Productivity Commission Education and Training Workforce Study –

Submission by TVET Australia

TVET Australia is a Ministerial company providing services to the vocational education and training (VET) system. Its responsibilities include the provision of secretariat support services to key decision making bodies of the national training system including the Flexible Learning Advisory Group (FLAG). FLAG is a committee of senior VET officers advising the National Senior Officials Committee (NSOC), the Australian Government Department of Education, Employment and Workplace Relations (DEEWR) and the Australian Information and Communication Technologies in Education Committee (AICTEC) on national issues related to the directions and priorities for flexible learning in the VET sector, with particular reference to e-learning technologies.

This response has been developed by TVET Australia from its role in providing Secretariat services to FLAG.

Context for this response

In 1999 Governments developed and invested in a five-year national strategy - known as the Australian Flexible Learning Framework for the National Vocational Education and Training System 2000-2004 (Framework).

The Framework was designed to provide the VET system with the essential e-learning infrastructure and expertise needed to respond to the challenges of a modern economy and the training needs of Australian businesses and workers.

The first Framework Strategy focused on raising awareness of the potential of e-learning and starting to build capability. The second Framework Strategy, implemented during 2005-2007, continued this work and focused on engaging with key target groups.

The third Framework Strategy, for the period 2008–2011, is focusing on embedding e-learning in training providers and businesses. Together these strategies have created a considerable infrastructure and a sound foundation for e-learning across the national training system.

Scope of this response

This submission is focussed on that part of the study which specifically relates to innovations in e-learning and the adoption of new technologies in education and training. It deals only with the questions relating to the impact of technology on the VET workforce and workplace found in Section 4 of the Issues Paper (pp.15 – 18) and address concerns around:

- structural economic change and the need for flexibility and responsiveness in the VET system and its workforce;
- technological developments, and changes in the organisation of production within firms, which can alter the types and amount of training demanded, in particular, by existing workers who need to upskill; and

- how the adoption of new technologies and e-learning initiatives their impact on VET pedagogy and demand.

In particular this submission addresses the specific questions raised in the Issues Paper in respect of the third dot point.

Overview

The VET sector operates in an ever evolving landscape of social, economic and technological change. The imperative for the continuous development of VET workforce capacity is driven by the extent to which the current workforce is capable of achieving the key outcomes expected from it in this landscape.

In a broad sense the VET sector faces a number of challenges including the need to respond to:

- Public policy around social inclusion
- Macro and micro economic reform
- Government participation and productivity targets
- Increased client expectations especially from those who are accustomed to and expect to use technology for learning
- An expanded student demographic
- New forms pedagogy in an information and technology rich education environment
- Changes in industry practices and processes

The VET workforce in all its categories needs to be flexible, agile and well qualified to understand the opportunities that accompany change and also to meet the challenges.

The Australian Government's productivity agenda is concerned with raising the skills of the workforce to ensure that Australia is competitive in a global market. Education and training are seen as critical to competitiveness and the agenda aims to encourage all Australians to achieve at the highest possible levels. The agenda also seeks to ensure that the skills of the Australian workforce better match skill needs in the labour market.

In this context demands on the VET sector and the VET workforce will continue as the Government seeks to fulfil a productivity agenda that is in part enabled by the digital revolution; and that is most visible in the major infrastructure investment of the National Broadband Network (NBN), the Vocational Education Network (VEN) and other key policy initiatives such as the Digital Education Revolution and the Digital Regions Initiative.

The roll out of the equipment and infrastructure for the Digital Education Revolution (DER) and the Vocational Education Network (VEN) will impact immediately on the skills base of teachers/trainers.

As important as access to e-learning technologies and infrastructure is for delivering VET in technology rich learning environments, by itself it is not sufficient to lead to a 'step change' in the use of ICT in teaching, learning and assessment in the national training system. The emergence of a critical mass of teachers and trainers who are well prepared to incorporate e-learning into their practice and have the skills to use e-learning in transformative and innovative ways will not happen organically.

It will require a well planned and well resourced national workforce development strategy for the VET sector. It will also require a long term focus. The dynamic nature of e-learning and continuously

changing technologies means we are dealing with a 'moving target' in developing the skills and confidence of people to use e-learning effectively in their day to day practice, and the higher level skills to use e-learning in an innovative and transformative way for learning and assessment.

Technology is integral to the day to day activities of learners, teachers, employers and employees. It is increasingly an indispensable tool for learning for all of these groups and it fundamentally changes notions of the learning environment. Excellent examples of e-learning professional and workforce development exist but there is always more to be done.

Response to specific questions

- *What emerging technological developments could significantly alter industry skill needs?*

21st century training is characterised by the use of ICT which facilitates learning anywhere at any time, gives power to the learner, and provides stimulating and engaging learning environments. ICT is enabling the transformation of education and training through the use of learner – centred pedagogies and therefore changing the role of teachers and trainers and the skills they require.

The critical technology trends influencing the VET sector are related to increasing client demand for flexible learning options, the expansion of broadband networks and advancements in mobile technologies.

The roll out of the equipment and infrastructure for the Digital Education Revolution (DER) and the Vocational Education Network (VEN) will impact immediately on the skills base of teachers/trainers. In essence these initiatives will mean there will be 'nowhere to hide' from the recognition that e-learning skills are critical for teachers and trainers.

There are obvious difficulties in predicting the next 'new thing' in technology. New tools and applications are introduced at a rapid rate and they are quickly adopted by students. Teachers and trainers are often on the back foot when it comes to the use of new technologies - they are digital 'migrants' as opposed to digital 'natives' and by necessity spend more time learning to use the technology rather than how to apply it in the curriculum.

The Horizon Report annually predicts the new and emerging technologies for education and training and their time to adoption. It is regarded worldwide as the most timely and authoritative sources of information on new and emerging technologies available to education anywhere.

The Horizon Report: 2009 Australia – New Zealand Edition, identifies the six fastest moving technologies and their time to adoption horizon. The two fastest moving technologies with a time to adoption horizon of one year or less were found to be the rise of mobile internet devices and the emergence of private clouds. Students are increasingly using clouds to hold data and applications that can be processed remotely by accessing services via the internet. Next in line is the emergence of open content with universities in particular uploading content to popular applications facilitated through iTunes and using YouTube for tutorials and lectures. The remaining three technologies expected to impact over the next two to five years are virtual, augmented and alternate realities; location based learning; and smart objects and devices.

In addition to identifying actual technologies the report also looks at the meaningful trends, and challenges for their importance to education. The four trends listed as those most likely to have a significant impact in education in Australia and New Zealand in priority order are:

- *The increasingly perceived value of innovation and creativity.*
- *The growing impacts of technology on how people work, play, gain information, and participate in communities.*
- *The rising use of technology as a means for empowering students, a method for communication and socializing, and a ubiquitous, transparent part of their lives.*
- *The changing way we think about learning environments.*

The challenges facing educational institutions selected as most likely to impact the practice of teaching, learning, and creative inquiry over the next five years are broadly concerned with:

- *Practices for evaluating student work that are evolving in response to the changing nature of learning and student preferences for receiving feedback.*
- *Ageing learning environments and their capacity to support the use of information and communication technologies (ICTs), or enable the sorts of learning support systems being promoted.*
- *The growing need for formal instruction in key new skills, including information literacy, visual literacy, and technological literacy.*
- *The growing recognition that new technologies must be adopted and used as an everyday part of classroom activities, but effecting this change is difficult.*

Allied to this research is a similar study that focuses on schools - *What's on the E-Horizon for Schools.* The *2010 Horizon Report: K-12 Edition*, which identifies and describes six emerging technologies that will likely have a significant impact on K-12 education in the next one to five years. It provides interesting some interesting insights into the predicted e-learning skills of the next generation of tertiary learners and is a fingerpost to how VET professionals should start preparing.

One significant challenge for teachers and trainers across the education sectors is that for most people many of their activities related to the use of technology take place outside the formal learning environment — but these experiences are often undervalued, unacknowledged and unused in that environment.

Some of the rapidly changing technologies that are already altering industry skill needs include:

- **3D Game-Based-Learning**: enabling virtual instructor-led training where learners can be immersed into virtual real-world environments using 3D Game-based Learning.
- **3D Animation and virtual worlds**: which make it easier for learners to actually understand what they see by simulating a real world environment. This technology is also demonstrating great value in training people where access to particular workplaces or safety issues may be a complicating factor for hands on learning.
- **Wiki-Enabled Content**: linking the Wiki search engine to course content offers learners instant access to materials and resources on line while working through lessons/modules.

In addition to emerging technological developments, other demand issues are altering industry skill needs including:

- increased expectations that training providers will be flexible and responsive to client needs;
- employers and individuals expecting greater choice and control over the time, place and content of training;

- increasing expectations that technology will form a significant part of training delivery;
- expectation that more training will be delivered to address the demands of economic growth, critical skill shortages and rapid changes in the workplace; and
- pressures to maximise efficiencies and manage cost.

The skills to deal with these broader e-learning issues are as important for the VET workforce as those of using new technologies but will require entirely different skill sets.

The Australian Flexible Learning Framework (the Framework) 2009 E-learning Benchmarking Survey[1] which includes responses from more than 700 RTOs, 1,685 students, 1,500 VET teachers and trainers and 800 employers provides a wider canvass for the discussion of the skills of the VET workforce. Three key issues include:

Enhanced VET practice

For many VET clients it is no longer a question of 'if' their training involves e-learning, it is 'how' they use e-learning that matters. Around 60% of all RTOs now enable students to access online learning resources and content, and use technology to undertake learning activities and targeted internet research, and to communicate with teachers/trainers on learning issues. Seventy-five percent of RTOs provide their VET clients with access to at least some e-business services (e.g. online information, online enrolment, online payments and forms), up from 69% in 2008.

Learning is tailored to learners and supports student outcomes

Fifty-four percent of VET students said that e-learning enhanced their ability to do their job and 65% anticipated that e-learning in their course will improve their future employment outcomes. Significantly, 33% of students reported that e-learning had already helped them get a job, get a better job or get more responsibility in their job. Almost half (42%) said that e-learning was a factor in their choice of training provider.

Training meets the needs of employers and industry

Regardless of size, sector or location, Australian employers universally agree that employees should be able to do some of their training in the workplace. This is seen as a way of ensuring training is directly relevant to work they do, and a more efficient and productive use of the employees' time. More than a third of employers surveyed use e-learning as part of the structured training they provide to their employees. The majority of employers reported that they believe e-learning offers flexibility in access to and undertaking training, and that e-learning provides valuable computer skills for employees. Eighty-one percent of employers said that they would encourage their employees to use e-learning if it was available.

The survey results about the uptake, usage and impact of e-learning are considered to be conservative estimates. This is because there are data collection challenges including that computer and internet usage has become so common that definitions of e-learning are diverse and many VET clients may not even realise they are using 'e-learning' technologies.

[1] The *2009 E-learning Benchmarking Survey Report*, previous years' reports and further background information to the project are available at http://e-learningindicators.flexiblelearning.net.au/

Supporting data: http://www.flexiblelearning.net.au/files/2009BenchmarkingSurveyReport.pdf

- ***How do providers go about planning for, and responding to, demands for new skills arising from technological developments****?*

An examination of professional learning in the e-learning area in Australia will show that significant progress has been achieved in the VET sector through the Framework. After a decade of sustained and systemic investment in the national flexible learning agenda the Framework has provided a comprehensive approach to capacity building, with a strong focus on developing supportive communities of practice, and the tools and resources to successfully train teacher, trainers, middle managers and support staff to develop skills to apply technology in teaching, learning and assessment.

It has also provided a national repository of exemplars and planning guides supported by an online community fostering discussion and trialling of new tools essential to support teachers and trainers. The products and services delivered by the Framework to directly support teachers and trainers developing their own e-learning products and delivery methods are highly valued.

The workforce development strategy of the Framework nationally has progressively focused on raising awareness of the potential of e-learning and starting to build capability; engaging with key target groups; and on embedding e-learning in training providers and businesses.

Providers are able to access Framework support for a range of programs and activities at the individual practitioner and provider level, as well as direct support to industry and to the VET sector more generally.

The Industry Champions model is an example of an effective strategy for building e-learning capacity among VET teachers/trainers and their learners.[2] As a talented set of users of e-learning, the e-champions mentor, showcase, inspire and enable providers to use and embed new technologies. The Framework's support of e-learning champions through a national network of e-learning coordinators and Toolbox champions has fortified the sustainability of the flexible learning agenda for VET in the long-term.

The flexible learning website has provided a hub for e-learning information flow, web conferencing sessions on focused topics, and the e-learning advice service has provided support to a growing number of VET professionals. Dissemination of e-learning information to the wider community also occurs through an e-journal of research, conference presentations, electronic newsletters, media releases and social networking tools. The most popular national VET-related publication read by the 1,500 VET teachers and trainers who responded to the 2009 E-learning Benchmarking Survey was the Framework's e-newsletter, *Flex e-News*.

Framework events capture both new entrants and experienced users of e-learning. The activities include new tools in e-learning, new ways of thinking and planning for e-learning, new methods for using e-learning, new products such as adapting toolboxes to reduce teacher time and duplication, new shared learning experiences of integrating e-learning.

Innovation and integration strategies to embed e-learning in industry provide lessons in planning for, responding to and satisfying demands for new skills arising from technological developments.

---

[2] The impact of e-learning champions on embedding e-learning - in organisations, industry or communities, Final report, Australian Flexible Learning Framework, April 2009

The Framework has supported a series of whole of industry change projects which are led by employers and industry associations to engage in long term planning for embedding e-learning. This approach to workforce development for an industry has proven critical for industry cohesion, development of all workers including new entrants, and long term workers and access to learning in regional areas as well as metropolitan businesses.

Supporting data: E-learning of industry website www.industry.flexiblelearning.net.au highlights case studies of how industry sectors are embracing e-learning. Profiles for all Innovations projects in 2008, 2009 and 2010 are available at http://flexiblelearning.net.au/innovations/teamprofiles.

- ***Are there particular difficulties related to the recruitment or development of practitioners who are able to deliver training in new technologies?***

The VET sector has historically been challenged by attracting new workforce entrants for a range of reasons related to remuneration, employment conditions and status. Attracting people with good technology (and e-learning) skills will continue to be affected by these factors and by the opportunities to use their skills in the workplace. Public and private RTO's that do not show leadership in embracing technology and e-learning are less likely to be the employers of choice for these potential entrants who are accustomed to and expect to use technology.

Practitioners require three sets of skills in VET – currency of industry knowledge, adult learning capabilities and integration of technology into learning. New entrants tend to come into VET strong in either the first or the second of these. The third which is fundamental to their teaching requires mentoring and professional development. In small RTOs, they turn to the Framework for this, and in large RTOs the Framework support continues to provide stimulus to new ideas and access to professional networks.

The continued development of practitioners in this rapidly evolving and changing area also presents difficulties in the time needed for good professional development. Teachers interviewed for the SICTAS[3] study in technology capability nominated time to learn to use the new technologies, then to apply them and use them transformationaly and innovatively as being the biggest barrier to delivering training using new technologies.

What impacts do you anticipate that the use of technology in the VET sector will have on:

- **teaching delivery and methods over the next five to ten years?**

The Framework's 2009 E-learning Benchmarking Survey (previously cited) showed that for many VET clients, it is no longer a question of 'if' training involves e-learning but 'how' e-learning is being used that matters. Technology is integral to the day to day activities of learners, teachers, employers and employees. It is increasingly an indispensable tool for learning for all of these groups and it fundamentally changes notions of the learning environment.

The Vocational Education Network (VEN) the high speed broadband network infrastructure, initially for Australian TAFE institutions, will enable rich multi-media learning resources including supporting highly interactive virtual and simulated learning environments. Changing the learning environment will inevitably impact on training and delivery methods.

E-learning uses all available electronic media to improve the learning experience and deliver

[3] Educators and ICT Usage: Market Research Report, p.6 Education.au Strategic ICT Advisory Service (SICTAS) www.educationau.edu.au

vocational education and training flexibly. As a learning method in its own right or blended with other methods of learning, it can improve the quality and reach of learning, widen participation in it, broaden choices and foster the continuous innovation needed for the 21st century. It can also reduce time spent on training administration; provide better feedback about progress to learners themselves and to their employers; and make possible more personalised approaches to meeting individual learners' needs.

Teaching delivery and methods increasingly need to embrace client demand for flexible learning options, the expansion of broadband networks and advancements in mobile technologies. Practitioners need to know how to operate the technologies and how to integrate them into their practice and how to use them to innovate in their practice. The benchmarking Survey revealed that 90% of VET students say that they would like at least 'a little' e-learning in their course. Of these, 26% wanted "a lot" of e-learning.

There has been a significant upward trend in e-learning with 3-4% of VET enrolments in 2003-4 involving some e-learning. In 2009, 39 % of all VET activity formally involved some e-learning. Surveyed employers also increasingly use e-learning within their own training delivery and expect it as part of a work-ready training experience.

Advances in handheld mobile technologies including note books, tablets and smart phones, broaden the scope of flexible delivery. Mobile learning also increasingly incorporates "mobile assessment" as evidence of competency is collected and transferred from learners' dispersed locations.

Examples from the Framework Innovations projects provide insights into the impact of technology on teaching and learning methods. Work being done in the stainless steel industry for example highlights how learning is now occurring in the workplace for apprentices via computers or mobile phones.

In the community services industry where traditional planned learning is limited the use of social media is being explored to expand the learning opportunities for employees. Employers and employees are engaging with a range of social media tools to explore how to remain skilled and create an industry learning environment, while also being responsive to workplace imperatives.

Some other immediate impacts can be identified around:

- even more flexible delivery (use of mobile phones, online learning and virtual teaching spaces);
- teachers thinking outside the talk and chalk method to incorporate the use of everyday technologies and diverse contexts/locations for delivery;
- increased skills in on line delivery and the development of on line content;
- increased emphasis on student centred teaching (teachers will need to be trained and students prepared)
- technology enriched learning experiences (not as text based);
- new styles of teaching that enable people to learn independently facilitated by interactive media and teacher support; and
- higher level skills using state of the art pedagogy and technology.

In addition to teaching delivery and methods the impacts of technology can also be seen in the important area of assessment. E-assessment is a hot topic in vocational education and training (VET), with increasing numbers of practitioners looking for ways to harness its benefits.

In 2010, the Framework has been helping the VET system to rise to this challenge with a series of e-assessment workshops around Australia.

The Framework's *E-assessment and the AQTF* report indicates that e-assessment is growing in popularity due to the flexibility it provides and its capacity to:

- assess knowledge while providing ease of preparation, marking and feedback (e.g. online tests, e-examinations and Flexible Learning Toolbox assessments)
- promote reflection and self-assessment (e.g. blogs and wikis)
- collate and demonstrate evidence of skills and achievements and assist in the RPL (recognition of prior learning) process (e.g. e-portfolios).

A number of E-learning Innovations projects are currently exploring some of the key applications and issues for e-assessment. Examples such as the use of point of view (PoV) technologies that allow remote learners with low literacy levels to capture video and audio evidence of their competency in a practical way without completing written assessment tasks present big challenges for practitioners in adapting their delivery and methods to enable this type of assessment.

Supporting data: ***http://e-standards.flexiblelearning.net.au*** ***http://www.flexiblelearning.net.au***

- ***demand for training, particularly from regional/remote areas and overseas?***

New technologies will increase the accessibility to training for regional and remote areas and will lead to an increase in training demand. Technology enables true flexibility and learner control and the demand for these things as a feature of training will continue to grow along with the demand for all the new technologies to be included. Industry is clear that the cost of training regional staff is reduced substantially by e-learning along with the ability to increase the consistency and quality of training across an industry. The trend towards less campus based learning and the use of virtual spaces for RPL and work-based assessment options make training accessible to people who might otherwise have been disadvantaged by time and distance.

National policy settings require a more flexible national training system which provides opportunities and increases access and engagement for equity groups. Regional and remote registered training organisations (RTOs) are using e-learning to deliver quality VET in Schools to learners who are disadvantaged by distance, and/or access to further learning opportunities. An increase in e-learning at this level will flow on to post secondary education and training and allow more students in regional/remote areas to access both VET and Higher Education through technology enabled course provision.

A recent report by the National Centre for Vocational Education Research (NCVER) has highlighted how participation rates in VET in Schools decreases with geographic isolation and for particular learner groups. Framework experience in the Northern Territory indicates that VET in Schools has great potential to help Indigenous learners and learners in outer regional and remote areas.

Since 2008 the Framework has provided E-learning Innovations funding and support to RTOs delivering VET in Schools. Results from these projects confirm that e-learning is a successful medium for remote students. It is cost effective, and the learning methods and resources are transferable to a range of underrepresented learner groups.

- ***demand for the VET workforce, both in terms of numbers, and of knowledge and skills requirements?***

ICT enabled learning will likely increase the knowledge and skill requirements of some VET practitioners but it may over time lessen the actual numbers of the VET teacher/trainer workforce. Other industry sectors have witnessed the decrease in workforce numbers with the increase of technology and VET will not be immune from this. It will also likely change the types of activities that typically describe a teaching/training role to those of learning facilitator, mentor, and advisor working more shoulder to shoulder than face to face with learners. New technologies and learning platforms may also lead to the need for more highly skilled workers in the area of on line content development and course materials.

On the other hand e-learning has become a sophisticated business and quality standards and products require the increase of capable, knowledgeable staff. There is an expectation that all staff will become more digitally literate as digital media literacy continues its rise in importance as a key skill in every discipline and profession.

There is a changing focus on teaching styles that work in an online or flexible environment and there is a demand for different teacher training for new delivery styles or methods. Higher level skills will be needed to use technology in a transformative and innovative way for learning and assessment.

A major focus of the challenge for training deliverers and educational providers is to ensure e-learning skills feature in all curricula and not just in ICT related areas. Moving from ‘e-learning’ skills as being seen as an additional set of skills for the VET workforce to e-learning strategies as embedded and intuitive in the VET workforce will take a significant mindshift. All teachers and trainers will need skills that are based on sound digital literacy, effective management of subject delivery and responsible digital rights management.

More work needs to be done in achieving a critical mass of teachers and trainers who are well prepared to incorporate e-learning into their practice and have the skills to use e-learning in transformative and innovative ways.

The need for continued national professional development in e-learning for VET practitioners is of vital concern. However, the future focus should be on reaching even further into key VET practitioner audiences in the VET sector and the emerging integrated tertiary education sector.