Abstract — This study, conducted among final year engineering students at the University of Ulster, concentrates on their perceived gains from their year in industrial placement and their enhanced employability on graduation.

Students in this cohort had spent approximately one year, the third year of their four-year honours programme, in a supervised industrial placement working as junior engineers. A diverse range of companies provided a variety of experiences which developed their skills. On return to final year each student was asked to complete a questionnaire which focused on their placement experiences and resulting gains in skills and employability.

Analysis was conducted to determine the most common and significant gains from placement and how these contributed to employability as perceived by the student engineers.

The paper presents these findings and demonstrates a strong linkage between a significant period of placement and employability. As a postscript, the classification of awards for this cohort is presented to demonstrate their academic ability.

Keywords — placement, employability, work experience, work-integrated learning

I. INTRODUCTION

A review of the web pages of the careers departments for many UK universities suggests that the dominant issue is ‘employability’ of their graduates. Further, one author, Bray (2010) writing in the Winter Newsletter of the Chartered Institute of Personnel and Development (CIPD) South East Wales suggested that ‘employability’ had become ‘flavour of the month’. It may be surprising that in these
times of economic frugality there has been another view of University education. A lesser utilitarian view was expressed by the British Prime Minister, Benjamin Disraeli, when in 1873, he said in the House of Commons (London), ‘A University should be a place of light, of liberty, and of learning’ (Oxford Dictionary of Quotations, 1981). Now, at the beginning of the twenty-first century, it appears that the emphasis on a university education has shifted to be more about preparation for work. Indeed, some Vice Chancellors have been known to claim that their graduates are ‘work-ready’ as a result of their programme of study and work-experience at their institution.

This apparent shift in the purpose of a university education has been caused by many factors, but more recently by economic necessity linked to the need to obtain gainful employment. With widening access to university education most graduates must achieve gainful employment using their qualifications; fewer now come from wealthy backgrounds where employment is less of a necessity. The liberal view expressed by Disraeli is replaced by the employment emphasis from Vice Chancellors responding to the priorities of students. During the last five years in the UK the economic realities of student fees for university education has shifted the outlook on tertiary level study. This pressure is due to intensify again in 2012 with an increase in annual student fees to between £5000 and £9000 (Browne, 2010). Clearly, investment at this level by the individual student must produce a tangible return, most imminent of which is the ability to obtain well-paid and fulfilling employment on graduation.

As students look to university courses to enhance their skills for employment, other support for the ‘skills agenda’ came from the Confederation of British Industry (CBI) in their reports Time Well Spent (Mar 2007) and Future Fit (Mar 2009). As a means of reducing unemployment, supporting economic growth and developing a more widespread feeling of ‘well-being’ the value of appropriate skills is seen as the route to prosperity for the individual. Based on survey evidence, these reports presented an agenda for preparing graduates for the world of work and encouraged embedding employability skills into work experience. The views expressed in these publications are similar to the thinking in a position paper A National Internship Scheme by Universities Australia (May 2008); this proposed a national internship scheme to enhance the skills and work-readiness of graduates from Australian universities.
In their separate ways, these references commended highly the role of work experience and work integrated learning (WIL) as a means of gaining skills for employability.

This study explores the views of two groups of final year student engineers. To establish any gaps in their preparation for the world of work, their views were sought on their employability as a result of a year in a supervised industrial placement.

II. THE STUDY

As part of an ongoing study, two cohorts of pre-final year engineering students were surveyed in summer 2007 and 2008, respectively. At the time of their participation in the survey they had just completed a year-long, supervised and paid industrial placement where they had been working as junior engineers. A comprehensive paper-based questionnaire which addressed preparation for placement and in-placement experiences was presented to each student at the end of their placement. Responses to most questions were requested in their own words so as to gain their unconstrained viewpoint.

Several questions relate to the subject of this paper; in particular two questions asked respondents to identify three skills which they gained during placement and how the experiences of placement had enhanced their employability after graduation. A total of 110 students took part in the study.

Responses were analysis to establish appropriate clusters of ideas to effectively represent the findings under several main headings. The same analysis was applied to both cohorts and the results were combined to give consolidated data.

III. RESULTS AND DISCUSSION

Skills acquired or developed were readily codified into the list presented in Figure 1. It may be observed that just over half of the benefit acquired (cumulative percentage of skill count) was represented by four skills, three of which were technical in nature, ie, specific technical (related to the technology of the placement provider), general IT (including MS Office skills) and CAD (Computer Aided Design). These may be classed as examples of the so-called ‘hard’ skills and it is, perhaps, not surprising that engineers should focus predominately on these. It is noticeable that, apart from ‘communication’
and ‘general IT’, the so-called ‘soft’ skills received lesser emphasis. *Future Fit* (CBI, 2009) and *Time well spent* (CBI, 2007) considered these employability skills to include: self-management, team-working, business awareness, problem solving, communication and literacy, application of numeracy and application of information technology (IT). It is interesting to note that a similar list of employability skills was used by Universities Australia in *A National Internship Scheme* (May 2008).

![Figure 1: Skills acquired during placement](image)

This suggests that the vocabulary of employability skills is reasonably well defined and established. However, it was noticeable from the student responses that the names of the employability skills in these publications were rarely used. It is possible that many respondents did not consider they had acquired these skills or they may have valued more highly the ‘hard’ skills which they claimed. It should be noted that the survey asked them to identify three skills only and response space was restricted for this purpose; a pre-determined list was not presented. While they have not used the accepted vocabulary of employability skills in their responses it would be remarkable if these skills had not been developed to a greater extent than suggested in Figure 1. However, it is apparent that these student engineers need to develop the vocabulary of employability to ‘sell’ themselves better in the jobs marketplace.
There appears to be a widely-held view that work experience (and work integrated learning) enhances employability. This theme was developed in *Time well spent* (CBI, 2007) when it stated, ‘Work experience has a key role to play in developing young people for the world of work. It is an opportunity to bring home to them the attributes, skills and knowledge they need to succeed throughout their working lives.’ Also, *A National Internship Scheme* (Universities Australia, 2008) cited many examples of support for similar ideas in the context of university education. Specifically, Kemp, Martin, Maier and Williams (2008) noted the strong linkage between employability and workplacements as implemented by HEIs in their undergraduate study programmes. The findings from this study, as presented in Figure 2, show that ‘experience’ (or industrial experience) is the single most significant enhancement for employability. Also significant, but cited less frequently, are ‘technical expertise’ and ‘knowledge and understanding’ (of the work in-hand).

**Figure 2: Impact of placement on employability**

Again, for technically-minded engineers this selection, amounting to almost two-thirds of the impact, is not uncharacteristic. Furthermore, it is suggested from a closer study of Figure 2 that the ‘enhancements’ may be divided into two categories: ‘personal enhancements’ which prepare the student for the
world of work and ‘application enhancements’ which strengthen the actual application for employment. These categories are considered to comprise the following:

**personal enhancements**: experience, technical expertise, knowledge and understanding, professionalism, confidence and training, and

**application enhancements**: company reputation, career options opened, employment references, CV building and employment promise.

Again, it is noticeable that the vocabulary of employability as presented in *Future Fit* (CBI, 2009) is largely absent. While the study pre-dates *Future Fit*, the language of employability has been in use for some time. Therefore, as the focus of these engineers appeared to be predominantly technical they need to develop a wider perspective to better reflect their abilities in the context of employment and employability.

The study found that the experience of students in placement was very positive, as demonstrated in Figure 3. In fact, 93% of respondents claimed that their experience was ‘well up to’ their expectations or better.

![Figure 3: Experience compared to expectations](image-url)
For the few students whose experience was below expectations specific reasons were identified and addressed. Furthermore, 96% of these students expressed themselves to be ‘generally satisfied’, ‘very satisfied’ or ‘extremely satisfied’ with their overall placement experience. Consequently, the placement, or work integrated learning, environment was conducive to significant skills development as student engineers related well to it. These factors suggest that they experienced significant skills development opportunities.

These cohorts went on to graduate in 2008 and 2009 when the following classifications were awarded to the combined group: first honours, 21%; second class upper division (2.1), 47%; and second class lower division (2.2), 30% of the respondents in this study. This suggests that, even before considering their employability skills in detail, most of them would pass the selection criterion on their degree classification alone. Consequently, these engineers should have little difficulty in adopting the vocabulary associated with employability skills to deliver for themselves actual employment on graduation.

IV. CONCLUSION

This study shows that able undergraduate engineers recognized the high value of an industrial placement for enhancing their employability. They saw the enhancement of technical skills and communication as their biggest gains from placement and they considered they were more employable due to experience gained and technical expertise developed. There was relatively little use of the vocabulary associated with the so-called ‘soft’ skills which are now linked to employability. Able engineers who related well to their placement environment should be capable of expressing their skills using the accepted vocabulary of employability to better sell themselves in a competitive jobs market.

V. FUTURE WORK

This study forms part of a wider study which concentrates on these two cohorts of student engineers. The graduates of 2008 and 2009 are in different stages of the current economic recession and will have experienced different employment environments. Further work will seek to track their performance in employment, employability due to placement and a wide range of related matters. An earlier publica-
tion by Laird and Turner (2008) presented the views of one of these cohorts on enhancing placement through online placement management using OPUS (online placement university system). Further work will seek to relate their views as undergraduates to their employment experiences.

VI. REFERENCES


