

# The Impact of Electronic Learning among Accounting Students from Different Cultures

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## Abstract

In recent years we have seen many educational institutions “experiment” with flexible delivery modes for their courses in an attempt to achieve improvements in student learning outcomes. These new modes of delivery have evolved almost simultaneously with the rapidly changing Electronic Commerce medium.

In this **pilot study** we investigate the effectiveness or not of offering sections of a first year accounting course to undergraduate students via online electronic delivery. The aim of this study is to identify factors and variables that affect the way our new undergraduates approach their learning. The results of this pilot will hopefully assist in the formulation of a more comprehensive research project in the future. The overall objectives will be to assist accounting curriculum policy makers in enhancing more effective teaching programmes for their staff.

Previous literature reviews on computer-assisted learning were analysed to assist the authors in establishing their parameters for the study; hypothesis and questionnaire.

Specifically, the authors have chosen the first year accounting course at the Australian National University for their pilot study. Although the course is mainly delivered using traditional teaching methods, major sections of the course are available to students online, via the Course Website. A questionnaire was administered to seventy-two of these students (Appendix).

Our initial results indicate that the majority of these undergraduates would prefer the course (BUSN 1001) not to be presented online. The traditional method of delivery was overwhelming preferred — major reasons being the desire for “teacher contact/interaction”, and “help” being more readily available in a classroom situation. The study produced some very interesting correlations between different variables, particularly in terms of the countries where students originally learned their computer skills.

## 1. Introduction

Much literature and “in-house” research has been produced both in Australia and overseas over the last two decades into the most effective method of delivering course material to commerce students in universities. We have witnessed a significant growth in the number of students enrolling in such degrees due in part perhaps to expectations of better vocational pathways such students have once they graduate. Coupled with this we have seen two universities in Australia (University of Melbourne and the Australian National University) offer gifted Year 12 students the opportunity to study first year university accounting while they are still in their final year of high school. The future for accounting education in our universities therefore promises to be characterised with continued strong growth of undergraduate numbers well into the future.

The accounting profession itself in Australia threw out a challenge (Institute of Chartered Accountants in Australia [1994]) for universities to provide them with better quality graduates in the next century. They want graduates who will be able to meet the demands of a dynamically changing industry brought about in part by the changing pressure of technology.

Some researchers have investigated the relative merits of pedagogical styles proposing that the improved quality of educational outcomes is dependant on the methods educators use in presenting their learning materials — particularly with the use of technology (Berry [1993], Campbell & Lewis [1991]).

With our vast distances and the resulting “global village” that is emerging other researchers have looked at distance education and its implications. In particular, such studies have focused on learning that is enhanced through technology in this market - “In the higher education industry, outcomes are evolving, but include the formation of alliances, outsourcing and re-engineering of systems and work practices” (Marshall & Gregor [2002]).

Nevertheless, there is plenty of evidence available to suggest that the numbers of students in our mainstream universities are on the increase particularly in the commerce and related disciplines (both full and part-time students). This is despite the Higher Education Contribution Scheme (HECS) and the recent controversies over our Government's desire to allow Universities to charge additional fees on the majority of their courses.

In a plenary session at the 2002 Accounting Association of Australia and New Zealand (AAANZ) in Perth Professor Ron Weber of the University of Queensland eluded to a national project that commenced in 2001 that is investigating ways that universities throughout Australia are enhancing the quality of large-class teaching — particularly in the Accounting, Finance and Information Systems classes. Among other things this project is currently setting up a web site to provide teachers of these classes with resources (particularly technological type resources) to assist with online course delivery. The authors of this pilot and their subsequent paper hope to be able to provide additional information for this web site.

The mid 1990's in Australia also witnessed the Mayer Competency report into general education. The report emphasized the necessity that all educational sectors must incorporate the "specific use of technology" into all future curriculum development. There is no doubt that graduates from our primary and high schools in this country (and overseas) are much more technologically and computer literate than their predecessors of two decades ago. The concerns that remain for the current authors however is that are our universities exploiting this implicit "techno-knowledge" of our current generation and therefore making them a better "e-commerce" ready graduate for our business world?

So where have we, as educators, and are our students as learners, taking up these challenges of e-learning? The question also remains as to whether an effective use of technology based learning in accounting is being welcomed by our

Papers of the Research Society of Commerce and Economics, Vol. XXXXIV No. 2  
undergraduates — and if not why? This is where this paper is focused.

The rest of this paper is organized as follows; in the second section, we will have a brief review of previous studies. The third section will introduce the hypothesis of this study. And following this section, the methodology of investigation will be explained in the fourth section. Fifth section will provide a statistical model for this analysis. Preliminary statistics will also give us a brief insight about populations. In the sixth section, we will discuss the result of analysis and conclude the outcome of this study. And the final section will review the limitations of this study and encourage the further discussion of the future.

## 2. Literature Review

Nowadays, the effects of our new economy influence many areas of our society. Education as previously discussed is no exception. Many kinds of transactions and practices are evolving in the interaction between these various entities. These entities include businesses, schools, parents, and students. The process is often referred to as e-commerce in education. E-commerce in education is the process and practice of using an online medium to link together and manage education with training providers (NOIE [2002]). In fact, the use of e-commerce in education is showing unprecedented growth, particularly between business-to-consumer (B2C) activities (Chan & Swatman [2001]).

It may be argued that e-commerce in education is limited to the online medium, such as the Internet, Intranet, Extranet, Electronic Data Interchange and other telecommunications channels. However, in the reality of education, providers are also using off-line computer technologies to compliment their delivery. Regardless of whether on-line or off-line, the computer technology assisting educational provision is referred to as computer-aided-teaching and learning (CAT/L) for the purposes of this study.

The introduction of CAT/L into accounting education is not new. These chal-

allenges have been around since the early 1980's. According to previous studies, the types of computer technologies in accounting education are classified into four categories as follows (Boyce [1999]).

- (1) Productivity software
- (2) Drill-and-practice software
- (3) Modeling and simulation software
- (4) Internet and World Wide Web applications

These previous studies, tried to observe the effect of CAT/L on student performance. These studies examined the evidence of whether the integration of CAT/L into accounting education has a positive impact on student performance. Some studies compared scores achieved in exams or assignments, based on CAT/L, to student performance (Lane & Porch [2002]). However the evidence is still controversial. Some analyses indicate positive results. Others show that CAT/L has a negative effect on the improvement of student performance (Togo & McNamee [1997], Marriott [1994]).

Other research has examined the impact of CAT/L in terms of the efficiency and effectiveness on accounting education after the introduction of computer technology. One study in this area focused on the relationship between the cost-effectiveness of providing computer-based technology to staff-student ratios (Bellamy [1996]). However this study was purely theoretical and doesn't provide us with any empirical support.

Finally, the impact of CAT/L on generic or soft skill development in students should be examined. Generic or soft skills refer mainly to the acquired skills of analysis, judgment, and problem-solving abilities and etc. It is doubtful whether the CAT/L is playing an important roll in the development of these skills (Boyce *et al.*, 1996). Again, there is a lack of empirical evidence to support such obser-

### 3. Hypothesis

A major objective of this pilot study is to seek potentially new issues surrounding on-line education, particularly where there has been limited research to date. Similarly, we must also consider the feasibility and limitations for such an investigation. The investigation was conducted under such limitation, however it must be creatively reflected from the special features of research capabilities. The target audience for this study was undergraduate students from the first year accounting course at the Australian National University in Canberra.

One of the prominent aspects of the investigation targeted the diversity of student's nationalities and backgrounds. Our undergraduates come from over 40 different countries. Backgrounds were established after considering their different schooling and career experiences. It was considered that this variety was sufficient enough so as to examine the elements affecting CAT/L.

In the process of the study, we found one crucial relationship between students and CAT/L. Even though students would not like to see the disappearance of the traditional classroom, it was observed that they do have a preference for some form of CAT/L or computer-based learning while studying. Further, this preference seemed to be dependent on which country they learned their PC skills in. Overseas students for example are more inclined to prefer CAT/L than their native counterparts from Australia. This may be because overseas students have greater abilities to more easily adapt to new situations. To an extent, this observation does have some persuasion in the CAT/L context of accounting education.

As a result of this initial investigation, we established the following hypothesis.

*Ha: Students who learned PC skills in overseas countries will prefer CAT/L or computer-based learning more than students who learned such skills in Australia.*

Students sometimes come to study in Australia at an early stage in their lives. For example, some students may have been born outside of Australia but they came to Australia for their secondary school, so that we don't separate population by "Nationality".

#### 4. Methodology

To meet the challenges of more effective outcomes the School of Business and Information Management at the ANU is now offering major sections of the first year accounting course over the Internet. Students are able to download Microsoft power-point presentation of each lecture prior to the Instructor delivering the lecture in the traditional method. In addition students are able to complement their studies by subjecting themselves to on-line quizzes; downloading previous examination papers; accessing international accounting standards and "chat" with their peers and staff via a bulletin board in the special "MY Course" section of the website. Students can also enroll in course, units and tutorials over the Internet.

The results of a questionnaire (Appendix) were analyzed from seventy-two respondents. These respondents came from the first year accounting cohort. The questionnaire was conducted over three different class situations - these were a lecture; workshop and a tutorial. The teacher/presenter on each occasion "stood back" from administering the questionnaires. This was hopefully to avoid minimum response bias or researchers' influence.

This particular semester unit (BUSN 1001) was chosen for the study because it is a compulsory core unit for the Commerce degree as well as a popular unit for other IT, Economics and combined degrees at the ANU. There are currently over 600 students enrolled in the unit.

The questionnaire assisted us to identify whether students came from overseas or within Australia. We separated them into two groups, according to where they

Papers of the Research Society of Commerce and Economics, Vol. XXXXIV No. 2  
originally learned their PC skills (table 1) and then analysed dependent and independent variables accordingly.

### *Dependent variable*

The dependent variable is whether or not students' prefer CAT/L in the context of accounting education.

### *Independent variables*

The major independent variable for this study was the location of where students learn their PC skills. We also considered other factors that may potentially influence the dependent variable. These included previous work experience; when students started learning PC skills; frequency of using their PC and the frequency of accessing the accounting education material "My course" from their computer.

It is easy to imagine that work experiences could influence preference or not for PC usage. The time of starting to learn PC skills refers to the period that each student started to learn their PC skill (e.g. Primary school, High School and etc). We can assume that the earlier a student starts to learn these skills, the more likely they would prefer learning through CAT/L. The frequency of using a PC can also be used to indicate the degree to which students get used to a computer-based learning environment. The frequency of accessing "My course" means the intention or not of voluntary study under CAT/L. It is left to each student's discretion to some extent to study via "My course". This is because it is not a compulsory requirement to visit it nor can the lecturer check to ascertain whether or not students use it.

## 5. Statistical analysis

In accordance with the above discussion, the following regression is used to predict the students' preference of CAT/L.

$$\text{CAT/L preference} = \beta_0 + \beta_1 \text{PLACE} + \beta_2 \text{WORK} + \beta_3 \text{START} + \beta_4 \text{ACCESS} + \beta_5 \text{MYCOURS}$$

Where

CAT/L preference	= 0 for answer "no" and 1 for answer "yes"
PLACE	= 0 for leaned PC skills in overseas and 1 for in Australia
WORK	= 0 for having no work experience and 1 for having work experience
START	= 1 for studied PC after high school, 2 for at high school, 3 for at primary school and 4 for infant school
ACCESS	= 1 for none accessing PC, 2 for once, 3 for more than once and 4 for daily
MYCOURSE	= 1 for accessing "My course" not at all, 2 for a few more time, 3 for weekly and 4 for daily

## 6. Preliminary statistics

Table 1 shows the sample size of this analysis. Table 2 displays preliminary statistics (means) for the dependent variable and independent variables between the students learning PC skills overseas or in Australia. A one or two tail p-value for the significance of the difference between overseas' and Australian means (t-test) is also displayed in Table 2, as is the conclusion as to whether the difference is statistically significant or not.

Table 3 is a matrix showing the correlations among all variables. The largest

**Table 1. Sample size**

	Number of students	Proportion
Overseas	31	43.06 %
In Australia	41	56.94 %
Total	72	100 %

**Table 2. Preliminary statistics: means**

Variable	Overseas = O (n =31)	Australia = A (n =41)	P=value	Conclusion
CAT/L preference	0.4838	0.2683	0.03289	Oversees' students prefer CAT/L
WORK	0.1935	0.0487	0.03826	Oversees' students had more job experiences
START	2.3548	2.8048	0.00398	Australian students started Learning PC earlier
ACCESS	3.5483	3.3658	0.21114	No significant difference
MYCOURSE	2.1612	2.1707	0.48423	No significant difference

CAL/T Preference 0 for answer "no" and 1 for answer "yes"  
 PLACE 0 for leaned PC skills in overseas and 1 for in Australia  
 WORK 0 for having no work experience and 1 for having work experience  
 START 1 for studied PC after high school, 2 for at high school, 3 for at primary school and 4 for infant school  
 ACCESS 1 for none accessing PC, 2 for once, 3 for more than once and 4 for daily  
 MYCOURSE 1 for accessing "My course" not at all, 2 for a few more time, 3 for weekly and 4 for daily

**Table 3. Correlation matrix**

	CAL/T	PLACE	WORK	START	ACCESS	MYCOURSE
CAT/L	1					
PLACE	-0.22223	1				
WORK	-0.1738	-0.22809	1			
START	-0.11635	0.310388	-0.239	1		
ACCESS	0.167271	-0.09603	0.2087	-0.21697	1	
MYCOURSE	0.078202	0.004741	0.0299	0.18966	0.08481	1

CAL/T Preference 0 for answer "no" and 1 for answer "yes"  
 PLACE 0 for leaned PC skills in overseas and 1 for in Australia  
 WORK 0 for having no work experience and 1 for having work experience  
 START 1 for studied PC after high school, 2 for at high school, 3 for at primary school and 4 for infant school  
 ACCESS 1 for none accessing PC, 2 for once, 3 for more than once and 4 for daily  
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correlation is 0.3103 between PLACE and START. The correlations among the independent variables are small enough, so that it is concluded independent variables are not multicollinearity.

## 7. Results and Conclusion

Table 4 describes the outcomes of regression. Five variables combined explain 15.18% of the variation. The t-value for PLACE is - 2.0185 with a one-tail

**Table 4. Regression Results**

<i>Regression Statistics</i>	
Multiple R	0.389643844
R Square	0.151822325
Adjusted R Square	0.08756644
Standard Error	0.462030656
Observations	72

  

ANOVA					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	5	2.521937508	0.504387502	2.362777	0.049254019
Residual	66	14.0891736	0.213472327		
Total	71	16.61111111			

  

	<i>Coefficients</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.293139118	0.894935872	0.3740736
PLACE	-0.23706227	-2.01852144	0.0476037
WORK	-0.443958818	-2.41736533	0.0184035
START	-0.059228776	-0.70104969	0.4857364
ACCESS	0.090638678	1.497315225	0.1390787
MYCOURSE	0.043729646	0.768634971	0.4448518

  

CAL/T Preference	0 for answer "no" and 1 for answer "yes"
PLACE	0 for leaned PC skills in oversees and 1 for in Australia
WORK	0 for having no work experience and 1 for having work experience
START	1 for studied PC after high school, 2 for at high school, 3 for at primary school and 4 for infant school
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Papers of the Research Society of Commerce and Economics, Vol. XXXXIV No. 2  
p-value of 0.047. These results indicate that the relationship that we investigated is significant.

As a result of these relationships, it is concluded that students who learned PC skills in overseas countries prefer a CAT/L learning environment compared to those students who learned their PC skills in Australia.

### **8. Future Research:**

In view of the findings of this pilot one must first consider the limitations associated with these results. The sample was relatively small, however respondents were drawn from a diverse range of students studying first year accounting with a common perceived study goal to enter the world of work. As one of the goals of educators is to prepare students for the workplace, the influence of an evolving e-commerce society should not be ignored. Course and course delivery may require significant overhauls to meet these phenomena. This study also indicates that composition; backgrounds of our students and their life experiences should not be ignored as curriculum developers prepare courses for our changing business world.

As a result of this pilot, opportunity abounds for further comprehensive research into this area. It is the intention of the authors to extend this investigation of the same cohort of students, but further into their degree programs.

Further use of qualitative as well as quantitative data seems highly desirable. The questionnaire format will require some modification as a result of some weaknesses found in this preliminary survey, and other variables may need to be taken into account.

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Greg Boland and Satoshi Sugahara: The Impact of Electronic Learning among Accounting Students from Different Cultures

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**Appendix** (page 1 of 3)

**E-LEARNING SURVEY FOR ANU FIRST YEAR  
ACCOUNTING STUDENTS**

**GENERAL INFORMATION:**

1. GENDER: Male/Female (please circle)
2. AGE: .....
3. FIRST LANGUAGE: .....
4. COUNTRY WHERE YOU ATTENDED HIGH SCHOOL: .....
5. DEGREE CURRENTLY ENROLLED IN: .....
6. DID YOU (ie by yourself) ENROL IN YOUR COURSE ELECTRONICALLY? Yes/No (please circle)
7. WHAT DID YOU DO BEFORE COMING TO ANU? – (please tick)
  - Studied at another Universityl
  - Travelled overseas
  - Worked
  - Other Study
  - Other (please state) .....
8. WHEN DID YOU START USING COMPUTERS? – (please tick)
  - Infants School
  - Primary School
  - High School
  - After High School
  - Never
9. WHAT SPECIFIC COMPUTER SKILLS DID YOU LEARN?
  - None
  - Basic Word Processing

**Appendix (page 2 of 3)**

- Internet
- E-Mail
- All of the above

10. WHAT COUNTRY DID YOU LEARN YOUR COMPUTER SKILLS IN ?

11. HOW OFTEN DO YOU USE A COMPUTER AT UNI.?

- Daily
- Once per week
- More than once per week
- Do not use one

12. DO YOU OWN A COMPUTER ? YES / NO (Please circle)

13. WHERE DO YOU MOSTLY USE A COMPUTER? -

- At home or in your college room at Uni.
- At another location at Uni (eg Library; laboratory)
- Other location (please specify).....

**SPECIFIC INFORMATION:**

14. How often do you visit the BUSN1001 Course Website? -

- Daily
- Weekly
- Occasionally
- Never

15. If you do go to this Course Website what do you mainly use it for? -

- Downloading lecture notes
- Downloading the workshop solutions
- Downloading previous exam papers
- Links to International Accounting Standards

**Appendix (page 3 of 3)**

More than one of the above

Other .....

16. How often do you visit "MY COURSE"? –

Daily

Weekly

Not at all

17. Does anything discourage you from using "MYCOURSE" more? .....

18. If you do go to "MY COURSE" what do you use it for? – (please tick)

Read the appropriate text chapter summaries

Perform the "Practice Tests"

Use the bulletin board to talk to other students

All of the above

19 (a) Would you prefer BUSN1001 to be presented entirely over the internet?

YES/NO (please circle)

(b) In the space below please give 2 reasons for your answer to 19 (a) above:

(i) .....

(ii) .....