Prior learning in accounting and its impact on student performance in first courses in accounting: Addressing the gaps in the literature

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Abstract

The changed and more diversified profile of university students enrolling in accounting first courses (and beyond) has accentuated the need for accounting academics to be fully aware of those factors that have a significant influence on student performance. Over the past 30 years a well-established research literature has emerged that has sought to identify and measure the significance of factors believed to have an impact on student performance. Unfortunately, the identification of those factors having a significant impact on student performance in university accounting courses is still far from settled. This study posits that the contrary results reported in prior research may be attributable to differences in how key independent variables have been defined and measured. In this study, we use a tighter specification of independent and dependent variables and find that academic preparedness (as measured by tertiary entrance scores) and prior learning in accounting are both highly significant factors in explaining student performance in a Western Australian university's first course in accounting. Moreover, after controlling for the impact of academic preparedness, for students possessing prior learning in accounting, they achieve a significant lift in performance in the first course in accounting than conferred by their tertiary entrance score. The policy implication of this result is that Australian universities, perhaps unintentionally, privilege the learning and academic performance in first courses in accounting of those students who already have prior learning in accounting.

Prior learning in accounting and its impact on student performance in first courses in accounting: Addressing the gaps in the literature

1. Introduction

In Australia, as throughout the world, accounting is a subject that can be taken as part of a senior secondary school student's education. Similarly, accounting, particularly at first year level, is taken by many students as part of their Australian university undergraduate degree.

For most undergraduate students enrolled in a commerce or business degree, they are required to take a first course in accounting irrespective of the major they intend graduating in.[1] Also, for universities where students are required to undertake broadening studies outside of their discipline's undergraduate degree, the first course in accounting student cohort may include a lesser number of students who 'elect' to take this course. Thus, the student cohort enrolled in first year accounting courses offered by Australian universities often comprises students who are enrolled in business oriented degrees as well as those in non-business related degrees (e.g. law, health sciences, engineering, the physical sciences and education). Thus, at many Australian universities the first course in accounting is often amongst the largest taught in terms of the total number of enrolled students.

For those students enrolled in a business oriented degree, many have already decided about the business major they intend pursuing before taking their first course in university level accounting (e.g., in accounting, banking and finance, economics, human resource

[1] The term used to describe the first form of university level studies in accounting is the first "course" in accounting. Such first year accounting studies are also described across the university sector as being "units" and "subjects." However, as other work being undertaken by the authors in this area is based upon the Accounting Education Change Commission's (AECC, 1992), ***The First Course in Accounting: Position Statement No. 2***, we have chosen to use course as a common term to describe all initial and subsequent studies in university level accounting.

management, information systems and marketing).[2] However, other students may defer deciding which business major to pursue as they want to complete one or more 'required' units, such as accounting, before selecting their major. In many Australian universities, students intending to major in accounting typically account for 20 to 25 per cent of students enrolled in a first course in accounting. For these intending accounting majors, the first course in accounting will be the first in a sequence of progressively higher level and more advanced studies in accounting to be undertaken. Yet, for the greater proportion of students taking a first course in accounting, this will be the only study they complete in accounting as part of their undergraduate degree. Thus, a university level first course in accounting must cater for the learning needs of students who intend undertaking further studies in accounting as well as for those who only need the financial literacy skills thought to be of benefit to them in their remaining non-accounting undergraduate studies.

The importance of the first courses in accounting in higher education has been addressed by many authors (e.g., (Byrne, Flood, & Willis, 2009; Duff, 2004; Lucas, 2000, 2001; Lucas & Meyer, 2005; Lucas & Mladenovic, 2009). As Byrne, Flood and Willis (2009, p. 159) suggest in terms of the significance of a first course in accounting, it is '… important in developing students' understanding and interest in accounting regardless of their future study and career intentions'.

Within business oriented university programs (including accounting), the impact of prior learning in the relevant discipline on subsequent university performance has been extensively researched In particular, given that accounting courses are increasingly taken by secondary

[2] In our data base, 160 students continued with further studies in accounting beyond the first course in accounting. Of the 438 students who completed Survey 1, 90 (or 52 per cent) of prior learner respondents undertook further studies in accounting compared to just the 70 (or 26 per cent) of no prior learning respondents who chose to do so.

school and technical and further education (TAFE) students before they enter university, the impact of this prior learning on student performance in accounting first courses and beyond has been a question that has demanded empirical study (e.g., (Abhayawansa, Tempone, & Pillay, 2012; Baldwin & Howe, 1982; J. Bergin, 1983; Keef, 1992; Loveday, 1993; Rohde & Kavanagh, 1996a, 1996b; Sangster & McCombie, 1993; Schroeder, 1986).

Partly because of changes in the way these different forms of prior learning have developed over time, they have become similar in topic coverage and assessment tasks as those in first courses in accounting offered by most Australian universities. Whilst the reforms in the curriculum and assessment of such prior learning courses have been managed by the relevant state and national authorities (e.g., state departments' of education and curriculum authorities and the Australian Curriculum Assessment and Reporting Authority), university academics and the accounting profession have sought to influence the shape of a planned revision to the accounting curriculum taught during Year 11 and 12 in Australian secondary schools.[3]

The implications for the composition of the student cohort enrolled in an Australian university's first course in accounting is that it will comprise a significant number of students

[3] In responses to an invitation issued by the Australian Curriculum Assessment and Reporting Authority (ACARA) to comment on a draft shape of the Australian Curriculum: Economics and Business, the Accounting and Finance Association of Australia and New Zealand (AFAANZ) and, in a joint submission, CPA Australia and the then Institute of Chartered Accountants in Australia accepted the invitation. AFAANZ (2012, p. 2) proposed 'In years 11-12, the curriculum should feature a separate accounting course with more of a focus on the basic principles and concepts of accounting in year 11 and a focus on business reporting and analysis and accounting issues in year 12. Both years 11 and 12 Accounting courses should incorporate topics such as sustainability reporting, ethical behaviour, international financial accounting standards and corporate governance. Contemporary case studies based on actual live companies could also be incorporated into both year 11 and 12 Accounting courses.' The joint submission made by the two peak accounting professional bodies responded by noting as follows (2013, p. 9): 'Progressive approaches that develop students' critical thinking, analytical skills, interpretation and decision making are evident in Queensland and Western Australia. The accounting curriculum taught in schools in Western Australia is three years old and already there are indications that it is yielding positive results.'

who already possess a level of knowledge that will better equip them for their studies in the first course when compared to the far greater number of students who lack that privilege.

As noted above, the benefit of prior learning in accounting upon student performance in university level first courses in accounting has attracted a significant body of empirical research. Unfortunately, reported results have been equivocal and there remains some doubt that prior learning in accounting means much to student performance in the first course in accounting, let alone for further and more advanced courses in accounting.

We submit that part of the reason for there being inconsistent and inconclusive findings on the impact of prior learning is partially attributable to the manner of how independent variables (e.g., *prior learning in accounting* and *academic readiness*) and dependent variables (e.g., *approaches to learning* and *academic result achieved*) have been previously defined and measured. For example, we argue that the testing of the impact of prior learning on subsequent learning cannot be reduced to identifying an association between an 'undefined' secondary level education, or equivalent, "accounting" and an equally 'undefined' university first course in "accounting". We initially review the prior empirical literature to document our concerns about the specification and measurement of independent and dependent variables. Drawing upon the gaps identified in the prior literature, we examine the impact of prior learning on student performance at a large Western Australian university (WAU).

The remainder of this paper is structured as follows. In the next section, a brief overview of the Australian education system is provided. For the purposes of documenting potential problems in prior studies of the impact of prior learning of prior learning on student performance in university level first courses in accounting, the following section examines

how relevant independent and dependent variables have been defined and measured in prior studies. This is followed by an overview of our study where we detail the relationship between prior learning and the university's level first course in accounting, indicate our specification and measurement of independent and dependent variables and the hypotheses that we test. This is followed by the research method, data analysis and results. Finally, a discussion of the results is followed by the study's conclusions, limitations identified and suggestions for further research in this topic area.

2. Background to the Australian higher education system

In Australia, diverse pathways to higher education exist. The greater majority of students enrolled by Australian universities are admitted directly from Year 12, the final year of secondary schooling. However, an increasing number of students gain admission through other entry pathways. These increasingly popular alternate pathways include the traditional inter-sectoral movement of students from Technical and Further Education (TAFE) colleges and from the bridging courses offered directly by the universities themselves or other external educational providers. Among the motives for Australian universities utilising a broader entry path for recruiting students is the greater income that now flows from an unregulated demand funding model (i.e., enrolment numbers are not capped). Furthermore, Australian universities have been encouraged to enrol a more diverse mix of students in response to the policies of and the incentives offered by the Australian Federal Government to widen participation rates to include those students who would not normally form part of the profile of past student populations (e.g., due to lower academic grades, socio-economic circumstances, linguistic and cultural differences).

As noted above, upon completing Year 12, students can seek admission to an Australian university based on their Admission to Tertiary Education Rank (ATAR). As indicated by the name of this admission measure, ATAR is not a percentage score but represents an individual student's rank relative to their Year 7, or first year of secondary school, student cohort. The rank ranges from 0.00 to 99.95 and is derived from an aggregate score comprising the sum of the scaled marks of the four best subjects completed at Year 12 standard plus 10% of the sum of the weakest two subjects taken. In computing an ATAR score, the marks in some subjects are typically scaled up (e.g., high level mathematics, physics and chemistry) and other subjects are scaled down (e.g., low level maths and accounting and finance).

Thus, even though our study establishes that prior learning in accounting yields a significant benefit to a student's performance in a university level first course in accounting, it is not without cost. For example, the scaling down of Year 11 and 12 accounting marks has the effect of lowering the aggregate score used to calculate the ATAR of a student who takes that subject. Similarly, Rowbottom (2013) identifies how the definition by leading UK universities of preferred combinations of A-level subjects for admission purposes, is to the detriment of those students who opt to take a purportedly 'softer' A-level subject in accounting.

Being a common entry criteria used by Australian universities, each university will determine what their cut-off score for the institution is as a whole (e.g., an ATAR of 80 and above) and for specific undergraduate degrees (e.g., entry to law might need a minimum ATAR of 98). At WAU the minimum published ATAR admission score is 70.

In terms of the TAFE university admission route, most students intending to enrol in business related disciplines (e.g., accounting) at undergraduate level will complete an

associate/advanced diploma or advanced certificate in business/accounting. Given that diplomas are taught over two years, successful completion of a relevant TAFE course allows a student to be admitted into the second year of an undergraduate accounting or business degree. For example, Jackling and Anderson (1998) report that approximately 40 per cent of accounting students were granted exemptions from first-year units based on their TAFE qualifications.

3. Factors influencing student performance in first course in accounting

Students entering higher education at the undergraduate level clearly bring with them a variety of differing academic capabilities, prior knowledge, orientations to learning and cultural backgrounds. For many decades, identifying and measuring the effect of these presage factors on academic performance has commanded attention of researchers from across a diversity of university disciplines (Alfan & Othman, 2005; S. Bergin & Reilly, 2006; Borde, 1988; Mitchell, 1990).

Not surprisingly, student performance has been found to be influenced by factors including prior learning experiences and learning backgrounds (Dochy, De Rijdt, & Dyck, 2002; Prosser & Trigwell, 1999; Shanahan & Meyer, 2001), exposure to a variety of teaching styles (Biggs, 1995; Phillips, 1990) and cultural differences (Ramburuth & McCormick, 2001) (Watkins. 1998).

For the purposes of this study, the factors suggested to exert some influence over student performance in first courses in accounting include the following:

i) Prior general academic performance;

ii) Prior learning in accounting;

iii) Expectations, confidence and self-efficacy beliefs;

iv) Motivation and engagement, and

v) Student approaches to learning.

3.1 Prior general academic performance

Prior general academic performance, as a measure of learning capability, has been found to be strongly associated with university performance (Auyeung & Sands, 1993; Byrne & Flood, 2008; Clark & Ramsay, 1990; Doran, Bouillon, & Smith, 1991; Duff, 2004; Eskew & Faley, 1988; Kirkup, Wheater, Morrison, Durbin, & Pomati, 2010; McClelland & Kruger, 1993; Power, Robertson, & Baker, 1987); Green, 2011; Surridge, 2008). However, other research indicates that the power of prior general academic performance may wane over time (Clark & Ramsay, 1990; Schofield, 1989).

With respect to first courses in accounting, prior general academic performance has also been found to be associated with student performance (Booker, 1991; Buckless *et al.*, 1991;(Doran et al., 1991; Eckel & Johnson, 1983; Eskew & Faley, 1988); Stout and Bonfield, 1986; Togo and Baldwin, 1990). Similarly, Koh and Koh (1999) found academic aptitude to be the most important determinant of performance.

3.2 Prior learning in accounting

Apart from prior academic achievement, having undertaken prior learning in subjects relevant university studies have been found to benefit student performance in their first year courses in science disciplines (e.g., for science see: (Abbott-Chapman, Hughes, & Wyld, 1992; Auyeung & Sands, 1993; McClelland & Kruger, 1993). Similarly, a factor identified as being influential for student performance in first courses in accounting is prior learning in

accounting (e.g., Clark and Sweeney, 1985; (Doran et al., 1991; Duff, 2004; Eskew & Faley, 1988; Gul & Cheong Fong, 1993; Loveday, 1993)Doran, *et al.*, 1991; Duff, 2004; Eskew and Faley, 1988; Gul and Fong, 1993; Loveday, 1993). Yet academic opinion is divided. Others have expressed contrary views as to the merit of studying accounting prior to university (see (Byrne & Willis, 2009; Rankin, Silvester, Vallely, & Wyatt, 2003; Sangster & McCombie, 1993).

Hall, Ramsay and Raven (2004, p. 502) state that '…students first must learn terminology, basic concepts and procedures before being able to apply knowledge to novel problems and reflect/evaluate on the appropriateness of various treatments and methods'. Accordingly, given the overlapping syllabi of prior learning accounting subjects taken and first courses in accounting, a significant benefit obtained prior to students enrolling at university is that they have already established some mastery over important threshold accounting concepts.

In terms of the practical aspects of accounting, as students who have studied secondary school accounting are already familiar with the accounting equation, double-entry bookkeeping including the use of journals and ledgers, preparation of financial statements and may also have had some exposure to basic managerial accounting topics such as product costing, cost behaviour and cost-volume-profit analysis, their knowledge of the practice of accounting is well established.

For those who lack such prior learning, the confronting task facing them is to catch up to the level of accounting knowledge already held by their prior learner counterparts (Schroeder, 1986).

Notwithstanding the greater body of empirical evidence suggesting that prior learning in accounting is associated with superior performance in the first course in accounting, other studies have suggested this advantage erodes and its benefit for subsequent and advanced studies in accounting no longer persists

Further issues to address in connection with the nature of prior learning include:

Source of prior learning (i.e., secondary education, technical and further education, undergraduate accounting for MBA level courses, previous attempts at passing first course)

Nature (WACE ACF 3A and 3 B TAFE, previous attempt

Correspondence of PL to first course (Accounting 100) syllabus, textbooks, assessment tasks

Duration (i.e., length of course)

Timeliness of PL to commencement of first course

Measuring in prior learning performance

- *Dummy variable (i.e., 1, 0)*
- *Actual results:*
  - *% Mark*
  - *Grades*

3.3 Expectations, confidence and self-efficacy beliefs

How measured

Negative perception and impact on interest in continuing in accounting

3.5 Motivation and engagement

Intentions for future studies in accounting (i.e., Accounting 100 is viewed as introductory accounting)

3.6 Student approach to learning

Deep versus surface learning

(Tan & Laswad, 2015)

Measuring the impact of prior learning measuring outcomes

Measured in various ways: academic performance, course satisfaction, generic skills

First course -Performance

Marks

Dummy variable (i.e., Pass, Fail or 1, 0)

Actual results:

% Mark

Grade

SWA and CWA

Overall mark or individual components

Satisfaction with course (i.e., student experience)

Continue/discontinue (i.e., formal withdrawal or informal: F-00 +)

In conclusion that lack of consistency in the literature could be attributed to many factors including differing research designs, differing rigour among secondary school systems, and, for each study, differences in the degree to which there is a link between the topics covered in secondary school and university first course in accounting.

Generic skill set

Technical versus generic skill

Beyond (i.e., higher and advanced courses in accounting)

Performance

Actual results:

% Mark

Grade

SWA and CWA

Selection of major (i.e., progression into accounting major)

4. Hypotheses

Summarise prior literature (e.g., ATAR)

State each hypothesis

For example: high ATAR → high Accounting 100 mark, high PL mark → high Accounting 100 mark and controlling for ATAR, high PL mark → high Accounting 100 mark)

Hypothesis 1 states that:

H_1: For Accounting 100, students with higher university admission scores (i.e., ATAR) will achieve a higher mark than those with lower university admission scores.

Specific sub-hypotheses include:

H_{IIa}: A student's experience/satisfaction in Accounting 100.

H_{IIb}: A student's view of the usefulness/value/benefit of Accounting 100 to them and for the future.

H_{IIc}: A student's approach to learning in Accounting 100 will be significantly different to those with a lower university admission score.

H_{IId}: A student's view of Accounting as a career.

H_{IIe}: A student's view of Accounting being a major to undertake.

Hypothesis II states that:

H_{II}: For Accounting 100, students with prior learning in accounting will achieve a higher mark than those with no prior learning.

Specific sub-hypotheses include:

H_{1a}: A student's experience/satisfaction in Accounting 100.

H_{1b}: A student's view of the usefulness/value/benefit of Accounting 100 to them and for the future.

H_{1c}: A student's approach to learning in Accounting 100 will be significantly different to those with no prior learning.

H_{1d}: A student's view of Accounting as a career.

H_{1e}: A student's view of Accounting being a major to undertake.

Define variables

For example: ATAR, PL, Accounting 100 mark

Define models for univariate regression analysis.

For example:

$$ACC100FINAL_i = \beta_0 + \beta_1 ATAR_i + \beta_2 PL_i + \beta_3 GENDER_i + \beta_4 AGE_i + \beta_5 SALi + \varepsilon_i$$

Methodology

Student sourced data (i.e., self-reporting data)

Data collected from students:

Survey 1

Survey 2

Focus group sessions

Indicate date administered and type of questions posed for each.

Survey 1

Survey 2

Focus group sessions

University records

Indicate what collected (e.g., ATAR, PL, student ID) and duration data collection for (i.e., 2012, 2013, 2014, 2015)

Data matching of common data

Student ID, PL to validate student supplied data

Outline of survey and focus group data collected

Survey 1 requested students' gender, age, and expectations about whether or not they would enjoy the Accounting 100.

Asked if students had completed any prior learning in accounting and, if so, what was the nature of that prior learning and the percentage mark they obtained.

Each of the two surveys included questions to measure students' approach to learning. For purposes of our study we used a shortened version of the student approach to learning instrument

Survey 2 asked students if they enjoyed the course and to what extent identified and other factors affected their attitude towards Accounting 100 (e.g., quality of teaching, workload demands topic difficulty, assessment tasks completed. Survey 2 contained the same questions as Survey 1, except that items were reworded where necessary to reflect past tense.

Asked students in Surveys 1 and 2 what mark they expected to receive in Accounting 100 and how confident they felt in predicting their final mark.

Research design

To obtain data for our study we administered two surveys during the third week (Survey 1: 12 to 16 March) and tenth week (Survey 2) of Semester 1, 2012 which commenced on 27 February and concluded on 15 June. The surveys were collected in six different classes taught by the five different instructors (i.e., one instructor taught two classes). Each instructor, who was independent of us[4], conducted their assigned class in a mass lecture format with no smaller learning sessions (e.g., tutorials or workshops) being offered.

One-hour long focus group sessions were conducted on ten separate occasions with five to eight student participants in week 6 (2 to 5 April). At the completion of a focus session, each student received a $25 voucher as compensation for their time spent in attending the session.

[4] The authors of this paper were not involved in either teaching Accounting 100 nor assessing student learning.

No other compensation was formally offered to those students who completed Survey 1 and/or Survey 2.

Data analysis

Descriptive statistics

- Table shows that 438 and 375 students responded to Survey #1 and Survey #2.
- Survey #1: PL students 173 out of 261 responded (66.5%) and NPL students 265 out of 727 responded (36.4%)
- Table shows a 44.4% and 37.9% response rate for surveys 1 and 2 respectively. Overall, only 24.3% completed both surveys 1 and 2 and 41.9% did not complete any survey.

Surveys completed	Total	% of total students	% of total respondents	Average final mark: 100
Only survey 1	217	21.99%	37.22%	53.72
Only survey 2	119	12.06%	20.41%	54.26
One time respondents	336	34.05%	57.63%	53.91
Both surveys 1 and 2	247	25.02%	42.37%	53.11
Total surveys	583	59.07%	100.00%	53.57
No surveys	404	40.93%		50.50
Total students	987	100.00%		52.31

- In Survey I, for prior learning students **5 in every 6 prior learners** (i.e., 83.44% versus 16.56%) perceived that their prior accounting studies were to be **highly beneficial** (i.e., moderately and strongly agree of 83.44%) to their academic performance in Accounting 100.
- Average of 3.1288 indicates above moderate agreement (i.e., of a 3.00).

- In Survey 1, for students with no prior learning, **nearly 6 in every 10 no prior learners** (i.e., 56.69% versus 43.31%) perceived that their lack of prior accounting studies were to be **highly detrimental** (i.e., moderately and strongly agree of 56.69%) to their academic performance in Accounting 100.
- Average of 2.7283 indicates **slightly below moderate agreement** (i.e., of a 3.00) that a **lack of prior accounting studies was perceived to be highly detrimental**.

Surveys completed	Surveys completed of students with prior learning				No prior learning	Total students
	ACF Stage 3	Pre ACF stages 2 and 3	Other accounting (e.g., TAFE)	Total students with prior learning		
Only survey 1 completed	**33**	**2**	**41**	**75**	122	197
Only survey 2 completed	**21**	**3**	**1**	**25**	110	135
One survey respondents	**54**	**5**	**42**	**101**	232	332
Surveys 1 and 2 both completed	**50**	**7**	**40**	**97**	**143**	**240**
All survey respondents	**104**	**12**	**82**	**198**	**375**	**573**
No responses to any survey	53	8	2	**63**	351	414
Total students enrolled	157	20	84	**261**	726	987

Some observations:

157 ACF prior learners (16% of cohort): 104 responses (66%) and 53 non-respondents (34%).

20 Pre-ACF prior learners (2% of cohort): 12 responses (60%) and 8 non-respondents (40%).

84 other accounting prior learners (8% of cohort): 82 responses (98%) and 2 non-respondents (2%).

726 no prior learners (74% of cohort): 375 responses (52%) and 351 non-respondents (48%).

Courses enrolled in	Number	Mid-semester examination	Group assignment	Final examination	Overall final mark
Bachelor of Science	**73**	**63.80%**	**53.20%**	**63.30%**	**61.00%**
Bachelor of Arts	60	57.60%	52.30%	53.30%	54.20%
Bachelor of Engineering	**12**	**66.10%**	**54.50%**	**62.80%**	**61.70%**
Bachelor of Commerce	**671**	**55.60%**	**51.50%**	**54.00%**	**53.90%**
Bachelor of Business Administration	7	62.90%	50.40%	60.20%	58.70%
Total	823	56.70%	51.80%	54.90%	54.70%

Some observations:

Science and engineering degree students outperform Arts, Commerce and Business Administration students across nearly all examination type assessment components.

Average group assignment mark not significantly different across all degrees.

graphic details	PL ACF		PL Pre-ACF		PL Other		No PL		
	Number	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**	
Female	70	*47.30%*	11	*61.10%*	32	*44.40%*	304	*52.00%*	
Male	78	*52.70%*	7	*38.90%*	40	*55.60%*	281	*48.00%*	
Total	148	*100.00%*	18	*100.00%*	72	*100.00%*	585	*100.00%*	
Science	8	*5.40%*	3	*16.70%*	6	*8.30%*	56	*9.60%*	
Arts	6	*4.10%*	0	*0.00%*	1	*1.40%*	53	*9.10%*	
Engineering	0	*0.00%*	2	*11.10%*	0	*000%*	10	*1.70%*	
Commerce	**134**	***90.50%***	**13**	***72.20%***	**65**	***90.30%***	**459**	***78.50%***	
Business Administration	0	*0.00%*	0	*0.00%*	0	*0.00%*	7	*1.20%*	
Total	148	*100.00%*	18	*100.00%*	72	*100.00%*	585	*100.00%*	
Graded Students	**148**	***94.30%***	**18**	***90.00%***	**72**	***85.70%***	**585**	***80.60%***	
Withdrawals	5	*3.20%*	2	*10.00%*	5	*6.00%*	74	*10.20%*	
Incomplete studies	4	*2.50%*	0	*0.00%*	7	*8.30%*	67	*9.20%*	
Total Enrolled	157	*100.00%*	20	*100.00%*	84	*100.00%*	726	*100.00%*	
WD and incomplete		*5.50%*		*10.00%*		*14.30%*		*19.40%*	

Some observations:

212 prior learners (89% of all 238 prior learners) enrolled in Commerce degree.

Prior learners are less likely to withdraw (i.e., either formally or informally) from their Accounting 100 studies than no prior learners. WD and incomplete for PL = 8.80% and for No PL = 19.40%.

Assessment type and gender marks	Prior learning			No prior learning	All stu
	ACF	**Pre-ACF**	**Other**		
assignment [out of 25 marks]	**53.00%**	**59.60%**	**51.20%**	**51.30%**	**51.8**
mester examination [out of 25 marks]	**67.80%**	**63.90%**	**58.80%**	**53.40%**	**56.7**
xamination [out of 50 marks]	**70.40%**	**72.30%**	**60.80%**	**49.70%**	**54.9**
nark	**65.50%**	**67.20%**	**58.10%**	**51.20%**	**54.7**
:					

	66.70%	65.60%	59.70%	53.10%	56.3
	64.50%	69.90%	56.80%	49.00%	56.1
ts who previously failed Accounting 100					
s repeating Accounting 100	**62.00%**	53.00%	51.80%	45.70%	47.3

Some observations:

Prior learners outperform students with no prior learning over all assessment tasks.

Relatively insignificant differences between male and female students.

Repeating students who have ACF prior learning outperform all other types of repeating students.

Final mark range	Prior learning			No prior learning	All students
	ACF	Pre-ACF	Other		
Mean final mark	**65.50%**	**67.20%**	**58.10%**	**51.20%**	**54.70%**
Maximum final mark	92.00%	85.00%	90.00%	**95.00%**	95.00%
Minimum final mark	24.00%	31.00%	22.00%	10.00%	10.00%
Quartile distribution of final marks:					
Top quartile	58.00%	60.00%	50.00%	39.00%	42.00%
Second quartile	8.50%	8.50%	9.00%	12.00%	13.00%
Third quartile	8.50%	8.00%	10.50%	12.00%	13.00%
Fourth quartile	25.00%	23.50%	30.50%	37.00%	32.00%

Some observations:

Superior performance by all students with prior learning [*t* statistic = 11.701. Significance = 0.000].

Prior learners achieve higher quartile overall final mark performance levels than students with no prior learning.

One student with no prior learning achieved the top overall final mark of 95%.

Mid-semester examination mark range	Prior learning			No prior learning	All students
	ACF	Pre-ACF	Other		
Mean mid-semester exam mark	**67.80%**	**63.90%**	**58.80%**	**53.40%**	**56.70%**
Maximum mid-semester exam mark	96.70%	96.70%	**100.00%**	**100.00%**	100.00%
Minimum mid-semester exam mark	20.00%	25.50%	11.00%	3.00%	3.00%
Quartile distribution of mid-semester exam marks:					
Top quartile	56.70%	52.50%	43.30%	40.00%	40.00%
Second quartile	13.30%	14.20%	13.40%	10.00%	16.70%
Third quartile	13.30%	10.80%	16.60%	16.70%	17.00%
Fourth quartile	16.70%	22.50%	26.70%	33.30%	26.30%

Some observations:

Superior performance by all students with prior learning [*t* statistic = 8.095. Significance = 0.000].

Prior learners achieve higher mid-semester examination mark quartile performance levels than students with no prior learning.

One student with no prior learning achieved the equal top mid-semester examination mark of 100%.

Group assignment mark range	Prior learning			No prior learning	All students
	ACF	Pre-ACF	Other		
Mean group assignment mark	**53.00%**	**59.60%**	**51.20%**	**51.30%**	**51.80%**
Maximum group assignment mark	**85.00%**	82.00%	**85.00%**	**85.00%**	98.00%
Minimum group assignment mark	33.00%	36.50%	0.00%	0.00%	0.00%
Quartile distribution of group assignment marks:					
Top quartile	48.00%	51.50%	47.30%	46.00%	47.00%
Second quartile	5.00%	4.50%	5.70%	7.00%	6.00%
Third quartile	8.00%	14.30%	4.00%	6.50%	7.00%
Fourth quartile	39.00%	29.70%	43.00%	40.50%	40.00%

Some observations:

Prior learners achieved similar group assignment mark quartile performance levels to the students with no prior learning [*t* statistic = 1.807. Significance = 0.072].

Expectation was that groups with one or more prior learners would achieve higher group assignment marks. Presence of prior learning measured in two ways: absolute proportion of prior learners and weighted average of prior learning accounting marks.

No superior performance exhibited by higher ranked prior learning groups.

Final examination mark range	Prior learning			No prior learning	All students
	ACF	Pre-ACF	Other		
Mean final examination mark	**70.40%**	**72.30%**	**60.80%**	**49.70%**	**54.90%**
Maximum final examination mark	98.00%	94.00%	96.00%	**98.00%**	98.00%
Minimum final examination mark	20.00%	25.50%	11.00%	3.00%	3.00%
Quartile distribution of final examination marks:					
Top quartile	60.10%	69.80%	46.00%	29.50%	36.50%
Second quartile	13.40%	7.20%	18.00%	21.00%	21.50%
Third quartile	10.50%	8.80%	14.80%	19.50%	17.00%
Fourth quartile	16.00%	14.20%	21.20%	30.00%	25.00%

Some observations:

Superior performance by all students with prior learning [*t* statistic = 11.946. Significance = 0.000].

Prior learners achieve higher final examination mark quartile performance levels than students with no prior learning.

One student with no prior learning achieved the top final examination mark of 98%.

ATAR rank for no-prior learning students	Number	% of total students	Average final mark
ATAR ranking less than 70	45	10.35%	43.33%
ATAR ranking 71 to 79	203	46.67%	45.57%
ATAR ranking 80 to 89	128	29.42%	53.25%
ATAR ranking more than 90	59	13.56%	67.95%
Total students	435	100.00%	50.63%

Some observations:

A no prior learning student with a higher ATAR ranking outperforms a no prior learning student with a lower ATAR rank.

Academic preparation, as measured by ATAR rank, mediates the impact of the absence of prior learning on academic performance in Accounting 100.

ATAR rank for prior and no-prior learning students	With prior learning		No prior learning		*t* test	Sig
	#	Average mark	#	Average mark		
ATAR ranking less than 70	13	52.00%	45	43.33%	2.229	0.030
ATAR ranking 71 to 79	76	63.20%	203	45.57%	10.930	0.000
ATAR ranking 80 to 89	41	67.80%	128	53.25%	6.625	0.000
ATAR ranking more than 90	18	79.94%	59	67.95%	4.793	0.015
Total students	148	65.53%	435	50.63%	11.487	0.000

Some observations:

A prior learning student at each ATAR ranking outperforms a no prior learning student at the same ATAR ranking.

Academic preparation, as measured by ATAR rank, enhances the positive impact of prior learning on academic performance in Accounting 100.

Multivariate regression analysis

Source	Type III Sum of Squares	df	Mean Square	F	Signific
cted Model	8031.328[a]	5	1606.266	15.929	.000
ept	398327.822	1	398327.822	3950.019	.000
CODE	1285.859	2	642.929	6.376	.002
R_CODE	1797.914	3	599.305	5.943	.001
	14319.564	142	100.842		
	657832.000	148			
cted Total	22350.892	147			

Dependent variable: Final mark. R Squared = 0.359 and adjusted R Squared = 0.337.

An observation:

Both prior learning and ATAR ranking variables significantly impact on student performance in Accounting 100.

ACF code:

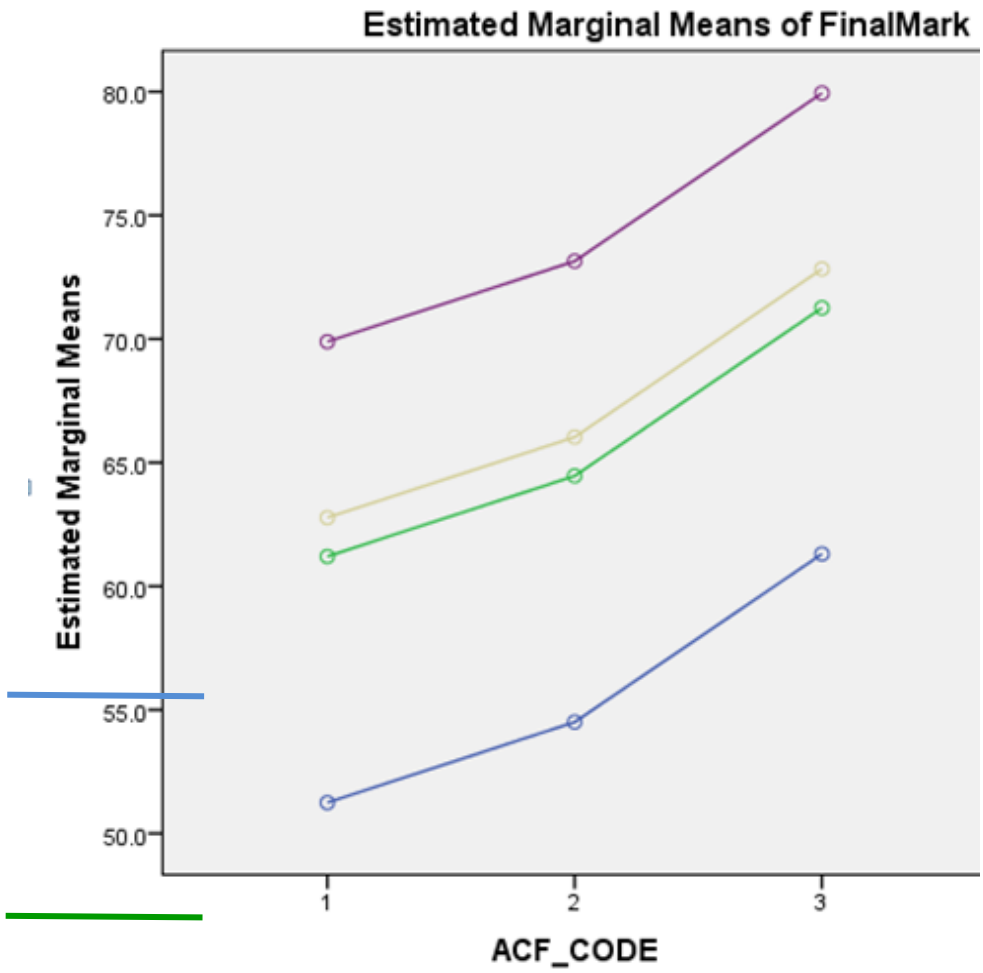
ACF mark achieved

1. Below 60%
2. 60% to 65%
3. Greater than 65%

ATAR code:

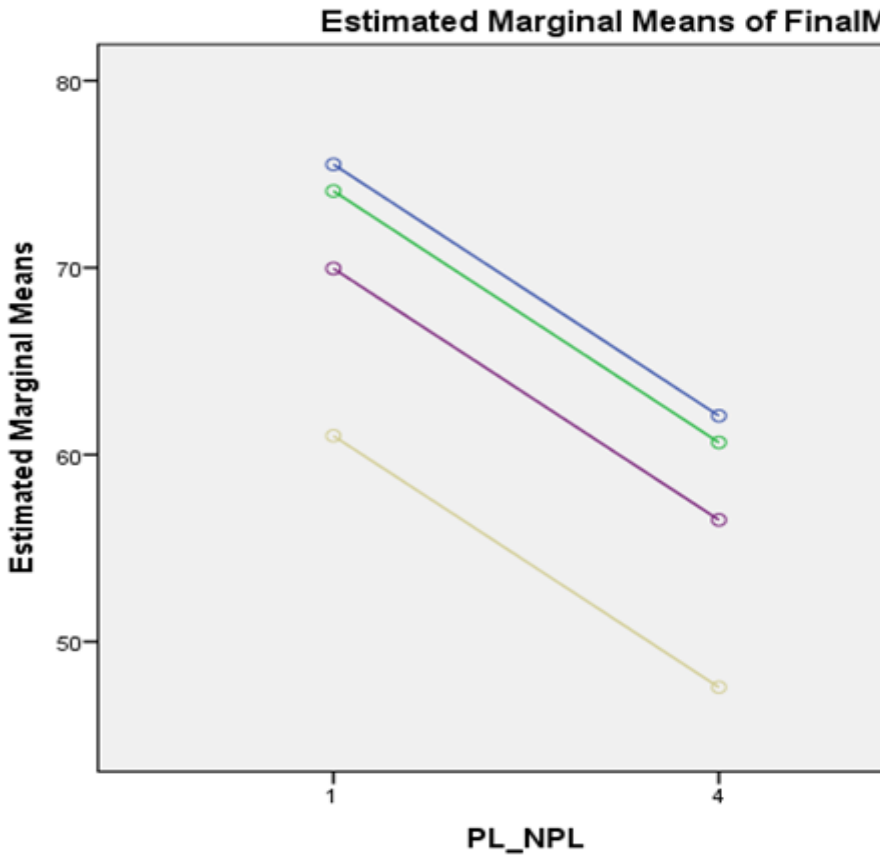
ATAR rank achieved

1. ATAR ranking less than 70
2. ATAR ranking 71 to 79
3. ATAR ranking 80 to 89
4. ATAR ranking more than 90



Prior learning code

1. ACF prior learning
2. Pre ACF prior learning
3. Other accounting prior learning
4. No prior learning



Learning style

1. DM: Deep motive learning.
2. DS: Deep strategic.
3. SM: Surface motive learning
4. SS: Surface strategic.

Some observations:

Students with prior learning outperform students with no prior learning.

Deep learning styles outperform surface learning styles.

Response given	Number	% of responses	% of opinions given
No opinion	16	8.94%	
Strongly disagree	11	**6.15%**	
Disagree	16	**8.94%**	**16.56%**
Agree	77	**43.02%**	
Strongly agree	50	**32.96%**	**83.44%**
Total prior learners	179	100.00%	100.00%

Survey question asked of prior learners: I have found my prior accounting studies to be highly beneficial to my academic performance in Accounting 100.

5 of every 6 prior learning students expressed an opinion that their prior learning was highly beneficial to their performance in Accounting 100.

Response given	Number	% of responses	% of opinions given
No opinion	11	4.15%	
Strongly disagree	30	**11.32%**	
Disagree	80	**30.19%**	**43.31%**
Agree	73	**27.55%**	
Strongly agree	71	**26.79%**	**56.69%**
Total prior learners	265	100.00%	100.00%

Survey question asked of prior learners: I have found my lack of prior accounting studies to be highly detrimental to my academic performance in Accounting 100.

Nearly 6 in every 10 students with no prior learning expressed an opinion that their lack of prior learning was highly detrimental to their performance in Accounting 100.

5. Summary and conclusions

Matters of curriculum have been debated for many years, and in some ways there is nothing novel about the current situation in Australian university level accounting degrees. Accounting professionals and academics continue to debate questions such as: What is the desired length of an accounting degree? What is core accounting knowledge versus non-core? How are generic skills to be included in the curriculum and, if so, should this be at the expense of technical accounting skills? Should students specialise in accounting later in their degree versus earlier in their degree, or at undergraduate level versus postgraduate level?

We have no ready answers for these questions but simply to add to this list a question of our own: "What initiatives ought to be considered where addressing our finding that students who enter university with more than sufficient prior learning in accounting are conferred with a privileged and significantly favourable learning outcome than those who lack that prior learning?" Potential answers to our question include:

- Stream students into two first courses in accounting that differ in the perspective taught. Thus, for a student intending to undertake no further studies in accounting, they would be enrolled into *an introduction to accounting as their first (and only) course*. For students intending to undertake further studies in accounting, they would enrol in the alternative stream where *introductory accounting* is not only their first course in accounting, but one of many more to come. A potential problem with this option is that students who elected to enrol in the introduction to accounting may now wish to undertake further advanced studies in accounting. Would their lack of exposure to the introductory accounting course disadvantage them in subsequent accounting courses? According to Bernardia and Bean (1999), this does not occur. They report that students taking a preparer approach first course in accounting prior to subsequent studies in

intermediate accounting did not outperform the students who completed a user approach first course in accounting. Similarly, Chiang, Nouri and Samanta (2014) report that there was no significant difference in the marks achieved by students enrolled in a finance course who were taught a first course in accounting using a preparer perspective versus those students who were completed an equivalent first course with a user perspective.

- Offer students lacking prior learning in accounting a bridging type unit that lifts their knowledge of accounting to a level that provides a sound foundation upon which they can successfully complete their first course in accounting.[5]
- Ensure secondary school students and those that influence their choice of subjects in senior secondary school, are fully informed as to the significant benefit prior learning in accounting brings to subsequent studies at university level, such as for a first course in accounting.

[5] One of the authors was the lecturer-in-charge of a first course in accounting at a large Western Australian university from 2005 to 2007. Having noted the beneficial impact of prior learning on student performance in this university's first course in accounting during 2005, one-day "boot camps" in financial accounting were offered in 2006 and 2007 to students who had no prior learning. For those students who participated in each boot camp, not only was there a significant improvement in marks achieved over those non-prior learners who did not attend, positive social outcomes were also achieved. Given that this innovation was for teaching and learning purposes only, ethics clearance for publication of the results was not sought and have not been formally reported elsewhere.

5.2 Limitations

This study is limited in a number of ways. Firstly, the results may be particular to the WAU, specific to the state of Western Australia and, moreover, an artefact of the Australian secondary and higher education sectors. Secondly, in only examining a single year, these results may be peculiar to first year students in the given year and not readily generalisable to other years.

Thirdly, this study has only considered the impact of PL on the results obtained by students enrolled in WAU's first course in accounting. The beneficial impact of prior learning may extend into further and advanced studies in accounting that are undertaken during a student's second and/or third year of studies in accounting. To address this limitation, we have a working paper that tracks the academic performance of students beyond the first course in accounting so that monitored and their performance in subsequent years will be assessed.

The findings of this study raise the open question of whether first courses in accounting offered by Australian universities are appropriately designed as a generic accounting unit with learning outcomes that are equally applicable, yet not well suited to the learning needs of all students. Furthermore, given the differences of in performance and the quality of the learning experience reported here, there are certainly grounds for arguing that a better formulated and tailored response to the learning aspirations and needs of non-accounting majors and for those with and without prior learning is essential.

In common with the prior literature, this study offers only an investigation of the impact of prior learning at one university (WAU) and for one teaching period (Semester 1, 2012). Thus, the caveats of our results not being generalisable beyond WAU and in terms of the time-

period examined also apply. However, in addressing the latter time-bounded caveat, we have undertaken an extension to this paper where we examine the effect of prior learning on academic performance beyond the first course in accounting (e.g., to also include student performance in second and third year courses in financial and management accounting).[6] In a current study, we examine the particular circumstances affecting student performance in the advanced corporate accounting course.

5.3 Future research questions to address

As our study of the impact of prior learning upon student performance in the first course in accounting was conducted at WAU where the user perspective was employed, future studies might establish whether the impact we report is replicable at universities where the alternate preparer perspective is taught. Earlier we noted that most prior accounting learning in Australian state-based senior secondary education courses (e.g., the Western Australian Certificate of Education) incorporate both the preparer and user perspectives over two years of study. Thus, intuitively the effect of prior learning on first courses in accounting taught in Australian universities with a preparer perspective might be stronger than we report.

Given ongoing debates about the place of university teaching in the context of broader discussions around the teaching/research nexus and the use of opaque university funding models to siphon funding from business programs to elsewhere, we believe that more needs to be known about how students are able to continue learn effectively in a constrained financial environment. Part of the response to this challenge, might be to no longer ignore the

[6] The results of this study are not reported in this paper. However, the impact of prior learning appears to extend beyond the first course in accounting to higher and more advanced accounting courses, albeit this effect being no longer as strong as reported for the first course in accounting.

contribution prior learning in accounting has for successful studies in a first course in accounting and those accounting courses that lie beyond.

Because most students taking a first course in accounting are not intending to major in accounting, the usefulness of the preparer's perspective accounting process (e.g., debits and credits, journals and ledger, balance day and closing entries) is highly questionable. Yet for those first courses in accounting that adopt a preparer-approach, up to 80 per cent of the student cohort (i.e., all non-accounting majors) are required to spend considerable time on becoming proficient in tasks that they will have need of in their post-graduation careers.

As our results are limited by the reliance on one institution, it may embed and reward particular skills and learning approaches that advantage students with particular subject experiences and learning styles (e.g., prior learning in accounting). Therefore, a replication of our study across institutional settings where the development of other skill sets (e.g., generic skills as opposed to technical skills) in the first course in accounting might ameliorate some of the privilege afforded to prior learners that we have reported here (see Tan and Laswad, 2015).

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