Preliminary version of: **Nayna Patel, Willem-Paul Brinkman, Jane Coughlan, (2012) "Work placements and academic achievement: undergraduate computing students", Education + Training, Vol. 54 Iss: 6, pp.523 – 533.**

Work placements and academic achievement: Undergraduate computing students

Nayna Patel[1], Willem-Paul Brinkman[2] and Jane Coughlan[1]

[1]Department of Information Systems and Computing
Brunel University
Uxbridge, Middlesex, UB8 3PH, UK
nayna.patel@brunel.ac.uk
jane-lisa.coughlan@brunel.ac.uk

[2]Man-Machine Interaction Group
Delft University of Technology
Mekelweg 4, 2628 DC Delft, The Netherlands
w.p.brinkman@tudelft.nl

Abstract

Purpose – The purpose of this paper is to investigate and understand whether students who complete a work placement as part of their degree course achieve a better classification of degree than those students who do not include a placement.

Design/methodology/approach – The study was conducted by extracting the profiles of computing students from the database of a UK based University. Data collected included the marks and academic performance throughout the course of the students' degree, educational background, age and gender. In total, the profiles of 290 students were analysed to understand the impact of a work placement on their degree.

Findings – The results show that 58% of those students who had been on a work placement achieved an upper second or first class degree, whereas only 37% of non-placement students achieved the same academic standards. Furthermore, this study also established that this result is not because work placement students are academically more capable to begin with, as originally believed by many researchers.

Practical Implications – Direction for further research would involve investigating different cohorts of students and in different subject areas. However, the initial findings from this study could be used as a starting point in an attempt to encourage students to include a work placement as part of their degree.

Originality/value – Rather than simply performing a comparison of degree classifications between the placement and non-placement students, this study goes further and investigates student performance during their entire three or four year degree course. Furthermore, this

study also considers influences such as age, gender and educational background on the results.
Keywords Work placement; Work experience; Academic achievement; Students; Undergraduates; Computing.
Paper type Case study

1. Introduction

The number of students in the UK opting to complete a work placement as part of their degree course has been in decline for the past 10 years (Gomez et al., 2004; Little and Harvey, 2007). Even the widely researched and publicised benefits have not had an impact on this downward trend, and instead students appear to be focused on the short-term goal of obtaining a good degree as quickly as possible (Newman, 2010). However, it is believed that one of the main benefits of doing a work placement is increased employability (Blackwell et al., 2001; Greenbank, 2002; Blasko et al., 2002). During the placement, students are able to develop communication and transferable skills (Watts and Pickering, 2000; Greenbank, 2002; Neill et al., 2004; Reddy and Moores, 2006) which play an important role when they are seeking employment as graduates. It has also been suggested that graduates with placement experience are more likely to achieve success early on in their careers, both in terms of progression and pay, in comparison to their non-placement counterparts (Mason et al. 2003; Reddy and Moores, 2006; Little and Harvey, 2007).

There is also evidence to suggest that students who have been on placement are better equipped to deal with the final year of the degree (Reddy and Moores, 2006; Auburn, 2007). First, exposure to the 'real-life' element of the subject enables the students to relate practice back to theory when they return to their studies at university (Morgan, 1997; Greenbank, 2002; Knight et al., 2002). Second, it is believed that students returning from a work placement do so with a significant increase in motivation and maturity (Morgan and Turner, 2000) and are therefore more likely to adopt a more strategic approach to their final year of studies (Knight et al., 2002). Finally, the development of transferable skills such as time management and organisation skills, during the placement, can potentially mean that the students are able to better manage and cope with the requirements of the final year of their degree (Reddy and Moores, 2006).

In addition to the advantages the placement has for the final year, there has been some suggestion that students who do a subject related work placement as part of their degree are likely to achieve a better class of degree (Blackwell et al., 2001; Gomez et al., 2004). However, there is a lack of research in this area (Mandilaras, 2004; Little and Harvey, 2007) and the assumption appears to be based predominantly on anecdotal evidence as opposed to any systematic data analysis. Therefore, considering that students appear to be focused on the short-term goal of obtaining a good class of degree (Newman, 2010), the possibility of improving their overall academic performance may be a way of encouraging them to also include a work placement as part of their degree.

Therefore, the aim of this paper is to investigate if students that undertake a work placement as part of their degree course achieve higher academic standards in comparison to those students who do not. This is accomplished by analysing the academic performance of placement and non-placement students studying for a computing degree. Furthermore, rather than simply performing a high-level comparison between the placement and non-placement students' overall performance, this paper goes further and looks into their performance throughout the course of their degree, the impact on individual modules, and potential alternative explanations. The paper begins by describing the structure of the work placement programme in a computing department at a UK based University. A description of the methods used in order to gather the relevant data follows this. The paper then goes on to discuss the analysis of the data and presents the findings from the research. The paper concludes by reflecting on the findings and highlights directions for further research.

2. Work placement structure

At the time of conducting this study, the department in question offered two undergraduate courses: 1) Computer Science (CS); and 2) Information Systems (IS). Furthermore, as a part of a CS or IS course students could select one of two modes study. The first was a full-time three year programme. The second is commonly known as a thick sandwich degree where the degree spans over a period of four years and the student spends the entire third year out on a subject related work placement (Auburn, 2007). In this particular department, for completion of a satisfactory work placement the students were awarded a diploma in professional development along with their degree certificate. The following lists the conditions for which the diploma was awarded:

- The student must complete a minimum of 44 weeks on work placement;
- *Satisfactory Tutor Assessments* (30%[1]) – the students were visited twice over the course of their placement, during which the allocated tutor assessed their performance based on discussions with the student, their manager and the objectives that the student had set for the placement;
- *Employer assessment* (30%) – this was a report written by the student's manager in which they were asked to describe and rate the performance of the student;
- *Student placement report (15%)* – on completion of the placement the student was required to write a report describing their roles and responsibilities during the work placement;
- *Final presentation* (25%) – on returning to university for the final year, students were required to give a presentation to their placement tutor and a small group of their peers, who had also returned from placement, about their experiences of the placement.

At the time of conducting this study, the work placement and associated assessment was entirely independent of the degree and was awarded as an additional qualification to those students who successfully met the above conditions.

3. Data collection

All of the required data for the study was already available from the university's student database and therefore it was a case of extracting the relevant information. In order to ascertain whether or not the placement had an impact on academic achievement it was necessary to analyse the students' performance throughout the course of their degree i.e. three or four years depending on their mode of study. All of the profiles for computing students who had graduated in the academic year 2008/9 were extracted, which resulted in a total of 555 profiles. However, many of the profiles were incomplete with students having left the course or transferred to another degree after the first or second year, or in other cases students did not have the full set of credits required for an Honours degree. In instances such as these the student profile was removed from the data set. This resulted in a total of 290 remaining student profiles of which 71 were placement students and 219 non-placement students.

[1] Percentage of overall mark

Although we had the results for the first year of the degree, these were excluded from this instance of analysis because they did not contribute to the outcome of the degree; as students were only required to pass the first year in order to progress to the next level. Therefore, only the results from the second and third year of the degree were used to calculate the final degree classification. The results from the second year were weighted at one third and the results from the final year at two thirds. The university's policy at the time of this study was also to omit the lowest pass mark, for a single credit module, from both the second and third year from the calculation of the degree classification.

4. Analysis and Findings

Having obtained the student profiles and imported these into SPSS the data were analysed from three main perspectives. First, a comparison of the two groups (placement and non-placement) in terms of the overall degree classification was performed. Second, we then compared the performance of the two groups in the final year of their degree. In analysing the results for the final year of the degree it was necessary for us to also understand the academic performance of the two groups for the second year of their degree, forming our third angle of analysis on the data. However, before presenting the results it should be noted that as the placement and non-placement students studied the second year of their degree in alternate years, i.e. 2006/7 and 2007/8 respectively (see Table 1), there may be some differences in the teaching, assessment and structure of the modules. Specific details about the circumstances for each case are provided as necessary in the following sub-sections. Table 1 illustrates the schedule for when each group completed the various stages of their degree. The shaded area represents the data that were included in the analysis for this study.

Table 1: Stages of degree across analysed cohort

	ACADEMIC YEAR			
STUDENTS	**2005/6**	**2006/7**	**2007/8**	**2008/9**
Placement	First Year	Second Year	Work Placement	Final Year
Non-placement	-	First Year	Second Year	Final Year

4.1 Comparison of degree classifications

In order to investigate the theory that placement students achieve a better class of degree than non-placement students, our first point of analysis was to compare the overall degree classification amongst our two groups of computing students. As previously mentioned, the

classification is calculated based on the second year results weighted at one third and the final year results weighted at two-thirds. Since the data set only included those student profiles with full credits i.e. those qualifying for an Honours degree, the data were analysed according to the four classifications. The results in Table 2 illustrate that proportionally more placement students achieved a higher degree classification in comparison to non-placement students, a difference that was found to be significant (p. = 0.015, Fisher's exact test). For example, there was a factor 2 difference between placement and non-placement students in the percentage of first (5.6% vs. 2.3%) and third (5.6 vs. 11.9%) class degrees.

Table 2: Percentage of placement and non-placement students and their degree classifications

	Classification				
Mode	1	2.1	2.2	3	Total
Placement	4 (5.6%)	37 (52.1%)	26 (36.6%)	4 (5.6%)	71 (100.0%)
Non-Placement	5 (2.3%)	77 (35.0%)	111 (50.7%)	26 (11.9%)	219 (100.0%)
Total	9 (3.1%)	114 (39.2%)	138 (47.4%)	30 (10.3%)	290 (100.0%)

This initial result concurs with anecdotal evidence and demonstrates that for this particular set of students, placement students do appear to achieve a higher degree classification in comparison to non-placement students. We went on to explore and understand these findings by analysing our data in greater depth.

4.2 Comparison of final year results

Having looked at the overall results, our second point of analysis was to single out the results for just the final year of the degree and to compare the performance of placement and non-placement students. At this stage the placement students would have returned to university having completed their placement, and the non-placement students would be going directly from the second year to the final year of their degree. This perspective of analysis enabled us to understand the academic achievement of both sets of students in the final year, whilst also considering other factors that may have had an influence on the results. To this end, a Multivariate analysis of covariance (MANCOVA) was conducted while controlling for potential other factors that might account for a difference between placement and non-placement students. The potential confounding factors that were considered were: age, gender, course, and student academic capabilities (explained in further detail below).

Although completing a placement takes at least one academic year, placement students were on average (M = 22.7, SD = 2.02) significantly (t(273.84) = -6.37, p. < 0.001) younger than

non-placement students (M = 25.3, SD = 4.95) when they finished their degree, making maturation as an alternative explanation unlikely. 16.9% of the placement students were female, compared to 26.9% of the non-placement students, a difference however that was not found to be significant (p. = 0.112, Fisher's exact test). This makes gender differences as an alternative explanation also unlikely. The third potential confounding variable was the course, (Computer Science (CS) or Information Systems (IS)), students were following. 56.3% of the placement students obtained a Computer Science degree, compared to 51.6% of non-placement students. Again, no significant difference (p. = 0.498, Fisher's exact test) was found for this factor, meaning that the course that a student studies, be it Computer Science or Information Systems, has no significant impact on the students results in the final year of their degree.

Examining the final possible confounding factor of the students' academic capabilities was a little more complex and required further analysis of the data. Firstly, it is believed that students who go on placement are generally more motivated and therefore more academically capable than non-placement students (Blasko et al., 2002). Therefore, the initial phase of investigating the students' academic capabilities was to establish whether placement students were essentially academically stronger than the non-placement students prior to doing the work placement. In order to achieve this, we examined the students' performance during the second year of their degree, at which point none of the students had completed a work placement.

4.2.1 Comparison of second year results

Analysis of the performance for the two groups shows that the overall average for the second year of the degree for placement students was 57.6 (SD = 8.74), whereas non-placement had an average of 55.5 (SD = 8.26). A difference that although approached significant, (t(288) = 1.83, p. = 0.069) threshold level of alpha = 0.05, was not statistically significant. However, another issue that had to be taken into consideration is that the data for the second year results were obtained across two different years, 2006/7 and 2007/8 (see Table 1). This meant that although placement and non-placement students followed the same modules during the second year of their degrees, different lecturers may have presented the material, and teaching and assessment approaches may have varied. Therefore we also looked separately at the averages for the entire cohort (placement and non-placement students combined) for each

year. The average for the second year for the 2006/7 cohort was 56.5 (*SD* = 8.63) and the 2007/8 cohort was 55.5 (*SD* = 8.15), a result which was not significant ($t(288) = 1.03$, p. 0.306). This suggested that the results for the second year might be a suitable candidate in the analysis of performance for the final year of the degree to control for students' academic capabilities. Having established this, the data were investigated to compare the academic performance of the placement and non-placement students for various modules taken in the final year of the degree.

4.3 Comparison of individual module results in the final year

Both placement and non-placement students completed the final year of their degree in the same year, which meant that there were no differences in terms of module structure, teaching or assessment. However, instead we had to account for the fact that the final year is where the students specialise in a specific topic area, which meant that students studied a combination of compulsory and optional modules. Therefore, this more personalised scheme of studies meant there was a distinct lack of common modules across the cohort, making comparisons more complex. There were only two compulsory modules, the Final Year Project (FYP) and a Software Project Management module. The FYP is completed by all final year students and is worth double the credits of a standard module. In brief, the purpose of the FYP is for students to tackle a problem by investigating relevant literature and proposing and evaluating a solution. In addition to this being a compulsory module, the motivation for analysing the results from the FYP was that this is the only module where the students are required to undertake a unique piece of work independently. Skills such as time management, organisation and prioritisation of work tend to be important. Transferable skills such as these are commonly referenced in the literature as those that are gained during a work placement (Greenbank, 2002; Neill and Mulholland, 2003). Furthermore, it is the students' responsibility to predominantly guide the direction of the work and ultimately to take responsibility for it. Therefore, we thought that it would be interesting to see if those students who completed a work placement achieved higher results for their final year project. The second compulsory module was Software Project Management, a single credit module. Again, in addition to this being the only other compulsory module for all final year students, this module was singled out because its content is most closely aligned with industrial activities. In fact, guest speakers from the IT industry delivered a large proportion of the module. The motivation underpinning this line of investigation was that it was assumed that

placement students are more likely to understand the theory related to this module having had exposure to a working environment.

The remainder of the final year modules are dependent on whether a student is studying the Computer Science course or the Information Systems course, and within these two strands there are a variety of compulsory and optional modules. Some modules are predominantly theoretical, others that are more practical and industry oriented, and others a mixture of the two. All of these modules are worth single credits and include a variety of teaching methods and assessment. Comparing the results for each individual module would be complex and the results may not be reflective as some of the modules had very few students. Therefore, we dealt with this by grouping all of the modules together, referred to as course specific modules in Table 4, and comparing the results of the placement and non-placement students. A MANCOVA was conducted with, as dependent measures, the marks students obtained in the final year for: 1) their final year project; 2) the software project management module; and 3) the average mark for course specific modules. Fixed independent variables were gender, course, and the mode of studying (placement or non-placement). Covariates were students' age in their final year, and students' average mark for the second year. Table 3 shows the results from this analysis.

Table 3: Results from MANCOVA on student performance in the final year

	df			
Factor	Hyp.	Err.	F	p.
Age (Final Year)	3	278	1.02	0.384
Second Year Marks	3	278	0.66	0.581
Mode	3	278	4.54	0.004
Gender	3	278	0.35	0.793
Course	3	278	3.06	0.029
Mode x Gender	3	278	0.86	0.463
Mode x Course	3	278	1.10	0.349
Gender x Course	3	278	0.89	0.446
Mode x Gender x Course	3	278	0.502	0.681

As can be seen, both the mode of studying (placement/non-placement) and the course (Computer Science/Information Systems) had a significant effect on students' marks in the final year. Examining the results of univariate analysis (Table 4) shows that the effect for the mode of studying (placement/non-placement) was found in the marks for the Software Project Management module and the marks for the course specific modules. And

furthermore, the effect approaches a significant level of $p = 0.052$ for the final year project mark. Looking at the averages (Table 4), placement students generally obtained higher marks than non-placement students across all modules. The difference in marks between the placement students and the non-placement students ranged from a minimum of 4.4 points for the final year project (63.9 vs. 59.5), to a maximum of 6.7 points for the Software Project Management module (60.8 vs. 54.1). Interestingly, going back to Table 3, no significant effect was found for the second year marks, providing no support for the hypothesis that placement students are academically more capable to begin with. Furthermore, gender and age was also found not to significantly affect the performance in the final year of the degree. Testing homogeneity of the regression slopes (age in final year and second year marks) resulted in no significant two-way interaction with the mode of studying, suggesting no potential violations of ANCOVA assumptions.

Table 4: Results from ANCOVAs on Level 3 performance for Mode of studying

	Mean marks[a]		df			
Measure	Place.	Non-place.	Hyp.	Err.	F	p.
Final year project	63.9	59.5	1	280	3.82	0.052
Software project management	60.8	54.1	1	280	12.39	0.001
Course specific modules	63.7	57.3	1	280	10.79	0.001

[a] Covariates appearing in the model are evaluated at the following values: Age (Final Year) = 24.68, Second Year Mark = 56.05

5. Discussion

This study has statistically established that for this particular set of undergraduate computing students there appears to be truth in the original theory that those students who complete a work placement as a part of their degree course achieve a higher class of degree than those students who do not. Therefore supporting the concept that the possibility of achieving a better degree being used to encourage students to do a work placement. Particularly considering that the class of degree remains the predominant concern for students (Newman, 2010). However, previous research has speculated that the reason that placement students may achieve a better class of degree in comparison to non-placement students may be attributed to the theory that placement students are more academically capable to begin with (Blasko et al., 2002). This study also investigated this theory, and although the average mark for placement students (57.6), prior to the year out on placement, was higher than the average for non-placement students (55.5) this difference was not significant. Furthermore, in this particular instance, the two groups of students had completed the second year of their degree

across two different years, and accounting for variations in teaching and assessment, we found that there was no significant difference in performance between the two groups. We therefore found no basis for the theory that placement students are academically more capable prior to the placement, and in fact we were able use the marks from the second year as a basis for measuring students performance during the final year of their degree.

As previously mentioned, this study went further than simply conducting a direct comparison between the degree classification of placement and non-placement students. In analysing the performance of the students in the final year of their degree, we also looked at other variables which may have had an influence on the results. We found however, that age and gender had no significant bearing on performance at this level, although interestingly, placement students did tend to be younger than non-placement students on completing their degree, even though they had taken the extra year to complete the placement.

Prior to analysing the results for the final year project we believed that the difference between placement students and non-placement students would result in a significant impact on their performance in the final year project. The reason underpinning this line of thought was because of the skills that students may have gained during the placement e.g. self-confidence, organisation, prioritisation, time management, the ability to work independently and written communication (Neill and Mulholland, 2003). Although this skill set is not exhaustive, the skills that have been identified are skills that a student is likely to use during the course of their final year project. However, this study found that although the average mark for the final year project for placement students was greater than the non-placement students, the finding was only approaching significant, which contradicts our initial thinking. We have two possible explanations for why this may be the case. First, the final year project is weighted at double credits and therefore students may have made extra effort with this particular module. Furthermore, as the final year contributes towards two-thirds of the overall classification of the degree, we have consistently observed that obtaining a ‘good’ grade for the final year project is seen as an important goal for all students.

Due to the variation across the other final year modules we had no preconceived ideas of what analysis of the results might show. On the one hand we thought that the placement students may be academically better than the non-placement students because of their

practical experience, which may enable them to relate practise to theory. In the past we have observed a number of students who, on returning from placement, have commented on being able to understand concepts such as models and theories that were covered during the second year. Another frequently occurring scenario is where students use knowledge that they have gained whilst on placement to provide examples of concepts when questioned during lectures. It appeared that the practical experience obtained from the placement helped students to better understand the material presented during lectures in the final year. However, we also thought that since these were specialist modules students may be more enthusiastic and perhaps make more effort with them. Our findings for this study demonstrated that the placement students outperformed the non-placement students where course specific modules were concerned, a difference that was deemed to be statistically significant. Therefore, it seems that the placement students were stronger in the final year of the degree across all modules, regardless of whether they were compulsory or optional, or practical, theoretical or specialist modules.

6. Practical Implications

In order for these results to be generalised, further research is required in terms of different cohorts of students and in different subject areas. However, these initial findings can be used to try and encourage students to include a work placement as part of their degree. We often refer to the results of this study at Higher Education Fairs, University Open Days and in our departmental literature as a means for promoting placements. We also present the findings of this study to our existing first and second year cohort at the beginning and throughout the year as a means of trying to convert as many students as possible to a thick sandwich course. Although findings from previous studies showing that graduates with placement experience are more employable than those that do not, have not really had a positive impact on increasing students opting to do a work placement (Little and Harvey, 2007). Therefore, the combination of increased employability and a better degree may have different results. Companies could also influence and encourage students by promoting placements as a desirable experience for graduate applicants. For instance, a study published in 2002 (Hickson, 2002) indicated that more than 40% of companies were more likely to employ graduates that had completed a work placement as part of their degree. Furthermore, we believe that the key may be to try and change students thinking from the short-term goal of obtaining a degree to a more long-term career plan. Table 5 brings together the findings from

previous studies and shows the potential impact of doing a placement on both the degree and future employment, which may form the basis for a discussion with students.

Table 5: Impact of work placement on degree and career

	Advantages of doing a work placement
Impact on degree	▪ Money ▪ Apply theory to practise ▪ Transferable skills ▪ Better degree
Impact on career	▪ Experience of applying for jobs ▪ Increased employability ▪ Previous experience of working environment ▪ Higher starting salary ▪ Faster career progression ▪ Transferable skills

Encouraging students to do a work placement is not only beneficial for the individual, but also has a wider impact on universities and companies. It is in the interests of universities in terms of reputation and finance to promote and encourage their students to do a work placement. As previously mentioned, the employment amongst placement graduates is better than non-placement graduates and a university's employment record is believed to play a significant role in choice of university for prospective students (Gedye et al., 2004). Therefore, a good graduate employment record is likely to result in a better reputation for the university, and this may lead to higher student enrolment numbers, resulting in increased income in terms of tuition fees. Furthermore, a study recently conducted by the UNITE Group (2012) that was conducted via The Student Room, showed that 79% of university applicants for 2012 entry are willing to pay the higher tuition fee if a university has a good academic reputation. Encouraging students to do a work placement is also a good opportunity for universities to build links with companies that may go on to provide ongoing placements and employ their graduates.

Finally, it is also important for companies to encourage students to complete a work placement as part of their degree as they benefit in numerous ways. First, companies that provide placements for students are often able to employ a student that can do the job of a permanent employee at a lower cost (Hickson, 2002). Second, placement students can

provide new perspectives and a fresh injection of ideas and knowledge (Hickson, 2002). Third, and most importantly, placements can act as a year-long interview where a company has the opportunity to evaluate a student's potential as a future employee. Companies that do not provide placements can still benefit from employing graduates that have previously completed a work placement as they are generally more prepared for a working environment and already possess the basic employment and transferable skills.

7. Conclusions

This particular study has demonstrated that placement students do achieve higher academic standards in comparison to non-placement students. When the two groups are compared, work placement students tend to obtain a higher class of degree, have a greater increase on their average in the final year, and achieve higher grades for the majority of modules. Furthermore, there is no evidence to demonstrate that placement students are academically more capable prior to the work placement. Therefore, in addition to giving students an advantage in terms of employability, the placement really does have a positive impact on the academic achievement of computing students in this instance. Having said this, further investigation is required in terms of looking at different cohorts of students from different years. As this study has focused on computing students, it would also be interesting to see what the results are with students in different subject areas. In sum, placements are beneficial for students, universities and potential employers and it is important that students are encouraged to complete a work placement as part of their degree course.

References

Auburn, T. (2007) Identity and Placement Learning: Student Accounts of the Transition Back to University Following a Placement Year. Studies in Higher Education, Vol. 32, No. 1, pp. 117 – 133.

Blackwell, A., Bowes, L., Harvey, L., Hesketh, A. and Knight, P.T. (2001) Transforming Work Experience in Higher Education. British Educational Research Journal, Vol. 27, No. 3, pp. 269 – 285.

Blasko, Z., Little, B. and Woodley, A. (2002) UK Graduates and the Impact of Work Experience. Higher Education Funding Council for England (HEFCE).

Gedye, S., Fender, E. and Chalkley, B. (2004) Students' undergraduate expectations and post-graduation experiences of the value of a degree. Journal of Geography in Higher Education, Vol. 28, No. 3, pp. 381 – 396.

Gomez, S., Lush, D. and Clements, M. (2004) Work Placements Enhance the Academic Performance of Bioscience Undergraduates. Journal of Vocational Education and Training, Vol. 56, No. 3, pp. 373 – 385.

Greenbank, P. (2002) Undergraduate Work Experience: An Alternative Approach Using Micro Businesses. Education and Training, Vol. 44, No. 6, pp. 261 – 270.

Knight, J., Baillie, L., Osmon, P.E. and Williams, V. (2002) Industrial Placements and Sponsorship: The Professional Pathway. Presented at: Engineering Education 2002: Professional Engineering Scenarios, IEE. Accessed: 18th May 2005.
http://ieeexplore.ieee.org/iel5/7987/22096/01028446.pdf?arnumber=1028446

Little, B. and Harvey. L. (2007) UK Work Placements: A Choice Too Far? Tertiary Education and Management, Vol. 13, No. 3, pp. 227 – 245.

Mandilaras, A. (2004) Industrial placement and degree performance: Evidence from a British Higher Instituion. International Review of Economics Education, Vol, 3, Iss. 1, pp. 39 – 51.

Mason, G., Williams, G., Cranmer, S. and Guile, D. (2003) How much does higher education enhance the employability of graduates?
http://www.hefce.ac.uk/pubs/rdreports/2003/rd13_03/

Morgan, A. (1997) National Vocational Qualifications in a Business Studies Degree. Journal of Vocational Education and Training, Vol. 49, No. 2, pp. 181 – 194.

Morgan, A. and Turner, D. (2000) Adding Value to the Work Placement: Working Towards a Professional Qualification in an Undergraduate Degree Programme. Education and Training, Vol. 42, No. 8, pp. 453 – 460.

Neill, N. and Mulholland, G. (2003) Student Placement – Structure, Skills and E-Support. Education and Training. Vol. 45, No. 2, pp. 89 – 99.

Neill, N., Mulholland, G., Ross, V. and Leckey, J. (2004) The Influence of Part-Time Work on Student Placement. Journal of Further and Higher Education, Vol. 28, No. 2, pp. 123 – 137.

Newman, M. (2010) Hard work, money worries... and hopes for a bright future. Times Higher Education, 18-24 March, pp. 16 – 18.

Reddy, P. and Moores, E. (2006) Measuring the benefits of a psychology placement year. Assessment and Evaluation in Higher Education, Vol. 31, No. 5, pp. 551 – 567.

UNITE Group (2012) Higher fees see rise in 'savvy' students. URL: http://www.unite-group.co.uk/press-centre/press-releases/higher-fees-see-rise-in-savvy-students.go

Watts, C. and Pickering, A. (2000) Pay as you Learn: Student Employment and Academic Progress. Education and Training, Vol. 42, No. 3, pp. 129 – 134.