

Accounting and finance degrees: is the academic performance of placement students better?

Abstract

The relationship between placement and academic performance on accounting and finance degrees is significantly under-researched. This paper examines the relationship between a number of factors, including placement, and academic performance as measured by average marks. Readily available data on placement status, gender and prior achievement for the academic years ended 2004, 2005 and 2006 for an accounting and finance degree were used. Linear regression models were constructed using two versions of the data – one with all students in it and the second with graduates only. Placement students perform significantly better than full-time students and, in the Graduates model, it is the female placement students who perform significantly better than their male counterparts. Most recent prior academic performance is significant in all models whereas gender had no separate significant effect on performance in the second and final years of the degree. The paper concludes with suggestions for further research into placement.

Keywords: academic performance, placement, gender, work-based learning

Introduction

There is a considerable body of UK and overseas research investigating the influence of particular factors on academic performance. Factors such as gender, prior academic achievement and course type have been examined over a wide range of degree courses (see for example Morrison *et al.*, 2005; Gomez *et al.*, 2004; Koh & Koh, 1999; Hoskins *et al.*, 1997). Although some of this research focuses on accounting and finance courses there is very little recent UK research and a paucity of research into the relationship between placement and academic performance. This study aims to re-examine some of the factors influencing academic performance in an accounting and finance degree with particular emphasis on placement (also known as internship) using readily available information from university records.

The paper begins by setting the context for this study. The next section evaluates the existing research on factors influencing academic performance and identifies a lack of recent UK research into the relationship of placement to academic performance (however measured) on accounting and finance degree courses. Factors influencing performance – particularly placement status, prior academic achievement and gender – are investigated using regression models. Conclusions are then drawn and areas for further research identified.

Context

Increasing attention is being paid to the employability of graduates and additionally the part that higher education (HE) plays in preparing them for work (Ryan *et al.*, 1996; Dearing, 1997; Mason *et al.*, 2003; Cranmer, 2006). Knight and Yorke (2004, p.25) identify the following aspects involved in the notion of “employability”:

- Getting a graduate job
- Possession of a vocational degree
- Possession of ‘key skills’ or suchlike
- Formal work experience
- Good use of non-formal work experience and/or voluntary work
- Skilful career planning and interview technique
- A mix of cognitive and non-cognitive achievements and representations

Placement offers the opportunity for the fourth of these - formal work experience - which is often highly valued by employers (Harvey *et al.*, 1997; Little and Harvey, 2006). In the UK this is offered by some HE institutions in the form of a one-year placement with a single employer as part of a planned programme of study (alternative forms of placement include two six month stints at different employers or much shorter periods such as six weeks or three months). The placement normally occurs between the second and final years of study, is supervised and the student is required to produce an assessed report relating to the placement experience. Whilst such placements may potentially increase a students’ employability because employers value the work experience itself, it is also of interest to see whether placement improves students academic performance in the year following placement.

There is, however, little hard evidence that work placement enhances academic development. As Little and Harvey (2006, p.2) point out:

Very little research explicitly explores how the placement experience translates into academic development from the point of view of current students. Much is taken for granted, the observed maturity of undergraduates returning from a period of work placement is assumed to carry over into a more studious or reflective approach to learning but there is little direct evidence to be found of this in the literature.

Any positive academic relationship in terms of better performance leading to a better degree classification may also affect another aspect of employability – getting a graduate job (Knight and Yorke, 2004, above). There is anecdotal evidence to suggest that employers prefer first or upper second (2.1) class degrees to lower seconds (2.2) and below. A better class of degree, coupled with any better employment prospects arising from having work experience, may encourage others to follow the placement route (or stimulate competition with students not taking a placement) benefiting both students and academics.

The relationship between placement and academic performance is thus worthy of further study.

The factors which may influence academic performance

This section contains a review of prior research within the UK and elsewhere, in accounting and non-accounting contexts.

Placement

There is almost no research into the relationship of placement (i.e. where students undertake a work based placement, often as the third year, as part of their degree) to academic performance in an accounting and finance context. Gracia and Jenkins (2003) considered the relationship of placement to final year performance but as placement did not appear in their final stepwise regression model, the relationship was unquantified. In Gammie *et al.* (2003) all students did a placement, so it was not possible to separately quantify any placement relationship. Koh & Koh (1999) included the time spent on national service for males as a

measure of prior work experience in their study, arguing that skills learnt such as communication and leadership are similar to those learnt in the workplace. They found students with work experience performed significantly better at all three levels of the degree programme than those without the experience.

Duignan (2002) found no significant difference between the performance (using mean module percentage scores) of placement and full-time business undergraduates. He suggested (p.216) that this did not mean that students had failed to learn on placement but it was 'suggestive of a failure to exploit to the full the learning potential of the placement with respect to those attributes that are commonly valued and evaluated by academics'. Duignan (2003, p.345) also argues that 'the skills and competencies that are engendered by successful placements are not easily transferable into academic performance'.

More research has been published on placement in non-accounting contexts. Gomez *et al.* (2004) analysed graduate students on a bioscience degree over a two year period. The effect of type of course followed and gender, amongst other factors, on aggregate percentage marks in each of the three years on the course were examined. They found no significant difference in performance between males and females in the first two years but that females performed significantly better than males in the final year. In contrast to Duignan (2002), those taking the optional placement course performed significantly better than those following the normal, full-time degree in the final year. In addition, there was no significant difference between the performance of male and female *placement* students in the final year following the year of placement. One possible factor contributing to this, suggested by the authors, is that the more academically able students follow a placement course. They found that placement students had significantly better HESA scores (a points measure based on 'A' level grades obtained at school in the UK) than those on full-time degrees and that HESA score, as a measure of prior achievement, had a significant effect on final-year average marks for the bioscience students studied. However, their results showed that there was a significant positive effect of the placement year itself, regardless of initial academic ability measured by HESA score.

Rawlings *et al.* (2005) examined students graduating from information systems degrees over a four year period. They found that the probability of gaining a first or higher second degree classification was greater for students on placement rather than full-time courses (for students scoring at least 50% in their second level exams). They also found that there was a significant

interaction between second-year marks and placement status on degree classification. Mandilaras (2004) also found that placement students in an economics degree had a significantly better chance of achieving a higher degree (first and upper second).

Students on a human psychology degree over a six year period were studied by Reddy and Moores (2006). Placement students significantly improved their final-year marks (compared to second-year marks) by 3.2% compared with 1.5% for those students not going on placement and they hypothesised that 14% of students improved their degree class by undertaking a placement. However, they noted that placement students had higher second-year grades and might have been expected to improve more in the final year.

Some of the literature reviewed above contains suggestions as to why the performance of placement students might (potentially) be better than full-time students. Mandilaras (2004), Gracia and Jenkins (2003), Duignan (2003) and Rawlings *et al.* (2005) suggest increased maturity may be a factor in improved performance. Increased ambition or motivation (Duignan, 2003; Gracia and Jenkins, 2003) leading to increased focus and determination to do well (Mandilaras, 2004) or the possibility of increased employability (Gomez *et al.*, 2004) has also been identified. Skills and competencies have been mentioned by a number of researchers. Mandilaras (2004) suggests that, potentially, work experience may improve students' reliability so they take coursework and exams more seriously. Koh and Koh (1999) speculate that work experience, in the form of national service, may improve leadership, communication and interpersonal skills and instil discipline. Duignan (2003) suggests that whilst on placement students might be expected to develop core competencies and that their academic performance might be enhanced by applying the skills learned on placement. Gomez *et al.* (2004, p.382) identify practical skills learned which can be used on the final-year biosciences project i.e. subject specific skills and 'generic skills of team-working, communication, self-reliance and confidence, time keeping etc'. Rawlings *et al.* (2005, p.461) state that 'complex working practices and environments require individual practitioner self-confidence in order to work flexibly and productively, learning new skills and adapting established talents' and that placement can help gain these abilities. Reddy and Moores (2006) list eight benefits from placement – communication, time management, confidence, taking responsibility, self presentation, making presentations, writing skills and teamwork. All of this suggests the need for further research into placement.

Prior academic achievement, focus and gender

There have been many studies which have examined the factors influencing performance on undergraduate accounting and finance courses. Studies by Gracia and Jenkins (2003), Lane and Porch (2002), Duff (2004), Gammie *et al.* (2003), Turner *et al.* (1997), Wooten (1998), Jackling and Anderson (1998), Bartlett *et al.* (1993), and Koh and Koh (1999) all report the statistical significance of prior achievement on university performance. Generally it is the most recent prior performance which is of significance with Gammie *et al.* (2003, p.74) concluding 'performance in the early years of the degree programme appears to supersede school performance'. Most often general measures of prior performance are used e.g. previous year average marks at university or points scores based on school qualifications but more specific measures such as performance in particular subjects/modules at university or school have been employed in some studies (Gammie *et al.*, 2003 and Bartlett *et al.*, 1993).

Some studies focus on performance in single accounting subjects or modules (Lane and Porch, 2002, Turner *et al.*, 1997, Wooten, 1998, Jackling and Anderson, 1998, Lipe, 1989, Carpenter *et al.*, 1993, Buckless *et al.*, 1991, Keef and Roush, 1997, Mutchler *et al.*, 1987) and others on overall performance by year ie first (introductory), second (intermediate) or final (Gracia and Jenkins, 2003, Duff, 2004, Gammie *et al.*, 2003, Tho, 1994, Bartlett *et al.*, 1993 and Koh and Koh, 1999) making comparisons difficult.

A number of studies have considered the effect of gender on accounting performance. Gracia and Jenkins (2003) found that females significantly outperformed males in the second year, but the effect disappeared in the final year. Koh & Koh (1999) reported that males outperformed females in the first two years of the course but that there was no significant difference in the third year. Gammie *et al.* (2003), Turner *et al.* (1997), Jackling and Anderson (1998), Carpenter *et al.* (1993) found no significant gender difference. Whilst there was no evidence that females significantly outperformed males, Lipe (1989), did find a significant interaction between the gender of the student and that of the lecturer. Both Buckless *et al.* (1991) in the UK and Keef and Roush (1997) in New Zealand reported that many of the gender effects identified by Mutchler *et al.* (1987) and Lipe (1989) disappeared when controlling for prior academic achievement. In non-accounting contexts the findings are again mixed with Hoskins *et al.* (1997), Morrison *et al.* (2005), Woodfield *et al.* (2006) and

Gomez *et al.* (2004) finding that females performed significantly better than males but Rudd (1984), Jochems *et al.* (1996) and De Vita (2002) finding no significant difference.

The key issues

From the literature reviewed above the following key issues are identified

- The relationship of placement to academic performance on accounting and finance degrees is significantly under-researched.
- Prior academic achievement, measured in a variety of ways, is significant in many studies. Typically the most recent prior achievement is significant. (However, it may be that this prior academic achievement is simply a proxy for something else e.g. a particular learning approach or kind of motivation or level of intelligence and that the most recent prior achievement is simply the current manifestation of this something else).
- There are interesting, but no consistent, findings on the effect of gender.
- There is no common way of measuring performance and this makes comparisons between studies very difficult. For example, performance can be measured using average percentage marks, grades, degree classifications etc.
- Studies vary in the level examined i.e. first, second or final years, with an examination of first-year performance being the most common (which may in part explain the lack of research into placement which occurs later in degree courses).

This research aims to address these key issues by examining the effect of placement, prior academic achievement and gender on final year performance using average percentage marks.

The research study

This research aimed to identify whether placement is significantly related to the academic performance of students enrolled on a UK accounting and finance degree course in one university over a three-year period. The opportunity to investigate the significance of prior areas of interest was also taken.

The following research questions were addressed

- Is the type of course chosen (full-time or placement) related to performance?
- Does prior academic achievement influence current performance?
- Is there a significant difference in the performance of males and females?
- Are type of course chosen and gender interrelated in terms of performance?

In each case, performance is measured using average percentage marks (see below). For the purposes of this research the label “full-time” is used to denote students following a full-time 3 year degree course and the label “placement” is used to denote those following a full-time 4 year course including a one-year placement between the second and final years.

Methodology

The university maintains computerised student records containing a range of information including gender and type of course followed. This information was combined with Award Board reports which contain information on results by individual module and the average mark for each student by year for the BA (Hons) Accounting and Finance award for the academic years ending 2004, 2005 and 2006.

The final-year average percentage mark, L3%, (Gomez *et al.*, 2004) and that for the first (L1%) and second (L2%) years (see Koh & Koh, 1999 for example) were used as the dependent variables in the regression models. Average percentage marks were chosen as the measure of performance as this avoids, for example, the bandings used for degree classifications (where the bandings can be quite wide e.g. 10%) and the method by which degree classification is determined which varies between institutions. It also allowed inferences to be made as to how any differences in average marks between placement and full-time students might impact on degree classification (Gomez *et al.*, 2004: Reddy and Moores, 2006).

The independent variables chosen for study based on the key issues identified in the literature review and the readily available data were as follows.

- Gender (male = 0, female = 1) which features in much of the other research in this area. Anecdotally, staff teaching students in the final year of the degree course feel

that placement students perform 'better' than full-time students and, in particular, that female placement students perform best of all. The inclusion of a gender variable (and the interaction variable below) will allow this to be assessed and directly compared with the findings of Gomez *et al.* (2004) in the same university.

- HESA ('A' level points) score as a measure of prior school-level achievement. Intuitively, prior academic attainment might be expected to influence performance i.e. those with higher HESA scores might be expected to perform better than those with lower scores. Again, prior achievement (albeit measured in different ways e.g. cumulative grade point averages in many US studies) features in much other research.
- Type of course (either a three year full-time course without a placement [FT] or a four year placement course with a year's placement between the second and fourth years [P]). (FT = 0, P = 1).
- Dummy year variables for 2005 (2005 = 1, not 2005 = 0) and 2006 (2006 = 1, not 2006 = 0) to investigate any individual year effects.
- Two interactive terms (gender* FT or P and L2%* FT or P) to see if the nature of the relationship, if any, between final-year average marks (L3%) and the independent variables changes when the independent variables are combined. Prior research indicates that the most recent academic performance is normally significant hence the use of L2% (rather than L1%).

The university's Data Controller approved the use of the above data as no students were to be individually identified.

As there is a numeric dependent variable which can be related to multiple predictor variables, the most appropriate model to initially consider is a multiple regression model to determine the broad patterns in the data. It is recognised that the above variables are not the only ones which could have been considered and that further research is necessary to explore placement more fully. Some suggestions for possible future research are made at the end of this paper. The data was analysed using linear regression in SPSS 13.0. Further analysis was undertaken where possible using t-tests of significance to compare means. In judging levels of significance, standard levels (1%, 5% and 10%) are used throughout.

Samples and analysis

The sample comprised students sitting their final-year exams in 2004, 2005 and 2006 (“All Students”). To facilitate comparison with Gammie *et al.* (2003) and Gomez *et al.* (2004), a sub-sample consisting only of students graduating in the three years was also examined (“Graduates”). Multiple regressions were carried out using four different models. Checks were made for multicollinearity (using variance inflation factors) and the residuals were examined for normality and no problems were found. Accordingly, there is nothing to cast doubt on the appropriateness of the modelling approach.

Direct entrants to the final year (for whom no HESA, L1% or L2% data existed) were excluded from the analyses as were other students for whom no HESA score was available (for example, those students joining after foundation years or from overseas) or second-year mark (for example, ERASMUS students on exchange years abroad). This means, for example, in Table 2 for All Students, $n = 236$ for L3% but excluding 49 direct entrants and 6 students without second-year marks gives $n = 181$ for L2%. There were 143 students, for example, for whom all the independent variable information was available for models 2, 3 and 4 for All Students (see Table 4). Hence, the models analyse only students who follow what might be called a ‘standard’ degree pattern other than in terms of placement status. Arguably, the older measures of prior achievement like HESA score and L1% could be excluded if the more recent measure (L2%) was the only significant measure of prior achievement (as in Gomez *et al.*, 2004) to increase the sample size. However, this has not been done for consistency, as the HESA score is significant in model 4 for Graduates (see Table 4).

Results - sample characteristics

Table 1 shows that the majority of students were male and followed a full-time course. Only around one quarter followed a placement course. It should be noted that the Award Board reports from which this information is extracted are such that for the small number of students who switch from their intended placement course to a full-time course, all their information, including HESA score and level results, is recorded as if they had always been a full-time student.

[insert table 1 about here]

HESA scores and level average marks by year for All Students and Graduates are shown in Table 2. The increase in the fall off in numbers between All Students and Graduates over the

three years is caused by students failing exams and in particular, for L3%, reflects the relatively higher failure rate of the overseas students who are direct entrants at the final level (which, whilst important, is not pursued further in this paper as only ‘standard’ students are included in the analysis).

[insert table 2 about here]

Results - gender and performance

A comparison of the performance of male and female students in each year was made (Table 3). There were no significant differences in any year other than the first ($p < 0.10$), where females performed better than males, in either the All Students or Graduates samples so any difference which existed at the start of the students’ university course had disappeared in subsequent years.

[insert table 3 about here]

Results - factors influencing performance

Four separate regression analyses were subsequently performed for each sample. The results are shown in table 4.

Model 1: L1% as a function of HESA score, type of course, gender and year

Model 2: L2% as a function of L1%, HESA score, type of course, gender and year

Model 3: L3% as a function of L2%, L1%, HESA score, type of course, gender and year

Model 4: L3% as a function of L2%, L1%, HESA score, type of course, gender, year and gender*FT or P and L2%*FT or P.

where L1%, L2% and L3% are the % scores in the first, second and final years respectively.

Model 1

Table 4 shows that the HESA score is statistically significant in both model 1 regressions ($p < 0.01$). Thus prior achievement, as measured by the HESA score, has a significant predictive

effect on first-year average marks. Type of course followed is not significant in either model 1 regression nor were there any year effects. For both model 1 regressions gender has a significant predictive effect ($p < 0.05$), female students gaining an additional 2.7% - 3%. Table 1 indicated the same gender effect in the first-year. The adjusted R^2 shows the two regression models explain 12-15% of the variability of first-year marks and the model is significant in each case ($p < 0.01$).

Model 2

Table 4 also shows that the first-year mark is a significant predictor of the second-year mark for both model 2 regressions ($p < 0.01$). Compared with the first-year, HESA score is not a significant predictor of second-year marks. The type of course followed is now significant in both regressions ($p < 0.05$), with placement adding around 3% and 2.3% to the average second-year mark of All Students and Graduates respectively. The gender effect present in the first-year is not present in the second year. There is a significant year effect in both regressions ($p < 0.01$). In 2006 All Students and Graduates score an average 6% and 4% less respectively in their second-year exams. The adjusted R^2 show the two regressions explain 50-55% of the variability of second-year marks. Again the model is significant in each case ($p < 0.01$).

Model 3

First-year marks are no longer a significant predictor for final-year marks (see Table 4) and neither is gender. The other consistent features are that the type of course followed is significant in both regressions ($p < 0.01$) with placement students gaining an additional 3.6%-5.5% on their average final-year marks compared with full-time students and second-year marks are a significant predictor of final-year marks ($p < 0.01$). The HESA score is only a significant predictor in the Graduates regression model ($p < 0.10$) where there is also a significant year effect ($p < 0.05$) with 2006 students gaining an additional 4.6% compared with Graduates in the other two years (see also average graduate marks in 2006 for level 3 in table 2). The adjusted R^2 show the two regressions explain 48-55% of the variability of final-year marks. The model is significant in each case ($p < 0.01$).

[insert table 4 about here]

Model 4

Table 4 shows that there is a significant effect of both second-year marks and placement and also of the interaction between second-year marks and placement ($p < 0.05$). For full-time students the L2% coefficient is 0.959. The relationship changes for placement students to $25.851 + 0.959*L2\% - 0.371*L2\% = 25.851 + 0.588*L2\%$. Figure 1 summarises the model derived relationship between L2% and L3% according to placement status with all the other variables held constant at their average value. It can be seen that the benefit of placement is greatest those with lower average second-year marks.

For Graduates the significant interaction of gender and placement status ($p < 0.05$) shows a benefit of over 5% for female placement students. So for female placement students the effect of second-year marks is $24.246 + 5.368 + 0.756*L2\% - 0.373L2\% = 29.614 + 0.383*L2\%$ compared with $0.756*L2\%$ for a full-time student. For male placement students the equivalent results are $24.246 + 0.383*L2\%$ and $0.756*L2\%$. These are illustrated in Figure 2 on the same basis as that for figure 1. Again, it can be seen that the benefit of placement is greatest at lower average second-year marks.

[insert figure 1 about here]

[insert figure 2 about here]

Discussion and further analyses

Intuitively, prior academic attainment (measured as 'A' level HESA scores) might be expected to influence performance i.e. those with higher HESA scores might be expected to perform better than those with lower scores. This study shows that prior achievement has a significant effect in the first-year of university study, no significant effect in the second year and a significant effect for the Graduates only sample in the final year. The latter is consistent with the findings of Gomez *et al.* (2004) who also studied a sample of graduate students but there is no obvious explanation for the reappearance of HESA marks in the final year for Graduates compared with All Students in this particular study. However, it should be noted that Gracia and Jenkins (2003) found that IQ appeared in the final year in their sample of all students, not having been significant before. In Woodfield *et al.* (2006), 'A' level points were

only a significant predictor of final-year performance for females. Whilst Koh and Koh (1999) found 'A' level points were significant in all three years, the evidence in this study suggests at least *some* measure of prior attainment is an important factor (here it is the HESA score for L1, L1 for L2 and L2 for L3) and is more consistent with the findings of Gammie *et al.* (2003) and Lane and Porch (2002).

Other studies (Gomez *et al.*, 2004 and Gracia and Jenkins, 2003) have found that second-year marks, but not those for the first-year, are a significant determinant of final-year performance as was the case in this study i.e. most recent prior achievement (rather than older prior achievement) is significant.

This study only found an independent significant effect of gender in the first-year, otherwise it was not shown to be a significant independent determinant of performance. When interacting with placement status the lack of significance in the All Students regression shows that placement had a similarly beneficial effect for males and females. However, the graduate regression indicated a significant interaction with female placement students benefiting by more than 5% compared with equivalent males (supporting the anecdotal view of lecturers). Earlier studies are also mixed as to their findings on gender as an independent effect. For example, Koh and Koh (1999) found males outperformed females in the first two years of a degree but not in the final year but Hoskins *et al.* (1997) and Morrison *et al.* (2005) found that females outperformed males in their degrees.

Students who go on placement achieve significantly better final-year marks. For example, graduate placement students gained 3.6% more than full-time students in model 3. Final-year marks have a 75% weighting when determining degree class, hence placement can have a major impact making the difference between a first and upper second, upper and lower second. Gomez *et al.* (2004) found that graduate bioscience students benefited from placement by around 4% on final-year marks, Reddy and Moores (2006) found the difference to be 1.7%. Rawlings *et al.* (2005) found a positive benefit of placements as in this study and also a significant interaction between the second-year mark and placement status on degree classification. This research supports that finding albeit in terms of an interaction between second-year mark and placement status on final-year mark (rather than degree class).

It could be argued that the better students go on placement and that the benefit does not result from the placement itself. The HESA scores and first and second-year marks of those going on placement and those following a full-time course were examined (Table 5). The t-tests indicate no significant differences in performance other than for All Students in the second year ($p < 0.05$). The results would generally seem to indicate no difference between the academic ability of those going on placement and those going on full-time courses. They would also seem to indicate that the time and effort spent on the placement search seems to have no adverse effect on second-year marks. Duignan (2002) and Gracia and Jenkins (2003) did not find any significant difference in academic ability prior to going on placement or not. Gomez *et al.* (2004) found that placement students had significantly better HESA scores and second-year marks than full-time students. This difference could simply arise because the sample years are different (they used 2001 and 2002 graduates) or because the context, science, is different. A subsequent analysis of the difference between average second and final-year marks indicated that placement students improve their marks by 2.68% (All Students) and 3.37% (Graduates) whereas full-time students' marks decline by 2.57% (All Students) and 0.72% (Graduates). These differences in performance between full-time and placement students were statistically significant ($p < 0.01$) and the results are compatible with the earlier finding of a significant difference in the performance of placement students. The results are also consistent with those reported by Reddy and Moores (2006).

[insert table 5 about here]

As far as accounting and finance courses are concerned, Wooten (1998) hints at the effect of work experience in that non-traditional students aged 25 or more scored an extra 12% on average in his study but this is not developed further. Jackling and Anderson (1998) found that part-time students who typically had full-time accountancy related jobs performed significantly better.

Conclusions, limitations and further research

This paper goes some way to overcoming the paucity of research into the relationship of placement to academic performance on accounting and finance degrees. A statistically-significant better performance of placement students, as measured by average marks, compared with that of full-time students has been found. Better average marks may in turn

result in a higher class of degree and, anecdotally where employers require good degrees (first or upper second), better employment prospects.

This study has been confined to a single degree course within a single institution so it cannot be assumed that the results can be generalised to other courses within the same institution or to other institutions. Amongst other things, there may be differences between course work and examination weightings, the nature of the assessment undertaken and the extent to which second-year results count towards the degree awarded. Additionally, multiple linear regression models are used which in itself assumes the relationship between the variables is linear, which of course, it may not be. The HESA score was used as a measure of pre-university achievement as the data were readily available. However, the HESA score may be a proxy for some other variable such as IQ, which could have been used instead. Importantly, no causal relationship has been shown i.e. that placement causes an improvement in academic performance.

Bartlett *et al.* (1993) concluded that performance cannot be entirely explained by background variables such as gender and prior performance. Other factors such as motivation, personality and attitude are likely to be as important. What this study shows is that placement provides a good focus for considering these other factors and requires further research. There may be personality/motivation/attitude factors that predispose a student to undertake a placement (e.g. improved employment prospects from having work experience and a better degree drive better performance) or not (e.g. those who switch to a full-time from a placement course) and these might be why placement students perform better rather than anything to do with the placement itself. On the other hand, placement might equip students with skills which are useful in the final-year and which improve their performance ie the placement itself does have a beneficial impact. Both of these possibilities were recognised in the literature review. If future research shows that better academic performance is a benefit of placement then with better planning and integration within the degree course, it could be that placement can made even more valuable for students. It would also be of interest to investigate whether other forms of work experience (e.g. part-time, voluntary) lead to a similar improvement in performance. Finally, the effect of placement on those students who were excluded from the analysis because no HESA score was available e.g. students following a foundation programme, could be examined.

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	All Students			Graduates		
	FT	P	Total	FT	P	Total
Male	111	38	149 (63%)	81	33	114 (62%)
Female	63	24	87 (37%)	50	20	70 (38%)
Total	174 (74%)	62 (26%)	236 (100%)	131 (71%)	53 (29%)	184 (100%)

Table 1 Number of students by course type and gender

	All Students			Graduates		
	n	mean	SD	n	mean	SD
HESA						
2004	37	15.19	4.971	34	15.26	5.148
2005	57	16.42	4.648	47	16.68	4.864
2006	55	17.73	3.734	34	17.50	3.587
Total	149	16.60	4.501	115	16.50	4.659
L1%						
2004	45	55.876	8.1995	42	56.524	8.0457
2005	64	57.684	8.8626	52	59.467	8.2432
2006	66	58.788	7.4946	40	60.828	7.0783
Total	175	57.635	8.2297	134	58.951	7.9829
L2%						
2004	45	57.816	9.1019	42	58.579	8.8854
2005	64	57.439	8.8960	52	60.008	7.4971
2006	72	54.436	7.3535	41	58.393	6.2766
Total	181	56.338	8.4678	135	59.073	7.6069
L3%						
2004	54	55.904	8.8343	51	56.616	8.5244
2005	90	55.450	11.6190	77	58.235	9.6689
2006	92	55.120	12.0958	56	62.454	7.7094
Total	236	55.425	11.2016	184	59.070	9.0564

Table 2 HESA and level average marks for 2004, 2005 and 2006

		All Students				Graduates			
		n	mean	SD	p	n	mean	SD	p
HESA	Male	103	16.59	4.183	0.984	79	16.32	4.238	0.524
	Female	46	16.61	5.192		36	16.92	5.516	
L1%	Male	116	56.894	8.2066	0.095	88	58.065	8.0628	0.075
	Female	59	59.093	8.1479		46	60.646	7.6284	
L2%	Male	119	55.624	8.0018	0.116	86	58.438	7.0772	0.201
	Female	62	57.708	9.2098		49	60.186	8.4179	
L3%	Male	149	55.112	11.3504	0.575	114	59.169	8.5239	0.850
	Female	87	55.961	10.9862		70	58.909	9.9245	

Table 3 Gender and level performance

Variable	All Students				Graduates only			
	Model 1 L1%	Model 2 L2%	Model 3 L3%	Model 4 L3%	Model 1 L1%	Model 2 L2%	Model 3 L3%	Model 4 L3%
Constant	46.704 (0.000)	17.494 (0.000)	-2.142 (0.678)	-10.078 (0.114)	48.047 (0.000)	20.262 (0.000)	12.331 (0.020)	3.396 (0.625)
L1%		0.708 (0.000)	0.105 (0.380)	0.144 (0.233)		0.675 (0.000)	0.013 (0.912)	0.079 (0.497)
L2%			0.857 (0.000)	0.959 (0.000)			0.662 (0.000)	0.756 (0.000)
HESA score	0.602 (0.000)	0.008 (0.943)	0.084 (0.578)	0.113 (0.453)	0.579 (0.000)	-0.017 (0.883)	0.269 (0.054)	0.296 (0.030)
Placement	0.721 (0.575)	3.076 (0.002)	5.534 (0.000)	25.851 (0.007)	-0.469 (0.738)	2.314 (0.027)	3.641 (0.005)	24.246 (0.015)
Gender (female)	2.715 (0.048)	-0.007 (0.994)	0.051 (0.971)	-1.056 (0.570)	3.011 (0.043)	-0.176 (0.872)	-0.644 (0.627)	-2.764 (0.120)
2005 dummy	-0.193 (0.907)	-1.781 (0.152)	-0.229 (0.894)	-0.297 (0.861)	0.911 (0.589)	-0.980 (0.437)	1.717 (0.262)	1.369 (0.359)
2006 dummy	0.278 (0.869)	-5.896 (0.000)	0.459 (0.807)	0.007 (0.997)	1.627 (0.385)	-4.004 (0.005)	4.616 (0.010)	3.384 (0.029)
Gender* FT or P				3.336 (0.247)				5.368 (0.042)
L2%* FT or P				-0.371 (0.025)				-0.373 (0.027)
n	148	143	143	143	114	110	110	110
Adjusted R ² (Raw R ²)	0.120 (0.150)	0.547 (0.566)	0.551 (0.574)	0.564 (0.591)	0.150 (0.188)	0.498 (0.526)	0.484 (0.517)	0.512 (0.553)
F	4.996	29.544	25.934	21.397	4.992	19.052	15.583	13.720
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 4 Regression analyses. (p values for individual coefficients are given in parentheses).

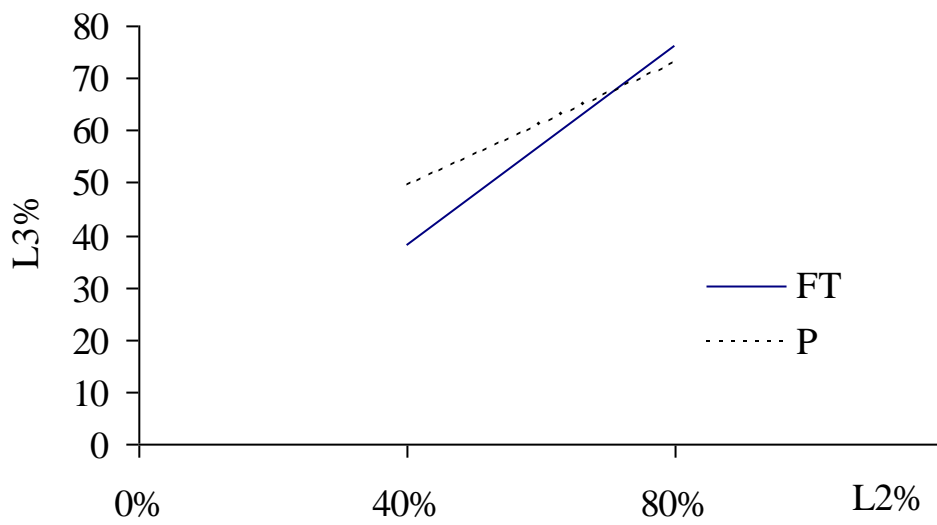


Figure 1 Placement – All Students Model 4 [L2% data range: 39.6% - 71.7% (FT) and 46.2% – 76.1% (P)]

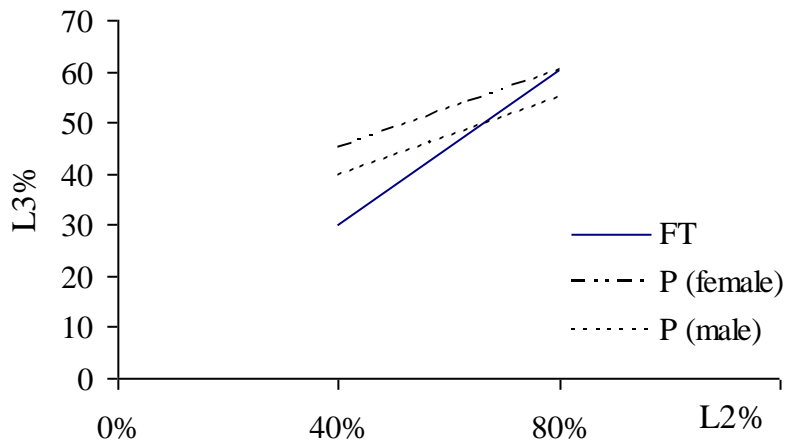


Figure 2 Placement – Graduates Model 4 [L2% data range: 41.8% – 71.7% (FT), 46.5% – 71.9% (P male) and 53% – 76.1% (P female)]

		All Students				Graduates			
		n	mean	SD	p	n	mean	SD	p
HESA	FT	89	16.56	4.535	0.907	64	16.25	4.925	0.514
	P	60	16.65	4.487		51	16.82	4.330	
L1%	FT	114	57.115	8.4727	0.254	82	58.562	8.0505	0.481
	P	61	58.608	7.7291		52	59.563	7.9138	
L2%	FT	123	55.250	8.5150	0.011	85	58.421	7.6694	0.196
	P	58	58.645	7.9546		50	60.180	7.4447	

Table 5 HESA, L1% and L2% comparison for full-time and placement students