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Catch Me I'm Falling. Using technology to assist educationally disadvantaged students: A case study on the Western region of Melbourne, Australia.

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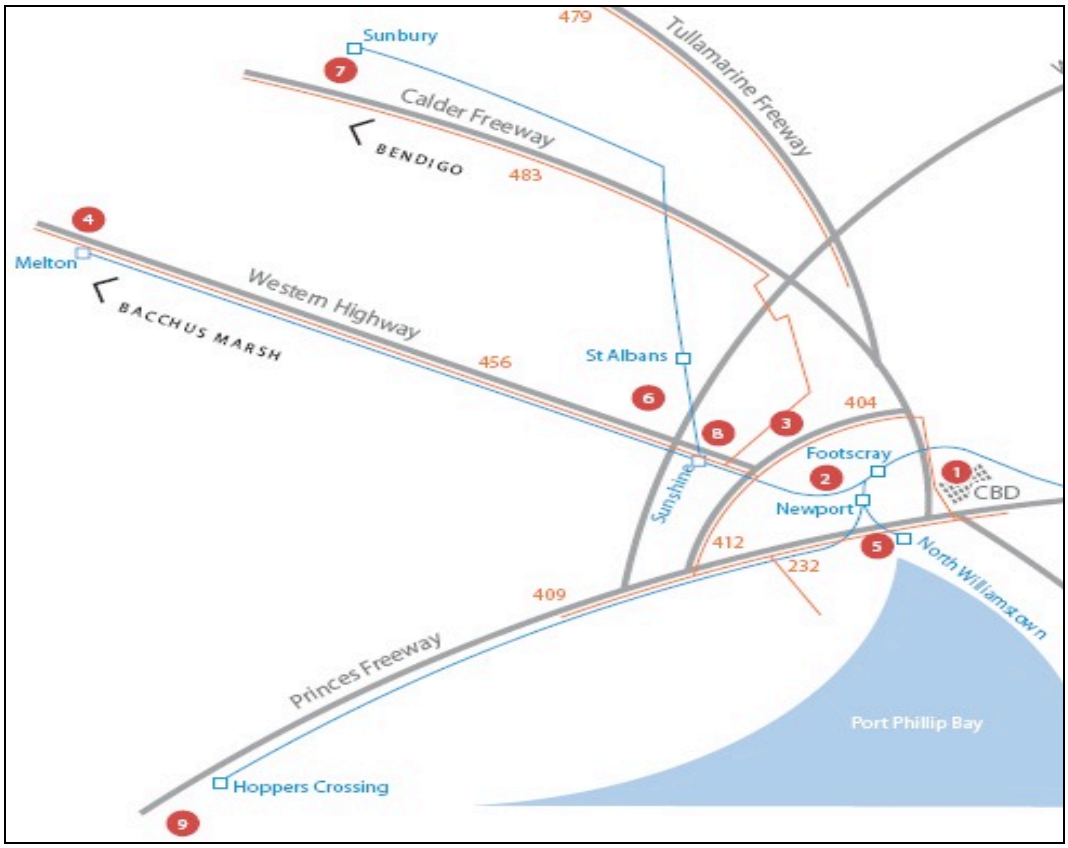
ABSTRACT

This study examines the use of WebCT as a communication and learning facilitation tool in higher education. The case study is based on marketing students' experience of using WebCT in an undergraduate business degree in Victoria University, Melbourne. A sample of 328 undergraduate students, drawn from four marketing subjects, was selected. Students from non-English speaking backgrounds made up almost half the respondents and they indicated that certain add-on features of WebCT would be of interest to them and assist them in their studies. Age and gender were also measured and the findings indicated that students aged between 18 and 24 were more likely to use WebCT as a learning tool and socialising medium while older students (older than 24) were less likely to do so. Gender differences were also identified with females more likely to use WebCT for communication purposes and that they generally found WebCT easier to use than their male counterparts. It is recommended that further study be undertaken to establish WebCT's contribution to subject management and students' ease of use, thereby establishing more fully WebCT's overall contribution as a teaching and learning resource.

Keywords: *Online learning; WebCT; Educationally Disadvantaged Students*

INTRODUCTION

This paper looks at the roll out of WebCT as a dissemination and communication tool in an undergraduate business degree in the Western region of Melbourne, Australia. The region from which the student respondents are drawn are educationally disadvantaged in that their participation in post-secondary education is relatively low when compared to the other areas of Melbourne, they have low social-economic status, the area has high unemployment and little economic change, there is high cultural diversity and "a relative paucity of infrastructure and services" . Additionally, the majority of these students "come from the lower bands of Victorian Certificate of Education (VCE)," (VU Performance portfolio 2006 p105). Given these socio-economic disadvantages the provision of tools that facilitate learning are all the more desirable.



Source: *VU Performance Portfolio 2006*
Figure 1: *Map Indicating Campus Locations of Victoria University, Melbourne, Australia*

The university in which these students are enrolled has as one part of *'its mission to serve…the educationally disadvantaged region of western metropolitan Melbourne'* (VU Performance Portfolio 2006). The concept used here for educational disadvantage relates to the fact that 34.6% of the students are from non-English speaking backgrounds (Victoria University, 2005) because this region is the 'destination of new migrants' (VU Performance portfolio 2006 p2) to Australia. Additionally the overall human capital profile of this institution is constituted from over 90 different nationalities (VU Performance portfolio 2006 p4). This factor combined with low-economic status, high unemployment and little infrastructure means that many students are required to work as a necessity.

It is in this context that WebCT has been utilized to assist the learning opportunities for this distinctive student profile. Internationally this study is relevant to many other inner-metropolitan tertiary education providers as one must consider the internationalising of students whereby students are more influenced and affected in their behaviour by their role as a student rather than by other factors such as ethnicity (Garma & Junek, 2006).

LITERATURE REVIEW

The following section reviews the current literature on the areas of Web-based /on-line learning, the application of WebCT in university teaching and educational disadvantage as it affects learning in higher education.

Web-based / on-line learning

Web-based learning or on-line learning environments have been developed and have been in use around the world for the past decade (Aggarwal, 2000). In the majority of cases web-based learning courses are a mixture of static and interactive materials, and most ensure that some individual face to face delivery for students is a key feature of the program. Some advantages of web-based learning include universal accessibility, ease in updating content, and hyperlink functions that permit cross-referencing to other resources (Aggarwal, 2000; McKimm, Jollie, & Cantillon, 2003).

Web-based learning in an institution is often integrated with conventional, face to face teaching. This is normally done via an intranet, which is usually "password protected" and accessible only to registered users. Thus it is possible to protect the intellectual property of online material and to support confidential exchange of communication between students (McKimm, Jollie, & Cantillon, 2003). As in Australia, most of the tertiary institutions are using web-based learning to facilitate teaching and learning for most of the on-campus degree. This use of technology supports students becoming lifelong learners by enabling them to be pro-active in their learning by independently utilizing materials available on-line (Clarke & Hermens, 2001). WebCT has become a popular tool for web-based teaching and learning across the institutions.

WebCT

In brief, WebCT is a teaching module that works within an Internet browser. It provides the instructor and students with many capabilities such as the ability to post documents in HTML format, to create any document file (word, excel, power point or acrobat) that can be shared it with students and it contains a grade tracking module, and it has a calendar (Merron, 1999).

However, WebCT has been criticised because materials in a WebCT subject *are* easily retrieved electronically and this easy access to learning materials on-line, it is posited, results in students believing they do not need to attend classes in order to do well in a subject. This is supported by Edwards and Usher (2001) who suggest that the Internet and other forms of electronic interface provide students with learning flexibility and a lessening of the need to attend formal learning centres. The assumption in this paper is that attendance has an important bearing on a student's academic performance and this view is supported by Woodfield et al. (2006) who state that attendance is 'the strongest predictor' of students' academic success when measured with several other variables. This is confirmed by Gump (2005) who indicates that attendance is but one of many variables affecting performance. This is further developed by Jacobson (2005) who suggests that attendance may have a causal relationship with learning. This paper also seeks to establish the veracity of this point of view and the opposing consideration that WebCT is effective at creating a sense of ownership and camaraderie within the student cohort, which in turn reduces the students' negative perceptions of class attendance. This draws upon the research conducted by McCrindle (2005) who suggest that Generation Y, i.e. those born between 1977 and 1988, (Jorgensen, 2003), strongly desire community and use technological means to find it. This view is tempered by McKenzie and Schweitzer (2001) who suggest that emphasis be place on study groups as opposed to social groups to achieve high academic achievement.

Educational disadvantage

Educational disadvantage is: *"the impediments to education arising from social or economic disadvantage which prevent students from deriving appropriate benefit from education in schools"* (Gibbons, 2006). It is posited that the use of WebCT may reduce the disadvantage of low social or economic position in society through its ease of use, intuitiveness, effectiveness, its entertainment value and the user's access to wider subject information (Jun & Cai, 2001; Liao & Cheung, 2002; Maenpaa, 2006). These constructs are examined in detail in relation to students' use of WebCT but rely on the fact that it would seem probable that given the high level of penetration of home computers in the Australian community (Nielsen, 2000) users would have a reasonable expectation that administrative materials would be provided on-line as well provided in hard copy and that provision would be user friendly. Indeed it is thought that student communities would expect materials to be provided on-line and information technology would be relied upon as a strong teacher to student interface to facilitate learning (Barraket, Payne, Scott, & Cameron, 2000).

Economic disadvantage often requires that students undertake paid employment whilst studying (Watts & Pickering, 2000). The use of information technology to assist students in accessing information relating to their subject would reduce the time taken to do so. In this way the secondary effects of paid employment, such as fatigue and having chronic time shortage for study could be managed more effectively with remote downloading (from home or work), 24 hour access to the materials and fast download times. As previously stated students drawn from a non-English speaking background enrolled in Victoria University courses are typically 34.6% of the overall number. These students face social and educational disadvantages because their home language is not English. It is thought that the use of WebCT may be a useful tool to level the 'playing field' in that students are not time constrained when accessing or downloading materials. It is also a medium whereby one's English, when communicating on WebCT's community pages, need only conform to 'online' language conventions, whereas in a face to face environment students whose English is not fluent are more likely to become tongue-tied and may as a result become less likely to engage in future exchanges. The online environment provides a foundation for students whose English is less fluent but who can still benefit from the community atmosphere of online communication and from being able to access additional learning materials relating to their subjects without necessarily having to communicate face to face. WebCT provides the benefit of remote and non-time sensitive access which allows those users who face various types of educational disadvantage to improve their chances of successful completion of their course. Incidentally this does not create a take from one to benefit another situation. Assisting a disadvantage group does not in this case diminish the resources for other students.The other two areas of educational interest are age and gender of students and whether these factors are relevant in their use of WebCT.

Age and Gender

Students entering Higher Education are expected to manage their time and remain motivated with a greatly reduced level of teacher involvement. A high and consistent level of self-motivation may be more likely in older students than in students entering higher education directly from pre-university schooling facilities. While these younger students are more likely to have a more realistic view of study loads and efficient methods of study there is some evidence to suggest that they may be intimidated by older more mature students and in their presence may be less likely to initiate or join in with classroom communications (Alstete & Beutell, 2004). Older students are also more likely to benefit from the use of online mediums such as discussion boards and this has been tracked in Master of Business-Arts students who also attain higher grades when enrolled in online courses (Alstete & Beutell, 2004). The use of online community however may be a

suitable venue to engage students in a way that is far less intimidating than face to face communication.

The use of WebCT as a personal aid in learning was also considered in relation to gender. Some of the earlier literature indicates that there is a gender difference when using technology which favours males (Furger, 1998; Spender, 1995; Ullman, 1997). However this difference may have since become less apparent as information technology has become ubiquitous (Raphael, 2002) and a study by Morss (1999) indicates that there were no gender differences in student perspectives of using WebCT to facilitate learning. While Brown and Liedholm (2002) suggest that females benefit from an online learning environment because they are freed from the pressure of responding within a limited time frame and from the pressure of having to respond with a correct answer as when in a face to face teaching and learning situation. Whilst it is understood that setting up an ideal environment to achieve optimum learning involves knowing and being able to respond to complex and involved conditions and considerations this study seeks to clarify whether WebCT can enhance students' learning.

CASE STUDY – EFFECTIVENESS OF WEBCT IN FACILITATING STUDENT LEARNING FOR UNDERGRADUATE MARKETING SUBJECTS

This study focuses on on-campus students enrolled in four undergraduate marketing subjects that have been using the WebCT to facilitate their learning. One of the subjects, Introduction to Marketing (BHO1171) is part of the core of the Bachelor of Business at the university. The other subjects, Product and Pricing Strategy (BHO2251); Business to Business Marketing (BHO2253) and Marketing on the Internet (BHO2407) are the second-level courses in the marketing major or an elective for any other business student.

The subjects were taught in two hours of lectures, followed by a tutorial of one-hour duration on a weekly basis. To attain a pass in all these subjects, students must pass the final examination and complete all other assessment components (three pieces of assessment per subject). The course homepage (in WebCT platform) provides current information, such as announcements from course instructors, subject guide, lecture notes, assignments in detail, and additional documents related to the subject.

METHOD

Data was collected using a one page questionnaire administered in the final week of the lecture in semester 2, 2006. The students are currently pursuing their Bachelor of Business degree at the university across three different campuses at Footscray Park, St Albans and Sunbury. Students were informed that it was anonymous and not part of the assessment regime of the class, both the survey and protocol were approved by the University's ethics committee.

The survey was designed to cover a range of issues identified in the literature as possibly impacting on educational outcomes. Students were asked a total of twenty-four self-developed questions most of which required a response on a five point Likert scale with 'strongly disagree' and 'strongly agree' at the extremes. This approach has been used previously in the literature which examines teaching and learning methods (Harasim, 1999). As will be described, the majority of questions focused on students' perceptions of the value of WebCT in facilitating learning and as a communication tool. The issues considered in the survey included benefits, enjoyability and difficulty of use as compared to traditional delivery.

The student profile on items 'English is not a main language spoken at home', 'Age of respondents', 'Computer experience' and 'Campus enrolled' were established as frequencies. Means and standard deviation were then calculated on all questions followed by t-tests conducted to compare age, gender and English as a second language against all the variables.

RESULTS

Student Profile

The response rate of the questionnaire survey was 328, composed of students enrolled in four marketing subjects (as listed above). The profile on the item 'non-English speaking backgrounds' was found to be higher than the typical non-English speaking background of the wider student community at this university. The results show that students with a non-English speaking background were approximately 48% as a cumulative total at the three campuses and the four subjects investigated. This is markedly higher than that of the general Victoria University's profile of 34.6%.

Table 1: *Students from Non-English Speaking Backgrounds*

	Campus		
	Footscray Park	**Sunbury**	**Werribee**
English is not a main language spoken at home	130 (n = 266)	11 (n = 29)	17 (n = 33)
Total:	158 = 48% (n = 328)		

The respondents were also asked to state their age, gender, level of experience as a computer user and the subject in which they were enrolled for the purpose of their WebCT use. The results (table 2. Age of respondents) showed that more than 79% of the respondents are between 18-24 years of age.

Table 2: *Age of Respondents*

Age	**Number of Students**	**Percentage**
18-24	261	79.6
24+	67	20.4
Total	328	100.0

Gender of respondents was evenly distributed, with 55.5% indicated for female and 44.5% male. The next variable was level of experience as a computer user. Whilst this was a self-evaluated question it was felt that given the general high level of computer use in the community respondents would be sufficiently conversant with computer use to give an accurate self-analysis

(Nielsen, 2000) . 70% of the respondents considered themselves to be either 'a bit experienced' or 'experienced' as shown in table 3.

Table 3: *Level of Experience as a Computer User*

Computer Experience	Number of Students	Percentage
Inexperienced	9	2.7
A bit Inexperienced	16	4.9
Neutral	73	22.3
A bit Experienced	118	36.0
Experienced	112	34.1
Total	328	100.0

The respondents were drawn from four marketing subjects as mentioned earlier, with most respondents from the 'Introduction to Marketing' subject (BHO1171) across three campuses as shown in table 4.

Table 4: *Campus Enrolled*

Campus at which Enrolled	Number of Students	Percentage
Footscray Park	266	81.1
Sunbury	29	8.8
Werribee	33	10.1
Total	328	100.0

Respondents were also asked to indicate their level of agreement with the statements as shown in table 5. The intention of these questions was to get students to give their viewpoint on WebCT as a tool to facilitate their learning. The study was particularly interested in establishing WebCT's degree of user friendliness, the perception of users that by using it they would enhance their impression of themselves and improve the impression of them by others and how they use WebCT as a tool (such as accessing administrative information). The results indicate that of 21 questions students agree (a mean of less than 3) that students prefer WebCT as a facilitation tool for their learning, that the package was user friendly and the impression of themselves and the impression of themselves by others was enhanced by using WebCT and it was useful for accessing administrative materials.

Table 5: *Agreement/Disagreement*

Questions	Mean	Std Dev
• Learning to operate WebCT was easy for me.	2.1402	.91128
• My interaction with WebCT was clear and understandable.	2.2256	.78850
• I found WebCT user friendly and easy to use.	2.3201	.94721
• It was easy for me to familiarize myself with WebCT's functions and information sites.	2.2012	.81033
• I get all the information I need (subject guide, assignment's topic, lecture notes etc.) for taking care of my study more conveniently from WebCT than from the face - to - face lecture.	2.6037	.96177
• By using WebCT I get better service than from the face - to - face lecture.	3.1250	.93827
• By using WebCT I have more time for my family/friends/hobbies.	2.9146	.99480
• Using WebCT shortened the amount of time I spent on my study.	3.1250	.92514
• Using WebCT for my studies improved my study performance and effectiveness.	2.8110	.88873
• By using WebCT I give a modern impression of myself to other people.	2.9695	.91487
• By using WebCT I stand out from ordinary people who use traditional methods.	3.1463	.96256
• It would be useful to exchange opinions with other colleagues or instructors under 'Who's online' about topics related to subjects in which I am enrolled.	2.4817	.76604
• Sometimes it is fun just to browse around and see what can be found in WebCT.	2.9848	1.04475
• I would like to read versatile daily news about WebCT.	3.1677	.94784
• It would be fun to have more visually interesting multimedia materials available on WebCT.	2.5122	.89844
• It would be useful to have a calculation tool so that I can tally my progressive results.	2.0305	.82709
• It would be useful to have a calculation tools so that I can use it to estimate what marks I would need to score a mark within the designed ranges of Pass, Credit, Distinction and High Distinction.	1.9177	.84008
• It would be useful to have a search agent in WebCT that would search for me information about topics I have chosen.	2.0579	.82005
• It would be useful if I could view all my assessment results.	1.6768	.79321
• It would be useful if I could be provided with information about other subjects that are similar in some way to one of the subjects in which I am enrolled.	2.1402	.82682
• It would be useful if I could view other subjects offered by the Faculty of Business and Law, on WebCT in which I am not enrolled.	2.1402	.85590

Age, Gender and English as a Second Language Difference

An independent-samples t-test was conducted to compare age, gender and English as a Second Language against all the variables. The results indicated that age was significant on six items whist gender was significant on four items and that English as a second language was significant on three items. These results are presented in table 6 and further discussed below.

Table 6: *Students' Age Differences and WebCT*

Items	Age 18- 24	Age 24+	t-test probability
	Mean (std)	Mean (std)	
Do you use WebCT to chat with other students about the subject topics or socialise?	1.23 (0.59)	1.49 (0.98)	P = 0.044
I use WebCT to get lecture notes or tutorial materials.	1.01 (0.13)	1.08 (0.29)	P = 0.05
I use WebCT to find out about administration of the subject.	1.49 (0.50)	1.31 (0.48)	P = 0.006
It would be useful if I could view all my assessment results.	1.60 (0.75)	1.96 (0.89)	P = 0.001
I would like to read versatile daily news about WebCT	3.26 (0.91)	2.82 (1.01)	P = .001
It would be useful to have a calculation tool so that I can use it to estimate what marks I would need to score a mark within the designated ranges of pass, credit, distinction and high distinction.	1.87 (0.81)	2.10 (0.90)	P = 0.041

The findings as shown in table 6 suggest that at the $p<0.10$ level students in the younger age bracket of 18-24 years are more likely to use WebCT to communicate with other students about study and to socialise, to source subject materials, view assessment details whilst mature age students (24 years and above) are more likely to use WebCT to source more information about WebCT itself. In the context of this study this is a major consideration which needs to be considered when developing subject programs because as indicated in table 2, this group represents the majority of undergraduate students. It may be that the mature age students (24 years and older) are time poor and so do not seek communication with other students when not on campus, which may be because they have pre-established social groups and do not seek to expand their social networks through the university community and they have a lesser affinity with ICT. These areas may form the basis of future research of mature age students' use of WebCT.

Table 7: *Students' Gender Difference toward WebCT*

Items	Gender: Female	Gender: Male	t-test probability
	Mean (std)	Mean (std)	
When I need more support or advice from the lecturer or tutor, I prefer email or online chatting services in WebCT	2.87 (1.09)	3.16 (1.01)	P=0.014
I found WebCT user friendly and easy to use	2.18 (0.86)	2.50 (1.03)	P=0.002
It would be useful to have a search agent in WebCT that would search for me information about topics I have chosen	1.97 (0.78)	2.16 (0.86)	P= 0.035
It would be useful to have a calculation tool so that	1.81	2.05	P= 0.012

I can use it to estimate what marks I would need to score a mark within the designated ranges of Pass, Credit, Distinction and High Distinction.	(0.83)	(0.84)	

The findings as shown in table 7 suggest that at the p<0.10 level there is greater affinity for females to use electronic means of communication, to interface with a computer package (WebCT), to find additional information and to assist them with the calculation of their potential grades. This may suggest that females are more time poor and therefore rely on electronic communication channels rather than face to face communication as compared with males. At the same time female students indicated a desire to have a calculation tool regarding their results which may indicate that they are more results driven and more likely to plan out their assessment tasks to achieve better results than their male counterparts.

Table 8: *English as First or Second Language*

Items	**English as a First Language**	**English as a Second Language**	**t-test probability**
	Mean (std)	**Mean (std)**	
It would be useful if I could view all my assessment results	1.78 (0.85)	1.58 (0.73)	P = 0.017
Sometimes it is fun just to browse around and see what can be found in WebCT	2.84 (1.02)	3.11 (1.05)	P = 0.022
I would like to read versatile daily news about WebCT	3.05 (0.98)	3.28 (0.90)	P = 0.031

The findings as shown in table 8 suggest that at the p<0.10 level there is a sense that students from homes where English is a second language would find certain add-on features desirable in WebCT. This may suggest that these students may have to use any resources that are available to assist them in their studies.

CONCLUSION AND RECOMMENDATIONS

This study looked at responses from students attending university in the western region of Melbourne. The area has low employment rates and a low economic status. Nearly half of the respondents in this study came from a non-English speaking background. The study sought to investigate undergraduate students' use of WebCT as a facilitation device for learning. The analysis showed that there are differences in use between younger and older students, with younger students using WebCT to socialise and communicate within the subject online community and leverage it to get additional information about the subject content and administration. This study also sought information regarding the use of WebCT based on gender. The analysis showed that female students used WebCT more than males to communicate their communication between academics and other students and had a higher involvement with using the technology than males. Students from a non-English speaking background were reported to have an interest in using WebCT beyond the basics provided as compared with students from an English speaking background.

WebCT is a valuable addition to one's educational armoury, but it does not replace traditional methods such as text, lectures, small-group discussion, or problem-based learning. Evaluation of online facilitation of learning is in its infancy, although most learners welcome its use (provided that download speed is fast), and give high satisfaction ratings, there is no evidence that students learn more from Web-based assisted programs than from traditional methods. Students may learn more efficiently, but there is minimal information about the relative costs of online assisted learning programs. This study contributes to a better understanding of current university students' use of technology to assist in their learning especially in relation to age, gender and socio-economic status. Future research could include an analysis of WebCT and its ease of use and time saving benefits for both students and academics. This would be particularly relevant given the ever increasing number of features being added to the package and the current limitations on resources available in the university setting. This lack of resources is particularly sitting in education systems of developing nations. The use of WebCT as a facilitation tool could ease the financial burden by providing conduit between classes and resources such as e-books, online tutorials and embedded email.

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