

Balancing the ledger between compliance and innovation: A case study of pedagogical change in financial accounting education

Abstract

The strong bond between industry and higher education informs and directs accounting education in Australia. Accordingly, professional accreditation of university accounting programs drives the selection of curriculum and impacts on the employability of graduates. Even so, the heavy demands of administrative tasks and compliance with professional body requirements can inhibit academics' capacity to generate innovative learning solutions. In the School of Accounting at Curtin Business School (CBS) the unit coordinator of Accounting (Financial) 250 was concerned about the propensity for students to engage in surface learning rather than deep learning. Moreover, many students experienced difficulty making the transition from the general first year accounting unit to the more specialised second year financial accounting unit and, subsequently, failed to develop the required technical and generic skills. In an endeavour to resolve this issue the unit coordinator researched, developed and trialled a customised e-learning resource. In this paper, an ethnographic case study of pedagogical change in relation to financial accounting education is documented and literature relevant to the case is reviewed. Throughout this paper the argument is made that both compliance and innovation are required to satisfy the demands of the profession and students.

Introduction

As compliance and innovation teeter on a pivot point, the tension between them is capable of either unhinging or enhancing the accounting profession. The goal of accounting higher education is, as it must be, to get the balance right. Tertiary curricula's compliance with both International Accounting Standards and professional body requirements is essential. However, without an injection of innovation, both as an input and output, accounting graduates will be unprepared for professional work in the 21st Century. According to research conducted by Coate, Mitschow and Schinski (2003) North American students hold preconceived ideas about accountants' personality traits. Stereotypically, accountants are characterised as less extroverted, more formal and neither gregarious nor thrill-seeking. Accountants are considered to be highly conscientious and to have leadership qualities, but are "perceived to be somewhat less imaginative, changing with difficulty, and reliant upon established norms" (Coate et al., 2003, p.2). Students with these personality traits are, understandably, drawn to enrol in accounting courses. However, the work that accountants undertake and are expected to perform in the 21st Century is not consistent with the stereotype. "Accounting work requires substantial social interaction ... accountants should be more creative, imaginative and open-minded" (Coate et al., 2003, p.2). Furthermore, "professional bodies expect to see a balanced curriculum, which covers more than technical content" (ICAA & CPA, 2009, p.4). Students are expected to graduate with an arsenal comprising both technical and generic skills, with the ability to think critically regarded as one of the most prized graduate attributes (Baril, Cunningham, Fordham, Gardner &

Wolcott, 1998; Cooper, Everett & Neu, 2005). So, how can accounting academics project an image of accountants as dynamic and diverse individuals and produce graduates fit for the accounting profession of the 21st Century? Cooper et al. (2005) identify the problem of tertiary accounting courses tending to rely too much on pedagogies that favour rote learning and marginalise broader educational issues. They argue that, instead, students should have the opportunity to engage with critical issues faced by accounting professionals in the workplace. Coate et al. (2003) thus recommend that accounting academics engage students with analysis and problem solving approaches to learning.

In this paper the research methodology and outcomes of a case study of pedagogical change in financial accounting education at Curtin Business School (CBS) are described. A pedagogical shift occurred as a result of replacing a mid-semester test, that encouraged students to rote learn content, with a customised e-learning resource which promoted critical thinking and required students to apply accounting principles in different contexts. To provide the reader with an understanding of relevant pedagogical issues, a review of literature pertaining to industry guidelines and pedagogical approaches is presented in the following sections.

Industry Guidelines

In their *Professional Accreditation Guidelines for Higher Education* (2009) the Institute of Chartered Accountants in Australia (ICAA) and CPA Australia (CPA) outline the

policies and procedures for the accreditation of higher education programs. In their description of acceptable program content the professional bodies identify and emphasise the importance of striking a balance between students' acquisition of technical and generic skills. Thus developing students' critical thinking, problem solving and interpersonal skills, together with their ability to use technology effectively, is as important as ensuring they acquire discipline knowledge and competency in the designated core curriculum areas. The ICAA and CPA both require the coverage of financial accounting, management accounting, finance, auditing and assurance, Australian commercial and corporations law, and Australian taxation. Additionally, CPA requires coverage of information systems design and development, economics, and quantitative methods (ICAA & CPA, 2009). In the CBS Accounting single and double major undergraduate courses, all of which consist of 24 units, financial accounting is covered within four units. Pedagogical innovation within the Accounting (Financial) 250 unit is the focus of this paper. In keeping with the requirement to produce graduates with appropriate generic skills, Curtin University has embedded the development of nine graduate attributes into all its curriculum areas. In Accounting (Financial) 250 students are able to develop the following graduate attributes:

- The ability to apply discipline knowledge, principles and concepts;
- The ability to think critically, creatively and reflectively;
- The ability to communicate effectively;
- The ability to use technologies appropriately; and
- The ability to recognise and apply international perspectives (Curtin University, 2009).

Both the ICAA and CPA expect that invigilated assessment comprise at least 50% of total assessment in each course unit (ICAA & CPA, 2009). Conversely, the Curtin University's *Assessment and Student Progression Consolidated Policies and Procedures* (2009) states that a final examination should be weighted at no more than 50% of the unit mark, unless relevant professional body requirements stipulate otherwise (Curtin University, 2009; ICAA & CPA, 2009). With such a heavy emphasis on examination, there can be a tendency to structure curriculum around the exam and to inadvertently promote rote learning of technical material instead of attending to broader educational issues and the promotion of deeper learning (Cooper et al., 2005; Leveson, 2004). Moreover, adherence to professional requirements combined with situational factors, such as limited funding, large class sizes, multiple delivery locations and the increased use of part-time contract lecturers, have resulted in heavy workloads, reliance on textbooks and reluctance to be innovative with curriculum (Parker, 2005). It thus appears that traditional teacher-centred approaches to teaching accounting promote surface learning rather than generating the range of technical and generic skills required by employers and professional bodies. In contrast, research by Freidlan (1995, in Leveson, 2004) and Mladenovic (2000, in Leveson, 2004) showed that non-traditional student-centred approaches to teaching accounting could enhance student learning and acquisition of generic skills. In this paper the researchers describe curriculum innovation that promotes self-directed student-centred learning through incorporating a customised version of the commercially available **Perdisco** e-learning resource and online assignment which fostered deep, rather than surface, learning. In

the following paragraphs literature pertaining to relevant pedagogical approaches is reviewed.

Pedagogical Approaches

Traditionally, teaching in higher education has been teacher-centred and, as such, a transmissive cognitive pedagogical approach has been adopted. More recently, educators have recognised the value of more student-centred constructivist approaches to learning in higher education. Whilst both teacher-centred and student-centred approaches are valuable, the more critical issue relates to student learning (Byrne, Flood, & Willis, 2002; Trigwell, Prosser, & Waterhouse, 1999).

Good Teaching in Higher Education Linked to Student Learning

Successive studies have linked teaching to student learning outcomes (Trigwell et al., 1999). Marton and Saljo (1976, in Byrne et al., 2002) noted that students, depending on their initial intentions, adopted either a surface or deep approach to learning. Students who set out to question arguments and assimilate concepts into their own understanding adopted a deep learning approach, whereas students who focused on rote learning facts tended to engage in surface learning (Byrne et al., 2002). Ramsden (1979, in Byrne et al., 2002) recognised that students also adopted a strategic approach to learning, whereby they used both deep and surface learning with the aim of achieving the highest possible grades. Studies of student learning have consistently linked

teacher-centred pedagogies with students' adoption of surface learning approaches and lower learning outcomes. Nevertheless, studies by Ramsden and others have identified a correlation between student-centred teaching and deep learning (Trigwell et al., 1999). Good teaching in higher education is aligned with student-centred learning and characterised by "giving helpful feedback, making an effort to understand the difficulties students may be having, being good at explanations, making subjects interesting, getting the best out of students, motivating students and showing an interest in what students have to say" (Ramsden, 1992, in Trigwell et al., 1999, p.66).

Extensive evaluation processes are used throughout the higher education sector to determine the extent of students' experiences of 'good teaching' (Bolt & Dickie, 2009). At Curtin University the eVALUate tool is used to elicit students' views about their experiences of 'good teaching'. To date, one of the weakest aspects of teaching that students experience is *giving helpful feedback* (Tucker & Pegden, 2009). In an effort to enhance student learning and provide students with individualised immediate feedback, academics may use computer-assisted learning in their teaching. Even so, the use of technology must be situated within a suitable pedagogical approach (Boyce, 1999).

The Use of Technology to Enhance Student Learning

Pedagogically, a key issue with using technology such as computer-assisted learning (CAL) to enhance student learning is whether or not it should replace or supplement the role of the teacher. There is evidence to suggest that students with different learning

styles respond differently to CAL, in that it is “more beneficial for ‘intuitive-feeling’ type of learners than ‘sensing-thinking’ types” (Boyce, 1999, p.200). As such, CAL should be used supportively rather than supplantively. Similarly Belal (2002), in questioning students’ intentions for using CAL and the type of learning outcomes they achieved, noted that students who used CAL to strengthen their understanding engaged in deep learning, whereas students who used it only to complete a task engaged in surface learning. Belal (2002) subsequently conducted a study on the use of the EQL (Understand Management Accounting) software package and observed that most respondents found the resource helpful, but also noted that it should be used supportively rather than supplantively.

Educators also use the Internet in tandem with CAL to enrich students’ learning experience. Baker and White (1999) conducted research into the early use of the Internet in accounting education. They discovered that the Internet was used in accounting courses for different purposes and predicted that in the future Internet usage would increase. Interestingly, however, minimal research has been conducted to exemplify how best to integrate CAL and/or the Internet into the classroom (Marriott & Lau, 2008; Rebele, Apostolou, Buckless, Hassell, Paquette, & Stout, 1998). In response to this lack of information, Marriott and Lau (2008) investigated the role of computer-assisted assessment (CAA) by changing summative assessment practices from a single paper-based assessment to a series of phased online/paper-based assessments in which students could practise and receive feedback as they progressed. The results of this research indicated that students were motivated and

engaged by the receipt of immediate online feedback (Marriott & Lau, 2008). Nevertheless, further research is required to provide guidance on how best to integrate CAL into the teaching of accounting in higher education.

A specific area requiring guidance pertains to how academics can make the best use of commercially available e-resources. The quality of e-learning products depends on their fitness for purpose (Roy & Ghatak, 2007). Bagranoff (1993) recommends selecting generic software packages that enable students to develop transferable skills. However, fitness for purpose may be compromised if generic e-resources are not aligned with the specific learning outcomes of the units in which they will be used. To overcome this issue, customisation of e-learning resources may be necessary. In this paper, the customisation of the commercially available **Perdisco** e-learning resource to the syllabus of Accounting (Financial) 250 and the case study research methodology are described. As recommended by Bagranoff (1993), both the e-learning resource and the assignment were thoroughly tested prior to implementation.

Methodology

As an ethnographic case study, the qualitative research described in this paper sits within the interpretive paradigm and differs from other forms of ethnographic research. Hence, in the case study there is a pedagogical focus on the Accounting (Financial) 250 unit, in particular on the development and use of the **Perdisco** e-learning resource, rather than on the behaviours of students or teachers involved in the unit. Although

cultural themes such as deep learning and surface learning are identified and discussed to some extent, the main concern is to explore the case rather than the themes. The characteristics of this ethnographic case study are, thus, consistent with Creswell's (2008) description of this type of research methodology. Further aspects of this research are described in the following paragraphs and include the research purpose and plan, participants and data collection and analysis.

Research Purpose and Plan

The purpose of this case study was to understand and resolve pedagogical issues in Accounting (Financial) 250 and, subsequently, to describe the outcomes of the research. In effect the research was conducted and concluded within a four-year period. For example, during 2006 the Accounting (Financial) 250 unit coordinator consolidated her awareness of pedagogical issues and student concerns, and began to formulate strategies to address these needs. A **Perdisco** representative initially contacted the unit coordinator on 1 October, 2006. Shortly thereafter the unit coordinator was nominated as the School of Accounting member of a faculty-based project, entitled *The 1st and 2nd Year Experience Project*, whose brief was to implement a series of curriculum innovations across CBS Schools in 2007. Project participants were drawn from the six CBS Schools, and the first project meeting was held on 13 December 2006. During Semester 1, 2007 the unit coordinator consulted and worked with **Perdisco** representatives to customise the commercially available **Perdisco** e-learning financial accounting resource to the syllabus and requirements of Accounting

(Financial) 250. By the end of Semester 1, 2007 sufficient customisation changes had been made to enable trialling selected parts of the e-learning resource on a limited number of students in Semester 2, 2007. The *1st and 2nd Year Experience Project* was concluded in December 2007, with the final project report being disseminated across CBS in May 2008. After further changes were made to fully tailor it to the unit syllabus, the ***Perdisco*** e-learning resource was embedded, on a complete basis and across all students, within the Accounting (Financial) 250 curriculum in Semester 1, 2008 and data were collected in relation to students' experiences and results. In 2009 the outcomes of implementing the ***Perdisco*** e-learning resource were reflected upon and disseminated through scholarly publications.

Participants

The authors are the key participants in this ethnographic case study. As CBS Coordinator of Teaching and Learning, the first author participated in the research as an observer who interviewed the unit coordinator and interrogated the data collected. The second author was the unit coordinator of Accounting (Financial) 250 from 1999 to 2008 and, as such, conducted the research. In doing this, the unit coordinator engaged in fieldwork which resulted in the development of extensive field notes, including correspondence, resource development ideas, student feedback, and student performance data.

Data Collection and Analysis

Both quantitative and qualitative data were collected and analysed. Data were collected in five distinct phases. The first phase occurred as the unit coordinator managed and taught different student cohorts in Accounting (Financial) 250 across several years: Data were collected up to and including 2006 and included student feedback as shown in Tables 2 and 3 in the results section of this paper. The second phase was Semester 1, 2007 and consisted of field notes, correspondence and resource development ideas. In the third phase, Semester 2, 2007, the e-learning resource was trialled and data collected from a **Perdisco** student survey, formal student feedback from Curtin University's eVALUate unit surveys and informal student feedback. The **Perdisco** survey results are shown in Table 1; eVALUate student feedback is shown in Tables 2 and 3, with student ratings aggregated and shown as percentages. In Semester 1, 2008 the **Perdisco** e-learning resource was formally incorporated into the Accounting (Financial) 250 unit and has remained so since then. Thus, in the fourth and fifth phases student feedback and performance data were collected. 2008 student feedback is shown in Tables 2 and 3, again with ratings aggregated and shown as percentages.

Student feedback data about Accounting (Financial) 250 were collected over this three-year period from multiple locations and cohorts of students. For example, in 2008 1,510 students were enrolled in the unit, which was delivered in both 2008 semesters at Bentley, Miri (Sarawak), UHK SPACE (Hong Kong), Metropolitan College (Kuala Lumpur), UPI (Jakarta) and Sydney locations. It was also delivered in only one 2008 semester at CTI (Mauritius), MIS (Singapore), UHK SPACE (Beijing), (Inti) Penang,

UHK CIDP (Hong Kong) and DUFE (China) locations. Students' quantitative eVALUate ratings are represented as percentages and reported in Table 4 by location¹. Students' qualitative comments have been aggregated and reported as themes and include quotes typifying students' comments about their *Perdisco* experience.

Phase One: Motivation for Considering the Perdisco e-Learning Resource

Based on many years experience as unit coordinator of and lecturer/tutor in Accounting (Financial) 250, the researcher observed that successive cohorts of students encountered difficulty in bridging the learning gap between the general, broad first year Accounting 100 unit and the more specialised Accounting (Financial) 250 unit. Students appeared to find the technical content of the unit difficult to understand and master. This difficulty was often exacerbated if students were studying by distance education (external) mode or in an offshore location. In general, students' approach to learning and tertiary study impeded their ability to develop deep understanding of technical issues and the competencies required to apply foundational principles in different contexts. Additionally, an assessment structure comprising a mid-semester test and final exam resulted in students' adopting a surface rather than deep, learning approach and working sporadically, instead of consistently, throughout the semester. Hence, the unit coordinator decided to investigate ways in which she could motivate and engage students more effectively in meaningful learning opportunities. The *Perdisco* e-learning resource appeared to offer an attractive means of achieving this, as its promotional

¹ In Semester 2, 2008 eVALUate surveys were only available to students in Bentley, Sarawak, Hong Kong and Sydney locations.

information stated that its customised e-learning resources created a supportive learning environment that encouraged students to work consistently during the semester and minimised their tendency to defer study until just before tests and exams.

Perdisco is an e-learning publisher, based in Sydney, Australia, that develops interactive specialist e-learning resources in business, finance and accounting fields of study. The word, **Perdisco**, is Latin for *learn thoroughly* (Perdisco, 2006). The **Perdisco** e-workbooks are developed by subject experts, educational designers and clients and provide customised question and answer based learning environments. The answers provided by **Perdisco** are fully worked solutions. The feedback students receive, from using the e-workbook, not only tells them if they were correct or not in their answer, but also explains why the correct answer is correct and what students need to do in order to answer the question correctly. By using a mathematical model that randomises key variables within questions, the **Perdisco** e-learning resource not only ensures that each student practises on unique sets of questions but also provides each student with hundreds of questions on each topic. As such, students can keep practising at their own pace and in a supportive learning environment until they are confident they have understood and mastered the e-workbook topics. In addition to providing practice questions, “tailored assessments with automated marking, recording and reporting can be delivered online” (Perdisco, 2006). Lecturers can thus use **Perdisco** e-learning resources to track student performance, to diagnose trends and to respond to student learning needs by designing and structuring future lesson plans accordingly. As **Perdisco** specialises in designing and coding complex mathematical

questions, there is a broad range of scenarios that can be incorporated into the e-workbooks (Perdisco, 2006). The fact that such a versatile e-learning resource could be customised to suit specific curriculum needs was the key feature that appealed to the Accounting (Financial) 250 unit coordinator.

Phase Two: Perdisco e-Learning Resource Development

The process of customising the ***Perdisco*** e-learning resource began in October 2006. Initial negotiations focused on the ledger account format and inventory system used in the e-workbook. ***Perdisco*** uses the three-column running balance ledger account format and the periodic inventory system, whereas the unit coordinator required the T ledger account format and the perpetual inventory system. Although the ***Perdisco*** developers were committed to producing a product tailored to client needs, any changes necessarily involved resource implications. From the unit coordinator's perspective, these changes were necessary to ensure a perfect match with the Accounting (Financial) 250 syllabus. After consultation with academic colleagues, consideration of ledger account formats used in key accounting computer packages and taking into account the fact that students had used three-column running balance ledger accounts in Accounting 100, the unit coordinator agreed to accept the use of the three-column running balance format in the ***Perdisco*** e-workbook. However, the need for the e-workbook to use the perpetual inventory system, which is the conceptually superior system and used most widely by businesses, remained non-negotiable. In order to

determine the viability of using the **Perdisco** e-learning resource, the unit coordinator asked **Perdisco** for online access to enable the e-workbook modules to be reviewed.

On 22 December, 2006 online access was established for the unit coordinator to review two modules: The *Accounting A 'Inventory'* module, consisting of questions using and comparing the periodic and perpetual inventory systems; and The *Online Practice Set*, based solely on the periodic inventory system. At the same time the **Perdisco** representative informed the unit coordinator that the company was still finalising aspects of its *Financial Accounting* modules. As such, although parts of the *Property, Plant and Equipment* module would be available for review early in 2007, the completed *Financial Accounting* modules would not be ready by Semester 1, 2007 as had previously been hoped.

The review process proceeded throughout Semester 1, 2007 and included the review of the *Accounting B* module. Based on review results, in early July 2007 the unit coordinator advised **Perdisco** that all references to company and partnership accounting had to be deleted, as Accounting (Financial) 250 only dealt with sole trader accounting. Similarly, any references to lease transactions, bills of exchange and promissory notes also needed to be deleted as they were not covered in the unit. Other required deletions included references to regulatory bodies, ethics and business structures, as these were beyond the scope of the unit. The unit coordinator also required the following specific inclusion and coverage changes:

- To always provide the diminishing or reducing balance depreciation rate, instead

of asking for it to be calculated;

- To expand and enhance the usage of the Goods and Services Tax (GST) in all sections except for the *Property, Plant and Equipment* module; and
- To ensure appropriateness of terminology and correctness of answers in all modules.

In particular, the unit coordinator required confirmation that the e-workbook modules available to students during the Semester 2, 2007 trial would reflect all the above required changes. As it was agreed that incorporation of a small **Perdisco** assignment into the unit assessment structure during the trial would increase student usage of the e-workbook, the unit coordinator asked **Perdisco** to develop an online assignment of 20 practical questions covering three unit topics for the trial.

During the development phase non-curriculum related issues regarding the intellectual property ownership of the customised e-learning resource, compliance with the Higher Education Support Act 2003 (HESA) and level of access/service had to be considered and resolved. It was agreed that **Perdisco** had control over the intellectual property rights. Under HESA regulations students cannot be required to pay for unit assessment (for example, assignment) materials but can be required to use (via purchase or library reserve) prescribed unit texts from which unit assessment tasks (for example, assignments) may be set. As it was determined by Curtin University authorities that the **Perdisco** e-learning resource effectively constituted an electronic text, it thus could appropriately not only be set as a prescribed unit text but also be used for unit assessment purposes. Accordingly, when the **Perdisco** e-learning resource was fully

integrated into the Accounting (Financial) 250 curriculum in Semester 1, 2008 students were asked, legitimately, to either purchase it for \$49.50 (AUD) or use 'library copies', which were available at no charge via **Perdisco's** Electronic Special Reserve (ESR). Students needed to be aware, however, that these library copies were limited by both the number of hours and simultaneous users. It was also agreed that for the purposes of the Semester 2, 2007 trial, the **Perdisco** e-workbook would be made available to students free of charge. Unfortunately, the access/service level in the development phase was somewhat problematic, resulting in several weeks of downtime during which the e-workbook was not accessible. **Perdisco** replaced the software it was using and assured the unit coordinator that the downtime she encountered was only a temporary glitch.

In due course, **Perdisco** representatives and the unit coordinator committed to trial selected modules of the customised **Perdisco** e-workbook in Semester 2, 2007 on students enrolled at the Bentley campus and distance education students.

Phase Three: Perdisco e-Learning Resource Trial

In July 2007 the Semester 2, 2007 trial of the **Perdisco** e-learning resource began with the posting of an announcement and information flyers on the Accounting (Financial) 250 Blackboard site. Students were instructed to create their **Perdisco** accounts, login to the **Perdisco** website and start using the e-workbook and were also encouraged to contact **Perdisco's** customer support facilities if they experienced any technical

difficulties in accessing or using the e-workbook. Whilst students had access to the e-workbook practice questions from the start of semester, the unit coordinator and **Perdisco** representatives continued to negotiate and work on the format and content of the trial's online **Perdisco** assignment worth 4%. For this online assignment a total of 32 questions, covering six unit topics, were agreed on and allocated to 10 pools of questions. The pooling of questions enabled students to randomly receive one question from each pool so that students completed different sets of 10 questions, albeit from the same six unit topics. At the unit coordinator's request, an introductory clarifying statement regarding terminology was inserted in the online assignment to minimise any potential student confusion. To ensure students knew about the online assignment details the assignment instructions were available both in the **Perdisco** e-workbook and on the Accounting (Financial) 250 Blackboard site. Students were given access to the online assessment for a 10 day period from 21 September 2007 to 1 October 2007, and were permitted only one attempt at completing the assignment within a three hour timeframe.

For some students the online assignment proved somewhat challenging. Prior to the online assignment being made available on 21 September 2007 only 50% of students had accessed the **Perdisco** website. However, as the online assignment's due date drew closer, student access and usage increased dramatically. Nevertheless, 77 out of a total of 477 students failed to even attempt the online assignment within the 10 day period, despite a Blackboard flyer, Blackboard reminder announcements and a reminder email being sent to every student. Other students attempted the assignment

but did not complete it within the mandatory three hour timeframe. After the online assignment closed, **Perdisco** conducted a survey of the students and provided a report of student feedback about its e-learning resource. Sadly, only 30 students completed this online survey, the results of which are shown in Table 1.

(INSERT TABLE 1)

The survey results indicate that all students agreed that the e-learning resource helped increase their understanding of the unit, with 97% of respondents recommending that future students use it and 89% stating that they would purchase an equivalent e-learning resource in a future unit. Survey comments revealed that students valued “receiving detailed immediate feedback on my actual answers” as the best feature of the e-resource and “the ability to practice whenever I want to” as the next best feature. Negative comments centred on students wanting more variability in the questions. This issue had already been dealt with; however, as the unit coordinator and **Perdisco** representatives had previously discussed the issue of the limited range of questions in the trial version of the e-learning resource and had committed to making more questions, in terms of both number and variability, available in 2008.

Final Phases: Embedding the Perdisco e-Learning Resource

In Semesters 1 and 2, 2008 the **Perdisco** e-learning resource was embedded in the Accounting (Financial) 250 curriculum across all locations and study modes. The

Perdisco e-learning resource, consisting of an e-workbook and practice set assignment, was available for students to purchase at a cost of \$49.50 AUD. Alternatively, students were able to access 'library copies', at no charge, via the Electronic Special Reserve (ESR) of the **Perdisco** website. Students were able to access the e-learning resource to support their learning in all except one unit syllabus topics. However, unlike the Semester 2, 2007 trial, when the e-learning resource was formally incorporated into the unit in Semester 1, 2008 students were set an online **Perdisco** practice set assignment covering unit topics 2-6 and worth 25% of their overall unit grade and mark. The replacement of the mid-semester test by the online practice set assignment resulted in a remarkable improvement in student performance. For example, in the mid-semester test students scored an average of 49% in Semester 1, 2007 and 33% in Semester 2, 2007. These scores reveal that the majority of students were failing the mid-semester test. Conversely, the average score for the online practice set was 70% in Semester 1, 2008 and 72% in Semester 2, 2008. As these averages show, the majority of students passed the on-line practice set assignment. Not only did students' marks improve, but students' eVALUate ratings also improved and, what is more, typically surpassed ratings at either CBS or University levels. Table 2 shows the 2006-2008 Accounting (Financial) 250 eVALUate results for Bentley students. Table 3 shows the 2006-2008 aggregated Accounting (Financial) 250 eVALUate results for students in all eVALUate locations. Table 4 compares the Accounting (Financial) 250 eVALUate results in the four eVALUate locations with the equivalent CBS and University results. The semester in which **Perdisco** was trialled is shown in the shaded column. The highest eVALUate ratings are highlighted in grey.

(INSERT TABLE 2)

(INSERT TABLE 3)

(INSERT TABLE 4)

The Student Learning Experience

The data shown in Tables 2, 3 and 4 represent the students' learning experiences from 2006 to 2008 in Accounting (Financial) 250 across multiple locations and modes of delivery as indicated by eVALUate results. The questions in the eVALUate survey pertain to students' teaching and learning experiences within individual units. In 2006 Accounting (Financial) 250 students had no access to either the ***Perdisco*** e-learning resource or any other self-directed computer-assisted learning. The ***Perdisco*** trial occurred in Semester 2, 2007, and the e-learning resource was fully embedded within the curriculum from Semester 1, 2008 onwards. Hence, in 2008 students had full access to self-directed learning, support and feedback via the ***Perdisco*** e-learning resource as well as conventional lectures and tutorials. Furthermore, in Semester 1, 2008 the traditional mid-semester test was replaced by the ***Perdisco*** online practice set assignment. As noted in the previous section, students' grades improved significantly as a result of the pedagogical changes described in this paper. Students' average score in the mid-semester test over the two 2007 semesters was 41%, whereas the average score in the ***Perdisco*** online practice set assignment over the two 2008 semesters was 71% - an increase of 30%. In addition to the improvement in students'

academic results, the 2008 eVALUate data shown in Tables 2 and 3 indicate significant improvement in students' experiences in relation to all survey questions on Accounting (Financial) 250 across all locations and study modes. Furthermore, when compared to the aggregated survey results across all units in CBS and the University, students' experiences in Accounting (Financial) 250 (as shown in Table 4) indicate consistently higher levels of student satisfaction for the majority of questions in most locations.

As well as the eleven quantitative questions shown in Tables 2, 3 and 4, students are asked the following two qualitative questions in the eVALUate survey:

1. Please comment on the most helpful aspects of the unit; and
2. Please comment on how you think the unit might be improved.

Accounting (Financial) 250 students' responses to both these questions indicated that they had sought to understand the unit content rather than just complete it; hence that students had engaged in deep, rather than surface, learning. Typical comments in response to the first question included:

- “The **Perdisco** assignment was great as it allows you to work through the accounting cycle in a logical manner at your own convenience whilst providing continuous feedback.”
- “I've thoroughly enjoyed the unit – particularly using **Perdisco**, an excellent tool. The revision questions are easy to use. I like the instant feedback and the practice set assignment was easy to follow and fun to complete.”
- “The **Perdisco** practice set assignment and online practice was essential for me achieving a good outcome in learning the fundamental concepts of financial

accounting. It was a major project and I estimate I spent 40 hours practising and 18 hours completing the assignment – with a score of 92%.”

- “**Perdisco** was very useful with feedback and explanations given after submission of work. The assignment based on effort rather than correct answers is a very good idea because it is rather hard to get correct answers straight away after attending a lecture with not much practice done.”

While there were fewer comments in response to the second question, typical comments included:

- “Perhaps more **Perdisco** free workbooks. I started my assignment straight away and got away with using the free workbooks but closer to the date everyone was using it. I even waited after each two hour block and ended up having to purchase the \$49 workbook, bit pricey.”
- “If possible, by making topics 8-10 a **Perdisco** assessment [not just topics 2-6], because I think it will help people have a better understanding.”

Discussion and Conclusion

A common complaint about accounting education is its emphasis on rote learning and examination-oriented curriculum (Cooper et al., 2005). Moreover, research has linked rote learning with surface learning and lower student learning outcomes; whereas the development of students’ understanding of topics is linked with deep learning and higher learning outcomes (Byrne et al., 2002). The description of the case study in this paper indicates that the embedding of the **Perdisco** e-learning resource into the

Accounting (Financial) 250 curriculum allowed students to practise and apply their learning in a supportive and blended learning environment that provides immediate feedback and full explanations of topics. Although Accounting (Financial) 250 retained the mandatory final examination worth 50% of students' allocated marks, the **Perdisco** online practice set assignment gave students the opportunity to demonstrate their understanding of topics in the context of a series of simulated scenarios consistent with professional accounting workplace situations. The student learning outcomes for Accounting (Financial) 250, identified in this paper as student grades and eVALUate survey data, indicate a distinct improvement in students' academic results and learning experiences as a result of incorporating the **Perdisco** e-learning resource into the curriculum. As such, the innovative use of customised computer-assisted learning in one of the ICAA and CPA core curriculum areas has contributed to improving student learning in accounting education.

The customisation of the **Perdisco** e-learning resource as described in this paper ensured that it was fit for purpose, as it was tailored to the Accounting (Financial) 250 syllabus. The resultant e-learning resource provided a balanced opportunity for students to develop their technical and generic skills and, thus, prepare them for employment in the accounting profession. The **Perdisco** e-learning resource and online practice set assignment enhanced students' critical thinking skills by requiring students to make decisions about how to apply their knowledge and understanding in a range of situations, instead of allowing them to rely on rote learning content. Accordingly, the researchers recommend the use of customised computer-assisted

learning opportunities in accounting education. Furthermore, the researchers stress the importance of tailoring commercial e-learning resources to curriculum requirements in order to achieve a balance between compliance and innovation that enhances student learning.

The research described in this ethnographic case study has been substantial. Data were gathered over a three-year period and extensive field notes were meticulously recorded and maintained throughout the development, trial and full rollout of the customised *Perdisco* e-learning resource. The researchers have sought to disseminate the findings of this research to the broader academic community through scholarly publications. However, the findings of this research pertain to a single, albeit crucial unit in the CBS Accounting single and double major undergraduate courses. Further research could be conducted to determine the viability of customising other commercially available computer-assisted and online learning resources in other units and discipline areas. Future research could also investigate and provide advice to the academic community in relation to how best to implement blended learning strategies in higher education contexts.

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Table 1: Survey Results from *Perdisco* Trial in Semester 1, 2007

Question	SA	A	D	SD
This e-workbook helped me increase my understanding of the course	31%	69%	0%	0%
I would recommend that future students in this course use the e-workbook	48%	49%	3%	0%
I would purchase an e-workbook for a future course	29%	60%	11%	0%

Table 2: Bentley Accounting (Financial) 250 eVALUate results

	1/06 %	2/06 %	1/07 %	2/07 %	1/08 %	2/08 %
Response rate	20	27	30	22	36	39
Q1: The learning outcomes in this unit are clearly identified.	81	79	86	85	89	94
Q2: The learning experiences in this unit help me to achieve the learning outcomes.	78	64	74	72	81	88
Q3: The learning resources in this unit help me to achieve the learning outcomes.	69	64	77	64	73	85
Q4: The assessment tasks in this unit evaluate my achievement of the learning outcomes.	75	65	78	72	82	92
Q5: Feedback on my work in this unit helps me to achieve the learning outcomes.	68	55	63	61	70	77
Q6: The workload in this unit is appropriate to the achievement of the learning outcomes.	73	61	75	56	70	87
Q7: The quality of teaching in this unit helps me to achieve the learning outcomes.	67	52	68	67	74	83
Q8: I am motivated to achieve the learning outcomes in this unit.	71	77	78	71	77	90
Q9: I make the best use of the learning experiences in this unit.	72	77	80	77	82	81
Q10: I think about how I can learn more effectively in this unit.	71	77	82	79	74	85
Q11: Overall, I am satisfied with this unit.	72	60	76	58	76	90

Table 3: Aggregated Accounting (Financial) 250 eVALUate results for Bentley, Distance Education and all other eVALUate locations

	1/06 %	2/06 %	1/07 %	2/07 %	1/08 %	2/08 %
Response rate	20	33	35	30	39	39
Q1: The learning outcomes in this unit are clearly identified.	80	81	85	81	89	93
Q2: The learning experiences in this unit help me to achieve the learning outcomes.	78	70	76	73	83	89
Q3: The learning resources in this unit help me to achieve the learning outcomes.	68	70	78	70	76	85
Q4: The assessment tasks in this unit evaluate my achievement of the learning outcomes.	76	71	79	72	85	91
Q5: Feedback on my work in this unit helps me to achieve the learning outcomes.	69	63	67	64	74	78
Q6: The workload in this unit is appropriate to the achievement of the learning outcomes.	75	66	75	65	74	88
Q7: The quality of teaching in this unit helps me to achieve the learning outcomes.	68	62	69	66	76	83
Q8: I am motivated to achieve the learning outcomes in this unit.	72	77	77	74	81	89
Q9: I make the best use of the learning experiences in this unit.	73	77	81	81	83	84
Q10: I think about how I can learn more effectively in this unit.	72	79	82	84	79	87
Q11: Overall, I am satisfied with this unit.	72	68	76	61	79	89

Table 4: A Comparison of the Semester 2, 2008 Accounting (Financial) 250 eVALUate results with the faculty and university eVALUate results: Percentage of Students who Agreed with the Item Statement

Student enrolments and response rates in Accounting (Financial) 250: Bentley Campus = 484 students, response rate of 39%; Miri Sarawak = 80 students, response rate of 43%; Sydney Campus = 100 students, response rate of 36%; UHK SPACE (Hong Kong) = 16 students, response rate of 31%.				
eVALUate Question	Location	Unit	CBS	University
Q1: The learning outcomes in this unit are clearly identified.	Bentley	94	89	88
	Miri Sarawak	91	89	88
	Sydney	92	89	88
	UHK SPACE	100	89	88
Q2: The learning experiences in this unit help me to achieve the learning outcomes.	Bentley	88	85	84
	Miri Sarawak	94	85	84
	Sydney	92	85	84
	UHK SPACE	80	85	84
Q3: The learning resources in this unit help me to achieve the learning outcomes.	Bentley	85	84	83
	Miri Sarawak	88	84	83
	Sydney	78	84	83
	UHK SPACE	100	84	83
Q4: The assessment tasks in this unit evaluate my achievement of the learning outcomes.	Bentley	92	84	84
	Miri Sarawak	88	84	84
	Sydney	92	84	84
	UHK SPACE	100	84	84
Q5: Feedback on my work in this unit helps me to achieve the learning outcomes.	Bentley	77	78	77
	Miri Sarawak	74	78	77
	Sydney	83	78	77
	UHK SPACE	100	78	77
Q6: The workload in this unit is appropriate to the achievement of the learning outcomes.	Bentley	87	86	85
	Miri Sarawak	85	86	85
	Sydney	92	86	85
	UHK SPACE	100	86	85
Q7: The quality of teaching in this unit helps me to achieve the learning outcomes.	Bentley	83	83	82
	Miri Sarawak	85	83	82
	Sydney	80	83	82
	UHK SPACE	100	83	82
Q8: I am motivated to achieve the learning outcomes in this unit.	Bentley	90	84	84
	Miri Sarawak	76	84	84
	Sydney	94	84	84
	UHK SPACE	100	84	84
Q9: I make the best use of the learning experiences in this	Bentley	81	85	85
	Miri Sarawak	88	85	85
	Sydney	94	85	85

unit.	UHK SPACE	100	85	85
Q10: I think about how I can learn more effectively in this unit.	Bentley	85	85	84
	Miri Sarawak	100	85	84
	Sydney	86	85	84
	UHK SPACE	80	85	84
Q11: Overall, I am satisfied with this unit.	Bentley	90	84	83
	Miri Sarawak	88	84	83
	Sydney	88	84	83
	UHK SPACE	100	84	83