noted gaps in skills and knowledge within the existing workforce, thereby increasing accessibility and uptake. Their training needs will be addressed through the development of a minimum of 10 video master classes and VR and AR simulated learning environments.

In addition, the project addresses the development of TAFE training capability through the sharing of knowledge in teaching practitioner workshops across Victoria.

An innovative and critical feature of the project was its response to the National BIM knowledge and skills framework and competency matrix, released by the Australian Construction Industry Forum in 2017. This framework plays a crucial role in the construction sector's approach to improvement and enabled Box Hill Institute and its industry partners to develop competency-based qualifications that accurately reflect current industry needs.

Key construction industry partners involved in advising Box Hill Institute prior to, and during, the VRQA course accreditation process include the BIM Academy

(Australia), AG Coombs, Air Conditioning and Mechanical Contractors' Association, Billard Leece Partnership, BIMCO, BUCHAN, DKO, Ozbuild, PACE and WSP.

The project is guided by an industry steering committee that includes the industry partners, peak bodies and enterprises. It undertook significant work in advising the course accreditation. The course accreditation team was led by the Curriculum Maintenance Manager for Engineering Industries, hosted at Box Hill Institute.

The course accreditation project also responded to the 2016 Victorian Government Construction Technology Strategy. This strategy points to changes within the Victorian Construction industry being driven by rapid advances in information technologies, new production methods, improved environmental performance and new ways to control costs.

Both qualifications have also been received positively by the Office of Projects Victoria in building capability to deliver world class infrastructure in accordance with the Victorian Digital Asset Strategy.

A critical component of the new accredited courses, and of the entire project, is its focus on collaboration across construction industry sectors rather than maintaining a traditional siloed approach. The training environment is multi-disciplined with a focus on what has been termed as Industry 4.0.

The project and the delivery of all planned project outcomes and results are in progress. The indicators of the engagement of industry and learner stakeholders are strong, as are the early outcomes of learner engagement and industry support. The course content and associated VR and AR learning resources developed for the new accredited courses may be incorporated into other qualifications. Skills First funding may become available to learners in the courses.

The future of this innovative approach to training in the construction industry is likely to play a critical role in improving the capability and capacity of the industry in Victoria.

Innovation shake-up delivers results

Presenter: Robin Kuhne, General Manager, Education, SuniTAFE

SuniTAFE is located in north west Victoria with campuses at Mildura, Robinvale and Swan Hill, and onsite training support delivered across the region. The Institute's primary focus is its relationships with the local community and industry, building the capacity of the region through collaboration. Two years ago, SuniTAFE assembled 200 industry (and community) representatives to contribute to building the future focus of the Institute.

Since that time, the profile of courses has been reviewed to include a specialised focus on horticulture and agriculture, transport and logistics, and health industries. The partnership with La Trobe University has been reinforced to generate pathways to higher education and, also, foster research opportunities. SuniTAFE has also been successful in bidding for DET development projects focused on the Regional and Specialist Training Fund and the Workforce Training Innovation Fund that is the subject of this case study. Each initiative shares the common starting point of partnership with local industry and community.

The Institute focus on the future workforce and its industry employers is also evident in the realignment of the traditional Open Day to a Jobs Day; the change in language represents the change in Institute focus.

The success of the current approach is shown in the 28% increase in enrolments and SuniTAFE's achievement of leader in the TAFE sector in terms of improvement in employment status and in employer satisfaction. In addition, data shows that SuniTAFE's apprentice completion rate of 95% is significantly above the national average.

The Workforce Innovation Training Fund (WTIF) project is focused on the Horticulture and Agriculture industry in partnership with Mildura Regional Development and international company, OLAM Edible Nuts that operates across sites in the region. For the project reported here, the WTIF focus is on:

- Developing skills for current and future smart farm job roles, and
- New partnerships for the design and facilitation of programs.

Employment in the regional horticulture industry is expected to rise by 600 to 1000 jobs in the next 3 years. Four out of five of Australia's most valuable horticulture exports are features of the Mildura region. A massive investment in Horticulture in the region is underway and a potential skill shortage, partly linked to an ageing workforce, requires a focus to attract young people to a career in the horticulture industry.

But Work Health and Safety (WH&S) is a serious issue for an industry that employs 50,000 to 100,000 workers across Victoria. The partners' analysis and understanding of the risk were informed by data and information on the agriculture and horticulture industry from research by Safe Work Australia.

WH&S was also regarded as serious by OLAM with two significant incidents over the past 5 years. They recognised the complexity of building WH&S good practice in managing risk in the workplace through a focus on the People, the Processes and the Machinery.

In addressing the People dimension of the risk, the partners, led by SuniTAFE, focused on building a proof of concept using Virtual Reality (VR) as a training tool. The questions to be answered in the proof of concept were:

- Can technology be used across a diverse worker group to deliver critical skills, influence behaviours and impact on workplace culture?
- Will workers engage with a different training model?
- What benefits, consequences and further applications exist?

Four scenarios were filmed on site in the workplace linked to the WH&S unit of competency. They tackled the issues of speeding in work machinery, drugs and alcohol use, mobile phone use and the use of personal protective equipment (PPE).

In the Speeding VR, the trainee feels the effect of a vehicle collision and the emotions involved in killing a worker. The Drug and Alcohol scenario reinforces Olam's rules and also builds a level of trust with workers. The Mobile Phone scenario focuses on importance of focus and gives the trainee a scare with a close call. The PPE scenario highlights how omitting PPE can lead to injury or lost time.

All OLAM workers participated in the training prior to the 2019 harvest. The most powerful evidence of the effectiveness of the training using VR was that no serious incidents were reported in the orchard during the harvest season. This is the first time this has occurred.

Seventy-seven workers responded to a survey that sought to understand the impact of the VR training. An overwhelming number of responses agreed that VR training in the workplace was effective, with the Speeding scenario judged as having the most powerful impact. Participants also offered suggestions for improvement and for additional scenarios and applications.

SuniTAFE plans to expand the VR training option within training for the horticulture industry and is also investigating its applicability to transport and logistics.

Qualifications in Offsite Construction Technologies

Presenter: Tony Watson, Executive Manager Business Development (Apprenticeships and Traineeships), Box Hill Institute

The WTIF project addresses innovation in industry and workforce training requirements in the response to the 2016 Victorian Government Construction Technology Strategy. The Strategy points to changes within the Victorian construction industry that are driven by rapid advances in information technologies, new production methods, improved environmental performance and new ways to control cost. Construction is an area of predicted expansion within the Victorian economy. Prefabricated cross laminated timber is an emerging area of interest for the industry and the focus of the course development activity.

Prefabrication and off-site construction are regarded as new advances in the construction industry providing an opportunity for the industry and overall economy to reduce construction times and associated costs. The challenge for the Box Hill Institute project team and their industry partners was to address the skills and knowledge gaps not covered within current state and nationally accredited courses and training packages. It was also essential that training content and delivery was accessible, flexible and relevant.

To address the critical and emerging skills gap, the project was initially focussed on the development of new qualifications in Offsite Construction Technologies. The emphasis of the qualifications is on timber prefabricated building systems at Diploma and Course in levels of the Australian Qualifications Framework. The Diploma qualification is focused on project management while the Course in qualification relates to both project management and the installation of prefabricated building systems using timber. Forty fully sponsored places have been provided for the pilot program stage 2019 – 2020. Qualitative vocational research is planned to investigate the pilot program outcomes and provide advice for the future of the program.

Key industry partners involved in advising Box Hill Institute prior to, and during the VRQA course development and accreditation process included Xlam, Sinjen, WoodSolutions, Lendlease, Hutchinson, Atelier Projects, Carbonlite Design and Build, and Architects HimmelZimmerman.

The industry steering committee for the accreditation project undertook significant work in identifying the skills and knowledge requirements for design, production, manufacture, transport and safe installation. The course accreditation team was led by the Box Hill Institute hosted Curriculum Maintenance Manager for Engineering Industries.

Research into the potential skills gaps related to off-site manufacturing and changes to the National Construction Code, including the growth in off-site construction technologies, was undertaken by Box Hill Institute and other

stakeholders, including consultation with key industry partners and linked stakeholders. In particular, Professor Kerry London and her research team from Western Sydney University shared academic publications related to offsite manufacturing.

In addition, the project is building a blended and online learning platform to support Virtual Reality (VR), Augmented Reality (AR) and a cross laminated timber (CLT) workstation simulating a real work environment. The planned learning resources are 100% online and flexible addressing noted gaps in skills and knowledge within the existing workforce, thereby increasing accessibility and uptake. Participants' training needs will be addressed through the development of 10 video master classes and VR and AR simulated learning environments. Training is designed to include flexible, online and face to face elements. For current industry practitioners, a comprehensive RPL option is included.

The project also addresses the anticipated upskilling requirements of the existing workforce due to changes to the 2019 National Construction Code Volume One (NCC), increasing the range of buildings, up to an effective height of 25m, in which fire-protected timber construction systems can be used. For each situation, a unique performance solution with assessment methodology is required.

In addition, the project includes attention to the development of TAFE training capability through the sharing of knowledge in four workshops for teaching practitioners across Victoria.

A major outcome for the project is training for the development of off-site manufacturing processes for construction, including reskilling and upskilling of the existing workforce as well as the recruitment of new workers. The new course content may be considered as options for electives in traditional carpentry apprenticeships, as well as transport logistics, building information modelling and lean manufacturing courses.

Further information about the project is available at https://www.boxhill.edu.au/courses/diploma-of-project-management-for-prefabricated-building-systems-timber-dpmpb-d/ and https://www.thefifthestate.com.au/innovation/building-construction/the-box-hill-institute-will-be-a-first-mover-in-the-race-to-train-up-workers-for-offsite-construction/

A New Work Mindset in South West Victoria

Presenters: Susan Pettigrew, Manager Schools Jobs and Programs
Belinda Kim, Manager Teaching Quality Centre, South West TAFE

South West TAFE's WTIF project focused on identifying new and emerging training options to prepare existing and future workforces to face the challenges of rapid change. It also addressed the mechanisms by which organisations and industry challenge existing practices to thrive in the complex world of work.

By shifting the mindset of students and employers from job specific training to a focus on building a portfolio of technical, enterprising and career management education skills, we can increase the long term employability of TAFE graduates and better meet the immediate needs of employers.

South West TAFE undertook an industry-based research-to-action model, in partnership with the Foundation for Young Australians (FYA) and three key industry partners, Western District Health Service, Lyndoch Living and Eventide Homes Stawell Inc. The research is based on FYA's 'New Work Order' and a 'New Work Mindset' model and focused on the health and aged care sector in south west Victoria.

The project focused on three components:

1. Building localised future focused evidence of skills needs
2. A new 'skills based' approach to career development and management for current and future workers
3. Design and delivery of high-quality skills training that responds to industry needs and latest research on the future of work.

The outcomes of the research informed the development of four major products that will influence and challenge thinking about training for work: PIVOT Career Navigator Tool, The Hive Innovation Hub, a workforce planning model and micro-credentials. Each product is designed to support transitioning economies to enable deep collaboration across stakeholders and to foster equity in the community.

The research component indicated that the 2 major forces for change in south west Victoria were an ageing population and the pervasive nature and use of emerging technologies in personal and industry contexts. By 2030, over 1 in 4 people in the south west region will be over 65 years of age with a predicted 26% growth in aged support services; residential care is predicted as the largest component of the growth. A review of job descriptions and job roles in the health and aged care sector revealed that job descriptions and required qualifications did not necessarily match the day to day requirements of the work scope and responsibilities. Job descriptions and training requirements for on the job skill requirements therefore need to change to reflect reality.

The FYA New Work Mindset model is based on the identification of job clusters; each cluster requires similar skills. Seven clusters were identified: Artisans, Co-ordinators, Designers, Generators, Informers, Carers and Technologists. (More information about the FYA New Work Mindset model can be found at https://www.fya.org.au/report/the-new-work-mindset-report/). Demand for employees with skills and experience in the Informers, Carers and Technologists clusters is predicted to grow. In particular, the Carers' cluster is predicted to see a 29% growth in jobs by 2025, requiring an additional 2,500 workers across the south west.

The FYA model also indicates that a career no longer follows a linear path; a person may have one or more skill sets that are relevant in multiple job roles. Research has indicated that workers are likely to have 17 jobs over 5 careers. For example, a scan of 4.7 million job ads identified that the three common skill sets of teamwork, time management and communication were identified

in all advertisements for the Carers' cluster. They were nominated as required enterprise skills in order to meet the job demands. Enterprise skills particularly overlap across job roles within the cluster and into other clusters; and similar technical skills may also be found in other jobs within the cluster. For example, personal care workers and enrolled nurses share 17 of the top 20 required enterprise skills, and 6 of the top technical skills. The overlap may also operate across job clusters with personal care workers and retail managers sharing 13 of the 20 top required enterprise skills but none of the 20 top technical skills. This highlights the importance of skill transferability.

The challenge, therefore, was to support workers in identifying their skill profile and applying it to change their thinking around the future of work. Employers and education providers can use this tool to support current and future workers in having future-focused career conversations. (pivotcareer.com.au).

PIVOT uses data from thousands of job ads, job descriptions and courses to find out what skills are gained and required in a number of jobs across south west Victoria. Workers, career changers and job seekers complete the tool to develop a profile of their top skills that may qualify them for multiple jobs. They can then apply for the jobs that match their skills, experience and interests across the industry clusters.

The FYA research report, alongside the South West TAFE local consortia industry skills audit, has identified key skills gaps related to areas of Management, Communication, Creativity, Professionalism and Leading others. Enterprise skill sets have been developed under each of these categories to support consortia

skills gap training. Each of these key skill areas has been aligned to the Core Skills for Work Developmental framework (CSfW) and the required levels of performance mapped. The performance levels required for each enterprise skill across the consortia is a minimum of Capable through to Expert. Skill development, in the form of micro-credential training can be provided through a combination of accredited skill sets, and non-accredited enterprise skill sets. Most of the training can be undertaken at industry sites. The micro-credentials are designed to be flexible, stackable and assessable. The training is short duration and recognised through a digital badge to shareable across digital platforms.

The research aspect of the project also indicated the opportunity for a focus on new business and product development, with initial attention to the Carers' cluster. The Hive Incubator is a community focused entrepreneurial hub that is located at South West TAFE. It offers a co-working space with an immersive seven-week program to enable the development of business or product ideas. It is where you can collaborate and take innovative ideas into reality.

The outcomes of the research informed the need to:

- Create a repsonsive and flexible training system that can rapidly meet changing industry needs.
- Investigate training opportunities through microcredential solutions as an option to fill skill gaps where traditional training cannot.
- Improve the involvement of industry and employers in learning systems to support them to devleop a pipeline of talent from within and the community.

It is likely to play a positive role in the economic and social development of south west Victoria.

Further information about the project is available at

https://swtafe.edu.au/ and

https://www.fya.org.au/wp-content/uploads/2019/02/TheNewWorkMindsetAction_SWVic.pdf

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