Gender differences and similarities in online courses: challenging stereotypical views of women

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Abstract

This paper considers gender differences in online contexts and examines current trends in women's performance, access and experience of online courses. It uses supportive case study examples and specific research into students' academic engagement, conceptions and perceptions of learning support in online environments. The analysis shows that women studying online are confident independent learners who may outperform their male counterparts. They do not have reduced computer and Internet access compared with men, nor are they disinclined to enrol on online courses. They attach greater value to the pastoral aspect of tutoring and have different interaction styles from men, which may have implications for online tutoring support. The gender debate needs to move on from access and performance to the differences and similarities in the degree of importance that men and women place on different interaction and tutoring styles online.

Keywords

conceptions of tutoring, gender differences, online learning, student learning research, women and online learning.

Introduction

The use of computers and the Internet in our everyday social interactions is becoming commonplace. Education too is keen to exploit the Internet to offer more flexible and student-centred forms of education (see Kirkwood & Price 2005). Initial beliefs that the Internet was a democratic and equal medium for communication have been challenged (Gunn *et al*. 2003). Many regard the Internet as male-dominated while women are constrained by the need to juggle jobs and family commitments (Wolf 1998). This has given rise to concerns about equity in education, particularly for women (Yates 2001).

Research into computer-supported learning suggests that women are disadvantaged by poorer access to technology (Kirkup & von Prümmer 1997), lower levels of computer literacy and lower confidence levels in its use (Yates 2001). This is coupled with reports that women are under-represented and perform less well in science, mathematics and technology subjects (American Association of University Women Educational Foundation 1998; Cook *et al*. 2004). However, the picture is unclear as there are conflicting studies on gender differences in performance and interaction (Gunn *et al*. 2003).

A persistent issue in interpreting gender differences research is that of methodology (Crawford & Chaffin 1997). The biggest difficulty is separating the effects of gender from the effects of other societal factors. As there are a considerable number of differences in the background and status of men and women, it is

difficult to know whether the samples are really comparable (Richardson 1997).

A further problem in evaluating the research on gender differences is publication bias (Richardson 1997). For example, papers reporting a significant difference in performance between men and women are more likely to get published than those that report no significant difference. Rosenthal (1979) called this the 'file drawer problem' as studies revealing no significant difference are unpublished and remain in the author's file drawer. As a consequence, there is no literature on gender similarities, only on gender differences, which is often portrayed as negative and detrimental for women.

In many cases, gender is totally ignored as an important social variable and is omitted from the original study design. For example, phenomenographic studies have been criticised for typically failing to report gender (Hazel *et al.* 1997). Sexism in research methods is not new: many of our theories of moral and intellectual development are androcentric as they are based on men and boys, with subsequent studies examining how women 'fitted into' these schemes (Eichler 1988; Hazel *et al.* 1997). This makes it difficult to interpret previous research into gender and performance.

There is a considerable amount of folklore, bias and sexism regarding gender differences and some of this extends to views about women and technology. So what is the current position? Are there gender differences in online courses? And what do current trends look like for women's performance, access and experience on online courses? This article reflects on these gender-related issues and uses supportive case-study examples and specific research into students' academic engagement, conceptions and perceptions of learning support in online environments to answer some of these questions.

Research context

As a distance education institution, the Open University has considerable experience in providing flexible learning for a variety of students in different geographic locations remote from any campus. In particular, it has been an early adopter of the Internet and has been monitoring the impact of online courses in higher education for a number of years. It has

longitudinal data on the trends and experiences of online courses, which is of value to the higher education community as a whole. This presents an appropriate environment within which to examine gender issues in online courses in higher education.

Research goals

The study adopts a multi-method approach to understanding gender issues in online courses. It examines gender differences in terms of predisposition to enrol in an online course, performance in online courses, academic engagement and conceptions and perceptions of tutoring in online contexts. These are compared and contrasted with students' students taking the same course in a non-online environment. The comparison between the online and non-online versions of the course is essential in order to examine whether any differences are due to media effects or gender effects.

The investigation considers three different types of data. First, the enrolment and performance figures of an online course are examined for gender differences. These are contextualised with gender differences in computer and Internet access for the university as a whole, which are monitored by an annual university courses survey. Second, the same online course is examined for gender differences in students' perceptions of academic engagement. The third type of data examine views of online tutoring from two perspectives: a quantitative analysis of perceptions of tutoring and a qualitative analysis of conceptions and perceptions of tutoring. The quantitative examination of perceptions of tutoring used the 'Good Tutoring' scale in the Course Experience Questionnaire (Ramsden 1991). The qualitative analysis of tutoring was based on online interviews. These various data were compared and contrasted with those from the non-online version of the same course.

The primary focus of this paper is on gender differences. A detailed analysis of the other demographic variables is beyond the scope of this paper. But it should be acknowledged that gender is a classification variable determined in advance rather than a treatment variable that is under experimental control. This means that observed gender differences may be due to the effects of other confounded variables (Ferguson & Takane 1989, pp. 238, 246).

Nature of the online course

The course chosen for this research was a multi-disciplinary 60-point undergraduate course that examined social-science issues in the use of technology and included eight face-to-face tutorials. It was assessed by six assignments and an unseen examination. The course operated in two modes: one with online tutoring support and the other with conventional tutoring support. The online version had all tutorial support provided online using computer-mediated conferencing and e-mail support. All assignments were submitted, marked and returned electronically. The non-online version of this course had tutorial support provided either by face-to-face sessions or by telephone support, but some interactions initiated by the students' were also via e-mail. All assignments in the non-online version were paper based and mailed to a tutor for marking and feedback.

Enrolments and outcomes

Trends in course enrolments

In the 3-year period from 2002 to 2004, 1991 students enrolled for this course, of whom 1133 (57%) were women and 858 (43%) were men. The proportions were significantly different from 50 : 50 by a binomial test ($P < 0.001$), so more women were enrolling in this course than men. This reflects typical Open University gender enrolment trends. In 2004, 202 231 students enrolled in Open University courses, 118 558 (59%) of whom were women. The gender difference in enrolments for this course thus reflects typical enrolment trends as opposed to women's predispositions to study this course.

There was no significant variation in the proportion of women across all three years ($\chi^2 = 1.33$; df $= 2$; $P = 0.51$) so the figures are fairly consistent. The non-online version of the course attracted more students (1648) than the online version (343 students). However, there was also no significant difference between the proportion of women enrolled on the online version (61%) and on the non-online version (56%) ($\chi^2 = 2.36$; df $= 1$; $P = 0.13$). The women's enrolment figures on this course are thus not indicative of a student group that is having difficulty accessing technology. If anything, women were more likely than men to enrol on the online version of the course.

To consider whether access to a computer and the Internet was an issue for women beyond the bounds of this course, access figures for the whole university were analysed. These were gathered from the annual courses survey that the Open University sends to students on differing courses each year to monitor quality. Table 1 illustrates increasing computer and Internet access trends in men and women.

While women's access to a computer and the Internet is still below men's, the difference is marginal: 95% of women have access to a computer and 92% have access to the Internet compared with 96% of men having access to a computer and 93% to the Internet. Thus, computer and Internet access do not appear to be barriers to women who wish to study online courses.

Trends in course completion

Gender differences may be statistically significant yet of little practical importance, particularly in studies that involve large numbers of participants. This issue can be addressed by the use of an appropriate measure of effect size (Richardson 1996). For scale scores, one widely used measure is d, the standardised mean difference: the difference between the mean scores obtained by women and men, divided by the pooled within-gender standard deviation. A positive value indicates that women tend to produce higher scores than men; a negative value indicates that men tend to produce higher scores than women. According to Cohen (1969, pp. 22–24), a value of ± 0.20 represented a small effect, a value of ± 0.50

Table 1. Percentage of male and female students with computer access and Internet access from 2000–2005.

	Computer access (%)		Internet access (%)	
	Women	Men	Women	Men
2000	84.8	88.9	84.3	87.6
2001	87.1	89.2	77.4	82.9
2002	91.6	92.3	85.0	87.4
2003	94.2	94.6	90.4	89.7
2004	95.2	96.3	93.1	92.0

Source: The Open University Statistics Team Annual Courses Survey. $N > 12\,000$ in each year.

represented a medium effect and a value of ± 0.80 represented a large effect. The value of d is significantly different from zero if, and only if, there is a significant difference between the mean scores obtained by women and men using a conventional procedure such as analysis of variance.

For binary data, an appropriate measure is the odds ratio (see Fienberg 1985, p. 17). If the probability of women achieving a certain outcome is p (e.g. 0.60), then the odds of this are $p/(1–p)$ (i.e. 0.60/0.40 or 1.50). If the probability of men achieving the same outcome is q (e.g. 0.70), then the odds of this are $q/(1–q)$ (i.e. 0.70/0.30 = 2.33). The ratio between these odds is 1.50/2.33 = 0.64. In other words, the odds of women achieving the outcome are 64% of the odds of men achieving that outcome. An odds ratio greater than one means that the outcome is more likely in women, an odds ratio less than one means that the outcome is more likely in men and an odds ratio of one means that the outcome is equally likely in men and women. An odds ratio is significantly different from one if, and only if, there is a significant difference between the probabilities of women and men achieving the relevant outcome using a conventional procedure such as Pearson's χ^2 test.

Table 2 shows the completion rates for women and men taking the two versions of the course being discussed. The odds of women completing the non-online version were 60% of the odds of men completing the non-online version ($\chi^2 = 14.14$; df = 1; $P < 0.001$). However, there was no significant difference between the completion rates of women and men for the online version ($\chi^2 = 0.87$; df = 1; $P = 0.35$); indeed, women were if anything more likely to complete the online version than men.

Trends in course performance

Of the 1374 students who completed the non-online version, 1118 (or 81.4%) passed the course; of the 268 students who completed the online version, 217 (or 81.0%) passed the course. Table 2 shows that there was no significant difference for the pass rates for the non-online version ($\chi^2 = 0.12$; df = 1; $P = 0.74$). However, the odds of the women passing the online version were more than twice the odds of the men completing the online version ($\chi^2 = 5.92$; df = 1; $P = 0.02$).

Table 3 shows the continuous assessment and examination scores. Women studying the online version of the course obtained significantly higher scores than

Table 2. Percentage of completion rates and pass rates in women and men.

	Non-online			Online		
	Women	Men	Odds ratio	Women	Men	Odds ratio
Completion rate (%)	80.3	87.3	0.60*	79.8	75.6	1.28
Pass rate (%)	81.7	81.0	1.05	85.5	73.5	2.13*

*Odds ratios significantly different from 1 ($P < 0.05$).

Table 3. Continuous assessment and examination scores in men and women.

	Women		Men		Effect size
	M	SD	M	SD	
Continuous assessment					
Non-online	64.78	21.38	64.29	21.92	0.02
Online	64.74	16.61	56.10	27.40	0.40*
Examination					
Non-online	56.34	26.74	53.84	20.02	0.09
Online	61.00	23.25	49.30	30.65	0.44*

*Statistically significant at the 0.05 level.

men on both continuous assessment scores ($F = 10.35$; df $= 1$, 266; $P = 0.001$) and on the examination ($F = 12.413$; df $= 1$, 264; $P = 0.001$). There were no significant gender differences found in the non-online version of the course.

The results from the analysis on enrolments and performance contradict the folklore associated with women being disadvantaged by the use of technology in education. In fact, women's access to technology and enrolment on the online version of the course was comparable with men's. Women were more likely than men to complete the online course and twice as likely to pass the online version. The question should not be whether women are disadvantaged by technology but why they excel in online environments.

Differences in students' perceptions of online and non-online courses

Price *et al*. (in press) examined differences in the experiences of students taking the online and non-online version of this course. They used the Academic Engagement Form (AEF) to examine the degree to which students felt academically engaged in their course and the Course Experience Questionnaire (CEQ) to examine student's perceptions of the quality of the course. The AEF was constructed by Foster *et al*. (1999), and Richardson *et al*. (2004) adapted it for use in distance education. Academic engagement is a measure of the degree to which students find themselves engaged in purposeful academic activities (Hu & Kuh 2002, p. 555). This includes involvement in both the academic domain and the social domain (Nora 1993; Milem & Berger 1997). Although academic engagement is poorly specified from a theoretical perspective (Richardson *et al*. 2004), it is generally agreed that it affects learning outcomes (Tinto 1993; Kember 1995). The CEQ was devised by Ramsden (1991) as a measure of the academic quality of degree programmes. It has successfully been used in Australian universities to measure students' perceptions of quality and has been adapted by Lawless and Richardson (2002) for students taking distance education courses.

Price *et al*.'s (in press) study showed that students who received online support were less academically engaged than the non-online students on the scales of Relations with Tutors, Tutor Pace and Participation in Tutorials. The CEQ showed that online students produced lower scores on the Good Tutoring scale than the non-online students. Hence, students taking the online version of the course were less academically engaged than their non-online counterparts in relation to tutors and tutorials. They also perceived that the quality of tutoring was of a poorer standard. These results were elucidated by a qualitative study that examined students' perceptions of online versus non-online tutoring support. The qualitative study supported the findings from the quantitative study; students in the non-online version of the course reported poorer tutoring experiences.

However, this study did not consider gender issues and whether women in online environments were less academically engaged than men and whether they perceived tutoring support to be of a poorer quality. Given that the women studying the online version performed significantly better on this course than the men, are their levels of academic engagement higher? And what were women's experiences of online tutoring support? To answer these questions, the data from Price *et al*.'s study were reanalysed with respect to gender differences. This analysis compares and contrasts gender differences in online and non-online contexts.

Differences in students' academic engagement

The AEF was distributed as a postal questionnaire survey to all of the 478 students who were available for sampling one-third of the way through the course. The questionnaire contained 35 of the items in the version of the AEF used by Richardson *et al*. (2004). It asked students how often each item had been true for them in their experience of studying with the Open University, using a six-point scale from 1 for 'never' to 6 for 'always'. The questionnaire also contained nine items comprising the Good Tutoring subscale from the CEQ used by Lawless and Richardson (2002). This asked students to indicate their level of agreement regarding the quality of different aspects of their course on a scale from 1 to 5 (results from the good tutoring scale will be discussed in the next section on conceptions and perceptions of tutoring).

Of the 209 respondents, 98 were men and 111 were women. The proportion of women respondents was somewhat greater on the online version of the course

(55.9%) than on the face-to-face version of the course (52.6%), but the difference was not statistically significant ($\chi^2 = 0.13$; df = 1; $P = 0.72$). The number of students on the non-online version of the course was 175, which is a response rate of 45.7% while the number on the online version was 34, which is a response rate of 35.8%. The difference between the response rates was not significant ($\chi^2 = 3.03$; df = 1; $P = 0.08$). As some questionnaires were incomplete, they were excluded from the analysis. This left 13 questionnaires from women taking the online course and 12 from men taking the online course, 58 from women taking the non-online course and 62 from men taking the non-online course.

A multivariate analysis on the whole cohort showed a significant interaction between course and gender on the self-confidence scale ($F = 10.80$; df = 1, 141; $P = 0.001$). A further multivariate analysis of the online questionnaires showed significant gender differences on self-confidence ($F = 13.63$; df 1, 23; $P = 0.001$) and learning from other students ($F = 5.97$; df = 1, 23; $P = 0.023$). Table 4 illustrates the means and standard deviations for each of the scales.

Women taking the online version were more self-confident than men online; women online were also more willing to learn from other students compared with men online. The women taking the online version were more academically engaged than their male counterparts. They were more confident and more willing to communicate with other students. But how do these results compare with the views of men and women on the non-online version of the course?

A multivariate analysis on the non-online responses showed that there was a significant gender difference found on learning from materials ($F = 4.57$; df = 1, 118; $P = 0.035$) so women's higher levels of self-confidence are only significant on the online version. Women taking the non-online course have a greater preference for learning from materials than men. All other differences on the remaining scales were all small and non-significant. Once again, the women appeared to be more academically engaged than the men. The women taking the non-online version would appear to be more engaged with the learning materials while the women taking the online version were more confident and liked to learn from other students. How does this compare with women and men on the course generally?

There were significant gender differences found on the AEF scales of learning from other students ($F = 4.62$; df = 1, 141; $P = 0.033$), self-confidence ($F = 6.52$; df = 1, 141; $P = 0.012$) and student autonomy ($F = 4.13$; df = 1, 141; $P = 0.044$). Women were more academically engaged on all three scales compared with the men. So in general women liked learning from other students and are more self-confident and self-directed in their learning.

Women studying online were more academically engaged in terms of self-confidence and their willingness to learn from other students. Women in the whole course were more engaged than men in learning autonomy, learning from others and in self-confidence. Comparatively, men taking the online course have the least self-confidence compared with online and non-online women and non-online men and their performance rating is the poorest among these groups. This supports the findings from the analysis of the enrolment and performance data that women are not disadvantaged in online environments.

Differences in perceptions and conceptions of online tutoring support

Using the CEQ, Richardson and Price (2003b) had previously investigated this course to examine whether there were different perceptions of its quality based on the mode of tutoring that they had received. Results showed that online tutoring was considered to be of a lower quality, although gender differences were not specifically considered. The data from the AEF in this investigation suggest that there was a gender difference in academic engagement in online contexts. This part of the analysis considers whether there were gender differences in conceptions and perceptions of online tutoring support and whether they related to students' levels of academic engagement.

The good tutoring scale of the CEQ was used to examine whether there were gender differences in students' experiences of online and non-online tutoring. A univariate analysis of variance showed no significant gender difference. Table 4 shows that neither the online nor the non-online students have gender differences associated with their perceptions of tutoring.

Table 4. Women and men's mean scores and effect sizes on the AEF and CEQ scales.

	Women		Men		Effect size
	M	SD	M	SD	
AEF subscale					
Affiliation with peers					
Non-online	2.34	0.84	2.61	0.80	− 0.33
Online	2.44	1.15	2.56	0.89	− 0.12
Institutional affiliation					
Non-online	3.98	0.81	4.16	0.68	− 0.24
Online	3.88	0.79	4.08	1.00	− 0.22
Learning from materials					
Non-online	4.56	0.52	4.35	0.57	0.39
Online	4.58	0.40	4.42	0.47	0.37
Learning from other students					
Non-online	2.15	1.00	2.09	0.90	0.06
Online	2.62	1.02	1.79	0.58	0.98*
Motivation to learn					
Non-online	4.80	0.32	4.68	0.38	0.33
Online	4.67	0.41	4.48	0.57	0.39
Participation in tutorials					
Non-online	3.49	1.16	3.74	0.89	− 0.25
Online	2.87	1.10	2.98	0.80	− 0.12
Relations with tutors					
Non-online	4.05	0.61	4.08	0.51	− 0.04
Online	3.58	0.72	3.60	0.53	− 0.04
Self-confidence					
Non-online	3.92	0.69	4.03	0.70	− 0.16
Online	4.50	0.50	3.63	0.68	1.48*
Student autonomy					
Non-online	3.95	0.54	3.82	0.67	0.22
Online	4.10	0.66	3.69	0.48	0.70
Student control					
Non-online	3.92	0.67	3.84	0.60	0.13
Online	3.81	0.89	3.73	0.86	0.09
Tutor pace					
Non-online	3.23	0.87	3.33	0.81	− 0.12
Online	2.54	0.81	2.92	0.65	− 0.53
CEQ subscale					
Good tutoring					
Non-online	3.66	0.77	3.85	0.62	− 0.27
Online	3.23	0.85	3.44	0.95	− 0.23

*Statistically significant at the 0.05 level.
AEF, Academic Engagement Form; CEQ, Course Experience Questionnaire.

The qualitative study used a subset of those who had returned the questionnaire containing the AEF and CEQ questions. The interviews were carried out by e-mail as students were studying on a part-time basis, had many competing commitments and were located at a geographical distance. Although text is the main form of communication, Internet-based constructivist studies have illustrated that people can build deep and meaningful relationships (Walther 1992; Baym 1994; Walther *et al*. 1994; Parks & Floyd 1996; Lea *et al*. 2001; Joinson 2003). In these environments, participants can comfortably reflect and exchange their views (Mann & Stewart 2000). E-mail interviews offer the researcher a rich source of qualitative data (Kivits 2005). Internet e-social-science research methodologies may in fact outweigh more current face-to-face

methods (Nass *et al.* 1996; Moon 2000; McKenna *et al.* 2002; Joinson 2005). The use of e-mails in this study enabled the interviews to be structured in an 'epistolary' manner (Debenham 2001), so as to build up rapport and encourage disclosure.

There were 18 students interviewed, consisting of six women and two men who had studied the non-online version of the course and 10 women and one man who had studied the online version. At the initial contact, the purpose of the research was explained and the students were asked just two or three questions to begin the e-mail exchange about their beliefs and experiences of the tutoring support that they had received (see Price *et al.* in press).

The interview transcripts were examined to establish students' views and experiences of tutorial support. As different terms may have differing meanings for students, a goal of the study was to establish whether there was any difference in understanding between the terms *tutoring* and *tuition*, lest inappropriate assumptions were made. Students' interview responses to these terms were summarised by two independent researchers for each participant and put onto small file cards for ease of comparison. The researchers compared and contrasted their summaries to form overall distinctions between tutoring and tuition. The analysis showed that the students made an interesting distinction between tutoring and tuition. *Tuition* was viewed as the teaching of a syllabus of knowledge where instructional designers had the greatest influence on the nature of tutor–student interactions. It was an objective, impersonal activity intended to meet the needs of a group. In contrast, *tutoring* was considered to be a subjective and personal activity that was intended to meet the needs of the individual. This distinction was most markedly observed in the women's responses in both modes of the course, although there were only three men in the sample so gender comparisons are problematic.

The transcripts were analysed in more detail to examine students' accounts of their beliefs about tutoring and tutorial support. As before, these were summarised for each participant and put on file cards by two independent judges for comparison. The researchers' collective findings showed two kinds of student conceptions of tutoring support. These were identified as cognitive and affective. Both men and women in the online and non-online versions of the

course reported similar conceptions; however, what differed was the *degree* of importance that they attached to these conceptions. The academic conceptions had five categories, four of which were similar to the conceptions of tutoring found by Ashwin (2005) in his study of the Oxford tutorial system. These were

Tutoring where the tutor explains materials the student doesn't understand.

Tutoring where the tutor enables the student to see things as the tutor sees them.

Tutoring where the tutor helps the student to see the bigger picture by building a wider context of the discipline.

Tutoring where the students have a meaningful experience and where students and tutors collaborate to form a new understanding.

The fifth conception found in this study was

Tutoring that enables the student to speak and think like a professional in the domain.

The other set of conceptions were not hierarchical in organisation or specifically academic in nature. These related to the nature of the student's interactions with the tutor and with other students. They included the following conceptions (see Price *et al.* in press):

Pastoral, where the tutor offers support, encouragement and builds confidence.

Enthusiasm, where the tutor is positive about the subject

Leadership, where the tutor leads the way forward

Constructiveness, where the tutor provides feedback of a developmental nature

Autonomy, where the tutor enables the student to shape the course of study

Group learning, where the tutor encourages and supports group learning

As before, men and women in the online and non-online groups reported similar conceptions. However, in this case women tended to attach more importance to these affective conceptions.

Although gender comparisons are difficult to make given the small number of men in this sample, the

evidence might indicate that while there is no difference *per se* in conceptions of tutoring either between men and women or online and non-online, there may be a difference in the degree to which men and women attach importance to these conceptions. Further research is required with a balanced gender sample to establish this.

A different picture emerges on students' perceptions of tutoring support. The students who had received online tuition were more likely to report negative experiences of tuition than those who had not. This confirms findings of a previous study by Richardson and Price (2003a). Five out of the six women on the online version reported negative experiences. Comparatively, three out of the ten women taking the non-online course reported negative experiences. The course chair reported that there were some technical problems that some tutors experienced with the online version. These seem to have been exacerbated in a medium where the nuances of paralinguistic communication (e.g. intonation, emphasis and nonverbal cues) were missing. A student's experience in a face-to-face context would probably be less frustrating as the physical presence of the tutor could compensate for the misunderstandings that might arise in online, 'text-only' communications. It may also reflect the frustrations of women taking the online version as they may not have been able to engage as fully academically as they would have liked.

There was also a difference observed in the nature of the interactions. The women in the online group tended to describe things subjectively. This was evident too in the interactions of women taking the non-online version. Comparatively, the men tended to talk in objective terms. This phenomenon has also been identified by Herring and Martinson (2004). Here are two responses from women and men studying online that illustrates the point

> I feel that, whatever the activity, there needs to be some personal input. I have found some of that, despite being out in the boondocks here. . . . . . , by joining study groups and by keeping in regular contact with those I have encountered in past courses. Next year we hope there will be 6 of us doing the same level 3 course, because we all know the value of keeping each other going (Female online student).

> Someone is there to explain their perception of what they believe examiners and TMA markers are specifically looking for in answers to same. Someone is

there who drives the revision for examination process. Someone is there to provide another perspective to my own viewpoint (Male online student).

Further, women studying online valued the convenience of being online given that many were studying in remote locations. They could chat to other students without having to meet with them physically or use the telephone. In an earlier study, Kirkup and Prümmer (1990) also found that women in distance education valued the chance to interact with other students more than men. Weiser (2000) has shown this trend in Internet interactions too where women use the Internet to chat while men use it to support leisure activities.

Given that the data from the interviews were from a predominantly female sample, it is difficult to make any gender comparisons. The conceptions reported here represent predominantly women's views, which are typically not reported in phenomenographic studies (Hazel *et al*. 1997, p. 218). Women's views of 'connected' teaching involve techniques such as sharing intellectual authority and responsibility and facilitating collaborative work (Belenky *et al*. 1986; Begnal 1991; Stanton 1996). Hence, men and women may have different ways of conceptualising phenomena as opposed to being at different points on a developmental scale (Gilligan 1982). These methodological considerations might explain why affective conceptions were not found in Ashwin's (2005) study, which did not examine gender differences in the phenomenographic analysis. Alternatively, contextual factors, such as age or mode of study, or the fact that women were being interviewed by a female researcher may have some bearing on the findings. Further research is required to examine whether there are methodological gender differences, whether there are conceptual gender differences in online tutorial support or both, in order to interpret future findings.

Conclusion

This paper has challenged the stereotypical view that women are disadvantaged by technology when studying online courses. The results show that they are confident independent learners who are academically engaged and may outperform their male counterparts online. Women do not have reduced computer and

Internet access compared with men, nor are they disinclined to enrol on online courses. They place greater value on the pastoral aspect of tutoring and have different interaction styles compared with men, which may be related to their stronger desire to be academically engaged. The gender debate needs to move on from access and performance. Further research needs to examine the differences and similarities in the degree of importance men and women place on different interaction and tutoring styles online and what aspects of online tutoring encourage women to excel. Additionally, the field would also benefit from an examination of whether gender can be interpreted through different interaction styles online, its effect and whether interactions vary depending upon the perceived gender of the recipient.

Acknowledgements

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