Learning commercial computerised accounting programmes
Perceptions and motivations

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Abstract

Purpose – Practical accountving skills such as the ability to use commercial computerised accounting programmes (CCAP) is increasingly becoming expected of accounting graduates. To understand the impact of CCAP on learning, this paper aims to examine students' motivations for and perceptions about learning CCAP in two accounting subjects trialled in an Australian university.

Design/methodology/approach – A survey of students who completed the course was conducted twice, before training and assessment using CCAP and after completing the CCAP-based learning activity and the associated assessment task.

Findings – The results show that students demonstrate strong positive attitudes towards learning CCAP, and using CCAP elicits active student engagement in the learning processes. The findings also show room for further enhancement of student engagement by integrating CCAP learning tasks with teamwork and developing CCAP-based learning and assessment tasks suitable for higher-order learning outcomes.

Research limitations/implications – The survey respondents in this study are drawn from only one higher education institution in Australia and are predominantly an international cohort. This makes the conclusions of the study exploratory in nature and thus further studies are needed before generalising the conclusions.

Originality/value – By providing insights into student motivations to and perceptions about the use of CCAP in accounting curricula, the study sheds light on the potential of CCAP to enhance learning and aspects of consolidating the role of CCAP as a learning tool.

Keywords Accounting education, Curriculum design, Authentic learning, Learning processes, Commercial computerised accounting programmes

Paper type Research paper

1. Introduction

Many aspects of life are affected by the speed at which technology is moving. This movement has resulted in significant changes in working styles and the required knowledge and skills for professional positions. Using computers, processing electronic data and communicating electronic information is no longer an option but a "must do" function for individual practitioners. Accounting is one of the professions that has been significantly affected by the introduction of advanced hardware and software technology into its practices in recent decades. While the principles of the accounting process have not changed (at least significantly), the way in which accounting data are processed and communicated has changed dramatically. Thus, for all business students who have to study accounting as a part of their degree programmes, there is a concomitant need to be computer-literate in their subjects to gain skills relevant in a computerised environment.

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From the learning and teaching perspective, universities are required to prepare[1]
students for such a dynamic environment by creating authentic learning contexts
(Herrington and Oliver, 2000; Means and Olson, 1994). Lambert *et al*. (2008) argue that
universities' objective of producing graduates who are able to make a positive contribution
to the communities in which they live and work demonstrates that the offered business
courses should be based largely on a performative model. Handy *et al*. (2005) suggests that
the use of learning activities that would emphasise higher levels of learning could facilitate
students' achievements of these necessary skills and provide both a more satisfactory
educational experience for students and better-trained graduates for entry into the
profession.

Since the 1980s, there have been calls for changes in accounting education to respond to
changes in the business world (Stivers *et al*., 2011; Ferreira and Santoso, 2008; Montano *et al*.,
2004; Boyce, 1999; Saudagaran, 1996). Accordingly, accounting educators and the business
community must continuously identify up-to-date knowledge, skills and abilities necessary
for graduates to be successful in the business world. Shulman (2005, p. 53) believes that
pedagogy is important in professional education for two reasons; first, "the pedagogies of
professional schools must measure up to the standards not just of the academy, but also of
the particular professions". Secondly, he argues that "professional education is not
education for understanding alone; it is preparation for accomplished and responsible
practice in the service of others. It is preparation for good work". During the 2000s, in
Australia, the accounting professional bodies along with the business educational
institutions have responded to such changes by designing and implementing accreditation
programmes. Although stakeholders in Australia and internationally have recognised
the need for accounting graduates to have IT skills (Howieson, 2003), the use of
accounting software in accounting education was advocated as a more direct
requirement through accreditation systems of professional associations. The Institute
of Chartered Accountants in Australia and CPA Australia (2012, p. 1) in joint
accreditation guidelines state that the purpose of their accreditation programme is "to
promote improvements in accounting education quality". Consistent with this
approach, these professional bodies have required[2] inclusion of learning "[. . .] the use
of accounting software to record and report business transactions" (2012, p. 12) as one
of the core requirements in the accredited accounting programmes at both
undergraduate degree level and in postgraduate conversion programmes.

To deliver such a requirement, a common practice by Australian universities is to
incorporate the learning and assessment of a commercial computerised accounting
programme (CCAP) such as MYOB or QuickBooks in accounting course curricula. CCAP-
based learning and assessment tasks are intended to provide students with the opportunity
to complete authentic learning tasks to be completed using a computerised accounting
package. This approach can enable students to learn the relevance of theory in practical
contexts, and it is expected that incorporating such a learning environment in the
curriculum would enhance student-centred learning and improve graduate attributes. From
the teaching/learning perspective, the use of software to teach authentic tasks is supported
by constructivist learning theory, which promotes the learner's active engagement in the
learning process. In this regard, Biggs'(1996) concept of constructive alignment underscores
the need for taking intended learning outcomes as the starting point of curriculum
development and aligning learning and assessment tasks to the desired learning outcomes
(Treleaven and Voola, 2008; Walsh, 2007; Biggs, 1996; Biggs and Tang, 2007).

Despite the understanding of the need to incorporate CCAP in accounting curricula,
issues such as how to incorporate such task-oriented learning approaches in tertiary

accounting curricula remain yet to be explored. In particular, there is a need to address how CCAP influences student learning in light of the long-standing debate that tertiary education may need to focus on developing intellectual abilities of students as compared to a focus on vocational goals of training students on specific practical tasks (Harvey, 2000). While it is evident that both educators and professional bodies have made a significant contribution to curriculum design in accounting units, Andrews and Wynekoop (2004) believe students are the other main stakeholders that have a valid perspective on curriculum design. In other words, a comprehensive education process should reflect inputs from all main stakeholders in the education process. Learner's attitudes to learning approaches is crucial to the successful implementation of the approaches (Biggs, 1996). Understanding student expectations and perceptions on new teaching approaches is worthwhile because teaching/ learning and assessment strategies influence student learning behaviours, which in turn influence learning outcomes (Ferreira and Santoso, 2008; Biggs, 1996; Krause, 2005). The current study therefore seeks to evaluate students' perceptions and motivations concerning the use of CCAP to understand the impact of CCAP in student learning. The following research questions (RQs) are addressed:

RQ1. What are student expectations about learning CCAP in a tertiary accounting course?

RQ2. How do students perceive the effectiveness of CCAP-based learning and assessment in enhancing authentic learning?

In addressing the research questions, we draw on experiential learning theory, which explains that learning takes place when the learner relates abstract concepts to concrete experiences (Kolb, 1984; Menzies, 2012). The study illustrates that CCAP presents students with the opportunity to experience real-world-type accounting tasks and to practise classroom accounting knowledge. By doing so, the study contributes to better understanding of the role of CCAP in designing accounting curricula and identifying areas for further enhancing this teaching approach. It is expected that the results from this study will inform educators and professional bodies about the effectiveness, as far as students' motivation and perceptions are concerned, of the inclusion of CCAP as an integral part of accounting course curricula.

The remainder of the paper is organised as follows: In Section 2, the theoretical background and relevant literature are discussed, and the research methods are explained in Section 3. In Section 4, results of data analysis are presented and discussed, and the conclusions are presented in Section 5.

2. Theory and literature
2.1 Theoretical background
Experiential learning theorists conceptualise learning as "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984). Menzies (2012) argues that experiential learning is the process in which a student observes and integrates abstract concepts with concrete experiences, or placing a student in an environment in which the student can engage directly in the activity under study (Kolb and Kolb, 2005). The focus is on a transformation wherein knowledge is created through interaction rather than transmitted through, for example, lectures and readings about a concept. The student is directly involved in the experience to gain an understanding of the new knowledge and retain the information for a longer time (Menzies, 2012).

Biggs *et al.* (2001) note that many studies addressing the learning process are derived top-down from cognitive psychology, particularly information processing theories. They perceived this framework as inappropriate for such a context-dependent issue as student learning, where student strategy use is dependent on various factors such as students' values and motives, their perceptions of task demands, teaching and assessment methods, classroom climate and so on. Indeed, the idea of different student approaches to learning emerged from studies conducted by Marton and Saljo (1976a, 1976b). The concept was developed further during the 1980s and 1990s and became a meta-theory for conceptualising teaching and learning known as "Student Approaches to Learning" (SAL). Watty *et al.* (2010) explain that the SAL paradigm is mainly informed by two sub-theories: phenomenography theory (Biggs *et al.*, 2001; Marton, 1981) and constructivism (Prosser and Trigwell, 1999). The phenomenography view emphasises that what is learned is defined by students, not by teachers. From this theoretical perspective, the teacher's role is to provide opportunities for students to develop new understandings based on new learning activities. Constructivism emphasises that knowledge is constructed by students, not by a teacher's direct instruction. Therefore, the notion that students' perceptions are central to teaching and learning is recognised in both theoretical perspectives. Based on this notion, Watty *et al.* (2010) suggest that educators need to understand the influence of students' intention on the process of learning and to consider different ways of engaging students with deep learning by improving teaching, curriculum and assessment.

2.2 Experiential learning approaches in business disciplines
The idea of experiential learning theories can be found in the business education literature in different streams of business education research such as case teaching, service learning and use of computer simulations in teaching. Weil *et al.* (2001) consider the usefulness of a case study in teaching as perceived by students of an advanced management subject in a South African university. Their overall finding is that according to students' perceptions, the use of a case study enhances student learning. They concluded that the major perceived benefit of the use of a case study is the way in which it exposes students to the real world. Similarly, Ballantine and Larres (2004) underscore the perceived benefits of using case studies to develop generic skills based on a study of an experience in a management accounting subject in Queen's University in Belfast. They found that cognitive benefits were rated higher than either affective benefits or skills development. Consistent with the Weil *et al.* (2001) study, an important conclusion is that a case study is perceived as a tool that informs students of the complexity of the real world.

Service learning is another approach used to link practical contexts to the classroom. Rama (1998) argues that service learning provides students with a context to reinforce the application of technical knowledge to understand real-world problems. Service learning is defined as an instructional technique that supplements formal classroom education with real-life experiences. Chiang (2008) examines the integration of a service-learning project into a management accounting subject. Her study was based on a questionnaire survey of students' feedback on a project completed during a semester. She concluded that community projects reconnect universities with their communities and, at the same time, offer learning opportunities that go beyond the classroom.

Computer simulations are used as another approach to create opportunities for experiential learning. Lambert *et al.* (2008) investigate the perception of the effectiveness of a simulated treasury dealing room for teaching and learning from the students' point of view. They suggest that assessment tasks should encourage students to make links between subjects studied, and focus on applying knowledge in practical scenarios. In line with this

view, they believe this can be achieved through case studies and business games. They surveyed students at two different times, one at the commencement of the new learning approach and another at the end of the learning tasks and associated assessment. They reported that students believed that the dealing room improved students' opportunities to apply the theory they had learned and, in doing so, to develop relevant skills.

Despite the clear differences among these three approaches, the common thread that connects them is the notion that these teaching/learning approaches are underpinned by the need to create authentic learning contexts. The use of CCAP in the present study shares a common interest with the above approaches in that CCAP-based learning of accounting provides students with the opportunity to complete real-world-type business transactions using a commercial accounting software package. Students' perceptions of teaching/ learning have behavioural consequences regarding the learning approaches they adopt, which in turn influence learning outcomes (Ferreira and Santoso, 2008; Lancaster and Strand, 2001). Furthermore, assessment enhances learning through reflection and feedback (Biggs, 1996; Dochy and McDowell, 1997). The idea of constructive alignment, i.e. integrating learning, instruction and assessment in curricula, has been practised as an essential mechanism to foster learning (Biggs *et al.*, 2001).

2.3 Students' motivations, perceptions and learning strategies

The investigation of accounting students' perceptions of teaching and learning has been the subject of numerous prior studies. Studies have investigated inter alia the relationship between students' perceptions on various learning issues such as effectiveness of the teaching/learning methods, students' academic performance and learning outcomes (Ballantine and Larres, 2004; Chiang, 2008; Ferreira and Santoso, 2008; Lambert *et al.*, 2008; Watty *et al.*, 2010; Weil *et al.*, 2001).

Higher education teaching methods have changed over the past two decades, giving emphasis to student-centred learning. Lea *et al.* (2003, p. 324) sum up the role of students' attitudes and perceptions towards student-centred learning as follows:

Researching student expectations, attitudes and perceptions is, therefore, important for at least two reasons. First, the process of learning and teaching should take account of student needs and expectations. As noted, it needs to be fundamentally student-centred rather than teacher-centred. Second, the move from an "inside out" to an "outside in" approach should have an indirect impact on admission and retention statistics. Students will be both attracted to and more inclined to stay with a course that meets their learning needs.

This point underscores the need for a student-centred teaching/learning model. The success of such a model is highly dependent on students' motivations, learning strategies and their engagement. Montano *et al.* (2004, p. 192) argue that:

a student's attitude is closely related to the perceived functionality of knowledge. This implies that the student will gain a greater understanding of the contents of a subject if he/she perceives links to reality and the transfer of ability to solve "real world" problems.

Paulsen and Gentry (1995) developed an holistic model of student motivation that is affected by three factors:

(1) the value students place on the task; referring to the value of an academic task in terms of students' orientation and task value perceptions;

(2) the student expectations of task success; referring to students' perceptions of the probability of their success in an academic task; and

(3) the affect, i.e. relating to the emotional responses or level of anxiety to a particular academic task.

Paulsen and Gentry (1995) define learning strategies as the behaviours and thoughts that students use to select, organise and integrate new information with their existing knowledge. They classify all learning strategies into two categories:

(1) cognitive strategies, i.e. rehearsal, organisation and elaboration; and

(2) self-regulatory strategies, i.e. meta-cognition and resource management.

In their study, Paulsen and Gentry (1995) conclude that students need both the motivated will and strategic learning skills to be successful in their studies. The theory and literature presented in this section of the paper suggests that there is a link between students' perceptions, motivation and learning strategies.

3. Research method

3.1 The sample

The learning and assessment of CCAP is part of the curriculum of a first-year accounting subject in both undergraduate (UG) degrees and postgraduate (PG) conversion accounting programmes at a large university in Melbourne, Australia. The target population for the sample were students enrolled in these undergraduate and postgraduate accounting subjects. A sample of 175 students (PG 100; UG 75) attended the pre-survey (Time 1) and after elimination of 3 incomplete questionnaires, 172 valid responses were available. The post-survey (Time 2) was attended by 154 students (PG 106; UG 48) and 150 were determined to be valid.

3.2 The QuickBooks/MYOB learning and assessment task employed

The CCAP case study was explained to students as a part of the summative assessment task via the course guide at the start of the trimester. The course guide also explains this assessment task as a learning tool which enables students to apply their general-purpose financial reporting knowledge to recognise financial transactions, record these transactions into a computerised accounting programme (QuickBooks/MYOB) and prepare general-purpose financial statements. This assessment task was an individual assignment worth 20 per cent of total mark for the course and was due in the ninth week of an 11-week trimester. Students were also advised that the QuickBooks/MYOB software is an academic edition and they cannot record more than 650 transactions, and they need to purchase a full version of the software if they wanted to continue using the software.

The QuickBooks/MYOB software packages are user-friendly and do not necessarily call for official training. Thus, students were advised to work out the software by themselves or work closely with their classmates in groups, listen to previously recorded sessions (iTutorial) under the course resources provided online or attend face-to-face tutorial sessions (of 80 minutes duration) that introduce the software by Accredited Trainers. During the first eight weeks of the trimester, the lecturer/tutor focused on teaching accounting topics dealing with recording transactions and producing reports without reference to CCAP. The assessment task (QuickBooks/MYOB) required students to apply knowledge covered in the eight weeks by recording transactions provided and preparing general-purpose financial statements.

3.3 The survey instrument

Two questionnaires were used to gather and assess the views of accounting students with respect to their motivations for and perceptions about learning CCAP as a part of the accounting course. The surveys were conducted at two different times, prior to applying the programme "Time 1", and then after completion of the assessment task "Time 2" (see the questionnaires in the Appendices 1 and 2). Both questionnaires contained two sets of questions. Part 1 in each questionnaire consisted of demographic questions about age, gender, level of current study and work experience. Part 2 consisted of 11 questions in three sub-categories of:

(1) learning strategies;
(2) computer and information systems competencies; and
(3) technical accounting skills, knowledge and understanding.

Data on students' learning strategies were generated by asking students to evaluate five items:

(1) learning is largely instructor-centred, i.e. the lecturer talks and I listen;
(2) there have been limited opportunities for me to apply the theory I have been taught;
(3) I have learned more from tutorial/seminar/laboratory problems than I have from lectures;
(4) learning from working in a group is more effective than learning on my own; and
(5) I am able to monitor how effective my learning is, in any unit, for myself.

The first three questions focused on measuring students' opinion on learning strategies. Questions (4) and (5) concern the effectiveness of the CCAP-based learning measured in terms of group versus individual learning.

The second category, computer and information systems competencies, comprised two items:

(1) I think the QuickBooks/MYOB case study provides a valuable contribution to my learning; and
(2) I have the resources I need to help me learn about how to process accounting data in a computerised accounting information system.

The third category, technical accounting skills, knowledge and understanding, contained three statements:

(1) I am well-prepared for work in an organisation which uses a computerised accounting programme to record accounting transactions;
(2) I do not feel anxious about recording thousands of dollars of accounting transactions; and
(3) I am prepared for employment, and managing basic accounting process.

Question 11 is a general question about students' expectation of CCAP.

The study used five-point Likert-type scales, with 1 for "strongly disagree" and 5 for "strongly agree" as anchors. The questionnaires were adapted from a similar study by Lambert *et al.* (2008) that also examined students' points of view about a teaching/learning approach to incorporate real-world experiences in teaching.

4. Results of the study

4.1 Demographic information
The demographic data presented in Table I show 81.4 and 13.7 per cent of the respondents were in the age categories of 17-25 and 26-30 years, respectively. The remaining were placed in 31-35 years or older age categories (4.1 per cent), while the rest (0.9 per cent) did not respond to the question referring to age. Overall, 43.9 per cent of the respondents were male and 56.1 per cent were female. Overall, 81.6 per cent of the students who participated in both surveys were international students and 16.2 per cent were Australian citizens and Australian permanent residents. One demographic question was included about respondents' work experience. The results indicate that over 47 and 45 per cent of the respondents, respectively, in Time 1 and Time 2 surveys had work experience.

4.2 Student expectations of and perceptions about CCAP learning
The remaining 11 questions were designed to obtain information about the students' perceptions of the effectiveness of learning CCAP as an integral part of the accounting course. Results are reported in Table II below. As a general question[3], students were asked to identify their expectations of the CCAP. Three major themes were observed:

(1) to be able to apply accounting knowledge in the real world (learning from it);

(2) to be familiar with a CCAP; and

(3) doing it only because it was the subject requirement.

In the Time 1 survey, for 115/172 (66.9 per cent) of the respondents, one of their expectations was to be able to apply accounting knowledge in the real world. A large number of respondents, 110 (64 per cent), expected to become familiar with a computerised accounting

Demographic characteristics	Categories	Time 1 No. (%*)	Time 2 No. (%*)
Level of study	Undergraduate	74 (43)	46 (30.7)
	Postgraduate	98 (57)	104 (69.3)
		172 (100)	*150 (100)*
Age category	17-25	139 (81.8)	123 (82.5)
	26-30	26 (15.2)	18 (12.1)
	31-35	3 (1.8)	5 (3.3)
	36-40	0 (0)	0 (0)
	Over 41	2 (1.2)	3 (2)
		170 (100)	*149 (100)*
Gender	Male	79 (46.2)	61 (41.2)
	Female	92 (53.8)	87 (58.8)
		171 (100)	*148 (100)*
Residency status	Australian**	29 (16.9)	23 (15.4)
	Student visa	140 (81.9)	121 (81.4)
	Other	2 (1.2)	5 (3.4)
		171 (100)	*149 (100)*
Work experience	Yes	80 (47.6)	68 (45.9)
	No	88 (52.4)	80 (54.1)
		168 (100)	*148 (100)*

Note: *Missing items are not included, **Australian citizen and permanent resident

Table I.
Demographic results

Table II.
Descriptive statistics of student motivation and perceptions about CCAP learning and assessment

| | Percentage of responses to five scales of agreement or disagreement | | | | | | | | | | | | | | | | | Mann-Whitney, Z Asymp. sig. (2-tailed) | |
| | Strongly disagree (1) | | Disagree (2) | | Neutral (3) | | Agree (4) | | Strongly agree (5) | | Mean | | Median | | | |
Question	Survey 1	Survey 2	Survey 1	Survey 2	Survey 1	Survey 2	Survey 1	Survey 2	Survey 1	Survey 2	Survey 1	Survey 2	Survey 1	Survey 2	Survey 1	Survey 2
Q1	1.2	2.0	10.1	10.1	23.8	23.0	45.8	48.6	19.0	16.2	3.714	3.669	4.00	4.00	−0.366	0.714
Q2	1.8	3.4	20.7	23.0	31.4	34.5	34.9	30.4	11.2	8.8	3.331	3.182	3.00	3.00	−1.302	0.193
Q3	0.0	1.4	16.3	10.8	33.7	38.5	36.1	33.8	13.9	15.5	3.476	3.514	3.50	3.00	−0.354	0.723
Q4	4.2	2.7	10.1	9.4	23.2	26.8	33.3	36.2	29.2	24.8	3.732	3.711	4.00	4.00	−0.411	0.681
Q5	1.2	0.0	8.9	4.0	26.8	32.2	53.6	54.4	9.5	9.4	3.613	3.691	4.00	4.00	−0.467	0.640
Q7	0.0	1.3	1.2	0.7	11.8	16.1	53.8	49.7	33.1	32.2	4.189	4.107	4.00	4.00	−0.726	0.468
Q8	0.0	1.3	0.6	2.0	28.0	17.4	50.0	57.0	16.1	22.1	3.762	3.966	4.00	4.00	−2.539	0.011
Q9	0.6	0.00	16.1	6.0	33.9	31.3	35.7	40.7	13.7	22.0	3.458	3.787	3.000	4.00	3.041	0.002
Q10	0.00	0.7	15.4	7.4	32.5	30.4	37.9	40.5	14.2	20.9	3.509	3.736	4.00	4.00	−2.188	0.029
Q11	0.6	0.0	10.1	5.5	32.1	34.2	38.1	39.0	19.0	21.2	3.649	3.760	4.00	4.00	−0.923	0.356

information system, and only 14 (8.1 per cent) responded that they would do it only because it was a subject requirement.

In the Time 2 survey, a majority of the respondents (124/150, 82.7 per cent) believed that their expectations from the CCAP were fully met (satisfied with their learning from the programme). This satisfaction rate indicated strong positive attitudes towards the inclusion of such material in the accounting subject. Postgraduate students showed a slightly greater satisfaction rate at 92.6 per cent compared to the undergraduate students at 87.8 per cent. Similar results about meeting expectations were observed in a comparison between students with work experience and students with no work experience. Those with work experience and those with no work experience demonstrated 93.8 and 88.0 per cent satisfaction levels, respectively. Overall, the responses indicate a high level of satisfaction with the CCAP. The slightly better rating of students with experience suggests that this cohort of students may relate the CCAP learning tasks to the real-world practices better than students without practical experience.

Similarly, qualitative feedback collected from students shows that the students had positive attitudes towards CCAP learning and assessment. The following selected comments highlight the perceptions:

It was a really a good experience to use one of the Australian accounting software.

I very much enjoyed the practical nature of the QuickBooks assessment. I felt that this was well structured and delivered and a very useful learning experience.

The most useful thing for me is to learn how to use QuickBooks in accounting. It is a good beginning for the students without any accounting background.

These comments illustrate that the students positively perceived the value of CCAP in the learning process, and this in turn suggests that CCAP could positively influence the learning behaviour of students. Respondents highlighted the role of this teaching approach in exposing students to the authentic learning context. The following comments are selected as representative:

After the study of this course, we may handle practical accounting work.

The unit has given us the basic knowledge of accounting in theory as well as practice through the QuickBooks assignment.

[. . .] helped us to manage QuickBooks skill, which is very useful and practical for our future job searching.

Furthermore, the qualitative feedback from the students highlights that some aspects call for further improvements such as "more training or classes should be provided for learning to use QuickBooks", and "QuickBooks Assignment was not fully integrated with the content of the unit, it was just focused on the steps shown in the tutorial". While the first comment suggests the need for fully streamlining CCAP learning tasks into the unit, the second one has far-reaching insights. That is CCAP could be integrated more fully to the unit instead of merely using it as an assessment task on recording of transactions and production of financial statements. This can be done by integrating CCAP with a case study that addresses more analytical learning outcomes such as financial analysis.

4.3 CCAP and learning strategies

Table II presents the statistical results of student attitudes before and after completion of the CCAP assessment task. The proportion of students who agreed or strongly agreed that learning was largely instructor-led remained constant in both surveys (Q1, Part 2). In Question 2, students were asked whether they had been given opportunities to apply the theory they have learned. The results indicate that 46.1 per cent of the respondents agreed or strongly agreed with the proposition in the Time 1 survey as having limited opportunities, and this dropped to 39.2 per cent in the Time 2 survey. It appears that the CCAP task had a visible effect on student perceptions that they have been given adequate opportunities to learn about the application of theories in practice. The qualitative comments highlighted above also confirm this finding.

The third question asked students whether they learn more from computerised accounting practices than from lectures. The responses show 50 and 49.3 per cent agreed or strongly agreed and 33.7 and 38.5 per cent were neutral regarding the statement in the Time 1 and Time 2 surveys, respectively. While the overall level of agreement fell slightly in the Time 2 survey, the results indicate that students perceive that they learn more from CCAP practices than they do from lectures. A further question (Q4) targeted perceptions of the comparison between effectiveness of learning in a group and learning solo. In the Time 1 survey, 62.5 per cent of the respondents agreed or strongly agreed that learning in a group was more effective than individual activities. In the Time 2 survey, this overall perception remained relatively constant (agree or strongly agree, 61 per cent).

The question of "whether students are able to monitor the effectiveness of their learning" (Q5) resulted in agree or strongly agree of 63.1 and 63.8 per cent in the Time 1 and Time 2 surveys, respectively. This pattern of responses suggests a strong majority of students believe that they can monitor the effectiveness of their learning. This outcome suggests that the CCAP had no precise impact on perceptions of the monitoring of effectiveness as a part of the student learning strategies.

4.4 Using CCAP as a required assessment

In questions about the CCAP learning tasks, Question 7 asked students whether they believe that CCAP provides a valuable contribution in their learning. In the Time 1 survey, 86.9 per cent of the students agreed or strongly agreed with the statement, whereas in the Time 2 survey, this rate fell to 81.9 per cent. Despite the decline in the Time 2 survey, the results indicate a strong belief about the contribution of such material to student learning.

In Question 8, students were also asked whether they believe that they have the resources needed to help them to process accounting data in a computerised accounting information system. In the Time 1 survey, 66.1 per cent agreed or strongly agreed with the statement, and in the Time 2 survey, 79.1 per cent agreed or strongly agreed with the statement. The difference between the Time 1 and Time 2 surveys is statistically significant at the 5 per cent level ($p = 0.011$). This result suggests that students believe that they have the necessary resources to learn about the accounting process within a computerised accounting information system. In other words, after the CCAP case was completed, a larger portion of students believed that CCAP provides them opportunities to learn in a computerised accounting environment.

4.5 The role of CCAP in fostering knowledge, understanding and skills

In the area of knowledge, understanding and skills, students were asked (Q9) whether they believe that they are well-prepared for work in an organisation which uses a

computerised accounting programme. While in the Time 1 survey, only 49.4 per cent agreed or strongly agreed with the statement, in the Time 2 survey, the relevant level increased to 62.7 per cent. The variation in responses is statistically significant at the 1 per cent level ($p = 0.002$). This result demonstrates a relatively high level of confidence and preparedness for professional work by students after completion of the CCAP assessment task. Students were then asked (Q10) whether they are comfortable (do not feel anxious) about recording significant (high currency value) accounting transactions. Student agreement increased from 52.1 per cent in the Time 1 survey to 61.4 per cent in the Time 2 survey. The difference is statistically significant at the 5 per cent level ($p = 0.029$). This response indicates the significant effect of CCAP on students' level of professional confidence. In Question 11, students were asked whether they believe they have been adequately prepared for employment in a computerised environment and in managing basic accounting processes. The proportion of respondents who agreed or strongly agreed with the statement in the question increased from 57.1 per cent in the Time 1 survey to 60.2 per cent in the Time 2 survey.

5. Conclusion
This paper has examined students' motivations for and perceptions about learning CCAP in an accounting subject trialled in an Australian university. It also explored student perceptions regarding the impact of CCAP in student learning. The model adopted is to assign software learning activities as an independent student learning and mandatory assessment task. Generally, the results show that students have positive attitudes towards learning CCAP. A large majority of students (above 80 per cent) believed that a CCAP learning and assessment provides a valuable contribution to their learning. The study also found that students experienced a significant improvement in their confidence in learning how to process accounting data in a computerised accounting environment after completing learning and assessment tasks using CCAP. Similarly, students gained confidence in their preparedness for work in a computerised organisation. The findings are consistent with the literature on authentic learning activities and the role of assessment as a tool to enhance learning.

The results have implications to accounting educators. First, the study shows that accounting academics can usefully use CCAP to support learning without the need to purely focus on vocational goals. CCAP could in fact be used as a tool to promote authentic experiences. Second, the study offers insights that enable further harnessing of the potential of the CCAP to enhance learning. Group learning activities seem to work to harness the role of CCAP in promoting authentic learning (Lancaster and Strand, 2001). Furthermore, designing CCAP-based learning activities with more analytical problem-based learning activities to address higher-order learning goals will benefit the learning process. Integrating CCAP with the case study approach could enable achieving this goal.

This study has some limitations that need to be taken into account in considering the results. The first relates to inherent methodological limitations of questionnaire survey. That is, although much relevant information was gathered, the survey instruments are unlikely to capture every relevant variable that could have influenced the students' perceptions and motivations (Montano *et al.*, 2004). The second limitation arises from the anonymity of the questionnaires. It was not possible to identify the respondent and match the responses in "Time 1" and "Time 2". This study was also limited by the population surveyed. Although the cohort surveyed comprised both domestic and international students, the survey respondents in this study were from two subjects in a higher education institution in Australia. Also, they were predominantly an international cohort. The

limitations create opportunities for further research in this area. For instance, one possibility is to usefully address the mix of domestic and international students to determine whether students from different regions hold different perspectives of the contribution to their business education of learning a CCAP. In addition, the study could be replicated in other jurisdictions to determine whether similar results hold in other contexts to provide empirical evidence to inform educators in the designing of curricula.

Notes

1. Here the verb "educate" is used as a reference to the concept of "inform" and the verb "train" is used as a reference to the concept of "instruct".

2. The requirement is advised under Section 3 of the accreditation guideline.

3. Question 6 of Part 2 in the Time 1 survey became Question 1 of Part 2 in the Time 2 survey. The question had three options regarding students' expectations for the case study. The respondents were allowed to select more than one option (see the discussion in Section 4.2).

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Further reading

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Appendix 1

Set 1

Part One:

1. What is the level of your current study? ☐

Undergraduate ☐
Please specify name of the program you are enrolled in ……………………......................
Postgraduate ☐
Please specify name of the program you are enrolled in……………………….......................

2. Please indicate your age category?

(i)   17-25   ☐
(ii)   26-30   ☐
(iii)   31-35   ☐
(iv)   36-40   ☐
(v)   Over 41   ☐

3. Are you male or female?

Male ☐
Female ☐

4. What is your residency status? (Please tick one).

(i)   Australian Citizen   ☐
(ii)   Australian Permanent Resident   ☐
(iii)   Student Visa   ☐
(iv)   Working Visa   ☐
(v)   Other (please specify the type of Visa)   ☐

If you are a non-Australian please specify your country of nationality (e.g. China, India, Indonesia, Germany, New Zealand, Thailand, etc.)

_____

5. Do you have any work experience? (Please circle the appropriate answer).

Yes / No

If your answer is 'No' please continue with the questions in part two.

6. Have you previously worked with any computerised accounting program?

Yes/ No

Part Two:
Thinking about the units you have completed to date in your 'program', please indicate your agreement or otherwise with the following statements by ticking the appropriate box:

Statement	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
LEARNING STRATEGIES					
1. Learning is largely instructor-centred i.e. the lecturer talks and I listen					
2. There have been limited opportunities for me to apply the theory I have been taught					
3. I have learnt more from tutorial/seminar/laboratory problems than I have from lectures					
4. Learning from working in a group is more effective than learning on my own					
5. I am able to monitor how effective my learning is, in any unit, for myself					

Thinking about the QuickBooks/MYOB case study which you are about to complete:

6. What are your expectations for this case study (if any)?
e.g.
- to be able to apply my accounting knowledge in the real world. ☐
- to make myself familiar with a computerised accounting information system. ☐
- to complete this case study only because this is a required assessment of the unit ☐

Add any comments you wish to make to clarify your answer.

Thinking about your knowledge and skills NOW, before you complete the QuickBooks/MYOB case study:

Please indicate your agreement or otherwise with the following statements by ticking the appropriate box: **Statement**	**Strongly agree 5**	**Agree 4**	**Neutral 3**	**Disagree 2**	**Strongly disagree 1**
QUICKBOOKS/MYOB CASE STUDY					
7. I think the QuickBooks/MYOB case study provides a valuable contribution to my learning					
8. I have the resources I need to help me learn about how to process accounting data in a computerised accounting information system.					
KNOWLEDGE, UNDERSTANDING AND SKILLS					
9. I am well prepared for work in an organisation which uses a computerised accounting program to record accounting transactions					
10. I do not feel anxious about recording thousands of dollars of accounting transactions.					
11. I am prepared for employment, and managing basic accounting process					

Appendix 2

Set 2

Part One:

1. What is the level of your current study? ☐

Undergraduate ☐

Please specify name of the program you are enrolled in…………………….......................

Postgraduate ☐

Please specify name of the program you are enrolled in…………………….......................

2. Please indicate your age category?

(i)	17-25	☐
(ii)	26-30	☐
(iii)	31-35	☐
(iv)	36-40	☐
(v)	Over 41	☐

3. Are you male or female?

Male ☐

Female ☐

4. What is your residency status? (Please tick one).

(i)	Australian Citizen	☐
(ii)	Australian Permanent Resident	☐
(iii)	Student Visa	☐
(iv)	Working Visa	☐
(v)	Other (please specify the type of Visa)	☐

If you are a non-Australian please specify your country of nationality (e.g. China, India, Indonesia, Germany, New Zealand, Thailand, etc.)

……………………………………………………………………………………..

5. Do you have any work experience? (Please circle the appropriate answer).

Yes / No

If your answer is 'No' please continue with the questions in part two.

6. Have you previously worked with any computerised accounting program?

Yes/No

Part Two:

Thinking about QuickBooks/MYOB case study you have just completed:

1. Were your expectations for this case study (if any) fully met?	**Yes:**		**No:**	

- to be able to apply my accounting knowledge in the real world ☐
- to make myself familiar with a computerised accounting information system ☐
- to complete this case study only because this is a required assessment of the unit ☐

Add any comments you wish to make to clarify your answer.

Please indicate your agreement or otherwise with the following statements by ticking the appropriate box:

Statement	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
LEARNING STRATEGIES					
2. Learning is largely instructor-centred i.e. the lecturer talks and I listen					
3. There have been limited opportunities for me to apply the theory I have been taught					
4. I have learnt more from tutorial/seminar/laboratory problems than I have from lectures					
5. Learning from working in a group is more effective than learning on my own					

Statement	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
6. I am able to monitor how effective my learning is, in any unit, for myself					
Please indicate your agreement or otherwise with the following statements by ticking the appropriate box: **Statement**	**Strongly agree 5**	**Agree 4**	**Neutral 3**	**Disagree 2**	**Strongly disagree 1**
QUICKBOOKS/MYOB CASE STUDY					
7. I think the QuickBooks/MYOB case study provides a valuable contribution to my learning.					
8. I have the resources I need to help me learn about how to process accounting data in a computerised accounting information system.					
KNOWLEDGE, UNDERSTANDING AND SKILLS					
9. I am well prepared for work in an organisation which uses a computerised accounting program to record accounting transactions					
10. I do not feel anxious about recording thousands of dollars of accounting transactions.					
11. I am prepared for employment, and managing basic accounting process					

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