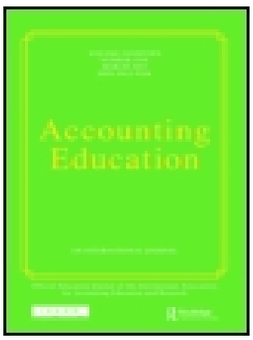

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The relationship between learning approaches and learning outcomes: a study of Irish accounting students

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Abstract

The higher education literature demonstrates that a student's approach to learning is a critical factor in determining the quality of the learning outcome. This is the first study undertaken in an Irish context which examines the relationship between accounting students' approaches to learning and their learning outcomes. The Approaches and Study Skills Inventory for Students (ASSIST) is used to measure the approaches to learning adopted by first year students in their study of management accounting. Students' learning outcomes are represented by their performance in the various assessment components of that module. Gender differences are specifically considered in this study. The analysis reveals that for the full group the deep and strategic approaches are positively associated with high academic performance and the instrumental approach is associated with poor performance. This relationship exists for female students but, surprisingly, there is little evidence of a relationship between performance and learning approaches for male students. This may be explained by male students failing to effectively report their actual approach to learning.

Keywords: learning approaches, learning outcomes, ASSIST, academic performance, gender differences

Introduction

There is growing recognition that, in order to improve the quality of student learning, there is a need to develop a greater understanding of how students learn. Within the student learning paradigm, learning is not viewed solely as either a cognitive or behavioural process but rather as the way a student experiences a learning situation (Marton and Booth, 1997, p. 13). Learning is conceptualized as relational in that the way a student learns depends on the way that he/she relates to a learning situation. A student may relate to one task in a particular way but relate to another in a totally different way. Therefore, the way a student relates to a learning situation is not an intrinsic characteristic of the student, but rather is dependent on the 'learning context' (Ramsden, 1987; Laurillard, 1997, p. 136; Prosser and Trigwell, 1999, p. 4). The term 'learning context' captures a whole range of variables which influence a student's approach to learning and the learning outcome. It embraces student-related variables such as prior learning experiences and learning

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orientations and it also captures factors controllable by educators such as the syllabus and teaching and assessment strategies (Entwistle, 1987; Biggs, 1999).

Since the emergence of research on students' approaches to learning, which started in the early 1970s, it has been recognized that different academic disciplines may foster different learning environments and thus differences in students' learning approaches across disciplines may be observed (Entwistle and Ramsden, 1983 pp. 111–30; Meyer, 1999). The need to explore student learning in different disciplinary contexts has been reiterated recently (Meyer and Eley, 1999; Neumann, 2001), and Lucas (2001) has called for more research within the accounting discipline.

This study hopes to contribute to the development of a body of research exploring student learning in the accounting discipline and specifically to explore quantitatively the relationship between accounting students' learning approaches and learning outcomes. The rest of the paper is structured as follows: first, prior research on the relationship between learning approaches and learning outcomes is explored; secondly, a description of this study is provided. The findings are then presented and discussed and the paper concludes with consideration of the implications of the findings and suggestions for further research.

The relationship between approaches to learning and learning outcomes

Higher education

Trigwell and Prosser (1991a) contend that the major aim of higher education is to produce high quality learning outcomes among students. However, the nature of a learning outcome is not widely defined. Entwistle (1997, p. 3) describes the outcome of learning as 'what students can demonstrate of their increases in knowledge and changes in understanding as a result of their experiences in school or college'. Research on student learning (Ramsden, 1985; Biggs, 1987a) has identified the approach to learning as a crucial factor in determining the quality of the learning outcome. A learning approach describes the way a student relates to a learning task. In early research exploring the link between learning outcomes and approaches to learning, students were asked to read an article and were then interviewed to assess their level of understanding and to determine how they approached the task (Marton, 1975; Marton and Saljo, 1976). Marton and Saljo identified two distinct approaches that were clearly related to different categories of learning outcome. These reflected qualitative differences in the levels of understanding achieved which were explained subsequently in terms of a combination of the intention that the student had in starting the task and the process used to carry it out (Entwistle, 1997, p. 18). Students achieving a high level of understanding had adopted a deep approach to learning. They set out with the intention of understanding the material, questioned the arguments, and related them to their prior knowledge and personal experiences. In contrast, those students with a low level of understanding had adopted a surface approach. They started out with the intention of memorizing facts in an unrelated manner and were constrained by the specific task. In a later study Ramsden (1979) identified a third approach which he called a strategic approach. This describes students who are primarily concerned with achieving the highest possible grades. They use both deep and surface approaches, as appropriate, and have a competitive and vocational motivation. The defining features of the three approaches to learning are summarized in Table 1.

Table 1. Defining features of three approaches to learning

Deep Approach
- Intention to understand
- Vigorous interaction with content
- Relate new ideas to previous knowledge
- Relate concepts to everyday experience
- Relate evidence to conclusions
- Examine the logic of the argument

Surface Approach
- Intention to complete task requirements
- Memorize information needed for assessments
- Failure to distinguish principles from examples
- Treat task as an external imposition
- Focus on discrete elements without integration
- Unreflectiveness about purpose or strategies

Strategic approach
- Intention to obtain highest possible grades
- Organize time and distribute effort to greatest effect
- Ensure conditions and materials for studying appropriate
- Use previous examination papers to predict questions
- Be alert to cues about marking schemes

Source: Richardson (1993) adapted from Entwistle (1987, p. 16)

Other researchers (Dahlgren, 1984; Prosser and Millar, 1989), following the approach of Marton and his colleagues, confirmed the relationship between students' approaches to learning and the quality of learning outcomes. Other studies explored the relationship using alternative methods of measuring either or both the learning outcome and the learning approach.

Biggs and Collis (1982) developed the *Structure of Observed Learning Outcomes* (SOLO) taxonomy to empirically classify qualitative differences in learning outcomes. In addition, a number of questionnaires were developed to measure quantitatively students' learning approaches (Biggs, 1978, 1987b; Entwistle and Ramsden, 1983). Using a questionnaire to measure approaches to learning and the SOLO taxonomy to measure learning outcomes, Biggs (1979) and Trigwell and Prosser (1991a, 1991b) identified a relationship between approaches to learning and learning outcomes, thus corroborating the phenomenographic work of Marton and his colleagues.

Other studies have used examination results as the measure of learning outcome when investigating the link between learning approaches and outcomes (Entwistle *et al.*, 1979; Watkins and Hattie, 1981; Watkins, 1982; Entwistle and Ramsden, 1983, p. 176–77; Ramsden *et al.*; 1986; Newble *et al.*, 1988; Trigwell and Prosser, 1991a, 1991b; Sadler-Smith, 1996). On the whole, the findings from these studies have been mixed, with the correlation between approach and outcome being lower than anticipated. These results may be explained by the potential inappropriateness of examination marks as a means of measuring differences in the quality of the learning outcome (Ramsden, 1992, p. 60). As

Lucas (2000) reminds us, research has indicated that students can have major misconceptions of fundamental disciplinary concepts, despite having passed the relevant examinations. This is a particular problem if the assessment does not require students to demonstrate their understanding. Thus using examination results as a measure of learning outcome can be problematic, particularly if care is not taken when designing the assessment.

Additionally, it is important to recognize the influence of assessment on the learning approach. It is well established in the education literature that assessment is a significant driver of student learning (Elton and Laurillard, 1979; Crooks, 1988; Boud, 1990; Biggs, 1996; Jones, 1996). Assessment has a powerful influence on students' approaches to learning which, in turn, affects the quality of their learning outcomes (Ramsden, 1985). In fact, the crucial factor is students' perceptions of the demands of the assessment (Thomas and Bain, 1984; Boud, 1990, 1995; Entwistle and Entwistle, 1991; Scouller and Prosser, 1994; Tang, 1994). Students, consciously or subconsciously, vary their attitudes and strategies of learning in order to cope with the assessment system (Harris and Bell, 1986). If a particular assessment is perceived to require just passive acquisition and accurate reproduction of details, students will then adopt a surface approach and employ a low level cognitive strategy. When assessment is perceived to require high level cognitive processing to demonstrate a thorough understanding, integration and application of the context knowledge, then students are more likely to adopt a deep approach (Tang, 1994).

Other studies have examined the link between different assessment practices and approaches to learning. Generally, multiple-choice and short answer tests elicit a surface approach to learning (Thomas and Bain, 1984; Tang, 1994), while essay or problem questions which require the demonstration of personal understanding encourage a deep approach (Entwistle, 1997, p. 20). Given its effects on learning, all assessment must be appropriately set to achieve the desired learning outcomes. An appropriate assessment is one that is aligned with the criteria set out in the course objectives (Biggs, 1999, pp. 25–29). Such criterion-referenced assessment steers students' attention to what is to be learned, while their performance indicates how well they have learnt it (Biggs, 1999 p. 33).

The accounting discipline

Accounting students within higher education are expected to develop high quality learning outcomes (QAAHE, 2000). Similarly, the accounting profession, which provides a career path for many accounting graduates, expects future members to demonstrate knowledge and competencies associated with high quality learning and outcomes (IFAC, 1996).

Within the accounting discipline there has been a considerable amount of research examining the determinants of examination success,[1] but research on student learning is at a relatively early stage of development (Stout and Rebele, 1996). While a small number of studies have examined the learning approaches of accounting students (Gow *et al.*, 1994; Sharma, 1997) few previous studies have explored quantitatively the relationship of accounting students' learning approaches and learning outcomes. A study undertaken by Booth *et al.* (1999) in two Australian universities explored the relationship of the learning approaches of accounting students with their learning outcomes. These authors used the

[1] For an overview of this research see Koh and Koh (1999).

Study Process Questionnaire to measure the learning approaches of students in a management accounting course. Academic performance in the course was used as the measure of learning outcome. The study found that both male and female students scored higher on the surface scale than on the deep scale. There was a significant negative correlation between the surface approach and academic performance, but there was no relationship for the deep approach. The study did not investigate gender differences in the relationship between learning approaches and outcomes.

Duff (1996), using the Inventory of Learning Processes (ILP) questionnaire to measure students' learning approaches, examined whether deep-elaborative information processing students gained higher marks in their subjects than shallow-reiterative processing students. While he found no significant difference in the performance of the two groups of students in year 1 of their accounting programme, significant differences were found in three subjects in year 2 (financial accounting, management accounting and company law) and two subjects in year 3 (financial management and advanced accounting). The differences were observed in those subjects which were a clear continuation of earlier years' studies. Duff (1997) later examined the relationship between students' scores on the ILP with their performance in both the coursework and end of semester examination in a financial management module. He found no significant relationship between the scores on the ILP scales and either of the two assessments.

Gender

Generally, those studies which tested for gender differences in approaches to learning failed to find any consistent evidence (Richardson and King, 1991). In a study of professional accounting students, Hassall and Joyce (1997) reported a significantly higher score on the surface learning scale for female students compared to male students. Similarly, Jones and Hassall (1997), in examining the learning approaches of UK university accounting students, found that the responses of female students were significantly higher on the surface and strategic scales. Byrne *et al.* (1999) found no significant differences in the approaches to learning of male and female students in a first year university accounting course.

There is contradictory evidence from those studies which have examined the influence of gender on the performance of accounting students. Mutchler *et al.* (1987) and Tyson (1989) found that female accounting students outperformed their male counterparts. Buckless *et al.* (1991) and Gist *et al.* (1996) found that gender had no systematic impact on performance. However, Koh and Koh (1999) found evidence to suggest that male students outperformed females.

No reference in the literature was found that examined gender differences in the relationship of approaches to learning with learning outcomes. Meyer (1999) suggests that discipline-specific contexts may require *gendered models* of student learning, thus supporting the examination of gender as a source of variation in the current study.

Irish context

The current study takes place in an Irish university and, while accounting education in Ireland has many similarities with that in the UK and elsewhere, there are also some distinctive features. Unlike the situation in the UK, the Irish accounting profession recruits

the majority of its trainees from specialist accounting programmes. Consequently, many students commence these programmes with a very clear career focus. Kember *et al.* (1999) found evidence that the career relevance of a programme is perceived positively by students and motivates them to study for understanding. Thus, as the current study focuses on a specialist accounting programme, it is possible that the students are motivated to take their studies seriously. A further feature of specialist accounting programmes in Ireland is that nearly all of the students enter directly on completion of their second level education where the majority will have studied accounting.

There has been little research in accounting education in Ireland and only one study examined the approaches to learning of accounting students (Byrne *et al.*, 1999). Therefore this study extends Irish accounting education research and seeks to contribute to the wider agenda of understanding the student learning process within the accounting discipline. The next section of the paper sets out the specific objectives of the study and describes the approach to data collection.

The research study

Objectives

The specific objectives of this study are:

1. to investigate the approaches to learning of first year accounting students;
2. to identify if a relationship exists between accounting students' approaches to learning and their learning outcomes; and
3. to determine if gender differences exist.

Measure of approaches to learning

The *Approaches to Studying Inventory (ASI)*, which was developed by Entwistle and his colleagues (Entwistle *et al*. 1979; Ramsden and Entwistle, 1981; Entwistle and Ramsden, 1983, pp. 35–55), is probably the most widely used questionnaire on student learning in higher education (Richardson, 1994). The most recent version of the questionnaire, called the *Approaches and Study Skills Inventory for Students (ASSIST, 1996)*, is used in the current study. The ASSIST measures students' approaches to learning on three dimensions or main scales: deep; strategic and instrumental. Tait *et al.* (1998) define instrumental as 'surface apathetic'. The inventory contains 52 statements and respondents indicate their agreement with each statement, using a five-point Likert scale where *1 = disagree* and *5 = agree*. The statements are combined into 13 subscales each containing four statements and are then grouped into the three main scales. The subscales have been designed to cover the defining characteristics of the main scales and are described in Table 2.

Duff (2001) recognizes that relying on validity information obtained from a prior study is satisfactory when the current study is based on a similar norm group. The ASSIST was previously validated for use in an Irish context using a sample of first year accounting and business students which included the students in the present study. The results of this validation are reported in full in Byrne *et al.* (1999), with the factor analysis revealing that the items for the three main scales loaded as expected conceptually, thus confirming the construct validity of the instrument. Additionally, Duff (2001) recommends that each study should provide evidence of the internal consistency of the data. In the case of the current

Table 2. ASSIST – approaches to learning scales and characteristic elements

Deep Approach	***Meaning***
Seeking meaning	Intention to understand
Relating ideas	Relating to other parts of the course
Use of evidence	Relating evidence to conclusions
Related Motives	
Interest in ideas	Interest in learning for learning's sake
Collaborating	Consultation and discussion with others
Strategic Approach	
Organized studying	Able to work regularly and effectively
Time management	Organize time and distribute effort to greatest effect
Monitoring effectiveness	Checking progress to ensure achievement of aims
Related Motives	
Achieving	Competitive and confident
Instrumental Approach	
Lack of understanding	Not understanding material and relying on memory
Lack of purpose	Lack of direction
Syllabus-boundness	Relying on lecturers to define learning tasks
Related Motives	
Fear of failure	Pessimism and anxiety about academic outcomes

study the derived alpha coefficients are 0.88 for the deep scale, 0.89 for the strategic scale and 0.79 for the instrumental scale, indicating good internal reliability.

Measure of learning outcomes

This study was conducted with first year students taking a management accounting module as part of the BA in Accounting and Finance programme offered at Dublin City University. The marks awarded in the management accounting module were used to measure quantitative differences in students' learning outcome. While the earlier discussion questioned the suitability of a quantitative measure of learning outcome, it is the most widely used measure. Trigwell and Prosser (1991b) recognize that while more qualitative measures of learning outcome are better indicators of student learning, the time demands of these measures reduce the likelihood of their use. Additionally, it must be recognized that higher education acknowledges a student's 'success' in the learning process by the awarding of marks.

In designing the assessment for the relevant management accounting module, every effort was made to ensure that the assessment was aligned with the module's objectives. Students were required to complete two elements of assessment: a group presentation for 10% of the total mark and an end of semester examination for 90% of the total mark. The presentation element of the module was designed to introduce students to the importance of effective oral communication for accountants, a theme which is developed over the three years of the degree programme. The students completed the presentation element of the module in pairs. They were required to prepare and present a suggested solution to a problem-solving question to their tutorial group. The primary objective behind the design and assessment of the presentation was to develop students' confidence and to foster a supportive and collaborative environment. Thus the assessment mark captured more than just their understanding of the material. The examination paper consisted of two problem-

solving questions (78% of the paper) and an essay question (22% of the paper). It was set with a view to being as representative as possible of the full knowledge and skills required by the module. The mix of questions gave students the opportunity to demonstrate basic and higher level skills and their ability to apply principles and techniques to unfamiliar circumstances. Thus, the paper was designed to promote and reward deep learning. It allowed students with a basic knowledge of the material to earn a pass, and students displaying a depth of understanding and well developed analytical abilities to gain high marks. Prosser and Trigwell (1999, p. 128) state that, if assessment is geared to testing understanding, student responses can be used to determine qualitative differences in students' learning outcomes.

Data collection

The ASSIST was distributed at the start of a management accounting lecture in week nine of the second 12-week semester. Before completing the questionnaire, the purpose of the study was verbally explained to the students and they were asked to write their name or student number on the questionnaire. They were reassured that their responses would not be used in any context other than for the purposes of this study. Details of the marks awarded in the assessments for this module were extracted from the record system of the university. There was a potential population of 110 students. Completed questionnaires were received from 48 females and 47 males resulting in a response rate of 86%.

Results

The scores for the 13 subscales of the ASSIST were derived by summing individual students' responses to the appropriate statements. The relevant subscale scores were combined to compute the scores for the main scales. As there are five subscales in the deep approach and four subscales in both the strategic and instrumental approaches, for ease of comparison each main scale was divided by the number of constituent subscales to standardize the scores. This resulted in a maximum score of 20 for each scale. Table 3 shows the mean scores for the main scales for the full sample and each gender group. The table also incorporates the results of the paired sample *t*-tests which tested for any significant differences between the mean scores within each group.

As can be seen from Table 3, a comparison of the scores on each of the scales revealed that the entire group and the female students score highest on the deep scale, while the

Table 3. Mean scores and differences in mean scores of main scales

	Total	*Females*	*Males*
Mean scores			
Deep	12.75	13.03	12.47
Strategic	12.73	12.81	12.65
Instrumental	12.18	12.19	12.16
Differences in means			
Deep – strategic	0.02	0.22	–0.18
Deep – instrumental	0.57	0.84	0.31
Strategic – instrumental	0.55	0.62	0.49

male students score highest on the strategic scale. For all groups the instrumental scale shows the lowest score. Paired sample *t*-tests failed to reveal any significant differences in the mean scores within any group, indicating that students do not have a strong preference for any particular approach despite the career relevance of the degree.

An examination of the scores on a gender basis revels that female students have a higher score on the three scales than the male students, but the differences between the gender groups are not significant. To explore the gender issue further, the scores of the males and females on each of the subscales were examined. It emerges that the only significant difference ($p < 0.001$) between male and female students is on the collaborating subscale indicating that the female students are more comfortable working and collaborating with their class-mates.

As discussed earlier, assessment marks have been used in this study as a measure of learning outcome. A summary of the assessment marks by gender and by type of assessment is given in Table 4. The data show that the female students achieved higher marks than the males in each of the three assessment elements. To examine whether these differences between the groups are significant, independent sample *t*-tests were performed. The tests revealed that female students achieved significantly higher grades ($p < 0.05$) in the essay question and in the presentation ($p < 0.001$).

Table 5 shows the correlation of assessment marks with the scores on the main scales and the subscales. It is clear on examination of this table that, for the full sample, the relationship between the learning approach and the total assessment mark is in the desired direction. There is a significant positive relationship between the deep approach and the total assessment mark with *interest in ideas* being the only factor contributing to this relationship. There is a highly significant positive relationship between the strategic approach and the total assessment mark with *organized study, time management, monitoring effectiveness and achieving* all significant subscales. For the instrumental approach, there is a highly significant negative correlation with the total assessment mark,

Table 4. Assessment marks

	Mean	*Std. dev*	*Min.*	*Max.*
Total mark (100%)				
Full sample	**63.85**	**14.84**	**8.30**	**88.05**
Females	65.26	16.18	8.30	88.05
Males	62.42	13.35	32.70	83.45
Problem-solving questions (70%)				
Full sample	**47.50**	**12.60**	**1.80**	**67.50**
Females	48.00	14.08	1.80	67.50
Males	46.99	11.01	21.60	64.80
Essay question (20%)				
Full sample	**9.55**	**2.90**	**0.00**	**15.30**
Females	10.20	2.76	0.00	15.30
Males	8.89	2.93	1.80	14.85
Presentation (10%)				
Full sample	**6.80**	**0.94**	**4.00**	**9.00**
Females	7.06	0.83	5.00	9.00
Males	6.54	0.98	4.00	9.00

Table 5. Correlation of ASSIST main scales and subscales with assessment marks

	Total mark			*Problem-solving questions*			*Essay questions*			*Presentation*		
	Full	*Female*	*Male*	*Full*	*Female*	*Male*	*Full*	*Female*	*Male*	*Full*	*Female*	*Male*
Deep	**0.22***	**0.34***	**0.02**	**0.21***	**0.36***	**–0.03**	**0.09**	**0.08**	**0.01**	**0.13**	**–0.10**	**0.27**
Seeking meaning	0.20	0.39**	–0.06	0.20	0.41**	–0.09	0.11	0.20	–0.05	0.09	–0.14	0.29
Relating ideas	0.13	0.25	0.00	0.17	0.27	0.04	–0.08	0.01	–0.16	0.02	–0.13	0.15
Use of evidence	0.04	0.14	–0.08	0.02	0.15	–0.12	–0.03	0.02	–0.05	0.05	–0.13	0.29
Interest in ideas	0.29**	0.40**	0.09	0.28**	0.40**	0.07	0.13	0.17	–0.00	0.24*	0.12	0.25
Collaborating	0.10	0.10	0.05	0.07	0.12	–0.04	0.09	–0.14	0.14	0.11	–0.11	0.05
Strategic	**0.29****	**0.39****	**0.16**	**0.25***	**0.38****	**0.09**	**0.25***	**0.26**	**0.23**	**0.18**	**–0.17**	**0.44****
Organized study	0.22*	0.29*	0.14	0.20	0.29*	0.10	0.14	0.20	0.13	0.14	–0.11	0.37*
Time management	0.21*	0.24	0.10	0.17	0.24	0.06	0.26*	0.19	0.26	0.14	–0.15	0.32*
Monitoring effectiveness	0.22*	0.27	0.19	0.22*	0.28	0.15	0.04	0.05	0.08	0.05	–0.17	0.26
Achieving	0.37**	0.45**	0.26	0.33**	0.43**	0.18	0.38**	0.38**	0.35*	0.17	–0.15	0.37*
Instrumental	**–0.34****	**–0.43****	**–0.17**	**–0.34****	**–0.44****	**–0.15**	**–0.19**	**–0.28**	**–0.14**	**–0.08**	**–0.03**	**–0.07**
Lack of understanding	–0.26*	–0.38**	–0.12	–0.26*	–0.36*	–0.12	–0.17	–0.24	–0.08	–0.12	–0.10	–0.06
Lack of purpose	–0.36**	–0.52**	–0.11	–0.34**	–0.51**	–0.07	–0.32**	–0.45**	–0.18	–0.13	–0.06	–0.15
Syllabus-boundness	–0.08	–0.01	–0.16	–0.09	–0.02	–0.14	0.01	–0.04	–0.04	0.02	0.03	–0.09
Fear of failure	–0.26*	–0.31*	–0.16	–0.27**	–0.34*	–0.15	–0.08	–0.06	–0.15	0.02	0.07	0.04

* Significant at the 5% level
** Significant at the 1% level

which is caused by *lack of understanding*, *lack of purpose*, and *fear of failure*. Thus, for the full group, these results are encouraging in terms of module development as the assessment rewarded a deep or strategic approach and did not reward an instrumental approach. This outcome is satisfying because, throughout the delivery of the module and the design of the assessment, the module co-ordinator encouraged students to develop a high level of understanding of the material.

To gain a greater insight into the relationship between learning approaches and academic performance, the correlation of the marks for the various assessment elements to students' approaches were examined. Looking at the results for the full sample, the relationship between problem-solving questions and approaches mirrors the pattern for the total assessment mark. This is not surprising as this component accounts for 70% of the total mark. Furthermore, throughout the semester students were required to complete problem-solving questions for both lectures and tutorials. Hence, this form of assessment is likely to be very influential in determining students' approaches to learning. In the case of the essay question, the only significant relationship is with the strategic approach. This may be because the students were offered a choice in this section of the paper thus affording them the opportunity to behave strategically. Examination-focused students may decide to limit their coverage of the syllabus and to concentrate on fewer topics in order to maximize their marks. With the essay question, examination marks may not be the best measure of outcome. Instead a qualitative approach may have provided a better evaluation of differences in understanding. With regard to the presentation, for the full sample, no significant relationships are found between the marks awarded and the approaches to learning. This is not totally unexpected considering that the primary objective of the presentation was to give students the opportunity to make a presentation and to evaluate their oral presentation skills, while the assessment of their understanding of the material was secondary.

In contrast to the full group, the relationship of approaches to learning and the total assessment mark for each gender group is less clear and less convincing. All the expected relationships between approach and the total assessment mark are present and significant for female students, but for the male students none of the correlations are significant. Thus, for the male students, the learning approach adopted in relation to management accounting is not significantly related to the outcome.

Furthermore, an examination of the correlation for the individual assessment elements on a gender basis shows a different pattern for male and female students. Generally the relationships for the female students mirrors the findings for the full sample, while there is little evidence of the learning approach impacting on the academic performance of male students in the various assessment components. The only significant relationship found for male students is between the strategic approach and their performance in the presentation. This relationship is not observed for the full sample, and is difficult to interpret.

Exploring the results for the male students, the appropriateness of the measures for learning approach and academic performance must be considered. The academic performance measure is objective and not a self-rating. Thus, the concern arises that the instrument used to capture the learning approaches does not adequately describe the actual learning approaches of the male students. Sadler-Smith (1996) suggests that the absence of a link between academic performance and the approach to learning could be explained by the fact that the approaches to learning questionnaire and student grades may be measuring separate constructs. He reasons that grades reflect students' actual approaches to learning

while a questionnaire measures students' perceptions of their approaches. Hence, if students' perceptions are quite different from their actual approaches, then any evidence of a link between learning approaches and academic performance may not be detected. This explanation may account for the difference in this study in the relationship between learning approaches and performance for male and female students. Female students' self-perception of their approach may be a good measure of their actual approach, while male students' perception may be a poor indication of their actual approach. To help gauge the reasonableness of this explanation, the correlation between students' self-rating of performance (captured as an additional item on the ASSIST questionnaire) and actual performance was derived as evidence of students' ability to judge their own progress. The test revealed a highly significant relationship between the self-rated performance and actual performance for female students and no relationship for male students. This suggests that male students are not effective in evaluating their performance, so similarly they may lack the ability to accurately evaluate their actual approaches to learning. An alternative explanation may be that the male students completed the questionnaire by responding to the questions in the way they thought would be desired or expected, rather than reflecting their actual learning approaches.

Limitations and implications

It is recognized that a quantitative approach to the exploration of student learning may fail to capture the complexities of the variables under review. The gender differences identified in this study need considerably more contemplation and analysis and may support Meyer's (1999) view of the possible need for gendered models of student learning. There is also a need to examine whether these gender differences are replicated in other populations.

The results suggest that the actual learning approaches of the male students may not have been captured in this study. This may arise because male students' perceptions of their approach to learning may be quite different from their actual approach. Alternatively, male students may have completed the questionnaire by responding to the questions in the way they thought would be desired or expected, rather than reporting their actual learning approaches. It may be beneficial if educators explicitly discussed different learning approaches with their students and linked those approaches to the specific module requirements.

Conclusions

This study sought to identify the approaches to learning adopted by first year accounting students in their study of management accounting and, in particular, to assess the relationship between their approach and the learning outcome. The ASSIST was used to measure students' learning approaches and the module assessment marks were used as the measure of learning outcome.

With regard to learning approach, while the highest score for the full sample was on the deep scale and the lowest was on the instrumental scale, students showed no strong preference for any particular approach. There were no differences in the learning approaches adopted by male and female students. Similarly, there were no significant differences in the total marks achieved by each gender group. It is satisfying to report for the full sample that the relationship between the learning approach and the total assessment

mark is in the desired direction. There is a significant positive relationship between the deep approach and the total assessment mark and a highly significant positive relationship between the strategic approach and the total assessment mark. For the instrumental approach, there is a highly significant negative correlation with the total assessment mark. These results are encouraging in terms of module development as the assessment rewarded a deep or strategic approach and did not reward an instrumental approach.

When the approaches were correlated with the assessment marks by gender group differences were observed. For the female students, all the desirable relationships existed, i.e., the deep and strategic approaches were positively correlated with high academic performance whereas the instrumental approach was negatively correlated. However, for the male students no relationships existed between their learning approaches and their total assessment mark. The absence of this link may be explained by the difficulty in capturing these students' actual approaches to learning. While the reasons for the gender differences require further qualitative and quantitative exploration, this study makes a contribution to the growing body of accounting education research which aims to develop an understanding of students' approaches to learning within the accounting discipline.

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