# Outcomes of incorporating e-learning in school VET delivery: How has Gen Y benefited from the 1:1 laptop program?

*Catherine Ryan*
*Southern Cross Catholic Vocational College, Burwood*
*Catholic Education Office, Sydney*

**Abstract**

The VET in Schools (VETiS) program is a great initiative in Australian education policy developments in recent years. Schools have broadened VET choices available to young people, providing pathways that were not previously available. Much research in this field has identified the benefits of the VETiS program for improving retention rates, providing enhanced articulation pathways to further study and employment opportunities.

Although the use of technology for Generation Y has become almost passé, schools are still struggling how to best engage students in effective teaching and learning programs. Researchers suggest that 'the lack of research and disseminated results has led to a situation where technology is driving pedagogy'. However e-learning has been a positive motivating factor for RTOs, teachers and VET in School students. Much hype has surrounded the DEEWR Digital Education Revolution initiative, but little research evaluating the effectiveness and successful outcomes for students using technology, especially in the VET in school sector, has been undertaken. Implemented just four years ago, can definitive outcomes be drawn from embedding technology in the teaching and learning programs of vocational courses at school?

This paper will consider the results of an online survey completed by the graduating cohort of a vocationally focused senior high school in metropolitan Sydney, NSW. Premised on the E-Learning Benchmarking Survey, the student survey covers the Impact of Learning, Learning Preferences, Personal Use of Technology and their E-Learning Experience in vocational courses. Students at the school are well placed to comment on embedded technology in VET delivery, studying at least three vocational courses as part of their HSC pattern of study.

**Introduction**

The Federal Labour government under Kevin Rudd rolled out the Digital Education Revolution (DER) in 2008, advocating that every Year 9 student in the next 4 years would have access to their own laptop. The NSW Department of Education & Communities (DEC) have commissioned two DER Evaluations, 2010 and 2011, on the one-to-one laptop program, which is part of a three-year evaluation (2010-2012). Students and teachers from NSW government schools were surveyed on the use of computers and technology across the Key Learning Areas (KLA), which did not include vocational courses.

Australian Flexible Learning Framework has conducted E-Learning Benchmarking Surveys on the use of technology in the Vocational Education and Training (VET) sector since 2005. Registered Training Organisations (RTO), trainers, students and employers have provided data on the uptake and use of e-learning within the

vocational sectors. VET in School (VETiS) students were part of the survey cohort although small in number.

The broader aim of the research is to ascertain whether technology (devices & e-learning) contribute to the success VET in School students achieve whilst, still at school. Success, is this context, is reflected in qualification completion rates, retention at school to achieve the Year 12 certificate and improving the student's readiness for post school employment.

A survey, premised on the E-Learning Benchmarking Survey, was undertaken by Year 12 students at a vocationally focused high school. The surveyed students in this study attended Southern Cross Catholic Vocational College, Burwood, a senior high school located in metropolitan Sydney. The school offers students a NSW HSC pattern of study which includes a range of vocational courses. Teachers and trainers are an eclectic mix of university educated and vocationally trained, experienced practitioners, who are either part or full time employees. Students originate from more than 50 different government and non government schools, with male students dominating. Students typically study three (3) complementary vocational courses as part of their HSC part of study. As a 1:1 laptop school, students had access to technology and wifi internet access throughout the school.

The survey used the Flexible Learning Framework's E-Learning Benchmarking Survey's definition of e-learning, which is any electronic media used to deliver flexible training. It includes access to, downloading and use of internet; online access to and participation in course activities; teacher directed use of the internet, mobile and voice technologies for learning and research purposes; structured learning-based email communication and e-assessment activities.

**Literature Review**

Vocational education and training (VET) plays an important role for young people in Australia. Delivery of VET programs are offered in upper secondary schools in the form of VETiS programs at Technical and Further Education (TAFE) Institutes, and private Registered Training Organisations (RTO) post-secondary school. In 2010 more than half of 15-19 year old VET students in Australia were studying in a secondary school environment (NCVER, 2011), and VETiS programs constituted one tenth of all VET delivery nationwide (Smith, 2004). Clearly, the secondary school VET program is a significant contributor to skilling the youth of Australia for post-school pathways.

Australian State and Federal governments are committed to supporting technology rich vocational educational experiences, as evident through the establishment of The Framework for National Collaboration in Flexible Learning in Vocational Education 2000−2004, Australian Flexible Learning Framework 2005-2010 and the National VET e-Learning Strategy 2012-2015. All RTOs, including schools, have had opportunities to engage in the development and use of e-learning resources within these frameworks since 2000.

The delivery of VET courses within senior school programs has steadily increased since the 1990s. By 2002, 44 per cent of senior secondary students were enrolled in VET programs (MCEETYA, 2003), and by 2010, 52.7 per cent of all 15-19 year old VET students were in schools (NCVER, 2011). School delivery of VET courses is

however restricted by each State's Board of Studies' Year 12 completion requirements, the level of dependence on qualified and trained VET teachers, and the reliance on a schools infrastructure to support a VET course.

Incorporating e-learning within the pedagogy of vocational courses is varied and is dependent on factors including the practical nature of the course, e-maturity of the teacher, quality of the online resources and a student's willingness to engage. The role of the teacher and the student's characteristics are important to the success of e-learning and effective pedagogy in the classroom. Further success resulting from good teaching and learning practices include enhancing student technology skills, improving school retention rates, encouraging further vocational study and improving employment opportunities (Karmel, 2007).

## Methodology

The Flexible Learning Framework's E-Learning Benchmarking Survey, was used as the basis for a survey undertaken by Year 12 students at the school. Approximately 10% of the cohort participated in focus groups which after discussion, identified the need to personalise the survey to accommodate nuances of the school, which would assist in the completion rate.

The E-Learning Benchmarking Survey was administered to VET students nationally who were studying only one vocational course. Students from the school study at least two (2) vocational courses, and as such the survey needed to allow students to report on the e-learning aspects of each course separately.

The survey tool used was a Google Form, which did not require students to have access to Google Apps, and the URL was issued to students via the schools Learning Management System (LMS). Results were populated into a Google Spreadsheet which was downloaded to an EXCEL spreadsheet for further manipulation.

In summary, there were 93 individual responses to sections *Impact of e-Learning, Learning Preferences*, *Other e-Learning Experience* and *Personal use of Technology*. As students studied at most three VET courses the *Your E-Learning Experience* section, was completed 213 times.

## Results

### The Technology Foundation

### Who are they?
Prensky (2001, 2005) has labelled these students 'digital natives', fluent in the language of computers, video games and the Internet. When questioned about how they use technologies outside of school, the students in this study identified the use of computer, mobile phone and Facebook / Instagram as their top options. Reading and writing blogs, and using Twitter were their least preferred technologies used outside of school (Figure 4.1).
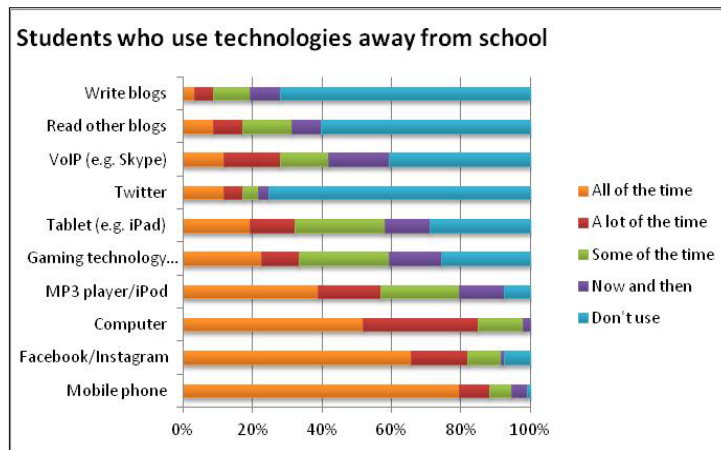
**Figure 4.1: E-Learning Survey, Personal Use of Technologies.**

In selecting this vocational school the students deliberately factored technology into their decision making. Figure 4.2 illustrates that more than 75% of students considered e-learning and technology as factors when selecting the school and courses within their HSC pattern of study. Student's responses from the 2011 E-Learning Benchmarking Survey were not as adamant in considering e-learning as a factor in choice of RTO (40%) and courses (44%) (2011).
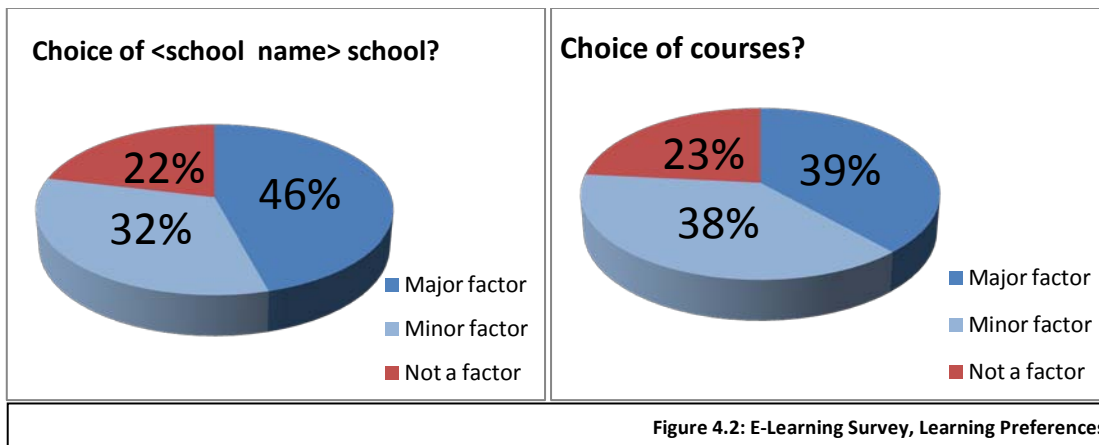


**Figure 4.2: E-Learning Survey, Learning Preferences**

## Laying the Foundation for e-Learning

The students confirmed their confidence in the teachers understanding, use and skill level for incorporating e-learning in their teaching and learning programs. Despite the school's infancy as a vocational training organisation, the students overwhelmingly felt that their teachers / trainers were equipped to support e-learning in the classroom. With 85% of students agreeing or strongly agreeing, that their teachers had a good understanding of e-learning, a much higher rate (+19%) than the 2011 National student response from the e-Learning Benchmarking Survey (Table 4.1).

| Table 4.1 : E-Learning Survey Q3d - Q3f. (Percentage of Respondents) | | e-Learning Benchmark Survey - School Students | | |
|---|---|---|---|---|
| Students' view on teacher / trainer support for e-learning | School Student Response | 2011 - Student Response (National) | 2011 - Student Response (School) | 2009 - Student Response (School) |

| | | | | |
|---|---|---|---|---|
| My teachers / Learning Facilitators have a good understanding of e-learning | 85% | 66% | 58% | 66% |
| My teachers / Learning Facilitators encourage the use of e-learning | 80% | 68% | 56% | 62% |
| My teachers / Learning Facilitators are skilled at using technology based teaching tools | 83% | 68% | 60% | |

Equally supportive was the student's responses regarding the school's preparedness to support e-learning by providing the necessary technological infrastructure (Table 4.2). According to the students the school provided easy access to technology (90%), the internet (77%) and support for online activities (87%). When the technology is stable and seamless, teachers and students alike are more confident to engage in using e-learning.
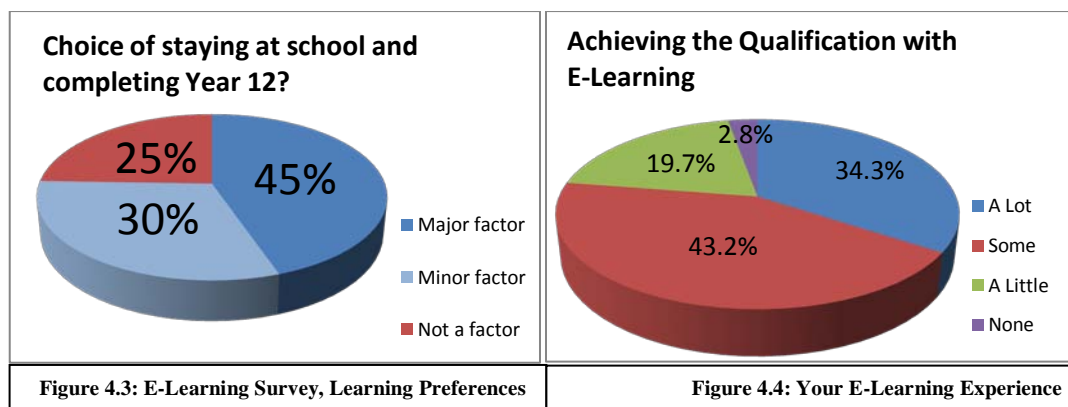
| Table 4.2 : E-Learning Survey Q3g - Q3i. (Percentage of Respondents) | | e-Learning Benchmark Survey - School Students | |
|---|---|---|---|
| Students' view on RTO / School support for e-learning | School Student Response | 2011 - Student Response (National) | 2011 - Student Response (School) |
| My training organisation / school provides students with easy access to technology | 90% | 71% | 64% |
| My training organisation / school provides students with easy access to the internet | 77% | 71% | 63% |
| My training organisation / school provides students with easy access to support for online activities | 87% | 67% | 58% |

Supporting this result, is the satisfaction level of technology access, reported in the 2013 E-Learning Benchmarking Survey of VET Teachers. VET teachers in schools had the most satisfactory levels of access to computers and internet for teaching and learning compared to their peers in TAFE, private & community training providers (FLAG, 2013).

### *Technology in the mix for Year 12 Retention*

Since 2010, all NSW students must complete Year 10, and until they turn 17, students must be in school, in approved education or training, in full-time paid employment (25hrs/week) or a combination of these (DET, 2009). There is a great deal of evidence that suggests there is a high correlation between students' level of education and their prospects in life. Extending that period of formal school education to complete Year 12, students have a greater likelihood of continuing with further study, particularly in higher education, as well as entering into the workforce (ABS, 2011a). The Foundation for Young Australians (FYA, 2013) latest report 'How are Young People Faring' shows that nationally 80% of students who started secondary school in 2007, completed Year 12 in 2012. As a nation this is encouraging, as governments continue to work towards the COAG target of 90% Year 12 or equivalent attainment rate for 2015.

Seventy five percent of students noted that e-learning and technology was a factor in their choice of staying at the school to complete Year 12. They have also maintained that technology has contributed to their choice of schooling and then continuing on to complete Year 12 (Figure 4.3).

| Figure 4.3: E-Learning Survey, Learning Preferences | Figure 4.4: Your E-Learning Experience |
| --- | --- |

### Completing Qualifications with E-Learning

In addressing the Federal Government's new principles and strategies for strengthening VET in the HSC, the NSW Board of Studies (BOS) had to accommodate the changes in the national VET system from a modular curriculum model to a training package model. In the NSW HSC Media Release (NSW BOS, 2012) the Board of Studies stated that of the 72,500 students receiving an HSC result in 2012:

*Almost 24,500 (34%) students who are eligible for their HSC have also completed a VET course*
- o *10,164 (14%) will receive an HSC and a VET Certificate II*
- o *5,794 (8%) will receive an HSC, a VET Certificate II or above and an ATAR*

Students are now able to select from 13 VET Curriculum Framework subjects and a further 40 BOS endorsed VET courses. Students undertaking the survey studied at most three (3) vocational courses, from 14 different qualifications all offered at the school. In reviewing the responses to '*Considering the <course name> description above, has using e-learning in this course helped you to achieve the qualification for this course?*' students answered on a scale of 'a lot' to 'none' for each course area studied (Figure 4.4).

Investigating further which e-learning technologies contributed 'a lot' to achieving the qualification, students rated use of the LMS (53.1%), communication through email (50.7%) and using interactive learning resources (44.1%) as the most significant. The use of mobile technologies (23.5%), podcasting (21.6%) and developing e-portfolios (25.8%) were not used as extensively in contributing to course completion. Some possible reasons for this result could be attributed to the teacher's lack of skill in using these tools, relevance to the completion of competencies within the course or the lack of access to the technology and devices for students to use the applications.

When asked about the types of activities within the course that use e-learning, the responses from students were overwhelmingly positive for all the options presented. Of particular interest was the submission of work via the Dropbox functionality in the LMS or through the use of Google Drive (68.1%), as that activity which students used 'a lot'. Both these facilities allow for the easy submission of computer generated documents, 24/7 flexibility of access and provides a 'due date' notification which assists students to be more organised. Students and teachers clearly recognise the benefits of such facilities and extensively used these in all course areas. Students in

the study who were issued with a school provided laptop, used e-learning extensively in training activities, in comparison to the national cohort.

**Drilling Down – Are all courses the same?**

**Trade v Non Trade**
Categorising the VET courses into Trade (Automotive, Construction, Furniture Making, Hairdressing, Hospitality) (N=101) and Non Trade (Beauty Therapy, Business Services, Children's Services, Entertainment, Health Services, Information Technology, Screen & Media, Retail) (N=112) areas, allows for more synergy and fine grained analysis of the results, than would be the case if the course responses were simply aggregated individually. Trades teaching requires theory preparation, practical demonstration, followed by guided practice, and the application and e-learning tools are used within this context. Most learning is conducted in a blended environment.

With a fairly even distribution of responses by courses between the two categories Trade (47%) and Non Trade (53%), there is much division within each of the questions. Taking into account, for many of the Non Trade courses (Business Services, Information Technology, Screen & Media Retail), where the mode of delivery and the content are similar, the use of e-learning provides a form of workplace training that is suitable both to the content and the students (Brennan, 2003).

Comparing the student's feedback to the question *How much e-learning is in your course?*, Non Trade teachers incorporate more e-learning in their pedagogy than Trade teachers. With 80% of students studying Non Trade courses stating that e-learning was used 'a lot' or 'some' of the time, compared to only 55% of students in Trade courses. As Trade courses allocate more time in the workshop, it is anticipated that the use of e-learning in Trade course would be less than in Non Trade courses. Trade teachers may perceive e-learning as irrelevant to trade teaching or there may be reluctance to up skill to new technologies (Thompson & Lamshed, 2006).

In every question within the *Your E-Learning Experience* section, students regarded Non Trade courses as either using e-learning or contributing to the course qualification, 'a lot' more than the corresponding questions for Trade courses. Of particular note within the question *How much does this course use each of the following e-learning technologies?*, was the use of email as a communication tool between students and teachers. Over 90% of students studying Non Trade courses used email within their course, either 'a lot' or 'some' of the time.

Interestingly, the differences in the use of e-learning in activities between Trade and Non Trade groups was not as differentiated when considering the combination of 'a lot' and 'some' responses. The inclusion of e-learning in the activities of Accessing learning resources and content, Undertaking learning activities & assessments and Doing Research, was perceived by students as the most used. Again, with the strong and well supported technology focus within the school, teachers are confident to use e-learning for activities and tasks. Based on the students overall responses it is evident that Trade teachers use e-learning less in activities, than Non Trade teachers.
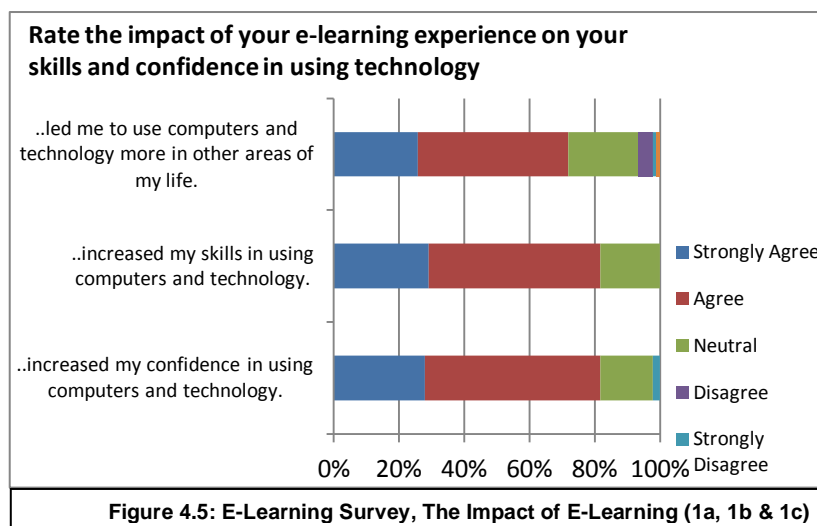
*Ready for Work beyond School?*

Commonwealth, and State and Territory Education Ministers through the 1999 Adelaide Declaration agreed that Australia's students should 'be confident, creative and productive users of new technologies, particularly information and communication technologies' (MCEECDYA, 1999). It was also agreed that 'all students have access to the high quality education necessary to enable the completion of school education to Year 12 or its vocational equivalent and that provides clear and recognised pathways to employment and further education and training'. Further supporting this national goal, in 2008 as part of the Melbourne Declaration on Educational Goals for Young Australians, the same governments agreed that the senior years of schooling should provide all students with high quality education, necessary to complete secondary school education and make the transition to further education, training or employment (MCEETYA, 2008). Part of the strategy to achieve this was:
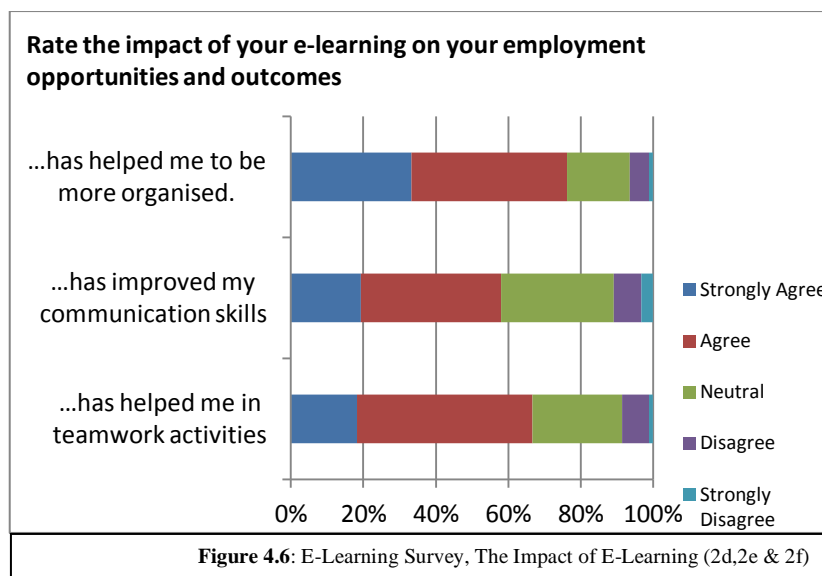
> 'ensuring learning in the senior years is supported by access to computers, online tools and resources, and teaching expertise in using information and communication technologies (ICT).'

In part, the DER provided schools and students with the hardware and technical support to facilitate this strategy, to enhance learning and improve post school outcomes of employment and further training.

Considering four of the eight employability skills of technology, communication, organisation and teamwork, surveyed students were asked to consider how they fared in these areas and whether e-learning impacted on their employment outcomes (Figure 4.5). In a predominately knowledge economy, where the labour force is characterised as computer literate and well-trained in handling data, and even with a vocational focus these students are well positioned to move into the workforce as competent users of technology.



**Figure 4.5: E-Learning Survey, The Impact of E-Learning (1a, 1b & 1c)**

Students also maintained that e-learning impacted on their employment opportunities and outcomes in relation to the other employability skills of communication, organisation and teamwork, to varying degrees. Most surprising was the extent to which e-learning has enabled them to be more organised (76%) (Figure 4.6).

**Figure 4.6**: E-Learning Survey, The Impact of E-Learning (2d,2e & 2f)

Aligning the E-Learning Benchmark Survey questions with situations more appropriate for school aged students, minor changes were made to the job related questions.

| Table 4.4: Impact of e-learning on students' employment opportunities and outcomes | | | | | |
|---|---|---|---|---|---|
| **Impact of e-learning on students' employment opportunities and outcomes** | **School Student Response** | **2011 - Student Response (National)** | **2011 - Student Response (School)** | **2009 - Student Response (School)** | **2008 - Student Response (School)** |
| **Student Survey** | | | | | |
| **...helps me to do my job better on work placement** | 64% | 55% | 60% | 35% | 52% |
| **...helps me to do my job better as a school based apprentice / trainee** | 44% | 42% | 49% | 25% | 43% |
| **... will in the future help me to get a better job, get a promotion, or get more responsibility in my job** | 68% | 66% | 54% | 54% | 52% |

Comparing student responses to the 2011 National survey data, scores were higher in all three questions. Students surveyed in this study placed a high value on e-learning enabling them to perform better at work, and foreseeing potential for improved job satisfaction in the future. In particular, students undertaking a work placement where the use of technology is critical (i.e. Business Services, Information Technology, Media), then logically the use of e-learning and technology at school would assist them on the job.

**5: Discussion**

*Readiness to E-Learn*

The technology cornerstone of the school was solid, stable and supported by all levels of the school Leadership and teaching staff according to the surveyed cohort of Year 12 students. Teachers had a very good understanding of e-learning (85%), encouraged the use of e-learning (84%) and were skilled at using technology-based teaching tools (83%), compared to the E-Learning Benchmark Survey results. Students also recognised that their teachers encouraged the use of e-learning in a variety of activities including doing research, communicating with their teachers and submitting

work via a Dropbox or with Google Drive. Strong evidence suggests that teachers were ready to use e-learning, in varying degrees, regardless of the type of course or mode of delivery.

The hardware infrastructure was relatively stable allowing staff and students to have confidence in using technology. Although some students noted misgivings with the technology sighting blocked websites, laptop maintenance issues and the distraction of the internet, as issues, most students embraced the benefits of this tool. It is because of this consistency of service that the school invested heavily in the use and application of technology.

The students in the study actively sought a senior high school in which e-learning and technology was a factor in their choice of school (78%) and courses (79%). In moving to a new high school, these students were positively advocating for e-learning and technology as part of their learning. Undertaking a vocationally based HSC was also a definite choice of these students. Student learning styles and preferences are important determinants in judging the effectiveness of e-learning pedagogy (Brennan, 2003). By all accounts, the school, teachers and students were ready to engage with technology in their teaching and learning programs.

As Gen Y students, those surveyed were skilled in a limited range of technologies, which targeted social media applications like Facebook and Instagram. Assumptions of a student's technology ability are often based on their superior social media skills, which can be misleading. Their use of technology can be aligned to Bloom's Digital Taxonomy (BDT) in terms of lower- through to higher- order activities (Churches, 2009). As this surveyed cohort presented with generally low literacy and writing skills, this must also be a consideration in the design of e-learning content and activities, and the expectations of the teacher.

A large proportion of students noted that they did not write (72%) or read blogs (60%) online, outside of school. This trend reflects the low interest and ability of the surveyed students to engage in higher order thinking skills compared to their extensive use of simple texting and instant messaging. When questioned about their use of e-learning technologies in courses, students noted that podcasting and recordings (21.6%), and e-portfolios (25.8%) were not used 'a lot' at school. Both applications require the higher order thinking skill of creating text. Teachers, conscious of the support needs to the students, targeted the use and depth of e-learning to suit their ability and needs. Brennan (2003, p.6) would suggest that the 'literacy demands and cultural homogeneity of many online courses and modules raises questions about the adequacy of the skills of students from LBOTE and ATSI groups, as well as others with low levels of functional literacy'. The learning needs of the students should be considered, and are paramount to the successful implementation of e-learning in teaching and learning programs.

In considering whether e-learning has been successfully embedded in the teaching and learning strategies of school VET delivery, evidence from the study would suggest that it has. Technology has enhanced the learning of the school students by enabling them to be more organised, more technologically 'savvy' and flexible in where and when to study. With an almost fifty percent split of students studying trade and non trade courses, using e-learning was still strongly advocated by both sets of students.

## Quality E-Learning Experiences

Quality learning experiences for a student can vary depending on the definition of the 'quality' that is adopted. Consideration of the learning experience could be benchmarked on previous experiences or relative to one's own ability. Alternatively, taking a more objective approach to what constitutes quality learning experiences, in particular e-learning, aspects of flexibility, access to resources or ease of use should be explored.

An analysis of data from Longitudinal Surveys of Australian Youth (LSAY) by Alnezark, Karmel and Oong (2006, p.7) revealed that students engage in VET in Schools programs because 'they see these programs as providing a better match with their perceived academic ability'. Students tend to choose subjects they are interested in and in which they can succeed. Quality learning for the surveyed students is a combination of studying vocational courses, in an e-learning delivery mode. The majority of students (69%) identify that their current e-learning experience is 'a lot better' or 'better' than previous experiences. In these student responses they identify that despite their abilities, e-learning has improved their learning.

> *'the benefit of E-learning is that it helps people that are not organized or the brightest people to understand or keep up with the class.'*
> *'i couldnt learn well with books and text books i never used to complete work. now i use a laptop it keeps me interested and keen to do work'*

In general the e-learning resources and activities in the courses were effective (79%) in helping the student to learn.

A number of factors contributed to the quality e-learning experience for the students in the study including flexibility, communication, ICT skills and ease of use. Flexibility of delivery also rated highly for the school students with e-learning in their courses enabling them to choose where they studied (76%) and how they did their learning activities (81%). Opting for a high level of technology was a deliberate attempt by the school Leadership team to cater for all students including those offsite at work as an SBAT or work placement, to ensure a continuum of learning. Comments from students reinforce the importance of delivery options for quality learning.

> *'it helps because i can do the same worki at home as well as at school'*
> *'The benefits of e-learning are that i can acess my tasks whenever needed from any location. I can also get any information i may have missed if absent.'*
> *'the benefits of e-learning in my vocational courses are that i have plenty of time to complete LC (Learning Common) tasks and i have the option of doing tasks at home or in the LC'.*

There is strong evidence to suggest that the students' technology skills improved significantly as a result of their e-learning experiences and use of technology. As recipients of laptops from the DER 1:1 laptop program, together with excellent technology infrastructure and support at the school, these resources contributed to quality online learning experiences.

Within their courses students worked together with other students (46%) 'a lot' using e-learning and communicated with their teacher (56%) 'a lot'. Responses to the benefits of e-learning listed 'easy' numerous times, and as such the 'ease of use' of e-learning can be confirmed.

> *'Easy to understand, easy access, organized'*

> *'you have easy access to work and internet'*
> *'Its easy and simple'*
> *'e-learning makes it easier for us to connect to the internet find out information as well as be able to use programs to develop our knowledge as well as the capabilities in a certain course'*

Not as obvious from the survey results, were the quality of materials and course design and identification of student learning styles. Based on Cashion & Palmieri's (2002) critical factors for quality online learning, it is not conclusive that the e-learning experienced by the students was quality learning. Although the responses were honest and positive, the questions merely considered what e-learning occurred, rather the quality and depth of work online.

### By-products of e-Learning

It is proven that quality teaching and learning programs, and quality e-learning programs, engage, motivate and improve the learning outcomes for students. In this study, the students attributed the use of e-learning to assisting in their completion of Year 12, improving their employability skills and building confidence in their learning.

In a study of 2004 HSC VET students in NSW (Polesel et al, 2005) reported that 60 % of students who chose a VET subject agreed that this had been a factor in them staying on until Year 12. Students in this study, targeted the school for its strong VET delivery, would also support this statement. This response, and their response that e-learning was a factor (75%) in their choice to complete Year 12, creates a formidable combination that contributes to increased retention rates for these students completing senior studies.

Of the eight employability skills, the survey questioned students on their improvement in technology, teamwork, communication and organisation, as a result their e-learning experience. The impact of e-learning on their skills and confidence in using technology was tremendously positive. Teamwork (66%) and organisational (71%) skills were also improved as a result of e-learning with communication (58%) skills to a lesser extent. As communication skills can cover oral, written, visual and behavioural dimensions, further clarification was needed for the students to better interpret the question. Nonetheless, as a medium for learning, e-learning has better prepared these students for work beyond school. Students to a lesser extent confirmed that their e-learning experience would help them get a better job, be promoted or get more responsibility in their job (44%). As the question targeted experiences for workers in employment, the students surveyed may not have connected with this question.

### When is too much e-learning enough?

In this study students are equipped with a 1:1 laptop, and with limited or no access to textbooks, are dependent on technology for course content, completing assessments and activities. This is especially evident in the Non Trade courses, where e-learning is used extensively in activities. Where the mode of delivery and the content area are very similar, such as business services, e-learning delivery becomes an effective form of workplace training (Brennan, 2003).

In comparing the difference between actual e-learning in their course with desired e-learning in their courses, the students' preference was to reduce the amount of e-learning. Regardless of whether the course was categorised Trade or Non Trade, students did not want 'a lot' of e-learning in the delivery of content, assessment allocation or completing tasks. Table 5.1 calculates the difference between the actual e-learning being delivered and what the student would prefer.

**Table 5.1**: Differences in Actual and Desired e-learning content by students

|  | How much e-learning is in your course? | How much e-learning would you want in your course? | Difference |
|---|---|---|---|
| **All Courses** |  |  |  |
| **A Lot** | 38.0% | 25.8% | -12.2% |
| **Some** | 32.9% | 40.4% | 7.5% |
| **A Little** | 26.8% | 29.6% | 2.8% |
| **None** | 2.3% | 4.2% | 1.9% |
| **Trade Courses** |  |  |  |
| **A Lot** | 18.8% | 11.9% | -6.9% |
| **Some** | 36.6% | 37.6% | 1.0% |
| **A Little** | 40.6% | 44.6% | 4.0% |
| **None** | 4.0% | 5.9% | 2.0% |
| **Non Trade Courses** |  |  |  |
| **A Lot** | 55.4% | 38.4% | -17.0% |
| **Some** | 29.5% | 42.9% | 13.4% |
| **A Little** | 14.3% | 16.1% | 1.8% |
| **None** | 0.9% | 2.7% | 1.8% |

Students are requesting mostly 'some' e-learning in their courses, which correlates with the national data responses for the same question. Some suggestions for this rating could be that they want variety in course delivery, as VET students are more kinaesthetic learners and prefer to be 'doing', they want less theory work generally, or as Gen Y students, place more importance on relationships than technology in the learning process. Relationships for young people, whether this is teacher to student or peer to peer, are important. Connection with their teachers is also important to their learning, and the school should be conscious not to allow technology to drive pedagogy (Brennan, 2003).

**Conclusion**

*Salient Findings*

The formula for successful student outcomes for incorporating e-learning in VET program delivery include a technology rich and supported school, the learning needs of the students to be considered, the differences in course content accommodated and, interesting, challenging content and activities.

Students confirmed their intent to remain at school and complete the Year 12 HSC certification, with e-learning a factor in this decision. Research would assert that studying a vocational course as part of the HSC, also contributes to Year 12 retention rates. Amalgamate the study of a VET course with the e-learning delivery of the content and activities, and this provides the best scenario for students to complete Year 12.

Understanding the differences between Trade and Non Trade course delivery is required to appreciate the differences on the impact e-learning on course completion in these course areas. Delivery of Non Trade courses such as Business Services, Information Technology and Media, are akin to workplace training, where competence in units and hence attaining the qualification are more achievable with e-learning. Students in these courses agreed that e-learning contribute 'a lot' (47%) to gaining the vocational qualification. Trade competencies like 'Carry out soldering of electrical wiring / circuits' from the Automotive course is less likely to be achieved by e-learning alone. Students undertaking Trade courses confirmed that 'some' (49%) e-learning contributed to achieving the qualification, but not all. More time is allocated in the workshop for Trade courses where students practically demonstrate their skills and knowledge to gain competency. E-Learning has certainly contributed to the students overall knowledge and skill development, as indicated by the students response to e-learning benefits. The extent to which this learning translates directly to achieving the nationally recognised qualification varies between courses according to the practical nature of the delivery.

In considering the largely positive impact that e-learning had on the student's skill and confidence in technology alone, has prepared them very well for workplaces beyond school. E-Learning has also improved their method and medium of communication, helped in activities which focused on teamwork and assisted them to be organised. E-learning tools supported students in developing these employability skills and enhanced their work readiness for employment after Year 12.

*Limitations of the Study*

There were a number of limitations of the study which restricted the researcher providing a more complete analysis of the outcomes of e-learning in VET in schools delivery. Further analysis of the types of activities developed or how each e-learning technology was used, would confirm the quality of the teaching and learning undertaken. Ensuring that teaching and learning programs cater to a range of skill and ability levels, and that the program's sequence of activities, challenged students critical thinking. In order to participate effectively and with satisfaction as a citizen in the post-industrial 'information societies' and 'knowledge based economies' of the 21st-century, a student needs to have greater thinking and problem-solving abilities, to be more self-motivated, to have a larger capacity for cooperative interaction, to possess more varied and more specialised skills, and to be more resourceful and adaptable than ever before.

The e-maturity and capacity of teachers may also determine the quality of e-learning content and activities developed for delivery. Data from the study did not explore the capacities of teachers to provide variation of activities to suit students' learning styles, be able to develop interactive and engaging lessons or extend giftedly talented learners. Where the schools expectation was to populate the LMS with content and activities, this has obviously been achieved as evidenced by the survey responses. Teachers may not be confident to move beyond this level, and need individualised guidance to assist them. Teachers contribute enormously to the quality of online education and are crucial in the entire process.

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