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Embedding professional experiences and employability into Engineering Sandwich Degrees

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Embedding Professional Experience and Employability into Engineering Sandwich Degrees

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Abstract: Employers of graduate and placement engineers require the students to demonstrate a level of competency in key technical and employability skills in their placement/graduate applications. Therefore any employability development learning in any engineering courses needs to be supported by engineering professionals with commercial/professional knowledge and appreciation of organizations/recruitment processes. Also, provide a learning experience and opportunities that enable students to self identify, reflect and articulate their relevant engineering and employability skills required for placement and graduate roles. Is embedding employability into the curriculum design the solution to the problem? If, 'yes', how effective is such an approach in providing an authentic and supported employability learning experience? This paper will present an example of an embedded employability curriculum design solution applied to engineering courses. In the first year of implementation the student engagement in the placement process increased by 8-fold, less than 6% of students in 2009-2010 were registered as not engaged, in comparison to the previous year where 50% were not engaged in the voluntary non embedded employability sessions. However, from the student's perspective can this success be attributed to the embedded curriculum design solution? This paper presents the quantitative and qualitative results of the student perspective and experience of the curriculum design solution and whether it has had a positive contributing factor on their employability.

Introduction

Work based and placement learning opportunities have been recognised as of critical importance for future graduate employment, as a third of graduate posts are filled with students who have already worked for an organisation, Highfliers (2011).   Blackwell et al (2001) research showed that sandwich degree students have a significantly higher graduate employment rate than their non-sandwich peers. Equally placements for engineering students have also been shown to have an impact on students' ability to learn upon returning to their studies, statistically placement students achieving higher classification of degree than their non-placement peers, Mendez (2008a).   In fact, Mendez (2008b) research identified that the placement experiences has a significant positive impact on academic achievement on previously underperforming students.

Placements have been a feature of the curriculum design for engineering courses for a number of Higher Education institutions since the 1960s, (Osbourne-Moss, 1968;Silver, 2007) .   However, the number of students undertaking placements are declining, Wilson (2012). Equally modern recruitment processes require students to provide evidence of key competencies. Blackwell et al (2001) study of British engineering students showed that the placement experience increased their awareness of employability skills sought by employer and their own confidence in these skills than their non-

sandwich peers.   The placement experience enables students to successfully develop these key competencies sought by employers, Hall et al (2009).

In our experience at Sheffield Hallam University in the placement team, large employers are increasingly using the same recruitment techniques as graduate recruitment processes to filter the applications.   Therefore employers require students to be aware, competent and demonstrate a degree of employability and technical skills pre-placement.   Equally not all students will successfully secure a placement and graduate employers still expect full-time students to be employability aware, Harvey (2005).   With the widening participation agenda a greater of degree of Sheffield Hallam University students are from communities who have little experience of Higher Education and the perceptions of graduate attributes, Bosanquet (2011).   Graduate attributes need developing, therefore needs to be embedded in the curriculum, Radloff et al (2008), however to be of any benefit the learning needs to placed in context in terms of learning, teaching and assessment.   Therefore all students need to be orientated in employers' employability requirements for graduate/placement employment and learning opportunities to reflect on and articulate their skills development gained in other parts of their curriculum, extra-curriculum and external experiences, Harvey (2005).   When a programme of placement preparation workshops and an application assignment were embedded in a Civil Engineering course the students job-hunting skills were shown to be enhanced, Barthorpe and Hall (2000).   Therefore, in readiness for placement and graduate opportunities the pedagogy and reflection of employability processes needs to be embedded early in the level 5 curriculum, October to November, fulfilling the immediacy of the student requirements who are seeking placement opportunities and the employers who are seeking placement students and typically advertise between October to June, with a view for students to start employment June to September.   The timing is also valid for students who are unsuccessful in securing a placement opportunity or exempt from a placement as provides them with plenty of time for students to develop themselves for employment as applications for graduate opportunities for FT100 index companies are typically open at the end of their level 5, August through to August the following year.

Placement Process at Sheffield Hallam University

Context

All full-time students on engineering courses at Sheffield Hallam University are registered on sandwich engineering degree programmes no exemptions, as it is to the benefit of students' long term employability, (Blackwell et al, 2001 and Mendez, 2008a).   Students can apply in their level 5 to be exempt from the placement and placement administrative recruitment process.   However, they are not exempt from the pedagogy process of placement as the embedded curriculum is designed to develop student learning and reflection in readiness for placement and graduate employment. Students' requests for exemption can only be accepted, if their circumstances are such that it is appropriate for them to be exempt with respect to current legislation or student sponsorship constraints, i.e. equal opportunities act, for example a student who has family caring responsibilities that would inhibit the student from taking paid employment at this time, or student mental health is poor and would further deteriorate if they undertook regular employment or for example an overseas student sponsorship is limited to a full-time course of study and time bound.   All local, national and international students are encouraged to engage in seeking a paid placement opportunity, as under current UK legislation international students registered on sandwich degrees are permitted to undertake a paid placement work experience under the terms of their study visa.

Placement Administration

The placement year occurs on each engineering course between level 5 and level 6 of study.   The engineering students are supported alongside the Maths, Computing and Business and Enterprise students by the Professional Employability Experience Unit (PEEU). PEEU provides the placement administration recruitment process and placement support, which consists of three full-time, two part-time administration staff and five academic staff (placement tutors) , two of which are from engineering.   All non-exempt students are required to register on the PEEU systems, each student is required to agree to the terms and conditions of placements, supply an e-copy of their CV on PEEU header, photograph (enable staff to correlate student face to their name) and select their placement preferences, i.e. type of engineering jobs, national and international locations that are of an interest to them.   The PEEU staff identify hundreds placement opportunities throughout the academic year and using the PEEU systems identify all the students whose preferences match the job criteria.   The students are notified electronically of any placement opportunity that matches their preferences.   If the

students are shortlisted for interview, the PEEU team will provide support and advice on how to prepare for the interview.

Engineering Employability Implementation History

The learning, teaching and assessment is provided as a series of placement/employability preparation classes aimed at assisting them in the process of gaining employment both placement and graduate employment.   These are taught by a team of engineering academics who are led and managed by engineering academic placement tutor.   Originally, these classes were on voluntary attendance for students, and were additional to their course of study. Also, any assessment was formative. Consequently the student engagement in the placement process was very poor only 50% engineering students in 2008-2009 were registered with PEEU and only 44 students out of 93 secured a placement.   However, since 2007 in fulfilment of the British Computer Society accreditation the pedagogy process of employability has been embedded into all technical computing courses, at level 5 the placement employability development is part of a 20% element of a 20 credit module, all assessment is summative.   Consequently, the majority of the technical computing students were actively engaged with PEEU and 50% to 80% of students on technical computing courses (varied from course to course) secured a placement.

In 2008, it was recognised in the Faculty that the lack of engineering student engagement was untenable in terms of student learning and future employability.   The issue needed to be addressed by adopting a similar approach to the technical computing courses.   Since 2009, the employability learning, teaching and assessment has been re-designed and embedded into all engineering sandwich degree courses (except one due to administrative and course design issues) and the assessments are summative.   However, the classes are still timetabled in addition to the core hours of the course, in order not to impede the timetabled technical learning on the courses.   The placement/graduate learning, teaching and assessment is 10% of a core 10 credit module and consists of six classes and two assessments.

Pedagogy Process Implemented

A high proportion of Public Limited organisations open up their placement/graduate recruitment processes in August until November/December, closing date can vary according to volume of applications received, i.e. close earlier if they receive high volume of applications.   Therefore the student engagement and learning needs to be maximised in semester 1 at level 5 in order to best equip students for applying for actual, placement opportunities.   The learning, teaching and assessment need to be inspirational in order to motivate student engagement and success in the placement process.   The resultant course design was led by the Lead Engineering Placement Tutor and was developed from; good pedagogy practice; graduate employability resources; informal feedback from students and employers; and observations made by the placement team of industrial placement recruitment processes and practice over numerous years.

Assessment

Any educator wishes to inspire their students, as William Butler Yeats reportedly said 'Education is not the filling of a pail, but the lighting of a fire'.   The objective of the employability classes is to light the spark that encourages and facilitates the student to personally develop their employability.   However, antidotal evidence observed by the placement team is that the students perceive placement/graduate as something in the future and there is no urgency to engage in semester 1 at level 5.   Therefore they need incentivising to attend in the first place.   Rewards can provide an extrinsic motivating factor, Morgan (1994), equally monitoring attendance, Bowen et al (2005).   Therefore, the assessment strategy was designed to include rewards for attendance and class engagement.

Assessment A: Engagement in PEEU sessions and PEEU Activities: 30%

> Assessment of the students' active participation each week in the class activities and their interface with PEEU communications in order to develop extrinsic motivation in employability post classes.

As graduate/placement recruitment processes require students to demonstrate key competences, to provide feedback on the student's ability to articulate their technical and employability skills in the past the technical computing employability preparation had included a summative assessment of a student application and covering letter for an actual placement position.   However, this assessment approach was less than ideal; as lacked parity; as students submitted a wide variety of applications with varying in difficulty of competency based questions; the students were receiving feedback post submission of

their applications to employers; and a missed learning opportunity to improve their application before submission.   Therefore the application assessment approach was redesigned for computing, maths and engineering by the placement tutor team in the summer of 2009 to ensure best assessment and feedback practices;

Assessment B: Application Form and Covering Letter: 70%

> Mock application form and covering letter for an engineering placement position at Tata Steel.   The students are provided with job descriptions for a wide variety engineering placement positions at Tata Steel and graduate style application form with competency based questions.   For example a Microsoft competence based question that was on Microsoft's 2010-2011 application form:

> 'Describe how you successfully overcame difficulties to ensure work was delivered to a high standard, on a project or piece of work that was particularly important to you'

> Students applying for a technical role can use their exemplar answer to demonstrate relevant technical skills and the key skills required to be evidenced in the question. In this case the students need to demonstrate the key skills; time management, project planning, innovative problem solving and technical skills design and testing.

The students have less than two weeks to prepare and submit. Submission is prior to all week 4 tutorials.   As in week 4 the students provide anonymous peer feedback on their peers' anonymous assessment submissions.   The rationale for adopting a peer feedback approach was that one it provides the opportunity for self reflective feedback and aid self-regulation Sluijsmans et al (1998), and the opportunity to provide timely formative feedback. 'Timeliness is a key component in supporting student learning (Gibbs and Simpson, 2004).

Learning and Teaching

Once the students are in situ in the class intrinsic motivation needs to be developed.   This can be achieved through good pedagogy class practice of group-work, student led activities, debate, self-instruction and changes in activities every 15-20 minutes, Cleary-Holdforth (2007).   Therefore the employability classes were designed to be more seminars/workshop type learning events that enable the students to build upon their understanding of employability and the personal implications for their own employability development.

Semester 1

Week 0:   What is PEEU? What it means to you?   The session introduces:

> • who is responsible for their employability; the student, academic, or employer?   The adaption of Butcher (2004) ESECT card sort to develop student understanding as to who is responsible for their employability development; student, academic, or the employer,
> • benefits of placements for their long term employment, types of placement opportunities that are available in their subject area, statistics of job types and locations.

Week 1:   What is employability? Identification of the top ten employability skills sought by employers in graduates, Targetjobs (2009). Adhering to good pedagogy employability practice, Harvey (2005), the session provides an opportunity for critical reflective opportunity of their graduate attributes being developed and evidenced in their educational, extra curriculum and external experiences using the professional development form, figure 1.   Finally identifying as a class how they can further develop their graduate attributes from educational, extra curriculum and external experiences.

Week 2:   What is an effect CV and Covering Letter? A learning opportunity through a class discussion, identifying the criteria for an excellent CV and covering letter, with a nod to the long term employability Jackson (2005).   Working in pairs the students provide peer assessment on one and another's CV, as peer assessment provides valuable peer feedback, Mindham (1998).   Finally, introduce the assessment: mock covering letter and application form.

Week 3:   What is an aptitude test? Introducing the student graduate recruitment processes of aptitude and psychometric tests, why, how, purpose and when the tests are applied by

employers.   Gaining familiarity in aptitude and psychometric tests aids the student preparation for graduate recruitment processes, and develops their self-awareness of their performance in the work place, Barrett (2006)

Week 4:   What is an effective application?   The class derive a consensus as to what is good feedback, in preparation for the class to peer assess their peers assessment B: the mock covering letter and application form. The submissions were anonymised before re-distribution in the class, in adherence to good peer feedback practices, Mindham (1998).   The students typically feedback on three submissions in the class, anonymised the student submission and an assessment rubric,   Falchikov, (1998) highlighted that peer assessment provides an opportunity to increase assessment reliability and reduces subjectivity through the increased number of assesses.   Peer assessment also promotes a more complex model of learning both for the student assessor and receiver, Nortcliffe (2003). Also, promotes self-reflection, assessment and feedback in the student assessor reflecting on their own submission, Nortcliffe and Middleton (2011).

Week 5:   How to make an impact? The session provides an insight into telephone interviews and assessment centre processes employed by placement and graduate employers. Presenting the reflections of the recruiters and students experience of interview recruitment processes aids student preparation and their understanding of the employers' perspective, (AGCAS, 2009a and AGCAS, 2009b), further supported by class discussion to aid class interaction and student learning, Horgan (2001).

Week 6:   One to one employability surgery, providing the students with an opportunity to reflect with the tutor upon their individual employability learning and development, as one to one learning provides and achieves the highest learning experience, Bloom (1984).

Semester 2

Week 0:   At the beginning of semester 2 a final session provides an opportunity as a class to reflect on the statistics of collective's current employability development progress, previous academic years and each individual's employability progress. The tutor is aiming to act as a facilitator to encourage Cousins and Deepwell (2006) environment for propagating a learning community that is willing to learn from one another's progress and develop a collective learning network.

Employability skills (technical and key skills)			
What Skills?	**WHEN and WHERE did you develop these skills?**	**HOW did you develop these skills?**	**HOW you applied these skills WHO benefited application?**
Knowledge, skills, qualifications or experience gained	The place the knowledge, skills or experience was gained or acquired (include start and end dates)	Course attended, role/job undertaken/description	Explain how skill(s) were gained/applied and who benefited from the skills being applied and why.

Figure 1: Personal Professional Development (PPD) Record Evidence of Learning

Evidence of Learning

Implementation Results

In the first year of implementation of an embedded employability curriculum design solution into all engineering courses, the student engagement increased 8-fold, and an approximate 10% ratio improvement on the number of students placed, as shown by Table 1.

Table 1: Changes in student engagement

Academic Year	PEEU Engagement	Number Students Placed
2008-2009	50%	44 out of 93
2009-2010	94%	76 out of 150
2010-2011	~94%	85 out of 150

It should be noted that the PEEU administration team also over the last two years have managed to identify and negotiate more placement opportunities for the engineering students, as shown by table 2. The data are approximates as not all employers are specific as to the number of opportunities for engineering students.

Table 2: Number of placement opportunities in engineering

Academic year	Number of Placement Opportunities
2008-2009	144
2009-2010	296
2010-2011	369

Overall the PEEU teaching and administrative team are having a positive impact on the student's employability, in context the placement figures are remarkable as;

- since 2008 Sheffield Hallam University increased the number of students enrolled on the engineering sandwich degrees, therefore more students are competing with their peers and other institutions for the limited number of national and very few international placement opportunities this is despite increasing the number of placement opportunities, competition rate is still high.
- the number of placement opportunities increasing, when the number of graduate employment opportunities has been decreasing, Henderson and Troup (2011), as the country was and still is in deep recession.

Student Reflections

Quantitative Results

All the current level 5, placement and level 6 engineering students were asked to complete a survey on their reflections of the level 5 PEEU sessions. This was in attempt to capture all students' reflections for the last three years of the adoption of the embedded employability approach in the curriculum. The survey was designed on Google docs and email distributed to the students via various Blackboard organisation and module sites to the desired student demographics. The email request sought the students help providing for feedback on the PEEU sessions, this email request was made three times over a three week period.   The survey has adhered to University ethics policy of anonymous submission.

The numbers of recipients of the survey were approximately 148 level 6, 87 placement, and 298 level 5 engineering students (approximate as each year a few students on the level 6 and level 5 withdraw from their course during the year).   Only 23 students responded in April 2012, and further 8 in June 2012; 17 level 5, 10 placements, 3 level 6 and 1 unknown. The explanation for a poor response rate from the engineers was that the survey request occurred during and after the National Student Survey and Faculty, Course and Module surveys, it is possible the students have become more survey weary. The second request was during and after the examination period; it is possible this is a time period when students do not perceive the need to check their University emails.   However an honest email

response from one student who was recipient the employability sessions in semester one of 2009-2010, highlights that for some students too much time has passed for recall of the learning;

Level 6 student 'I can't honestly remember much about that module so that is why I never completed your survey, I did try a few times but I was just guessing most of the answers so I thought it was best I didn't complete the survey rather than submit results which were not entirely accurate.'

The survey consisted of two parts PEEU class sessions and type of assessment B feedback.   The types of questions used to elicit the student's reflections of the PEEU class sessions;

- multi-answer questions enquire as to the students appreciation of the sessions and whether the session achieved the learning aims;
- Likert scale questions enquiring if they are continuing to use the learning beyond the sessions.

The assessment B feedback questions consisted of Likert scale questions and open text response questions, asking the students for their reflections on the types of feedback experiences they experienced peer and tutor audio or tutor written feedback.   This part of the survey was dynamic, if students responded that they had received tutor audio feedback the subsequent survey questions were in relation to the audio feedback and peer feedback only, vice versa if the student responded to receiving tutor written feedback were presented questions on tutor written and peer feedback. As all students received tutor audio or written and peer feedback.

PEEU Session Reflections

Figures 2 to 6 illustrates the students appreciated the sessions contents, however the mock application and CV/covering letter session appears to be for these students to have met all of its learning objectives in the students eyes, that is encouraging the students to reflect upon their own CV and covering letters. Table 3, the Likert scale questions demonstrate that the students indicate for them only the CV and covering letter session continues to resonate with them and they continue to apply the learning.   The fact the majority are not revisiting the learning for aptitude tests, telephone interviews or assessment centre is that for a number of the students they will have not been fortunate to progress to these stages of recruitment or these types of recruitment processes have not been used by the recruiters.   In reality this would be consistent with observations made by the PEEU team, the majority of placement positions advertised after the January are on the behalf of Small Medium Enterprises (SMEs). SMEs tend to request from students a CV only.   It has been observed by the PEEU team that SMEs tend not to use aptitude tests, some may use preliminary telephone interviews, but only a few, and none use assessment centres.   Whereas larger organisations use these recruitment processes each year from October to January.   Therefore it would be expected that students would continue to revisit the learning from the CV session throughout the year to fine tune their CV for each application, but not the other sessions as the year progresses.   However, these sessions should be still of learning value for when the students apply to large organisations in the summer and early autumn of level 6 for graduate positions.
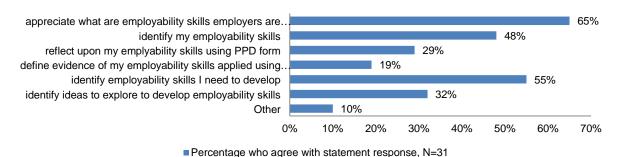

Figure 2: The first PEEU lecture session, What are Employability Skills? People may select more than one checkbox, so percentages may add up to more than 100%

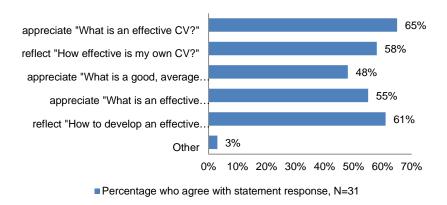Percentage who agree with statement response, N=31

Figure 3: The second PEEU lecture session, What is an Effective CV? People may select more than one checkbox, so percentages may add up to more than 100%

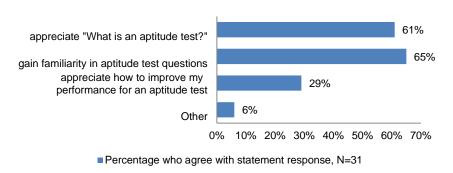Percentage who agree with statement response, N=31

Figure 4: The third PEEU lecture session, What is an Aptitude test? People may select more than one checkbox, so percentages may add up to more than 100%

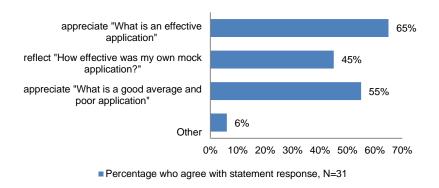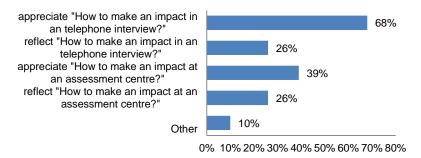Percentage who agree with statement response, N=31

Figure 5: The fourth PEEU lecture session, What is an effective application? People may select more than one checkbox, so percentages may add up to more than 100%

appreciate "How to make an impact in an telephone interview?" 68%
reflect "How to make an impact in an telephone interview?" 26%
appreciate "How to make an impact at an assessment centre?" 39%
reflect "How to make an impact at an assessment centre?" 26%
Other 10%

0% 10% 20% 30% 40% 50% 60% 70% 80%

■ Percentage who agree with statement response, N=31

Figure 6: The fifth PEEU lecture session, How to make an impact? People may select more than one checkbox, so percentages may add up to more than 100%

Table 3: Likert questions on the PEEU sessions, N=31.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I continue to use the PPD Form to reflect and evidence my employability skills.	3%	23%	26%	19%	29%
I continue to use the learning from PEEU lecture session 'What is an effective CV?' to continue reflect/refresh my own CV	10%	35%	19%	10%	26%
I continue to use the learning from PEEU session 'What is an covering letter?' to develop my own covering letters.	10%	26%	29%	16%	19%
I continue to use the learning from PEEU lecture session 'What is an aptitude test?' to prepare for aptitude tests	6%	26%	19%	10%	39%
I continue to use the learning from PEEU lecture session 'What is an effective application?' to reflect/revise my job applications	6%	32%	23%	16%	23%
I continue to use the learning from PEEU lecture session 'How to make an impact' when I have telephone interview	0%	29%	26%	16%	29%
I continue to use the learning from PEEU lecture session 'How to make an impact' when I have an assessment centre	0%	29%	19%	16%	36%

Assessment B Feedback Reflections

Student reflections on the assessment B feedback, 17 had received tutor audio feedback, 14 received tutor written feedback, as different tutors adopted different feedback approaches, all students received peer written feedback.   Noting this is very small research sample of engineers, the results indicate that the student found the written tutor feedback more useful to a point, Table 4, and a few of the students have continued to reuse/re-engage in the feedback.   The data indicates that there appears to be no correlation between whether the student agreed and disagreed with respect to their study year.   These students' reflections in terms of usefulness of the feedback contradicts previous research results of a large student sample, the students found the audio feedback most useful, Nortcliffe and Middleton (2011), but is probably reflection of too small data set.

Those who did find the written tutor feedback useful articulated why it was more useful than their peer's feedback in the open text question; level 5 respondent A 'Honest and useful pointers about my application', level 5 respondent B 'point out the problems and requirements'.   This also true for audio feedback for example if they found it useful level 5 respondent C 'Further expand on points on which I needed to improve' and the inverse level 6 respondent D 'unuseful'.   However decoding of the students open text responses as to the usefulness of the peer feedback contradicts the Likert scale responses, 56.25% of the students found the peer feedback useful, for example placement respondent E 'Gave me a chance to understand where I needed to improve' and the opportunity to appreciate different people's perspectives, level 5 respondent F 'Hearing what other people thought'. A minority did not find it useful, for example 'respondent G 'Other students were not taking it seriously'.

Table 4: Likert questions on the assessment B feedback

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
How useful did you find the personal audio feedback on your PEEU mock application form? N=17	17.6%	23.5%	17.6%	23.5%	17%.6
How useful did you find the personal written feedback on your PEEU mock application form? N=14	0%	50%	14.3%	21.4%	14.3%
How useful did you find the peer feedback on your PEEU mock application form? N=31	12.9%	19.4%	25.8%	19.4%	22.5%
I have listened to my personal audio feedback recording(s) more than once and found it useful each time? N=17	5.8%	23.5%	29.4%	5.8%	35.3%
I have read my personal written feedback recording(s) more than once and found it useful each time? N =14	0%	35.7%	28.6%	14.2%	21.4%
I have read my peer written feedback recording(s) more than once and found it useful each time? N=31	3.2%	12.9%	22.6%	16.1%	45.1%

Overall Reflections

The students' responses to open question for feedback/areas for improvements for the PEEU tutors on the PEEU sessions and assessment feedback yielded a mixed response.   Those who responded to the question valued the sessions equal to those who did not.   For two students their lack of enthusiasm for PEEU sessions was due to their perception that the PEEU assessment had significantly affected their overall classification grade of the module.   However, the PEEU assessment is only 10% of the module, the class average is typically 61-63%, 63% in 2011-2012.   Therefore to affect a student's module grade, a student will have to significantly underperform in the PEEU assessment.   Constructive student feedback highlighted the need for mock application assessment to be even earlier in the semester to provide more timely feedback, and another suggested the sessions should run at level 4.   However, there is a question of how receptive level 4 students would be to learning that is relevant in the distant future, as highlighted by another student response, level unknown respondent G 'This module should continue and students should be made more aware of the purpose and importance of this module'

Qualitative Results

In April 2012 voluntary interview participation approach, Hague (1993), was used to seek the cooperation of level 5 and 6 engineering students.   The interviews were conducted; outside of the classroom environment by one of the placement tutors; several months after the module; post the exam board.   This was in attempt to ensure neutrality, free expression, constructive feedback and honest answers from the participants.   Qualitative research adopted a semi-structured interview approach, Cohen et al (2000), the engineering students were interviewed in pairs informally for a short period of time, 5 to 10 minutes.   The students typically consisted of; five level 5 student pairs, 1 level 5 alone and 1 level 6 student pair.   The level 5 students are currently applying for placement opportunities. The level 6 students are studying a BEng engineering degree, due to their personal circumstances had applied for placement exemption, therefore had continued through to their level 6 of study and had been applying for graduate positions.   The students were interviewed for their reflections and feedback for improvement on each of the PEEU sessions (each session was encouraged to be discussed in chronological order of delivery), the PEEU assessment B and assessment B feedback approach, tutor audio/written and peer feedback.   The interviews encouraged student discussion in the pairs, as this assisted in drawing out each of their reflections of each PEEU session, resulting in the students becoming quite animated and enthusiastic about the learning benefits of the sessions as they reflected.   The interviews were audio recorded, and anonymously transcribed and analysed in accordance to University ethics approval for the research.

Analysis of the interviews highlighted that for neither year groups the students reported that they found every PEEU session perpent to their personal employability development, identifying and defining unaided the learning outcomes of each session, as shown by level 5 student A 'I remember a lot of information was given...The sessions were very important' and level 6 student J 'All of them were helpful... for me' and level 6 student K 'Gave me confidence, confidence for looking for a job'.

The interview results show for some students in certain sessions stood out and for different reasons in their personal development, for example the PEEU session 'What is employability?':

level 5 student F 'I thought [Employability skills] that was useful, it is good to know what employers are looking for in a person when they are employing them... you get to look at yourself say I need to improve on this...confidence.. building upon... talk to a lot more people'

level 5 student I '[Employability session] I think it was good it cause it showed you what skills were more important, so if you were missing a more priority skill in the top ten work on that, if you are missing skills lower down the list don't work on them until you've worked on the priority skills'

The PEEU 'What is an effect CV and Covering Letter?' resonated the most with all the students, in particular the students recognised the need to demonstrate their progression within themselves in moving towards becoming a professional:

level 5 student B 'Name experiences you had, I used to be really bad on that those, now I draw on different leadership skills and not [always] from engineering based [scenarios]... [sessions helped] writing my CV a lot'

level 5 student C 'CV and Covering letter stood out for me...when I redid it, it seemed to work I got an interview at Vauxhall'

level 5 student E 'CV always, CV helped and always going to be beneficial as none us have applied for a professional position before, though it is only a year industry... you need to be far more on the ball... it is the next step up definitely'

The other common theme was how useful the sessions had been in preparing them for certain recruitment processes, giving them a pre-warning, for example PEEU 'What is an aptitude test?'; level 5 student I 'It was useful never come across one before' and I 'It was useful never come across one before', level 5 student G 'aptitude test quite daunting even in a friendly environment' and level 5 student H 'Aptitude tests are not easy they are to throw you off balance...gave you idea what comes up'.

The peer feedback session in PEEU 'What is an effective application' was received with mixed views, for example level 5 student H '...[self reflection whilst peer assessing] I didn't see anything that made me go ooh [that's good]' and level 5 student I 'Peer assessment quite good... the application looking at the different approaches that was good that was bad.'   However the session brought home to the students the stark ruthlessness of HR recruitment processes;

level 5 student B 'I was shocked out how harshly it was to be judged...realised there was more of competition into it [in the recruitment process].

level 5 student F 'Opened my eyes more ...I thought there was some benefits to it ...harshness stems from marking other groups... emulates how harsh an employer can be...probably in directly more true to how it is really [employer assessment of applications]'

The reality is students need to stand out from the crowd and addressing what the employer are seeking, level 5 student D 'application sessions...getting the questions right and make sure you are answering the questions they are asking' and level 5 student A '... how to answer the questions that employers like to ask...how you lead a team or worked in a team it is always good to have answer'

The PEEU session 'How to make an impact' again for the students it provide them with the insight level 5 student G 'It was good heads up' and the importance this learning needs to be a classroom environment as the learning unlikely to occur if assigned as a self-study task; level 5 student I' interview, don't play it down... I think because we watched it in the class, I watched it, if I was watching it at home I probably would have of walked off [missing the learning]' and level 6 student J 'Prepares you for interviews and assessment [centres] especially that test your gave us...I believe it also prepared most of the guys in the class as ¾ of them are now on placement...really helpful'

The student reflections on the tutor audio feedback for the mock covering letter and application form was consistent with previous audio feedback research studies, Middleton and Nortcliffe (2009), level 5 student G 'I thought it was good getting audio feedback, because if it is wrote down people just scan it, then don't read through it...' and level 5 student F 'it sinks in more if said too you...can't skim through it, you have to listen to it'.   However the student's reflections in the interviews contradicted the survey results, in the interviews the students highlighted for them tutor audio feedback has the longevity through reuse, for example level 5 student H 'beared it mind when I changed my covering letters...'. Also, transferability as it can be applied to support their CV development, for example level 5 student I

'that was useful just saying need to improve, listened to it couple of times to improve my CV, for the Bentley placement application'.   In addition, not previously identified in previous research by the author, from the student's perspective the students' identified that the tutor audio feedback complimented the peer feedback increasing its learning worth:

level 5 student F 'It was nice to have the [audio] feedback, the peer feedback was quite harsh but it wasn't particularly constructive it pointed out the flaws, but didn't point out how to overcome them, the audio feedback did talk you through a little bit what you did wrong and how you could improve it linking it into other things'

The evidence of the long term impact of the sessions was supported by the level 6 student J 'All of them were helpful... for me I, I was able to write a good CV, I wrote good CV out of it, which has sold me and got me a job'.   The level 6 student interviews highlight that they knew they were not going on placement, but they did not dismiss the learning they keenly noted the learning in readiness for their level 6 and graduate recruitment processes;

 Level 6 student J' [We] engaged in the process as preparing us for after the final year, cause we knew we weren't going for placement, which we agreed with you, because of our situation, we benefited it from a year later, now' and level 6 K 'We are having to use it now, we have to stand on our own now...useful to brand oneself'

Both the second years were keen to emphasis to future second years that it is important to engage in these sessions; level 6 student J '..take it seriously from the onset, put everything into it, it is as good as a main module', level 6 student K 'It prepares you for the life after Uni', your life after Uni'' and level 5 student B'...get on it straight away...definitely...I underestimated how useful they are'.

Conclusion

The quantitative data is statistically too small to draw any sound conclusions, however the results indicate that the majority of the students had appreciated all the sessions, but not all, which is consistent with the qualitative study results.   The quantitative study implies that CV and covering letter session is resonating with the students, however the qualitative study highlights that in fact a number of the PEEU sessions are having some longitudinal effect at level 5, the learning is being transferred and translated into improving their CV.   However, the results are to small to indicate if the learning is having a positive longitudinal effect on level 6 graduate applications.   The research response sample in being small highlights the limitations of the survey research method should be considered as preliminary survey results, as contradicts previous research data sets and the qualitative data reported in this paper on their learning and longitudinal employability activities.   The lack of level 6 and placement student respondents may be due to the fact the students had forgotten the learning experience and had not felt confident enough to respond.   Therefore more research is required to identify if the latter is true.

In the case of the qualitative research approach of using dialogue pairs has been proven to encourage learner reflection, van Horn and Freed (2008).   In the qualitative study both level 5 and level 6 students highlighted how beneficial the embedded PEEU sessions were to their current and future career aspirations.   On reflection the sessions were an important integral learning element of their course.   Future improvements proposed by the students in the survey; recommended moving the mock application form and covering letter forward a timetabled session to aid student preparation and confidence on company application forms.   The interviewed students agreed that a mock assessment centre session would be helpful for both for providing an insight into what it entails, but also aid preparation. Also, both research studies highlighted the need to emphasis to level 5 students how important the employability learning is to their personal future.

With respect to the feedback quantitative results, the results are inconsistent with previous research into the feedback approach used in the embedded employability curriculum, the previous research has a larger data set, Nortcliffe and Middleton (2011).   However, the qualitative study results are consistent with previous research on, ibid and Middleton and Nortcliffe (2009).   However this study has indicates that the students have found that the peer assessment and tutor audio feedback complement one another. Therefore in the future the PEEU teaching team should be recommending to the students to use the tutor and peer feedback hand in hand.

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