Use of Resources, People and Approaches by Accounting Students in a Blending Learning Environment

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Keywords

Blended learning, first-year experience, student diversity, flexible delivery, student experience, teaching practice

Introduction

Higher education is evolving in response to rapid technological advances and increasing levels of internet use, as well as internal and external policy developments that encourage greater inclusion and flexibility in the sector. Many units (subjects) taught at university include a face-to-face component, but it is now common for units to be offered in a variety of modes using a range of printed, online and interactive resources. This combination of traditional face-to-face approaches with online and other modes is commonly referred to as *blended learning* (Singh 2003; Verkroost et al. 2008).

The term "blended learning" implies mixing or combining different types of learning experiences. However, definitions in the literature vary in scope and focus. Narrow definitions involve a "blend" of two modes of delivery – usually face-to-face teaching and some form of technology. In this context, blended learning has variously been defined as situations combining face-to-face with computer mediated instruction (Graham, Allen & Ure 2005; Graham 2006); text-based asynchronous internet technology (Garrison & Kanuka 2004); e-learning (Schweizer, Paechter & Weidenmann 2003); online learning experiences (Garrison & Vaughan 2008); and online contexts (Ginns & Ellis 2007). Singh (2003) stated that blended learning combines multiple delivery media, and is often "a mix of traditional instructor-led training, synchronous online conferencing or training, asynchronous self-paced study, and structured on-the-job training..."(p. 51). In contrast, other authors, such as Inglis et al. (2011), have described blended learning as providing students with an array of resources from which they choose the most effective to achieve their desired learning outcomes. Verkroost et al. (2008) similarly described blended learning as "the total mix of pedagogical methods, using a combination of different learning strategies, both with and without the use of technology" (p. 501). The current study adopts a broad definition, proposing that blended learning is the combination of face-to-face, online, print-based and other resources available to students that enables *multiple* pathways to engagement with the content of a course.

Blended Learning or Blended Teaching?

Thoughtful design of blended-learning courses is important (Stacey & Gerbic 2009), and many previous studies have tended to focus on the design of such courses. However, courses are often so highly structured that students must use specific resources offered in a specific mode to achieve the course requirements. For example, Verkroost et al. (2008) created a first-year course design that was highly structured and, while it used a variety of resources and methods, each component was restricted to a particular mode of delivery chosen by the teacher. Oliver and Trigwell (2005) assert that this type of highly structured blended-learning environment is perhaps more aptly named "blended teaching", and comment that blended learning is rarely from the perspective of the learner. What is offered to the learner and how resources should best be blended are decided by the teacher, often for sound pedagogical reasons, but students may have little choice. They argue that for learning to truly be called "blended", there needs to be more emphasis on the learner perspective. De George-Walker and Keeffe (2010) go further, arguing that "it is not the role of the teacher to prescribe the nature of the blend but to develop courses with multiple means of representation, expression and engagement and to scaffold and support students in the creation of their own individual blend" (p. 12).

Much of the evaluative literature on blended learning focuses on comparative studies that contrast different delivery modes such as online versus blended, face-to-face versus blended and distance versus blended (e.g. Cybinski & Selvanathan 2005; De George-Walker & Keeffe 2010; Dowling, Godfrey & Giles 2003; Roach & Lemasters 2006; Samarawickrema 2005; Schweizer et al. 2003).

Arbaugh et al. (2009, p. 83) consider that there is "potential to gain new insights regarding process and mix", and call for more studies that examine the entirety of the course experience. Bliuc, Goodyear and Ellis (2007), in their review of studies into blended learning, call for more "research into blended learning that focuses on the *combination* and *integration,* rather than the *contrasting"* (p. 232). This call is yet to be addressed, with Inglis et al. (2011) observing that future research should focus on the choice of blends students make when presented with a large range of options.

Some studies have attempted to address student perceptions of blended learning (e.g. de Lange, Suwardy & Mavondo 2003; Love & Fry 2006; Osgeby 2012) using focus groups or questionnaires to gather feedback on students' overall view of the concept. However, they did not address the learner perspective of what and how to blend. Benckendorff (2007) recognises the need to examine students' preferences concerning flexible or blended learning, and explores what business students would *like* to see offered in a hypothetical blended course. He calls for future studies to recognise that blended learning is not limited to types of delivery or teaching, "but includes a broad range of learning opportunities that a student might access and control" (Benckendorff 2007, p. 2). This means that it is important to focus on learners and their learning within the context of their situation, not merely in the context of the unit design.

There is increasing recognition of the need for further research in these directions. Bonk, Kim and Zeng (2006) predicted that "as options for blended learning proliferate, blended learning will increasingly address individual needs while becoming a highly complex decision making process" (p. 563). What and how things are blended will be up to the learner, who will need to self-regulate his or her own learning in what will potentially be a complexly structured and choice-rich environment. Blended learning offers a range of resources and flexibility, but students' success depends on their ability to connect with these resources in a constructive and meaningful way.

Research Question

Further research is needed that explores how students choose to blend and integrate resources offered to them. As Inglis et al. (2011, p. 490) assert, "What remains poorly understood is the overall pattern of study choices made when students are presented with many options. That is, are there individual differences in the range of study resources adopted by students?" This paper documents patterns of resource use that students choose and integrate in a first-year accounting unit. It was motivated by perceived low rates of lecture attendance, lack of communication or consultation with the lecturer and lack of online discussion or questions. This raised concerns about what students were actually doing to progress through the unit. Specifically, this study asks what resources accounting students rely on in a student-centred blended-learning environment.

The student cohort involved in this study was undertaking a compulsory, first-year accounting subject in the second semester. This subject was offered in both semesters, with the first semester traditionally being the main intake. The course design adopted constructive alignment principles to integrate face-to-face teaching with other resources in a blended environment, thereby enhancing intended learning outcomes (Biggs & Tang 2011). Face-to-face lectures, workshops and tutorials were offered throughout the semester, and lectures were also recorded and available online. In line with a "community of inquiry" approach to blended learning (Garrison & Vaughan 2008), groups were formed during tutorials, and although assessment was not group-based, students were encouraged to use their group members as a resource outside of formal face-to-face times. There was a dedicated online learning-management system (LMS) for the unit, and students were encouraged to interact with the lecturer, peers and materials on a regular basis. For example, written questions concerning content, learning materials and assessments would only be addressed

if posted on the LMS system and not through email. Specific discussion boards were created to encourage peer support and interaction. The online site was designed and organised to avoid simply being a repository for materials that first-year students in particular, may find "confusing and prohibiting" (Love & Fry 2006). The students had a textbook as well as various materials such as lecture slides, tutorial and workshop questions and worked examples, which were available in printed form and online. Students were offered advice on the use and benefits of various resources available in the course. However, apart from assessments, no aspect of the course was compulsory. Students could choose what resources they used and how and when they used them.

Bliuc et al. (2007) argued that educators need to understand "how to help students integrate the various learning experiences that come their way" (p. 232). As suggested by Arbaugh et al. (2009), the aim of the current study is to look at the entirety of the students' experiences by asking students about the unit resources, along with other resources they may have accessed beyond those provided by the unit coordinator. This included the internet, other texts and people (employers, family, classmates, friends and peers in the subject, and those who had previously completed the course or who worked in accounting).

This study extends the current literature on blended learning. First, it focuses on the students' choice of blend (blended learning), rather than a teacher-selected combination given to students (blended teaching). Second, it differs from the many comparative studies in the blended-learning literature that contrast different modes of delivery; instead, it takes a more holistic view, considering each student in the unit and the resources they individually used. Finally, by examining a wide variety of resources and learning opportunities, the study explores patterns of usage not previously investigated.

Method

This study employed a descriptive approach and used a self-administered delivery and collection questionnaire (Saunders, Lewis & Thornbill 2007), where first-year undergraduate students who attended the final revision lecture (of the semester) were handed a questionnaire and asked to return it to the front of the classroom when complete. Participation was voluntary and completion of the questionnaire provided the necessary consent. Importantly, the two researchers involved in teaching this unit were not present while the questionnaire was being administered, adding to the internal validity associated with confidentiality and trust, and eliminating any potential perception of subordination (Frazer & Lawley 2000). The final lecture had higher attendance than had been observed earlier in semester. The completed surveys were kept in a sealed envelope until after results for the unit had been finalised.

The Cohort and Participants

The 55 participants for the study were part of the alternate (second) semester cohort of 88 undergraduate students studying introductory accounting, a core unit in the Business degree at an Australian university. The cohort were unusual, with almost one half (41%) admitted to the unit with a probationary or at-risk status. Furthermore, 22% were repeating the unit and 38% were full-fee-paying international students. While most students had begun their 2011 study in semester one, 30 were "semester-two starters". Over three-quarters of the students (77%) were enrolled in the Bachelor of Business degree.

The cohort was slightly male dominated (53%) although more females participated in the study (57%). Consistent with the overall cohort, 82% of the participants in the study were aged 25 and under, although 56% did not come directly to university from secondary school (year 12).

The Survey Instrument

Quantitative survey data was collected to enable us to build an accurate profile of how students combine and integrate learning opportunities and resources in a student-blended setting. The questions were developed to collect data relating to the resources offered by this unit; specifically, how much the students relied on particular resources and how they used them in the context of other people and classes. Three questions were used to identify what resources and study approaches students relied on (Appendix 1). The first question related to class attendance and engagement with others. This question comprised 15 individual items involving resources such as lecture attendance, discussions with others and online interactions. The second question related to materials used and contained 16 items. These items included using worked solutions and reading the textbook. The third question concerned approaches to problem completion and contained 13 items such as attempting and/or completing tutorial questions or seeking out additional problems.

The survey instrument was pilot-tested on a group of second-year business students completing an accounting-based unit. The unit was not a core/compulsory unit where one would expect mainly accounting major students. This was important given that the majority of participants in the study were business students who did not identify as accounting majors. It was decided that the year difference would potentially benefit the study, as second-year students are more likely to comment on the appropriateness of questions (Saunders et al. 2007). Students rated their reliance on various aspects of the unit using a seven-point Likert scale instrument. Cronbach's alpha scores were calculated for each of the three questions (Q1 = .886; Q2 = .858; Q3 = .876). These indicate strong internal consistency for the survey questions, as results over .7 are considered reliable (Coakes, Steed & Ong 2009).

Data Analysis

The convenience sample consisted of all 55 students present at the last lecture. Those in attendance were asked to voluntarily participate, and all did so, for a response rate of 62.5% of the whole cohort. We used the substantive approach to data analysis, "which involves combining categories that seem to fit together: the categories have something in common" (de Vaus 2002, p. 164). We used this approach to reduce the number of individual items within each of the three questions and generated composite groups of smaller numbers (five to six) (Appendix 1). A list of the composite items for each question is presented in Table 1.

We did not use factor analysis to measure underlying constructs because this requires a minimum of five subjects per variable (Coakes et al. 2009), and with a total of 44 variables (items) across all three questions we would have needed a sample size of at least 220. Furthermore, preliminary analyses with SPSS resulted in a high number of complex factors. The sample-size issue meant that multivariate statistical inferences could not reliably be made with the original ordinal data for all items.

Table 1. Composite Item Constructs

Q1: Attendance and engagement with others	Q2: Materials used	Q3: Approaches to problem completion
Attend any formal classes	Lecture material	Completing questions IN CLASS
Discuss with lecturer	Problem answers on the LMS	Attempting questions BEFORE class
Discuss with tutorial group	Reading LMS and unit outline	Attempting questions MYSELF
Discuss with other students	Reading books or internet sources	Attempting questions with OTHERS OUTSIDE of class time
Discuss with other person	Old exam papers and test information sheets	Completing EXTRA PROBLEMS
Post on LMS	Prior knowledge of accounting	

The seven-point Likert scale ordinal responses (1 = Never; 2 = Rarely; 3 = Sometimes; 4 = About half the time; 5 = Frequently; 6 = Almost always; and 7 = Always) were reduced to a simple binary format (de Vaus 2002). If the student relied on any one of the related items at least frequently (5 to 7), the composite item was allocated a 1; otherwise it was allocated a 0. For example, a response received a 1 if the student relied on completing any problems *before class*, whether these were tutorial, workshop or independent study tasks, or a combination of them. A limitation of using the composite items is that they do not capture the full diversity of a student's responses and so will over-estimate the similarities between students. However, like a number of techniques, this aggregated data still provided useful trend information and allowed us to explore the diverse variations in student blending.

Results

In the following sections we document how individual students blended the various aspects of their learning experiences, and then examine in more depth the actual choices that they made.

Number of Blends

Four students (7.3%) claimed not to rely on anything frequently in any of the questions; that is, no items appeared in their blends (as shown by zero ticks in the top row of Tables 2-4). Whether this is an accurate description of their learning is not known. They genuinely may not have relied strongly on any aspect, or they relied on aspects we did not ask about. Of course, they may simply not have responded seriously to the survey questions. The greatest number of students using any particular blend in any question was 15 students (27.3% of participants) who relied on attending some form of class but not on other forms of engagement (Table 2). Table 3 shows that the use of learning materials had the highest number of unique blends (21).

Table 2. Attendance and Engagement with Others – Unique Blends

Composite items for attendance and engagement with others						Number of items	Proportion (%) of students with this combination
Post on LMS	Discuss with other person	Discuss with lecturer	Discuss with other students	Discuss with tutorial group	Attend class		
						0	7.3
					✓	1	27.3
				✓	✓	2	16.4
			✓	✓	✓	3	16.4
		✓			✓	2	5.5
		✓		✓	✓	3	1.8
	✓				✓	2	3.6
	✓			✓	✓	3	1.8
	✓		✓	✓	✓	4	1.8
	✓	✓			✓	3	3.6
	✓	✓		✓	✓	4	1.8
	✓	✓	✓			3	1.8
✓		✓			✓	3	1.8
✓	✓				✓	3	1.8
✓	✓	✓	✓	✓	✓	6	7.3
10.9%	**23.6%**	**23.6%**	**27.3%**	**47.3%**	**90.9%**		100%
Total number of unique blends							15

Table 3. Materials Used – Unique Blends

Composite items for materials used						Number of items	Proportion (%) of students with this combination
Prior knowledge of accounting	Reading books &/or internet	Reading LMS and unit outline	Old exams and test information	Problem answers on LMS	Lecture materials		
						0	7.3
			✓		✓	2	1.8
		✓			✓	2	3.6
		✓	✓			2	1.8
		✓	✓		✓	3	5.5
	✓				✓	2	1.8
	✓			✓	✓	3	5.5
	✓		✓	✓	✓	4	12.7
✓					✓	2	3.6
✓			✓	✓	✓	4	7.3
✓		✓			✓	3	1.8
✓		✓		✓	✓	4	1.8
✓		✓	✓		✓	4	1.8
✓		✓	✓	✓	✓	5	12.7
✓				✓	✓	3	3.6
✓			✓			2	1.8
✓			✓	✓	✓	4	3.6
✓		✓		✓	✓	4	1.8
✓		✓	✓	✓		4	1.8
✓		✓	✓	✓	✓	5	3.6
✓	✓	✓	✓	✓	✓	6	14.6
30.9%	**43.6%**	**60.0%**	**70.9%**	**78.2%**	**87.3%**		100%
Total number of unique blends							21

Table 4. Approaches to Problem Completion – Unique Blends

Composite items for approaches to problem completion					Number of items	Proportion (%) of students with this combination
With others outside class	Doing extra problems	Doing problems before class	Doing problems by myself	Doing problems in class		
					0	7.3
				✓	1	14.6
			✓		1	1.8
			✓	✓	2	12.7
		✓	✓		2	5.5
		✓	✓	✓	3	10.9
	✓				1	3.6
	✓			✓	2	3.6
	✓		✓		2	1.8
	✓		✓	✓	3	5.5
	✓	✓	✓	✓	4	9.1
✓				✓	2	3.6
✓			✓		2	1.8
✓		✓	✓	✓	4	5.5
✓	✓	✓	✓	✓	5	12.7
23.6%	**36.4%**	**43.6%**	**67.3%**	**78.2%**		100%
Total number of unique blends						15

Blend Composition

To better understand what students were choosing to put in their blends, we investigated single and pairwise frequencies. Tables 5-7 present the independent pairwise frequencies for each pair of composite items. This means that the same participant may be counted in a number of different pairings across the table. This allowed us to highlight the relative weighting of the respective items within blends and identify common core strategies. Three-, four- and five-way combinations were also explored to demonstrate the composition of student blends (Appendices 2-4).

In terms of attendance and engagement with others, the results show a strong face-to-face theme: discussion with group peers and/or others and attending some type of formal class. The overwhelming majority (91%) of participants said they relied on some type of formal class at least frequently (Table 5). Examining the original survey items, almost half (44%) of participants said they relied on all formal classes and 29% relied on only two of the three class types. This face-to-face approach was more prevalent for tutorials (84%) than lectures (69%).

Engagement was also a strong feature of participants' blends (Table 5). Most students (64%) did in fact rely on both attending class and discussing content with others. (This figure is determined from Table 2 by adding the proportion of students who had ticks in the "attend class" column and any of the "discuss with…" columns.) Almost half relied on attending and discussion with their tutorial group (Table 5), and almost a third relied on discussions with their group and one of the other categories of people (Table 2), particularly other students (26%). Interestingly, posting on LMS was the least relied-on resource for engaging with others (11%). While a number of pairs were used by more than 20% of participants, only one three-way combination (attend class, discussion with tutorial group and discussing with other students) was as prevalent (Appendix 2).

Table 5. Attendance and Engagement with Others – Single and Pairwise Frequencies

Attendance and engagement with others	Single frequencies	Pairwise frequencies				
	% of students relied on this at least frequently	% of students who relied on both at least frequently				
		Discuss tutorial group	Discuss with other students	Discuss with lecturer	Discuss with other person	Post on LMS
Attend class	90.9	47.3	25.5	21.8	21.8	10.9
Discuss with tutorial group	47.3		25.5	10.9	12.7	7.3
Discuss with other students	27.3			9.1	10.9	7.3
Discuss with lecturer	23.6				14.6	9.1
Discuss with other person	23.6					9.1
Post on LMS	10.9					

All but four participants relied on at least one type of learning materials, with lecture materials (87%) and answers on LMS (78%) the most common. These were closely followed by old examinations and test information (71%). A closer examination of the figures in Table 6 and common three-, four- and five-way combinations in Appendix 3 showed that a core of resources underpinned many of the blends. Sixty percent of the participants used a core combination of lecture materials, answers on LMS and old exam and test information (Appendix 3).

Table 6. Use of Learning Materials – Single and Pairwise Frequencies

Materials	Single frequencies	Pairwise frequencies				
	% of students relied on this at least frequently	% of students who relied on both at least frequently				
		Answers on LMS	Old exams and test information	Reading LMS and unit outline	Reading books/ internet	Prior knowledge
Lecture materials	87.3	74.6	65.6	58.2	43.6	27.3
Answers on LMS	78.2		63.6	54.6	36.4	29.1
Old exams and test information	70.9			47.3	36.4	25.5
Reading LMS and unit outline	60.0				32.7	21.8
Reading books/internet	43.6					14.6
Prior knowledge	30.9					

The question about problem completion covered working with others/alone and whether problems were attempted before or during class. Table 7 shows that the majority (78%) of participants relied on face-to-face classes involving problem-solving activities. The main pairwise strategy was completing accounting problems in class and completing problems (not necessarily tutorial problems) by themselves (56%). The majority of respondents relied on a core of either (or both of) completing problems in class, or by themselves. Nearly three-quarters (73%) relied on this core

with one or more additional approaches, such as attempting problems before class, doing extra problems or working with others outside of class (Table 4).

While the class context, with its opportunity for group collaborative learning, was clearly critical to most respondents, the importance of independent attempts at problem completion was also marked, with 67% relying on completing problems by themselves.

Table 7. Approach to Problem Completion – Single and Pairwise Frequencies

Problem-completion items	Single frequencies	Pairwise frequencies			
	% of students relied on this at least frequently	% of students who relied on both at least frequently			
		Doing problems by myself	Doing problems before class	Doing extra problems	With others outside class
Doing problems in class	78.2	56.4	38.2	30.9	21.8
Doing problems by myself	67.3		43.6	29.1	20.0
Doing problems before class	43.6			21.8	18.2
Doing extra problems	36.4				12.7
With others outside class	23.6				

Student Outcomes

Participants were asked to voluntarily provide their student number. Of the 55 students who took the survey, 21 provided this identifier and so allowed an examination of their final grade and what they relied on in the unit. The diversity seen in the larger group is also evident in this smaller group, as no more than three students relied on the same unique combination in any of the three areas. These 21 students displayed 10 unique combinations for attendance and engagement, 17 for use of learning materials and eight for approaches to problem completion. Despite this diversity at the individual level, the majority of this group said they relied on attending class (90%), lecture materials (81%), LMS answers, old exam papers, completing problems in class and attempting them before class (all 71%). Final grades were also diverse, with no apparent link between grade and blend, as the group included two students who failed, six with credits, five with distinctions and eight with high distinctions.

Discussion

This study investigated the resources that students relied on in a first-year accounting unit and addressed a number of gaps in the blended-learning literature. It extends the body of literature on student perceptions of blended learning by documenting the varied resources that students used in their learning and the actual choice of blends made by the individual survey participants taking this unit. The results demonstrate that students do choose and use resources and learning opportunities in quite distinct ways when given the choice in a situation of genuine blended learning. Because the class was largely first-year students, this suggests that some first-years can successfully navigate their way in blended-learning environments. Added to this, the high

percentage of "at-risk" students in this study's sample makes the findings potentially more interesting, given that assumptions may otherwise be made about these students' ability to organise their learning.

Our students had genuine choice in their blended-learning situation, and the findings show a diverse range of unique blends. For example, attendance and engagement with others showed that the individual blends chosen varied, with generally low numbers of students using any particular blend. This finding supports De George-Walker and Keeffe's (2010) contention that "a learner-centered view of blended learning requires acceptance that there will be endless successful combinations" (p. 12). If given flexibility and choice, students will choose a wide range of different blends. This is consistent with a student-centred approach, where students choose and use resources and strategies that best suit their individual preferences, circumstances and learning styles. This has implications for future practice, as teacher-determined blends may not suit all students and could increase the risks associated with "one size fits all" approaches. Our results suggest that flexibility and choice will be important features of any blended-learning course.

Within chosen blends, face-to-face contact continues to be important. Osgerby (2012) reported that accounting students *"expected"* face-to-face instruction due to the perceived difficulty of the course content. Samarawickrema (2005) looked at students' preference for face-to-face or flexible (distance) delivery in a two-week section of their design course, finding that students felt more motivated and disciplined when they attended face-to-face classes. This preference for some face-to-face interaction is consistent with our finding that students relied on their group members and other people for their learning. When asked about preferences for face-to-face contact or independent study, students in a large survey conducted by Alltree and Quadri (2007) expressed greater preference for either maintaining or increasing contact time. De George-Walker and Keeffe (2010) also found a strong preference for face-to-face classes. Participants in the current study show a similar preference for face-to-face contact, but it is likely to be in tutorials rather than formal lectures that engagement occurs.

This preference for face-to-face contact and the low levels of online interaction in the LMS seems unusual in the light of the young demographic (80% less than 26 years old). Love and Fry (2006) and Osgerby (2012) also report students' reluctance to use LMS for two-way interactions. Anecdotal evidence observed by the authors suggests higher levels of non-mandatory online interaction in second- and third-year accounting units. This apparent anomaly requires further investigation. It is possible that students initially are reluctant to engage in the online environment in educational settings given their preference for the more informal social-networking sites (Osgerby 2012).

Overall, the high prevalence of reliance on others and class attendance suggests that formal classes may play a critical role in facilitating engagement with peers and teachers. It highlights what may prove to be the biggest challenge of flexible, blended and distance learning: that promoting interaction between students in units with no, limited or an optional face-to-face-component may be key to student engagement and successful completion of these units.

For first-year students, the blended-learning environment is thought to represent a challenge because a fundamental tenet of blended learning is that students must accept responsibility for their own learning and be self-regulated and motivated (Dowling et al. 2003). De George-Walker and Keeffe (2010), in their study on blended learning, discuss first-year students who experienced difficulty with their transition to university. They suggest that "the addition of a blended learning course with its array of choices and possibilities may have added to [students'] sense of being

overwhelmed and perhaps even excluded" (p. 12). A first-year cohort such as ours, with a high number of at-risk students, may have special challenges over and above those common in the first-year experience (see Nelson, Smith & Clarke 2012 for a discussion of successful transition for first-year students).

This study is limited, as it was of one unit at an Australian university in one semester. However, it is likely that the finding of a wide diversity of student choice in resources used would be duplicated in larger studies or in studies of multiple offerings of the same class over time. We have documented for the first time the blends that individual students have chosen to rely on in a blended environment.

We do not yet know why students chose particular blends, how effectively they used them or whether there is any relationship between blend and outcome. Future research could extend this study by conducting focus groups or interviews with students to examine the blending process and the reasons for students' choices. In addition, associations between blends and performance could be further investigated. The diversity of blends for those participants in the current study who provided an identifier appeared similar to the whole sample, and their academic performance in the unit was dispersed across a range of results. Further analysis is required to test the proposition that students, and first-years in particular, are able to *successfully* navigate their way in a blended-learning environment. Discipline differences could also be explored, as accounting is a practical and technical discipline, and areas such as creative arts may yield different results (Samarawickrema 2005).

Conclusion

More research into student-centered blended learning activities will be key to designing units that maximise outcomes for diverse students in blended-learning environments. This study begins to answer some of the questions about the resources students choose to use and how they use them when they have control over the blend. It shows that the survey participants taking a first-year accounting unit used the resources on offer in a wide variety of ways. The study documented what they relied on and how they used formal classes and engagement with other people in their learning. The results are important, as they demonstrate that students blend resources and learning opportunities in different and unique ways in a situation of genuine blended learning. Interestingly, however, face-to-face interaction through attendance and doing problems in class featured strongly in most of the blends students preferred. Reliance on lecture materials was also prominent in blends. The items students were least likely to use or engage with included posting on the LMS system, engaging with others outside of class and their own prior knowledge.

The documentation of unique blends chosen by the individual participants will inform future course designers. Clearly, flexibility is important, given the different choices made by students in their learning of accounting. Furthermore, it will be increasingly important to look at how first-year, at-risk or non-traditional students navigate and make decisions in the learning environment, as this will be key to whether blended learning successfully supports the widening participation, access, flexibility and inclusion agendas.

References

Alltree, J & Quadri, N 2007. Flexible study – what students do and what they want. Proceedings of the S*econd International Blended Learning Conference*, University of Hertfordshire, England.

Arbaugh, J, Godfrey, M R, Johnson, M, Pollack, B L, Niendorf, B & Wresch, W 2009. Research in online and blended learning in the business disciplines: Key findings and possible future directions. *Internet and Higher Education,* vol. 12, no. 2, pp. 71-87.

Benckendorff, P 2007. Exploring the flexible learning preferences of tourism and hospitality management students. In McDonnell, I, Grabowski, S & March, R (eds.), *Past Achievements, Future Challenges: 17th Annual CAUTHE Conference,* pp. 1-16, Manly, NSW.

Biggs, J & Tang, C 2011. *Teaching for Quality Learning at University* (4th ed.) (McGraw-Hill, Maidenhead).

Bliuc, A M, Goodyear, P & Ellis, R A 2007. Research focus and methodological choices in studies into students' experiences of blended learning in higher education. *Internet and Higher Education,* vol. 10, no. 4, pp. 231-244.

Bonk, C J, Kim, K J & Zeng, T 2006. Future directions of blended learning in higher education and workplace learning settings. In Bonk, C J & Graham. C R (eds.), *Handbook of blended learning: Global perspectives, local designs,* pp. 550-567, Pfeiffer, San Francisco.

Coakes, S J, Steed, L & Ong, C 2009. *SPSS: analysis without anguish: version 16.0 for Windows,* John Wiley & Sons, Milton, QLD.

Cybinski, P & Selvanathan, S 2005. Learning experience and learning effectiveness in undergraduate statistics: modeling performance in traditional and flexible learning environments. *Decision Sciences Journal of Innovative Education,* vol. 3, no. 2, pp. 251-271.

De George-Walker, L & Keeffe, M 2010. Self-determined blended learning: a case study of blended learning design. *Higher Education Research and Development,* vol. 29, no. 1, pp. 1-13.

de Lange, P, Suwardy, T & Mavondo, F 2003. Integrating a virtual learning environment into an introductory accounting course: determinants of student motivation. *Accounting Education: An International Journal,* vol. 12, no. 1, pp. 1-14.

de Vaus, D A 2002).*Surveys in social research* (5th ed.), Allen & Unwin, Crows Nest, NSW.

Dowling, C, Godfrey, J M & Gyles, N 2003. Do hybrid flexible delivery teaching methods improve accounting students' learning outcomes? *Accounting Education: An International Journal,* vol. 12, no. 4, pp. 373-391.

Frazer, L & Lawley M A 2000. *Questionnaire design and administration: a practical guide*, John Wiley & Sons Australia, Brisbane.

Garrison, D R & Kanuka, H 2004. Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education*, vol. 7, no. 2, pp. 95-105.

Garrison, D R & Vaughan, N D 2008. *Blended Learning in Higher Education*, Jossey-Bass, San Francisco.

Ginns, P & Ellis, R 2007. Quality in blended learning: Exploring the relationships between on-line and face-to-face teaching and learning. *Internet and Higher Education,* vol. 10, no. 1, pp. 53-64.

Graham, C R 2006. Blended learning systems. In Bonk, C J & Graham, C R (eds.) *Handbook of blended learning: Global perspectives, local designs,* pp. 550-567, Pfeiffer, San Francisco.

Graham, C R, Allen, S & Ure, D 2005. Benefits and challenges of blended learning environments. In Khosrow-Pour, M (ed.) *Encyclopaedia of information science and technology I-V,* pp. 253-259, Idea Group Inc., Hershey, PA.

Inglis, M, Palipana, A, Trenholm, S & Ward, J 2011. Individual differences in students' use of optional learning resources. *Journal of Computer Assisted Learning,* vol. 27, no. 6, pp. 490-502.

Johnson, D W & Johnson, F P 2003. *Joining together: group theory and group skills*, Allyn & Bacon, Boston.

Love, N & Fry, N 2006. Accounting students' perceptions of a virtual learning environment: Springboard or safety net? *Accounting Education: An International Journal,* vol. 15, no. 2, pp. 151-166.

Nelson, K J, Smith, J E & Clarke, J A 2012. Enhancing the transition of commencing students into university: an institution-wide approach. *Higher Education Research and Development,* vol. 31, no. 2, pp. 185-199.

Oliver, M & Trigwell, K 2005. Can Blended Learning Be Redeemed? *E-learning and Digital Media*, vol. 2, no. 1, pp. 17-26.

Osgerby, J 2012. Students' perceptions of the introduction of a blended learning environment: an exploratory case study. *Accounting Education: An International Journal*, Vol. 22, pp. 85-99. doi:10.1080/09639284.2012.729341.

Roach, V & Lemasters, L 2006. Satisfaction with online learning: A comparative descriptive study. *Journal of Interactive Online Learning,* vol. 5, no. 3, pp. 317-332.

Samarawickrema, R G 2005. Determinants of student readiness for flexible learning: Some preliminary findings. *Distance Education*, vol. 26, no. 1, pp. 49-66.

Saunders, M, Lewis, P & Thornbill, A 2007. *Research methods for Business students* (4th ed.), Prentice Hall, Essex.

Schweizer, K, Paechter, M & Weidenmann, B 2003. Blended learning as a strategy to improve collaborative task performance. *Journal of Educational Media,* vol. 28, no. 2-3, pp. 211-224.

Singh, H 2003. Building effective blended learning programs. *Educational Technology*, vol. 43, no. 6, pp. 51-54.

Stacey, E & Gerbic, P 2009. *Effective Blended Learning Practices: Evidence-based Perspectives in ICT-facilitated Education*, Information Science Reference, Hershey, PA.

Verkroost, M J, Meijerink, L, Lintsen, H & Veen, W 2008. Finding a balance in dimensions of blended learning. *International Journal on E-Learning*, vol. 7, no. 3, pp. 499-522.

Appendix 1 – Composite Items Constructed from Original Question Items

Question	Composite Item Constructs
Question 1: Attendance and engagement with others	
a. Lecture attendance b. Tutorial attendance c. Workshop attendance	Attend any formal classes
d. Emailing lecturers e. Discussing with lecturers in class time f. Discussing with lecturers in their office g. Discussing with lecturers at separate APPOINTMENT times	Discussion with lecturer
h. Discussing with members of your group IN CLASS i. Discussing with members of your group OUT of class	Discussion with tutorial group
j. Discussing with other students studying the unit (not in your group)	Discussion with other students
k. Discussing with friends who previously passed unit l. Discussing with family/friends who have a general understanding of accounting m. Discussing with anyone who would listen even if they had no accounting knowledge	Discussion with other person
n. Asking a question on Learning Management System (LMS) o. Replying to a question on LMS	Posting on LMS
Question 2: Materials used	
a. Reading/ reviewing Lecture slides b. Lecture case studies e. My Media lecture recordings	Lecture material
c. Using tutorial answers from LMS d. Using workshop answers from LMS o. Using independent study answers from LMS	Problem answers on LMS
f. Reading LMS discussion posts g. Reading LMS announcements h. Reading Unit Outline	Reading LMS and unit outline
i. Reading the textbook chapters prescribed j. Reading extra parts of the textbook k. Reading other accounting textbooks m. Searching for and reading internet sources on the topics	Reading books or internet sources
n. Downloading previous EXAM papers l. Reading the test information sheets	Old exam papers and test information sheets
p. Your own prior knowledge in Accounting (eg from year 12,work experience, previous attempt at this unit)	Prior knowledge of accounting
Question 3: Approaches to problem completion	
a. Completing tutorial questions IN CLASS e. Completing workshop questions IN CLASS	Completing questions IN CLASS
b. Attempting tutorial questions BEFORE class f. Attempting workshop questions BEFORE class l. Attempting independent study tasks BEFORE classes	Attempting questions BEFORE class
c. Attempting tutorial questions by MYSELF g. Attempting workshop questions MYSELF m. Attempting independent study tasks BY MYSELF	Attempting questions MYSELF
d. Attempting tutorial questions with OTHERS OUTSIDE of classtime h. Attempting workshop questions with OTHERS OUTSIDE of classtime	Attempting questions with OTHERS OUTSIDE of classtime
i. Completing EXTRA PROBLEMS from the textbook j. Working additional problems from OTHER textbooks k. Working through previous exam papers	Completing EXTRA PROBLEMS

Appendix 2 – Attendance and Engagement – Common[1] Combinations of Items

Composite items for attendance and engagement with others						Proportion (%) of students with this combination
Post on LMS	Discuss with other person	Discuss with lecturer	Discuss with other students	Discuss with tutorial group	Attend class	
3 way combinations						
	✓		✓		✓	25.5

[1] Combinations presented if used by 20% or more of students.

Appendix 3 – Materials Used – Common[1] Combinations of Items

Composite items for materials used						Proportion (%) of students using this combination of materials
Prior knowledge	Reading	LMS information	Exams and test information	Answers on LMS	Lecture material	
3-way combinations						
			✓	✓	✓	60.0
		✓		✓	✓	47.2
	✓	✓			✓	32.7
✓				✓	✓	27.2
4-way combinations						
		✓	✓	✓	✓	43.6
	✓	✓	✓		✓	29.1
	✓	✓		✓	✓	29.1
	✓		✓	✓	✓	34.6
✓			✓	✓	✓	21.8
✓		✓		✓	✓	20.0
✓		✓	✓	✓		20.0
5-way combinations						
	✓	✓	✓	✓	✓	27.3

[1] Combinations presented if used by 20% or more of students.

Appendix 4 – Approaches to Problem Completion – Common[1] Combinations of Items

Composite items for approaches to problem completion					Proportion (%) of students using this combination of items
Others/ outside class	Extra problems	Before class	Myself	In class	
Three-way combinations					
		✓	✓	✓	38.2
	✓		✓	✓	27.3
Four-way combinations					
	✓	✓	✓	✓	21.8

[1] Combinations presented if used by 20% or more of students.