

Supporting new students from vocational education and training: Finding a reusable solution to address recurring learning difficulties in e-learning

Dai Fei Yang, Janice Catterall, and Janelle Davis

University of Western Sydney, Australia

This paper reports on a project that investigated the first year, online experiences of vocational education and training (VET) pathway students studying at university. It was found that, although some students embraced online learning, more than twenty percent of new VET students suffered from high levels of anxiety and frustration when learning online and more than 40% of students also reported difficulties in balancing work and study. In order to address these problems, this paper presents a reusable solution by introducing these new students to an education technology preparation (ETP) program. Student feedback on the ETP program shows a significant improvement in confidence and attitudes towards learning online. We suggest that online learning offers greater flexibility to time-poor students but only if they are confident and competent users of the online systems. We argue that it is dangerous to assume that all new students have the necessary online skills to study effectively in their first year at university. This leads to two implications. Firstly, in practice, it is crucial to provide new students from the VET sector with a well-designed online learning support program. Secondly, in institutional policy, it is imperative to ensure that such support is adequately resourced.

Introduction

There has been heightened interest in Australian universities into the transition experiences of VET pathway students, partly as a result of the Bradley report (Bradley, Noonan, Nugent, & Scales, 2008), which emphasised the importance of widening participation and seamless transition between further and higher education. Emerging themes that have been of interest to researchers in this field include the importance of transition pathways (Bathmaker & Thomas, 2009; Harris, Rainey, & Sumner, 2006), student academic literacy support and levels of preparation (Knox, 2005; Leese, 2010; Pillay, Irving, & Tones, 2007; Wheelahan, 2009) and students' online experiences at university (Krause & Coates, 2008; Pillay, et al., 2007; Scott, 2008). In this paper we report on a recent project funded by the Australian Learning and Teaching Council (ALTC), which examined the first year learning experiences of VET pathway students at a major Australian university. The project focused on students from Nursing, Business and Law, and Early Childhood education. At the research home university, these three disciplines have large intakes of VET students each year.

This paper falls into two parts. First it reports on the research which included student surveys, focus groups and telephone interviews. One of the key findings was that a significant number of students were experiencing difficulties with online learning and that this was contributing to increased levels of stress and anxiety. Some students also reported difficulty in balancing commitments to family, work and study. Based on these findings, the second part of the paper describes how a problem solution, pedagogical approach was used to address the identified difficulties. An education technology preparation (ETP) program has now become part of the university's transition programs offered to new students to facilitate greater capabilities in online learning.

We propose that if new students were well equipped with IT skills, as well as online academic literacy skills, they would be better able to take advantage of the flexibility of online learning. This in turn may be one strategy to assist new students to balance the demands of work and study. Student feedback from the ETP program has been encouraging as students indicated a significant improvement in confidence and attitudes towards online learning. The ETP feedback data also confirmed that a lack of prior online skills may contribute to high levels of anxiety and exacerbate stress in balancing family, work and study commitments.

VET transition to university: Adaptation to a new learning environment

The shift from study in the VET sector to university involves a significant adaptation in the mode of delivery and focus of teaching and learning. In Australia, the VET sector is often characterised by small group, classroom based learning which has the potential to create a more personal, student friendly environment where students can feel secure. The kind of knowledge that is valued in the VET sector tends to have its roots in active and practical applications (Wheelahan, 2008). By contrast, at university, theoretical knowledge is often imparted in larger, more impersonal lectures that are more removed from personal and practical settings and have fewer teacher student interaction opportunities. When adapting to a new learning environment, students can also find that at university the expectation of self directed learning is higher, requiring students to spend more time reading and understanding different genres of texts. The academic writing skills required for different types of assignments may also be at a higher, more abstract level than those required at vocational training institutions. (Aird, Miller, Megen, & Buys, 2010; Milne, Glaisher, & Keating, 2006; Willcoxson, 2010).

The ability of students to adapt to such significant transitional shifts is of concern. In some Australian universities, for example at the university where this study was conducted, the student population articulating from the VET sector tends to include a higher proportion of mature age students (Aitchison, Catterall, Docket, & Perry, 2006). These students may find it more difficult to achieve a balance between study, family and work. In seeking a solution for this, technology is one tool that can be used to support students who do not attend face-to-face activities (Baldwin, 2009). However, while challenging the assumption that technology may provide a more flexible alternative for time poor students, Hughes (2007) argued that technology could only support and engage students who were conversant with the use of technology. We should not assume that the enhanced flexibility offered by e-learning is automatically more inclusive for diverse groups of students than traditional teaching methods. Unplanned or unsupported use of technology can just as easily result in learning difficulties or even alienation from the learning process.

Supporting online skills in order for these students to take advantage of flexible learning is a crucial responsibility of institutions. Benchmarks set by the Australasian Council on Open, Distance and E-learning (Australasian Council on Open, Distance and E-Learning, 2008) stress the importance of institutional provision of both training and support for students in the effective use of technologies for learning. It is important to ensure that commencing students, who may have different types of preparedness for university study, are given sufficient support so that they would be able to actively engage with the tertiary e-learning environment (Aird et al., 2010; Kift, 2008; Kift & Nelson, 2005; Leese, 2010; Watson, 2008).

While there is significant literature addressing the importance of online learning in higher education (for example, Krause & McEwen, 2009; Malfroy & Rankine, 2010; Yang & Goodyear, 2006), there is little literature reporting workable and reusable models that support new students from the VET sector (Armitage, Campbell, & Welsby, 2011). The primary aim of this paper is to develop a problem based solution to address the gap in the field.

The understanding of blended learning in HE

Online learning forms a vital part of the student experience in higher education. With the increase of the integration of face-to-face and online components in most campus based courses, the cognitive demands and learning skills required at university are greater than it is often assumed (Bliuc, Ellis, Goodyear, & Piggott, 2010; Ellis, Ginns, & Piggott, 2009; Paechter & Maier, 2010). In this paper, online learning is defined as learning that is supported by the use of education technology, for example, via the Internet or a particular online learning platform (Ellis et al., 2009; Goodyear, 2005; Yang & Goodyear, 2006).

In recent years, social media, such as podcasts, Facebook, blogs, wikis, YouTube and e-lectures have dramatically improved the flexibility of learning, learner interaction and engagement. The concept of online learning should rule out the purely web-based resource or courseware without any kind of human interactions (Goodyear, Salmon, Spector, Steeples, & Tickner, 2001). When making a comparison of students' engagement and interaction with technology compared with other methods of interaction in learning, Thomas, Laird, and Kuh (2005) reported a positive relationship between student engagement

and information technology. They found that when an institution was well-equipped as a result of substantial investment in education technology, students participated more frequently in interactions with faculties, among their peers and with unit content. Some students preferred using tools such as the Internet, YouTube, and emails to interact with other students when engaging in academic work.

The rich multimodal environment at university has increased the complexity of learning, and students who are equipped with poor skills and attitudes are likely to achieve poorer outcomes compared to their peers (Ellis et al., 2009). When addressing the quality of first year experience Krause, McEwen, and Blinco (2009) reminded us that we should not assume that all first year students were able to use technology as a tool to enhance learning. It is imperative that we embed the development of technology skills into pedagogy and curriculum design.

In response to the online learning difficulties experienced by some participants, we propose a problem solution approach drawn from the work of the British architect, Christopher Alexander (1979) and his colleagues (Alexander, Ishikawa, Silverstein, Jacobson, Fiksdahl-King, & Angel, 1977). When dealing with a recurrent problem a workable solution is needed. This solution also needs to be reusable many times for the repeated problem (Goodyear & Yang, 2008; Yang, 2010). For example, in education design, the recurrent problem of first year students' inexperience in writing an essay may be addressed by embedding a proven effective essay writing module into a first year course. Students are provided with an opportunity to practise the skills and languages deployed by the discourse community in writing an academic essay. In the VET transition project, our solution was to use an ETP program to address online difficulties. Through this program first year students would learn how to use the most fundamental learning tools to access and navigate the online systems, as well as develop online academic communication skills to participate effectively in online learning. In the following sections we will first present the VET project and its key findings. Then, we will discuss how the ETP program is used to address the online difficulties experienced by first year students. Finally we will present evidence of improved outcomes.

The VET project

The VET research entitled: *Enhancing the student experience: Transition from vocational education and training to higher education* (VET project hereafter) was funded by the Australian Learning and Teaching Council and conducted in a major Australian university. Its primary aim was to investigate the transition experiences of students who had entered university on the basis of VET studies, in order to develop a strategic framework to help first year students overcome new challenges. The particular responses discussed in this paper were driven by two developments in Australian higher education: Widening participation and blended learning. The university in this study is a newer institution which has a significant proportion of students from low socio-economic backgrounds. While the widening of student participation is a government initiative based on social and economic imperatives (Bradley et al., 2008), the urgency of developing an innovative and efficient blended learning curriculum is well acknowledged globally as well as locally. In the later instance, it is important to address the constraints of the university's multicampus context and the diverse needs of the student population (Armitage et al., 2011). The project team sought to develop and refine reusable and sustainable solutions to address difficulties in the VET transition process and to lay ground work for future research using problem based approaches to provide transition support in Higher Education.

Methods

The VET project had two main stages. Stage one focused on the literature review and the collection of data that identified student transition difficulties at university. The project used a survey to identify learner groups, family and education background and socio-demographic distributions as well as emerging themes of transition difficulties. Survey topics were informed by the literature review and included both open and closed questions. Eligible students were identified through university enrolment data and the survey was sent electronically to students who had enrolled in the Schools of Business and Law, Nursing, and Early Childhood on the basis of their VET studies. Based on the emerging themes, the project team conducted student focus groups and telephone interviews in order to gain an in-depth understanding of various difficulties raised in the survey themes. The project then moved into its second stage which involved finding reusable solutions to resolve recurrent problems. The Education Technology

Preparation program to be discussed later in the paper formed an important part of the strategic solution in the supporting framework and was available to any commencing student according to need.

Student survey

As presented in Figure 1, a total of 529 students who had entered the university on the basis of VET studies completed the survey during 2009 and early 2010. The largest group of respondents was from Business and Law ($n=368$), followed by Nursing ($n=143$) and Early Childhood ($n=19$). This represented 33% of the students who entered these programs on the basis of a VET qualification in 2009 and 2010. The survey respondents consisted of 252 (47.60%) male and 277 (52.40%) female students who were undertaking first year study on campus. The number of mature age students was significant ($n=160$, 30.25%) with ages ranging from twenty six to sixty five years of age. Participants in this research were from a diverse range of backgrounds, with a high proportion of students who were the first to study at university in their family ($n=262$, 49.52%), and from low SES backgrounds, 29.7% ($n =157$). 38.56 % were from homes where English was not the main language spoken at home ($n =204$).

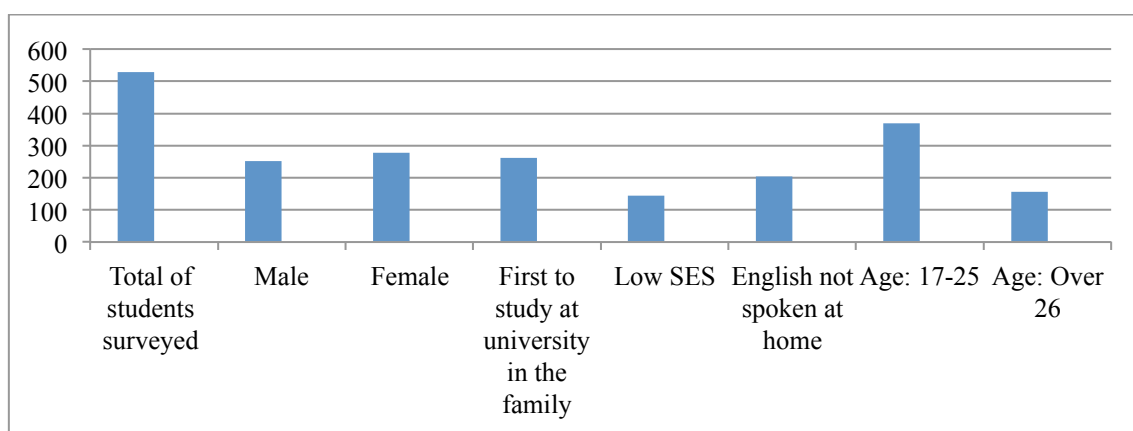


Figure 1. Survey data of participants.

Student focus groups and telephone interviews

Focus group (FG) or telephone interview (TI) participants were recruited from the survey participants who had expressed interest to further participate in the interviews. They were scheduled into subgroups according to the discipline they studied. This enabled the research team to identify common interests within each subgroup. FG sessions were recorded and transcribed while during the TIs, notes were taken by the researcher to document key ideas and points of view. A total of nine (9) FG sessions were conducted across 2009 and early 2010 with thirty three (33) participants and thirty (30) participants for the TIs.

Results

Student difficulties in the transition year

A Likert scale was used to measure students' responses related to differences between expectations and reality and the level of difficulty of specific tasks. Survey responses were coded and entered into SPSS software for detailed data analysis. Questions not answered by participants were not included in the data results. Chi square analyses were used to test associations between low socio-economic status, first in family and transition difficulties. These variables were not found to have a strong effect on difficulties with the online environment. For comments or specific text feedback, data was entered into NVIVO to enable different ways of coding according to the nature of the responses. Similarly, FG and telephone interview data was processed by NVIVO software to allow detailed analysis. Table 1 highlights the key results related to student learning difficulties in university study.

Table 1
Key difficulties facing VET students in their first year studies at university

Total number of students surveyed	529	
Having difficulties in	Number of participants (had difficulty)	Percentage of students
Assessment for your course	151	28.54%
Academic writing (e.g., essay writing)	223	42.15%
Academic reading	154	29.11%
Understanding academic conventions (e.g., referencing)	258	48.77%
Managing to keep up with the pace of your course	208	39.31%
Using the online environment	117	22.11%
Balancing the demands of study and work	264	49.90%

The online environment

The online environment of the research host university is improving in line with practices in other universities in Australia. Most of the subjects these students studied have a strong online component. This may include online assessments of weekly quizzes, online discussion on a specific topic, online journal entries and online group projects. In addition, students need access to unit outlines online, web tutorial registration, online research in the library and workshop registration and their webmail account (Malfroy & Rankine, 2010). All new students are required to activate their personal account and password before they can enrol online. According to the online learning survey conducted by Malfroy and Rankine (2010) many students prefer to work in the campus computer lab or use the lab printing services as it provides faster internet access and more computer facilities. Many of those students who were already equipped with IT related learning skills expressed positive feedback when using technology to help them learn.

Online difficulties

Table 1 shows the range of transition difficulties that were reported by more than 20% of students in the survey. Whilst not the most common area of difficulty, difficulty in using the online environment was still important with 22.11% ($n=117$) of students indicating online difficulties. In addition, in an open ended question on *challenges*, online difficulties were reported by numerous students as "the most challenging aspects" of studying at university. Details related to these challenges included difficulties in navigating the online tutorial system, doing online assessment (e.g., online tests and quizzes), not knowing how to navigate the University online systems for lectures and registration and the extra time taken up by studying online. The shift of study mode from mainly face to face in VET to more online at university was also one of the key challenges for new students, as well as online group work and keeping up with online work in general.

Students' online difficulties were further confirmed by the FG and TI findings. The disappointment associated with finding that essential information was offered online was raised. During one of the nursing FG sessions, one student said:

The whole online thing is a challenge. At TAFE (VET provider) two years ago, nothing was online. It was hard to find the first journal at the library.

When discussing aspects of blended learning some students preferred face to face and believed online learning was not suitable for them. For example, one student said:

I struggled and was stressed in first weeks and could not cope with the online at all. Wanted face to face and did not want distance, we felt like guinea pigs being tested. If the course is online they should do more face to face so you can make the transition – at least get to know how to work it first... I considered dropping everything. I thought I would have a mental breakdown and would just cry.

For a number of those students who were unfamiliar with terminology and IT infrastructure, this lack of familiarity contributed to their anxiety and frustration levels.

Positive attitudes towards online learning

In contrast to the negative feedback discussed above, some students were very positive and praised online learning. When answering the question of "*best aspects of studying at University*" they commented on the following online facilities designed to assist their study.

- Having access to all materials online is good.
- The best aspect of online is the lecturers' online help and 24 hours online help on the website.
- I like the extensive and informative online environment.

Similarly, the FG and TIs generated some enthusiastic comments with positive aspects of online learning including good IT facilities, and useful online material and flexibility. One student said he was very happy with the online environment:

In general, the University learning environment is good, Online material very useful. I went to the library to study but did the rest of research online at home.

Addressing the difficulties in balancing the demand of study and work

The most pressing concern raised by students in this study was related to balancing the demands of study and work (49.90%). In addition, balancing work, study, family or social life recorded the highest number of comments in the "most challenging aspect" section of the survey with 220 responses compared to the next most challenging aspect, academic expectations/writing which recorded 70 responses. It is not possible to tell from this study whether the particular demographics of this cohort of students, for example, 25% over the age of 26, or 29.7% from low socio-economic backgrounds contributes particularly to heavy commitment of paid work and family or whether the prevalence of time-poor students is now part of the higher education student fabric. In keeping with the literature we concluded that experience and expertise with the IT environment may allow heavily committed students to study more flexibly, which in turn may assist them to balance competing life demands.

Finding a reusable solution: Support of the education technology preparation (ETP) program

Overview

The ETP program was originally developed as an equity program aimed at students who had had more limited opportunities to engage in IT facilitated learning. It involved experts from the four key university units: the Student Learning Unit, the Library, the e-Learning Unit and the IT Services. The ETP program consists of modules covering four main areas: (a) the effective use of computer lab facilities; (b) access to library online research and services; (c) use of technology tools in vUWS (the university's online platform) and (d) academic literacy for online group work and discussions. The program aims to develop IT skills for system navigation, library searches, use of computer lab and printing facilities, accessing online courses, as well as academic literacy online skills for group work and peer and discussion board communications. These IT and online communication skills are fundamental skills for effective online learning and participation.

In order to encourage independent learning, each ETP module was designed with stand alone content which requires no specific order of navigation. This allows students the flexibility of choosing the module most relevant to their learning needs.

The ETP program was delivered in three modes to enhance active learning. The face-to-face workshop was conducted in the campus computer lab for small groups of students to provide interactive and hands

on practice. The lecture mode was conducted in conjunction with a School's orientation week to provide an overview of the program to guide students about how to log into the online site. The latter is an effective approach to introduce students to the online program. The online mode is promoted by postcards and flyers distributed during the Orientation week and service counters at the Student Support Services, the Library and the Student Centre.

When searching for a reusable solution to support the VET students' online learning difficulties, the project team decided to use the ETP program because of its previous success in supporting equity students. The face to face ETP workshops are specifically made available to students who had a strong preference for face-to-face mode, for example some mature age students, and students who have had no previous experience with online learning. In the orientation activities for students entering on the basis of VET studies the ETP workshops were promoted and these students in general were given priority to attend the program if places were limited. Students who had entered on the basis of VET studies were also encouraged to enrol in the University academic literacy preparation program which includes an ETP workshop.

In 2011, the ETP program provided a series of two hour face-to-face workshops in computer labs across 4 major campuses through the UniStep and AcPrep programs (two key literacy preparation programs). The successful promotion on the VET student information days in 2010 meant that VET students attended these preparation programs in almost double the proportion (31-39%) than they are represented in the university population. In addition, the ETP program was conducted in an introductory lecture to all new students in the School of Nursing, which had a high intake of non-school leavers including from the VET sector.

The lack of prior knowledge in studying online

The feedback provided by students who participated in the ETP program contributed further insights into the cause and impact of online difficulties experienced by commencing students. ETP students were invited to self evaluate their prior knowledge and skills in using some of the online tools and facilities. The result shows a significant gap in prior knowledge and that a large proportion of students were not acquainted with the new online system. For example, 50.60% ($n=79/156$) of new students did not know how to post a message online, 51.31% ($n=78/156$) did not know how to find assessments and lecturer's announcements online, 63% ($n=98/156$) did not know how to use the campus computer for printing and 63% ($n=98/156$) did not know how to check their library record online.

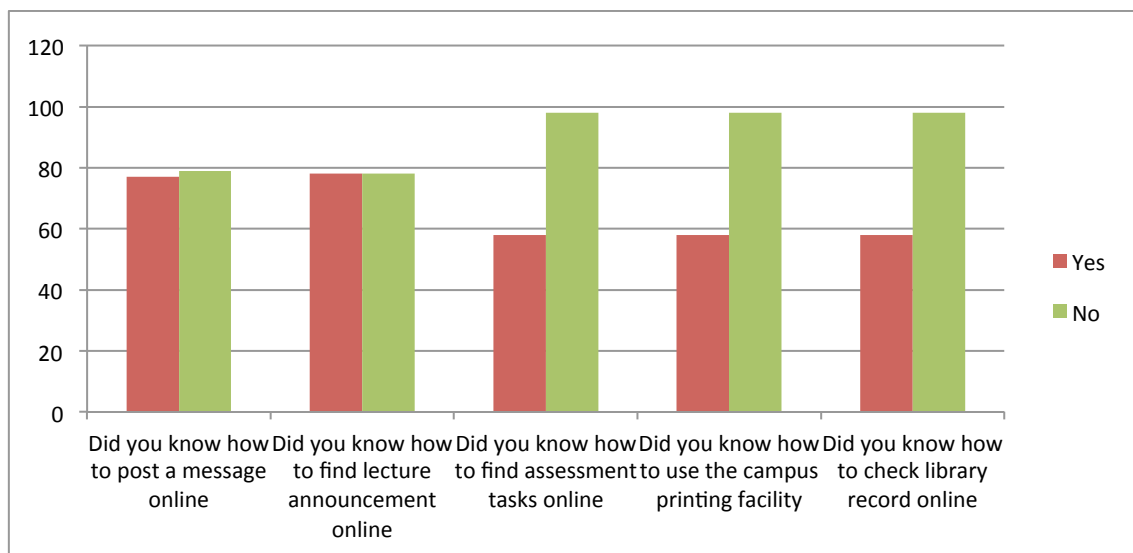


Figure 2. Students' prior knowledge in e-learning before attending the IT support program.

Benefits from attending the ETP program

After attending the ETP program, students were invited to fill in an evaluation form. The high rating of the usefulness of attending the program is encouraging. This is highlighted in Table 2.

Table 2
Student feedback on benefits of attending the ETP program

Questions	<i>n</i> agree/strongly agree	%
1. I have benefited from this program overall	135/157	85.90%
2. It has increased my knowledge in using the computer lab and other IT facilities	136/157	86.62%
3. I now feel comfortable in using vUWS and online tools	130/157	82.80%
4. I have increased my confidence in accessing podcasts and Lectures Online	133/157	84.71%

Note. vUWS: Virtual University of Western Sydney

Table 3
Students' attitudes towards podcast and lectures online

Questions	Agree/strongly agree	%
Using podcast is effective as I have gained a better understanding of referencing and how to avoid plagiarism from the interview podcast.	123	80.4%
I have gained a better understanding of the concepts of sustainability and ecological footprint by watching the lecture recording.	106	68.8%

Students appraisal of technology to assist learning

Student evaluations of the ETP program highly praised the effectiveness of using podcasts and lectures online to assist their learning as well as the flexibility of delivery. The following excerpts illustrate some of these comments.

Comments on podcast

- (The podcasts) provide flexibility to students and the opportunity to re-do (listen again) lectures
- It allows a student to 'attend' a lecture in convenience and also to replay the lecture to capture missed elements.
- It (podcast) encompasses two key learning styles, visual and auditory and allows more in-depth note-taking.
- You can be more engaged in responding and listening.
- It was an easy way to recreate the process (step by step) after watching someone do it.
- It uses a simple medium to explain things that may seem complex to some.
- It is a tool that compliments face-to-face learning. Definitely. It provides valuable learning materials to students in need.

Comments on lectures online

- You can listen and absorb information if you are not switched on the first time.
- Very helpful in heavily scheduled life and studying for exams.
- Yes because if I am unable to attend a lecture I can access them online.
- Lectures online are a good idea as you can listen to them at your own pace and rewind or fast-forward to points you need to pay particular attention to, although nothing can replace face-to-face.
- Save time- helpful especially for working students (or those who miss out due to illness or other commitments).
- Effective (for students) unable to keep up, or others talking over lecturers...for those with hearing deficits to go back and listen unobstructed assists.
- Learning at own pace and time saver.

Discussion and conclusion

For VET pathway students, the challenges of adapting to a new learning context at university are significant. In responding to these challenges, students' attitudes towards online learning are mixed. Some students embraced online learning for its affordance of flexibility and usability while in contrast, some students were frustrated with technology. Some found that the experience of online learning in their first semester of study was too soon as it has added another hurdle to their transition process. They would have preferred online learning to be introduced at a later stage after they had overcome other new challenges, such as the shift in learning style and the higher expectation of the work required at university. Overall, online learning could be very challenging, in particular for those new students who have had more limited prior experience in online learning.

The ETP program has responded to a need by addressing new students' lack of prior knowledge and skills in using technology to effectively assist their learning. From our feedback data it is evident that students not only improved their online experience and attitudes, they had also acquired new skills that will enable them to take more advantage of flexible learning. A number of students agreed that tools such as podcasts and lectures online could assist them to balance the demands of study with other commitments.

A well-developed support framework is essential for students entering university on the basis of VET studies, particularly during the first year of study. Apart from providing a workable solution in helping students with their online difficulties, this project developed a problem solution approach to research design. For example, the learning difficulties identified in stage one were addressed in stage two by an effective support framework. The two stages of the research have complemented each other in developing a problem resolution approach that addresses learning problems and facilitates an improved learning experience. However, it is also important to recognise the limitation of this method. Even though this solution is effective, the number of face-to-face workshops able to be conducted in the computer labs is often subject to the availability of staffing and lab booking times. This teaching work is quite specialised and computer lab space is often at a premium at the very early semester times that would be most beneficial to student engagement. For universities planning on integrating elements of online learning more broadly into the curriculum, it is imperative that adequate opportunities are afforded students to develop the necessary skills and capabilities. Institutions will need to factor in the potential costs of these opportunities which must be timely and, for some students, will need to be delivered in face to face, practically orientated sessions.

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Corresponding author: Dai Fei Yang, d.yang@uws.edu.au

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