
YOUNGER AND OLDER IT USERS: ARE THERE ANY DIFFERENCES IN LEARNING?

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ABSTRACT

Teachers today have a complex array of educational media that they can use to deliver educational material to students. Many institutions have sought to use the internet to deliver learning materials. This research examines university undergraduates' perceptions of the usefulness of a web-based discussion list as a learning tool.

INTRODUCTION

With an increasing emphasis being placed by universities on using technology to enhance students' learning, many universities are using web-based approaches to teaching and learning. It has been argued (Anderson, 1996) that online learning potentially provides meaningful learning activities. O'Malley (1999) argues that often new educational technologies, such as web-based learning, are implemented without any assessment of impact on students. Using web-based technologies is of great interest to distance education institutions as it not only has the potential to improve the delivery of resources and enhance students' learning – it can potentially substantially reduce the cost of distance delivery.

According to Slay (1997) problems have emerged in the development of web-based delivery packages and tools because academics have little experience in designing and using this medium of material delivery. These developmental problems can be exacerbated further because, as George (1996) argues, the form of delivery can produce particular types of learning behaviours so that web-based delivery is not a neutral medium and as such it is not suitable for all learners. In particular, this paper examines the perceptions of students from different age cohorts. O'Malley (1999) argues in his model of student perception that prior educational conditions, perceived characteristics of distance and online learning, and characteristics of the student influence the perceived effectiveness of distance learning and online learning. One of the student characteristics in need of further research is age. Not all university students enrol in university straight from secondary school. Increasingly, mature adults are returning to university after a significant time away from study. This study

uses two of these constructs – perceived characteristics of online learning, and characteristics of the student – to investigate students' perceptions of online learning. Mature-age students merit consideration because there is an increasing emphasis on these students gaining academic qualifications after several years in the workforce. Some institutions have been established to deal primarily with late teens and early twenty-year olds and this means they may need to reconsider how they deliver material to an aging cohort.

This paper analyses students' perceptions and compares the perceptions by age distribution.

As Ataya, Brown, Gorham, and Barker (2002) indicate, many universities are offering more Web Course Tools (or WebCT) to simplify course management by providing a centralised location for material and information. They also argue that it simplifies the management of online tests and allows for greater instructor-student and student-student interaction. What remains unclear is whether this increased interaction occurs across all student cohorts and whether this type of interaction via WebCT, such as discussions lists, is perceived by students of different genders and ages to be equally beneficial. MacGregor (2001) cited several authors (Merisotis, 1999; and Hanson, 1997) when emphasising the strong need for research into distance-education innovations and the examination of attributes, both psychological and social, of distance-education learners. This work reports the findings of a study conducted with first-year students in an accounting program in a regional Australian university that has extensive experience in distance education.

FLEXIBLE AND DISTANCE DELIVERY

In many countries, universities have typically used the lecture method to deliver material, and have supported this with workshops and tutorial activities. In Australia, because of the enormous distances and relatively large population, education providers at all levels have used alternative methods such as posting out printed materials and tapes; and at primary and secondary school level, they still use radio to conduct a "school of the air". Volery and Lord (2000) define distance education as any approach to delivery that replaces the same-time, same-place face-to-face environment of a classroom. So distance education is nothing new in Australia, and Central Queensland University (CQU) is recognised as expert in this area. Central Queensland University, with its headquarters in Rockhampton, Queensland, has been through a metamorphosis similar to that of many tertiary institutions in Australia.

Distance education materials have been important to CQU for more than 30 years, initially by servicing a rural regional community, but since then by developing a reputation as being one of Australia's most progressive and innovative universities. CQU is what Roberts and Kelly (1999) term "a third generation institution" as it has international and overseas multi-campus facilities. This has meant that the way students are taught has had to be revised to account for methods other than face-to-face teaching. The Faculty of Business and Law at CQU has been at the forefront in student growth which has meant that staff have been willing to experiment with varying forms of online assessment that meets the university's quality standards but which also assists in coping with the huge numbers of enrolled students. The purpose of this study was to ascertain the perceptions of first-year students regarding the use of WebCT as a delivery medium.

CQU is certainly not unique in terms of flexible delivery, as universities across the world are taking on many forms of this strategy (Brown, 1997 as cited in Roberts & Kelly, 1999; Pritchard, 1995 as cited in Roberts & Kelly, 1999). Distance education is no longer supplied by only a few providers. This is because universities have had to succumb to the pressures of multi-campus and new delivery modes encompassing new technologies (Roberts & Kelly, 1999). With the introduction of web-

based technologies, it is possible for all students in a course to access the same assessment, irrespective of their geographic location. According to Roberts and Kelly (1999), WebCT makes learning available to all students, including mature-age students and those who are unable to attend the traditional campus, and it can contribute to lifelong learning. In developing this course there was also an expectation that WebCT would provide students with a positive experience (Ataya et al., 2002; Deepwell & Syson, 1999). Programs such as WebCT have been found to lead to collaborative learning among students (enhancing the learning process) (Nachmias, Mioduser, Oren, & Ram, 2000). Hara and Kling (2000) have demonstrated in some cases, students experience distress with communication breakdowns and technical difficulties in non-traditional delivery modes. In a study by Morss (1999), over the period 1997 to 1999, it was shown that the use of WebCT did not place an unnecessary burden on students; however, the study by Morss did not differentiate between younger and mature learners.

STUDENTS' PERCEPTIONS

The student population 30 years ago was generally, made up of people who were, single, full time, and 18-23 years of age. Whereas today, as we continue in the Technological Age, the undergraduate population now includes older, married, employed, and non-residential students (O'Malley, 1999). The introduction of the Internet and email has presented an opportunity to radically innovate in the ways universities deliver both material and courses in an attempt to bridge the time-place gap. As Reisman, Dear, and Edge (2001) point out, the Internet and the World Wide Web lead to multiple strategies for implementing distance learning. However, as they also argue many of these strategies have resulted in an ad hoc approach to the development process. At CQU the use of web-based learning tools such as WebCT is building on a lengthy experience in distance education. Staff at CQU have gradually developed a suite of techniques to deliver distance education. With the introduction of WebCT, staff were not seeking to simply replace traditional distance delivery methods. Rather, they were seeking ways to make the learning experience of students more meaningful.

Volery and Lord (2000) argue there are two main advantages to using online delivery compared to other traditional technologies. Firstly, online learning creates collaborative tools that allow students to share their work, ideas, and frustrations with other students. In the case of geographically or physically isolated students, online technologies break down the barriers to isolation and allow students in chat rooms and discussions lists to interact in real time. The second major advantage according to Volery and Lord (2000) is that tools such as self-administered quizzes permit students to progress at their own pace through self-assessment exercises and reduce the stress and time constraints placed on students. The study reported in this paper focuses on gender and age perceptions of WebCT, in a course using both online tests and an online discussion list that were available to both distance and non-distance education students.

According to MacGregor (2001), studies of students' attitudes towards early forms of distance education indicated that students typically preferred the traditional classroom. She also pointed out that research by Savard, Mitchell, Abrami, and Corso (1995) on computer mediated communication in distance learning showed there were rarely any significant differences between the attitude towards learning and achievement of students in distance and traditional settings. Mariani (2001) pointed out that new technologies – including discussion boards (or lists) – could only supplement traditional teaching. The research reported here however, seeks to clarify the perceptions of students using WebCT. The research asked students, both distance and traditional, their perceptions of online tests and an online discussion list. This research is based on O'Malley's (1999) student perception model (see figure 1).

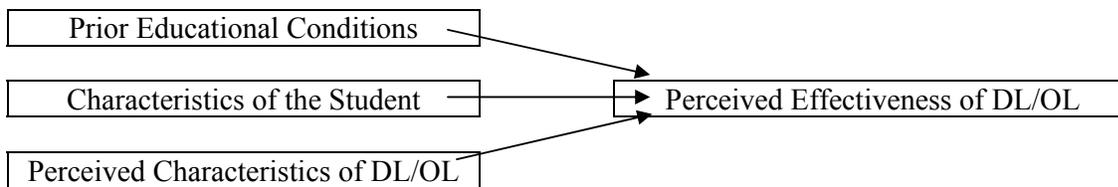


Figure 1. Students' perceptions of the effectiveness of delivery and learning outcomes.

O'Malley based his model on Rogers' 1995 model of the diffusion of innovation (Rogers as cited in O'Malley, 1999). This research is seeking to establish a relationship between perceived characteristics of distance learning (DL) and online learning (OL), and the characteristics of the student to investigate the perceived effectiveness of online learning. The questionnaire did not specifically seek confirmation of students' educational background because it was assumed that, since they had all gained entry into university, the majority of students would have the same educational backgrounds and experience. This study gathered data on student characteristics such as age (in bands), gender, degree program, and enrolment status (full time, part time, external, internal). Students' perceptions were elicited through their comments on the questionnaire, and students were asked about where they accessed WebCT and whether they would have used WebCT if it was not linked to their assessment.

Slay (1997) discussed the role of the Internet in creating a high-quality learning environment which encouraged effective learning. Students in this study were asked to use both online tests and a discussion list as learning tools. The majority of the contributions to the discussion list added to the body of knowledge within the course, with many discussions exploring current issues relating to the topics covered. It was felt that the assessment would enhance the experience of individual students who were isolated and undertaking subjects by distance education, as well as the internal students. It was intended to give the participants the feeling of being part of a larger cohort. As the course is part of the students' first term at the university, it was envisaged that access to a web-based learning tool, such as WebCT would encourage the students to "have a go" at connecting to some form of technology. Many of the students – internal and external – were mature aged, and may have been out of the workforce for some time, so this was also an attempt to encourage them to come to terms with the use of information technology.

Hatch (2001) argues that little literature is available that reflects students' perceptions in this area. Much of the increase in online learning is in response to the rapid growth in student numbers, the need to reduce costs, and more requirements for flexible teaching and learning. It has been clearly shown that any delivery method needs to engage students in the learning. To be engaged, students need to be consulted; that is, asked questions about whether they enjoyed the experience, encountered problems, and were supported, and whether the materials and assessments were appropriate (Hatch, 2001).

METHODOLOGY

All students (total population was 951, with 237 of the students being enrolled in distance mode) in a first-year accounting course, *Using Accounting for Decision Making*, were given the opportunity to complete a self-administered questionnaire. Distance students completed an online questionnaire, and traditional mode students completed a paper-based questionnaire

in class. All students were required to complete three online tests (each test was worth 10 percent, so the total value was 30 percent). The external (or distance) students were required, as part of their assessment, to make at least three contributions to a discussion list that had been set up on WebCT. They could receive a maximum of 10 percent towards their final score for the course. The internal students received a maximum of 10 percent for their contributions in class. The course was a first-term, first-year subject that is a compulsory unit for all Bachelor of Business students, irrespective of the major they have chosen. Internal students on all CQU campuses were also encouraged to access the WebCT discussion list, although there were no marks allocated for this to the internal students. The total number of respondents to the survey was 342 students. Of this number, 189 were females and 146 were males (7 did not indicate gender). Female students tended to be more willing to respond to open-ended questions than males.

	1,2 (17-26) (n=257)			3,4 (27-36) (n=60)			5 (37+) (n=18)		
	1 (Home)	2 (Work)	3 (Other)	1 (Home)	2 (Work)	3 (Other)	1 (Home)	2 (Work)	3 (Other)
Internal	200	16	41	22	5	5	8	2	2
1,2 (n=255)	66.45%	5.32%	13.62%	7.31%	1.66%	1.66%	2.66%	0.66%	0.66%
External	29	6	2	30	12	1	8	1	3
3,4 (n=73)	31.52%	6.52%	2.17%	32.61%	13.04%	1.09%	8.70%	1.09%	3.26%
Int/Ext	4	0	2	1	0	0	0	0	0
5 (n=6)	57.14%	0.00%	28.57%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 1. Cross tabulation of age, enrolment and computer access.

	1 - Male (n=146)		2 - Female (n=189)	
	1 (Yes)	2 (No)	1 (Yes)	2 (No)
17-26	41	72	58	80
(n=257)	28.08%	49.32%	30.69%	42.33%
27-36	18	8	22	12
(n=60)	12.33%	5.48%	11.64%	6.35%
37+	5	0	10	3
(n=18)	3.42%	0.00%	5.29%	1.59%

Table 2. Accessing discussion lists – a comparison of gender and age.

	(17-26) (n=257)			(27-36) (n=60)			(37 +) (n=18)		
	1 (Yes)	2 (No)	3 (Prob Not)	1 (Yes)	2 (No)	3 (Prob Not)	1 (Yes)	2 (No)	3 (Prob Not)
Male	38	29	39	15	6	5	3	0	2
(n=146)	35.85%	27.36%	36.79%	57.69%	23.08%	19.23%	60.00%	0.00%	40.00%
Female	64	23	49	21	4	8	10	2	1
(n=189)	47.06%	16.91%	36.03%	63.64%	12.12%	24.24%	76.92%	15.38%	7.69%

Table 3. Percentages within groups accessing discussion list if no marks are awarded.

	(17-26) (n=257)			(27-36) (n=60)			(37 +) (n=18)		
	1 (Yes)	2 (No)	3 (Prob Not)	1 (Yes)	2 (No)	3 (Prob Not)	1 (Yes)	2 (No)	3 (Prob Not)
Male	38	29	39	15	6	5	3	0	2
(n=146)	35.85%	27.36%	36.79%	57.69%	23.08%	19.23%	60.00%	0.00%	40.00%
Female	64	23	49	21	4	8	10	2	1
(n=189)	47.06%	16.91%	36.03%	63.64%	12.12%	24.24%	76.92%	15.38%	7.69%

Table 4. Comparison by gender and age if no marks are awarded for accessing list.

RESULTS

The students responding to this survey were enrolled in differing programs (e.g., Accounting, Management, Marketing) and were enrolled in both internal and external distance modes. As can be seen from table 1, there is no major differences in where students accessed computers; with more than two thirds of internals and externals accessing from home, regardless of age.

Students were also asked if they would have contributed to the discussion list if there were no marks attributed to their access. Their responses are summarised in table 2. While there are no significant differences based on gender, more students in the 27+ age grouping were likely to access discussion lists than the younger student cohort. Not surprising, when considering enrolment status, age, and gender, external students were more likely to access discussion list than internal students, and female external students were more likely to access discussion lists than male external students (see table 2). Most students were full-time internal students (and these students were not required to use the web-based material but could access it if they wished and were able to use the discussion list in exactly the same way as external students). This can be partly explained because it was a

requirement that external students use the WebCT material.

It could be argued that younger students have more affinity with using the Internet and are used to using list servers and chat rooms as discussion tools. This is supported by a study on The Current State of Play: Australia and the Information Economy (NOIE, 2000), which reported that the most common users of the Internet were 18-24 year olds and, in relative terms, Australia has the third highest growth of web domain names at 385, behind Japan and Canada; and in 2000 Australia had approximately 78 secure servers per million people – second behind the USA with 120 per million people. However, in this sample, students within age categories are motivated by activities that are seen to improve their grades rather than improve their learning experiences. Older students (27+ years) are significantly more likely to access lists if no marks are awarded, than younger students (see table 3).

In table 4 it is evident that there are no significant differences based on enrolment or age. However, there is a significant difference – again – in gender, as females are more likely to access discussion lists than males – particularly external female students.

n=60	Positive	Negative	Neutral
Age 17-26 n=58	26 43.3%	15 25%	17 28.3%
Age 27 + n=2	1 1.7%	1 1.7%	0

Table 5. Internal students' perceptions of discussion lists by age.

n=68	Positive	Negative	Neutral
Age 17-26 n=33	14 21%	12 18%	7 10%
Age 27 + n=35	20 29%	8 12%	7 10%

Table 6. External students' perceptions of discussion list by age.

Students were asked "Did using WebCT contribute positively or negatively to your learning in *Using Accounting for Decision Making?*" Positive comments were supportive of WebCT activities whereas negative comments were those that did not find WebCT a useful learning experience. The difference amongst internally and externally enrolled students is summarised in tables 5 and 6.

As can be seen from the tables there are no major differences, although mature-aged external students were more likely to have a positive perception of the WebCT experience than the younger students. Even though internal students did not have to use the discussion list, many mature-age, internal students used the discussion list as a learning tool. Internal student comments such as "...catered for one subject and peers had an opportunity to help each other" and "good to see what others were thinking and feeling about the course", were received.

CONCLUSION

Most mature-age (27 years-old or more) external students have responded in a more positive way to this course, with some of their comments being,

...once you contributed and saw the discussion it stimulated, it made it easier to contribute next time (mature aged external male).

...it's a good communication channel for both internal and external students to discuss any outstanding issue (mature aged external female).

Probably one of the best responses was from a mature aged female who commented that "Everyone's contribution helped me feel like part of a group and so therefore encouraged me to feel more confident with further contributions."

Other characteristics such as mode of study, enrolment pattern, and degree program and major appear to have no influence on student response. Of course, not all students felt positively about the experience so it is therefore important that we, as teachers, seek new and different ways to deliver learning materials and equally important that we assess and evaluate the effectiveness of different delivery modes and of students perceptions of the usefulness of differing modes. It is apparent from this study that age did play a role in the cohort of students involved in this study and that factor must be taken into account in our course design. In designing course materials, instructors and

course designers need to offer alternatives that meet the needs of all students rather than expect students to deal with and accept all learning materials. Further research in this area will examine other factors such as students' pre-university education experiences to determine if they have a significant impact on students' use of learning technologies at university.

It is far too simplistic to assume that mature learners will not have the information-technology skills needed to benefit from web-based learning. Age is not a barrier to learning generally, so why should it be a barrier to learning using web-based materials? If we seek to ensure that all people in our community can have access to lifelong learning, then as teachers and course developers we must seek to gain an understanding of the benefits and limitations of the modes and technologies we use. Making available a range of learning opportunities allows adult learners to select the mode that best suits their capabilities. This study has compared the students in two age groups: those less than 27 years old and those 27 years or more. While this is useful for this analysis, further research needs to be conducted to ascertain more about mature-age students at different ages. Clearly, learning materials need to be developed that take into account a variety of factors including, age, gender, and background.

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