Women learners in Vocational Education and Training (R017L)

Literature Review
Access and Equity in Online Learning
Literature Review: Women learners in Vocational Education and Training

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Australian Flexible Learning Framework 2
Contents

WOMEN LEARNERS IN VOCATIONAL EDUCATION AND TRAINING (VET) .................... 4
SCOPE OF THE LITERATURE REVIEW ........................................................................ 4
INTRODUCTION ............................................................................................................ 5
RESEARCH THEMES FOR WOMEN LEARNERS IN VET .......................................... 5
Are women averse to computer technology? ............................................................... 6
What gender differences has research identified in e-learning? ................................. 8
Do competing responsibilities impact on women’s ability to exploit the new technologies?.. 10
What does research tell us about good practice for women and elearning? .................. 11
Are there barriers to women achieving careers in IT? ................................................. 12
RESOURCES .................................................................................................................. 14
OTHER RESOURCES ................................................................................................... 15
FURTHER RESEARCH .................................................................................................. 16
Women learners in Vocational Education and Training (VET)

The Australian Flexible Learning Framework Strategy 2001 has as its over-arching goal “an expanding core of VET learners who are empowered by a wide range of flexible delivery methods, particularly e-learning.” Access & Equity in Online Learning is one of 19 projects and 3 facilitating programs funded in 2001 to advance this goal.

The Access & Equity in Online Learning project for Stage 1 examined the relevance of online technologies to the needs of:

- Aboriginal and Torres Strait Islander learners;
- learners with disabilities; and
- learners with low literacy levels.

Stage 2 will investigate

- women learners in VET;
- rural and remote learners;
- isolated learners in metropolitan areas; and
- the concept of the ‘digital divide’ to determine the extent to which it is a significant factor impeding or facilitating VET provision around Australia.

This component of Stage 2 comprises a literature review and analysis on issues affecting women learners in VET.

Scope of the Literature Review

This review and analysis was completed during July 2001 and encompassed a review of recent literature on on-line learning to identify issues affecting women. It includes both Australian and international research published both online and in traditional print form. It results from gathering material both online and in libraries from the following sources:

- databases of abstracts including Australian Education Index and ERIC;
- education and training specific databases including VOCED, and EdNA;
- the World wide web using meta-search engines; and
- papers and proceedings from recent relevant conferences.

The technologies and our knowledge of how best to use them in an educational setting are changing rapidly and today’s research may have limited application tomorrow. The review is therefore focussed on the most recent publications (1997-2001) as many issues described in earlier research were rudimentary statements of underlying problems which are now better

understood and written about at a more sophisticated level. As an example we need only to consider the reported problems students had with early e-learning materials that were simply transpositions of lecture-notes or class work-sheets to an e-format. While it is true that these learning materials still exist and are still being used we have learnt from past experience and there is little point in reviewing research that tells us again that on their own, they have limited value and present learning barriers to many groups.

As concurrent research is being undertaken on the ‘digital divide’ this review has also excluded research concerned with access to the technology and cost inhibitors to e-learning. It is assumed that issues of the digital divide which impact on women learners in VET and isolated metropolitan online learners will be addressed by that research.

Introduction

Within the Australian VET system e-learning is both expanding rapidly and diversifying in application. It now includes:

- enhanced face-to-face instruction (on-campus, in-class use of computers and the WWW);
- enhanced distance education (on- or off-campus individual and group learning with both print and computer-based materials); and
- instruction entirely online (individual and group learning).

Because of this mix VET is moving towards every student being an e-learner at least for part of their study, whether this be through learning materials, e-mail for contacting teachers/tutors or submitting assignments, the web for doing research, language laboratories, or any one of the myriad other e-learning applications.

The question for this review is whether the research identifies any barriers that isolated learners in metropolitan areas or women learners in VET, might encounter, whether there are any solutions that have worked or show promise, and whether there are any resources that teachers or learners might find helpful in overcoming such barriers.

Research themes for women learners in VET

Connole (2000) found that women were participating in VET training to improve their chances of employment, to upgrade current qualifications and levels of expertise in order to retain employment and meet personal and social goals, as part of long term career plans which might involve making up for earlier educational disadvantage, to change careers or to start small businesses.

The choice to participate in training was strongly related to gaining and retaining employment, and training with real prospects of employment was highly attractive. Women in the study recognised the current uncertainty in the labour market and the need for possible changes of occupation and further training. The fact that a course was accredited increased its attractiveness for most participants.²

² Connole, Helen “Making Training Work for Women - A qualitative study of women’s experiences in VET” A report to MCEETYA Vocational Education and Training Women’s Taskforce, 2000
At the beginning of the 21st century women learners in VET will not achieve these learning goals without achieving computer literacy. This has been defined in various ways but the common elements include an ability to use abstract reasoning; to apply information technology in sophisticated, innovative ways to solve problems across disciplines and subject areas; to interpret vast amounts of information with analytic skill; and to continually adapt and learn new technologies as they emerge in the future.

As a concurrent research project is considering the “digital divide” this review does not consider cost or technology infrastructure issues as they impact on women learners in VET. It focuses on the current apparent contradictions about women and the new technologies and explores the research findings and the educational implications of the following questions:

- Are women averse to computer technology?
- What gender differences has research identified in e-learning?
- Do competing responsibilities impact on women’s ability to exploit the new technologies?
- What does research tell us about good practice for women and e-learning?
- Are there barriers to women achieving careers in IT?

**Are women averse to computer technology?**

Spender (undated)\(^3\) argued that there are two parts to information technology, the information and the technology and women are engaged by the information part, in particular building on previous skills to use the technology for information management. She cites IBM research showing that women in small business are more likely than men to adopt new technologies for business growth.

In another paper on this issue Spender (2000)\(^4\) argued that women have more than their share of the necessary characteristics relevant to the digital age. She lists coping with change and an ability to do many things simultaneously as strengths of women in an information economy which is changing rapidly and continuously and frequently demands multi-tasking.

Ruhe and Qayyum (2000)\(^5\) found that the use of new technologies did not seem to be a variable that either attracted or deterred women or men from choosing a technology-mediated distributed course.

Statistics too, would seem to support the proposition that women are embracing the new technologies with enthusiasm. A major report by the U.S. Department of Commerce, *Falling Through the Net: toward digital inclusion*, found that:

> in the early years of life, boys and girls are equally likely to be Internet users. The small gap in favor of females of college age widened by 2000. During the years of prime labor force participation, while men were more likely than women to be Internet users in 1998, twenty months later the situation had reversed—in August 2000 women were more likely than men to be Internet users. For older adults in both surveys, men were more likely than women to be online.\(^6\)

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5 Ruhe, op.cit.

In Australia, the figures are approaching similar levels. Australian Bureau of Statistics\(^7\) figures for computer and internet use in the 12 months to November 2000 showed 65% of adult women and 67% of adult men had used a computer while 47% of adult women and 53% of adult men had accessed the internet.

For the first time the annual VET statistical collection for 2000 enrolments\(^8\) included a table: Module enrolments by delivery type and sex. It shows that while women comprise 48.3% of the total VET module enrolments, women comprise 54.2% of those enrolled in online/remote access delivery modules. These online/remote access module enrolments represent 4.7% of all female module enrolments and 3.7% of all male module enrolments. While there is no reported outcomes for these enrolments they do indicate that women are not averse to e-learning. It also contrasts with Choi’s (2000)\(^9\) finding in higher education that women students did not opt for distance learning as often as men students.

Eubanks (2000) paints another scenario for women’s interaction with new technologies:

> A disturbing trend I've noticed is talk about adapting technological training to suit "our learning styles." That is, making the technology more simple, less technical and friendlier, so that women will be able to understand it. The concept of "dumbing-down" and "friendly-up" technology so that women will be more comfortable with it is thoroughly offensive and ultimately counter-productive. What is at issue here is not the technology itself but the paradigms surrounding its use. Technology is simply a tool -- and those of us in the margins of society need to be taught to use these tools effectively. But most importantly, the paradigms that surround the technology, the metaphors that dictate how women are "supposed" to relate to technology, must be challenged in significant and lasting ways.\(^10\)

Research also shows that women’s attitudes to computers are changing. Ray, Sormunen and Harris (1999) administered an attitude inventory to 26 males and 36 females in a university business communication course and found that

> Females held more positive attitudes than males regarding the value of computers to make users more productive. Although neither men nor women in this group reflected concern about the impact of technology on people and their work environments, women were more positive than men in this regard. Women also reflected greater comfort in using computers than men.\(^11\)

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\(^9\) Choi, op.cit.


With a small group (n=30) of Australian women Singh and Ryan (1999)\textsuperscript{12} found that:

- they generally used the Internet as a tool for activities rather than to play with or master the technology;
- they used the Internet most enthusiastically when they perceived it as a personal medium of communication and a way of getting information in context; and
- when women were comfortable with the Internet – as with the telephone – they did not perceive it as technology.

In a study of the use of computer communications for post-secondary education Harasim (1999)\textsuperscript{13} found that 81% of women reported a positive experience as compared to 77% for men.

**Implications for women learners in VET**

While research in the 1970s and 1980s frequently showed that men were more disposed than women to adopt new technologies, there is growing evidence that women are fast catching up, and in some cases surpassing men in engaging with the digital world.

If women are not accessing the new technologies in VET then it is not because women are inherently averse or less inclined to embrace the information economy. We must look to other issues which might be impacting on women learners in VET.

**What gender differences has research identified in e-learning?**

Almost all the research on gender differences relevant to e-learning is located in either the school or higher education sector. This review has focussed on the latter as of more relevance because the subjects are adult learners.

In a small study (12 men and 16 women, age 32 to 64) in an Adult Education degree program delivered solely by means of web-based technology, Mott (2000) reported that more women (82%) than men (34%) reported ‘intrigue, interest, or curiosity with the technology’ as their primary motivation for enrolling in the online program. Women more frequently referred to computers as ‘tools’ for coursework, whereas men considered their course work as a chance to play on the computer for legitimate reasons. The majority of the women reported enjoying the web-based instruction but having to plan and limit computer time because they didn’t have time to play.

Mott also identified differences in the women’s online learning experiences:

> Women’s online communications were generally longer, more in-depth, and more frequent, often in response to others’ postings. In spite of noting access difficulty, family responsibilities, and career pressures... women’s collective communications were 37% longer than those of the male students. The women also reported spending longer reading and preparing for their more in-depth postings to course assignments and others’ postings. As one participant noted, “Using the computer for dialogue and response to course topics isn’t much

\textsuperscript{12} Singh, Supriya and Ryan, Annette, “Gender, Design and Electronic Commerce,” Research Report No. 25, CIRCIT@RMIT, 1999 \texttt{http://mams.rmit.edu.au/6w50qvyqwfwf.pdf}

different for us than in class. In this environment, too, we are more thoughtful about crafting our response; we talk more with one another. We don’t just give an answer and go on to something else." 14

McSporran and Young found that online learning favoured women and older students who were more motivated, more disciplined in scheduling their learning time and were better at communicating than males and younger students.

When asked in focus groups "when is the best time to be working online", our mature students tell us, "late at night" or "early in the morning" i.e. when the family are not around and/or chores are completed. Conversely younger male students tell us they study "any time". In other words they do not plan quiet times, their login pattern is irregular with a shorter time-span and scattered frequency.15

Aspin (1997)16 analysed the content from one month of messages (149 messages) from undergraduate and graduate students over the age of 25. This group were career-oriented, working full-time and studying part-time. She found gender differences which are both similar and different from the traditional learning environment.

- male students exhibited characteristics of attempting to control the online environment;
- the content of male messages often had a tone of certainty;
- female students exhibited signs of preferring to learn in a connected manner while males preferred to learn in a separate manner;
- females asked more technical questions than males;
- more females than males were frustrated or worried about the fast pace of online courses;
- females communicated in an elegant way, while males were generally rough, using shorter words and slang;
- males communicated with an underlying purpose of seeking power or status while females more often communicated striving to help others;
- females communicated in a more personal manner, often including mention of self, personal experience, and family in their messages; and
- more females requested help from other students, especially when they had initial positive responses.

She concludes that online learning allows a sharing and interactive pedagogy that is preferred by women and provides an environment for differing learning style preferences because it has collaborative potential.

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There is considerable research literature on gender differences in online communication. King (2000)\(^\text{17}\) and Herring (2000)\(^\text{18}\) also found differences in the ways men and women communicate electronically. Herring noted that teacher control of online interaction can positively influence female participation. From previous research, Herring hypothesised that synchronous communication may prove more egalitarian than asynchronous communication as women participate more equally in chat rooms (synchronous) than in email discussions (asynchronous).

Jenkins’ (2000) evaluation of 454 postings from third year Journalism students at Queensland University of Technology, in an assessable online forum also uncovered some interesting gender differences.

> Perhaps the most significant finding was that the female students were more willing to post their forum contributions after hours (i.e. from 6pm to 8am) than their male counterparts, with the females making 30.2% of their postings after hours, to the male students’ 17.8%. The female students (8.3%) also made more postings on weekends than their male counterparts (1.5%).

> Overall, the female students took more advantage of the flexibility of submission hours than their male counterparts. Interviews with some of the students involved have revealed that some students used the out of hours times because they better fitted in with the students’ work and study commitments, while others would make postings after either completing other work on the computer, or after surfing the web for enjoyment.\(^\text{19}\)

**Implications for women learners in VET**

While VET specific research on gender differences in elearning is desirable, it is likely that elearners in VET will exhibit the same gender differences as those in higher education. If women are not to be disadvantaged then these differences will need to be understood and addressed in the design of elearning materials and activities.

**Do competing responsibilities impact on women’s ability to exploit the new technologies?**

From past research into educational issues for adult women we know that family responsibilities often impact on women’s capacity to access learning opportunities. Proponents of e-learning argue that it affords greater flexibility and control for women to manage these competing demands. The current research literature does indicate that family responsibilities still impact on e-learning.

Ross (1998) found gender differences in the extent to which family issues affected participation. Women were more likely than men to talk about their families and to describe instances in which family commitments impinged upon contributions to group efforts.

> The most interesting finding was the role of group composition in moderating the influence of family concerns. When women are in the majority, discussion of family issues may bring the group together, giving women a stronger sense of group inclusion, a process that may not occur when a single female is in a male group.\(^\text{20}\)

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Burke (2000a\textsuperscript{21} and 2000b\textsuperscript{22}) surveyed 150 self-selecting women using home computers for work or study. 25% of the respondents experienced difficulties with this new form of 'home-work', and it is their experiences that form the basis of these two papers. Bourke conceptualised the problem this way:

Any learning at any age requires time, space and support. At a distance, the onus is on the learner to organise this necessary space and structure available time. That process of preparation and ongoing negotiation happens externally with others and internally, as the learner consciously and consistently engages with herself towards the learning event. Within the Information Communication Technology (ICT) distance learning framework, this process often must be carried out in relation to family and other domestic demands on time, space and technologies.\textsuperscript{23}

Bourke found that for some women there were conflicts with control and ownership of computers and computer time, for some where domestic space was limited or contested there were issues of location and access, and some indicated they felt it was permissible to take computer time for work or study but not for creativity and play. Most talked of inner computer time scheduling and guilt in taking time for learning from domestic responsibilities.

Bourke concluded that as in so many other aspects of their lives, many women who live with partners and children do not always have freedom to learn.

### Implications for women learners in VET

The research indicates that the flexibility the new technologies offer for learning does not, by itself, make education accessible to those with family responsibilities. It may make learning more accessible than rigid timetables and travel to class, but for women learners in VET who have family responsibilities, some consideration might need to be given to the pace of online modules and the composition of groups who are set collaborative tasks.

### What does research tell us about good practice for women and elearning?

From the review of the literature it is possible to identify some e-learning practices that will benefit women learners in VET.

Connole (2000) recognised that women VET learners were not a homogeneous group and that their delivery needs varied considerably depending on work and family responsibilities

… the provision of part time training courses, courses which are not accelerated in pace and opportunities to leave and rejoin courses if necessary would be success factors in delivery.\textsuperscript{24}

In a discussion paper prepared for the Canadian Congress for Learning Opportunities for Women, O’Rourke and Schacter (1997)\textsuperscript{25} observed that some programs use women-friendly approaches, such as mentoring, to help women learn about the technology itself.

\textsuperscript{21} Burke, Catherine (Dr), (a) "Women’s Access to Home Computers for Learning and Personal Development", Re-Open Vol. 1. No. 1 December 2000 pp.1-16 \url{http://www.edca.cqu.edu.au/lit/re-open/papers/burke.PDF}
\textsuperscript{22} Burke, Catherine (Dr) (b) “Time and Space for Women: Distance Learning and Domestic Constraints” Paper delivered at Distance Education: An Open Question? Adelaide, 11-13 September 2000 \url{http://www.com.unisa.edu.au/cccc/papers/refereed/paper6/paper6-1.htm}
\textsuperscript{23} Ibid.
\textsuperscript{24} Connole, op.cit.

\textsuperscript{25} O’Rourke and Schacter, 1997.
They observed that:

*New communications and information technologies are always potential new learning technologies. If used appropriately, they offer the prospect of enhanced and more accessible learning, education and training. These prospects are particularly significant for women who rely on flexible arrangements, such as part time studies, open and distance learning, and community based programs, for both formal and non formal learning. But all technologies function within a system of human organization. To realize the learning potential of new communications and information technologies, the context, learning goals and the human dynamic essential to teaching and learning must be taken into consideration.*

King (2000) made the following recommendation for good practice in using online communication and it most likely has particular application for those in VET women’s access courses:

*allowing women to find their own voices in a women-friendly and/or women-only environment will leave them better equipped to face mixed-gender online communications, whether in other communities or in the more public areas of the Internet. By gaining confidence and experience in a safe environment, women will later be able to hold their own when faced with flaming and challenging men. In addition, by learning to see other women as experts in the closed communities, women will value their input more in mixed-gender discussions.*

Aspin (1997) noted that in all adult learning situations we find women heavily located in certain disciplines as learners and as teachers but these areas often attract the least technology. She warns that unless there is e-learning staff development for women in all teaching areas, access to hardware and software, and access to flexibly delivered training using the technology, then women will be short-changed in their education.

**Implication for women learners in VET**

The research provides some indicators as to approaches that will benefit the majority of women learners in VET.

What is absent from the research is any consideration of whether mature age women who have long been out of education and employment and who enrol in VET women’s access course might have special elearning needs. This warrants further research.

**Are there barriers to women achieving careers in IT?**

Feminist and educational literature has long argued the importance of positive role models for breaking down gender barriers in education and employment, and for moving the “non-traditional” to become the accepted norm. This review has therefore looked at some of the recent research on the experience of women in computer science and IT and whether this might impact on the emergence of positive role models for women learners in VET.

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26 Ibid.
27 King, *op.cit.*
28 Aspin, *op.cit.*
Margolis, Fisher and Miller (work in progress [a]) are looking at the differential impact of the “geek” myth on male and female computer science students. Preliminary findings suggest that the geek stereotype of a person who is totally centred on the computer is particularly damaging for females. Whereas the males in computer science who did not think they fitted the stereotype (36% of male subjects) did not question their computer abilities, the 69% of females who did not think they fitted the stereotype were concerned about their computer abilities. They construe that:

…until women no longer feel the need to struggle to fit into a way of being that goes against their grain and appears to compromise who they are or whom they hope to be, fewer women than men will choose to pursue computer science. If the computer science culture can let women know that they can succeed without knowing everything about computing before entering college, and without adopting a stereotyped obsessive persona, it will have taken a step toward creating a more diverse population of computer science students and professionals.29

Margolis, Fisher and Miller [work in progress (b)] are also working on research which focuses on the dissimilarities between female and male students’ initial attraction, engagement and experience with computers. For males, the attraction to computers comes early in life and appears to be magnetic. Males are more likely to be fascinated with the computer itself, find satisfaction in controlling and mastering a machine, and enjoy hacking for hacking’s sake. Females’ interest in computing is more likely to be one interest among several others. They are more likely to place a high value on the context of computing, the links between computers and other fields, and the contribution that computers can make to society. This then impacts on their choice of career and further study.

What appears to be very important for women studying computer science is the integration of people and ties between computing, people, and other arenas. … The aggregate differences in motivations and history between men and women studying computer science point to a number of ways in which the field and its institutions need to change in order to increase the participation of women.30

Aspin (1997) noted that the small numbers of women in IT courses is culture bound.

A woman enrolling in an electronics course in Australia may confront a situation where she is one of the few females in not only the class, but the department and the campus, yet if she were to study in India, she would be part of a large female group of students and teachers in this field. 31

Carter and Jenkins (2001)32 researched the experience of female university computer science students and found that once they reach university the climate was favourable to them, they were not concerned by the lack of female numbers in their chosen course, but they were concerned about a shift in emphasis in course content to a more functional approach. The researchers conclude that it might be more productive to focus on the computing experience of young women in secondary schools since the major problem is one of supply.

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29 Margolis, Jane, Fisher, Allan and Miller, Faye (a) “Geek Mythology”, a "work in progress" in the Carnegie Mellon Project on Gender and Computer Science, http://www.cs.cmu.edu/~gendergap
30 Margolis, Jane, Fisher, Allan and Miller, Faye (b) “Computing for a Purpose: Gender and Attachment to Computer Science”, a "work in progress" in the Carnegie Mellon Project on Gender and Computer Science, 1999 http://www.cs.cmu.edu/~gendergap
31 Aspin, op. cit.
Clegg and Trayhurn (2000) argued that there is not a real lack of women in IT study, there is an unwarranted hierarchy of what constitutes ‘real computing’ and that courses which involve a broader range of skills, and where women are more numerous, are not counted in the same way as those focussed on artificial intelligence and similar specialisations.

For the women in our study … their first experiences with computers were overwhelmingly associated with clerical and administrative tasks. This means that they bring different views of the capacity of computers derived from networked systems in complex organisations, rather than PC experience. However, … they also sometimes underplay the relevance of this experience. ³³

### Implications for women learners in VET

While the recent research literature has focussed on the need to increase the numbers of women pursuing computer science and IT courses, there is little to suggest that the purpose is to provide more positive role models. Rather the emphasis has been on identifying any gender differences in the experience of IT and computer science students.

There is no literature to indicate whether women in VET IT and related courses of study have the same experience as their university counterparts and this warrants further research.

### Resources

This review found few resources specifically related to women e-learning in VET however the following may be of benefit to those teaching women in VET.

#### VET specific resources

The only VET specific resource identified in the literature search is Delaney and Dyson (1998)³⁴ *Women: Creating the Connection, Women and Information Technology in the Vocational Education and Training Sector*, which investigated the [then] current and potential roles for women, identified barriers which may inhibit women’s level of involvement and identified models and practices which have enabled women to develop their skills. It contains a literature review of research on women and their involvement with information technology.

They completed 30 case studies of women, both technicians and users of IT, from across the VET sector and from their experiences, motivations and expectations in relation to IT, drew some general themes. They found there were many similarities between the experiences of these women in TAFE and the ACE sector.

The findings permitted the design of a professional development model for women staff in VET and underpins some of the initiatives in the Australian Flexible Learning Framework Strategy.

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**Other Resources**

Sy and Anderson, (1999)\(^\text{35}\) is an interesting and detailed report of the development and implementation of an online group learning program for women in some Canadian women’s shelters. It aims to develop women’s technology skills through learning about their legal rights and issues related to domestic violence. The learning approach, the content design, the program implementation and the subsequent evaluation have much to offer in the search for best practice for women learners in VET.

The American Association of University Women Educational Foundation (2000)\(^\text{36}\) *Tech-Savvy: Educating Girls in the New Computer Age*, is aimed at school education but has recommendations which are also of interest to VET practitioners. These include in summary:

- compute across the curriculum;
- redefine computer literacy;
- respect multiple points of entry;
- change the public face of computing;
- prepare tech-savvy teachers;
- begin a discussion on equity for educational stakeholders;
- educate students about technology and the future of work;
- rethink educational software and computer games; and
- support efforts that give girls and women a boost into the pipeline.


Further Research

The preceding review and analysis of the literature suggests that the following further research is needed –

- whether current VET provision is meeting the e-learning needs of women learners
- whether there are particular learning needs for learners in women’s access courses that are different from those of other women;
- whether efforts to increase women’s participation in IT courses in VET to provide positive role models is worthwhile pursuing, or whether the emphasis is better placed on providing access to a broader range of career options for women as learners and staff in VET; and
- whether women in VET IT courses experience any barriers to successful learning because of their gender.