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Empowering Students by Enhancing Their Employability Skills

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Pauline Connell has worked in a variety of marketing roles in Glasgow, Sydney and London. She has also taught Marketing and Communications at TAFE colleges in Australia. She gained an Honours degree in Marketing from Strathclyde Business School and a post-graduate diploma in Information Studies from the University of Technology, Sydney. She is a professional member of the Chartered Institute of Marketing. Pauline has considerable marketing experience in publishing, law, retail management and higher education. She also ran her own business, successfully publishing a community magazine for seven years. Pauline has a particular interest in the field of marketing communications and disseminating technical information to a wide audience. Her primary focus at the University of Strathclyde was student recruitment and marketing, but her role also includes funded projects that relate directly to two of the University's strategic objectives: internationalisation and graduate employment.

Fraser Scott is a Senior Lecturer in Pharmacology in the Department of Biological Sciences at the University of Huddersfield and has previously worked as a Secondary School Teacher in Scotland. His research interests equally straddle drug design and science education, with the principal focus of the latter being at the science/mathematics interface. He also has an additional interest in strategies that promote an enhanced student experience, especially during phases of transition.

Linda A Thomson is a Teaching Fellow within the Department of Pure and Applied Chemistry at the University of Strathclyde and in this role is responsible for the Department's transferable skills programme, which focuses on generic study and employability skills in a chemistry context. Alongside this, Linda is also a Staff Tutor within the School of Life, Health and Chemical Sciences at the Open University, which involves managing a team of Associate

Lecturers on various science modules, as well as working on the production and presentation of science modules. Prior to these roles, she supported both generic skills development and science education of school pupils, college students, undergraduate students and postgraduate researchers. Using her experience of industry, research and academia, her pedagogical research interests investigate techniques to enhance student experience and graduate employability skills.

Debbie Willison is Vice Dean Academic for the Faculty of Science and Deputy Head of Department in Pure and Applied Chemistry. She has held an academic post for over 25 years and has previous extensive experience as Director of Teaching in Pure and Applied Chemistry and Associate Dean (Learning Enhancement) for Science. Initially researching in organometallic chemistry, her current interests lie in the areas of personal development advising, employability skills and student transitions. In recognition of her work, she received a Teaching Excellence Award from the University of Strathclyde Students' Association in 2012.

Abstract

Recognising the importance of graduates being equipped with appropriate employability skills alongside their subject-specific skills, we have had transferable skills training embedded throughout our degree programmes for 30 years. More recently a specific employability skills module for final year honours students has been created.

This module consists of a programme of activities supporting employability skills, which has been delivered to final year undergraduate students from 2012 to 2015. A key feature in the development and delivery of these activities was the involvement of external experts.

Detailed questionnaires have captured student perceptions and thematic analysis has revealed key themes. The module has been perceived to be highly useful, resulting in significant increases in students' confidence across key areas of employability skills. Furthermore, students may hold skewed perceptions of the relevance of generic employability skills to their chosen career path. This fact should be considered when delivering employability skills programmes.

Keywords

career development, career resources, employability, skills development

Introduction

Context of Development of Resources

Our Department has had strong links with industry for many years (CBI/Universities UK, 2009), including one of the longest established industrial training placement programmes (over 35 years) in the UK. These links have enabled us to seek views from industry, through an Industrial Advisory Board, on current technical training requirements, ensuring the material we deliver is appropriate. Additionally, our industrial partners have contributed to the design of a number of our courses to ensure that our graduates are career equipped. Students have further opportunities to engage with industry through guest speakers and prize-giving ceremonies for industry sponsored prizes. In addition, the University of Strathclyde and GlaxoSmithKline established the Collaborative Postgraduate Research Programme in 2009 and more recently a Doctoral Training Centre in Synthetic and Medicinal Chemistry, further strengthening our industrial links.

While subject specific training is necessarily essential, it is crucial that graduates also possess a range of important interpersonal skills (CBI/Pearson, 2015). These skills are specifically mentioned in the Code of Practice (QAA, 2010) and Subject Benchmark statement (QAA, 2014). A recent survey revealed ‘employers look for graduates who have a good academic record, an understanding of the work for which they are applying, and are able to demonstrate a range of transferable generic skills’ (QAA, 2016).

Based on the needs of our industrial partners, the Department first introduced a programme of transferable skills training in 1986. This programme developed, with activities now included in every year of our undergraduate degrees. The programme is

designed to allow the students to learn, develop and practice key transferable skills with progressing levels of difficulty.

Our industrial partners widely acknowledge the students' academic ability and value the transferable skills training they gain as part of their degree. They reported (Industry partner, 2010) that additional training in skills recognition and business skills, however, would further enhance our students' employability.

The technical training that Strathclyde University provides for the undergraduate chemists, along with the development of transferable skills, set a very strong foundation for a successful transition to industry... Students would benefit from some practice of 'thinking out of the box' exercises that would hopefully increase confidence in recruitment activities.

This feedback and additional discussions with partners encouraged us to consider how we could further support our students in this area. The lack of practical resources recorded in the literature coupled with the feedback from external partners convinced us that our strategy should be to create such resources and ensure they were external-expert centric to support articulation into the working environment for our students. We were also interested in enhancing generic employability skills, recognising that not all of our students plan to enter the chemical industry.

Literature Review

It is increasingly clear that a discipline specific degree is no longer sufficient for employers (Brown & Hesketh, 2004; Tomlinson, 2008) and graduates must also possess an array of additional skills. These employability skills include competencies such as team working, problem solving (CBI/Universities UK, 2009), adaptability and

resilience (Bagshaw, 1997). This review considers the definition of employability, identifies the drivers which have moved the employability agenda forward and details the approaches taken by different institutions to address this. The importance and value of these approaches from an employer/recruiter, academic and student perspective are discussed.

Employability has been defined as a set of achievements that makes graduates more likely to gain employment and be successful in their chosen occupations (Yorke, 2004). Another definition says employability is more than just developing attributes to enable a student to get a job and emphasis should be on developing critical, reflective abilities, with a view to empowering and enhancing the learner (Harvey, 2003). The true definition is likely to encompass both statements.

The Dearing Report (Dearing, 1997) encouraged Higher Education institutions (HEIs) to identify opportunities to increase support for students to become familiar with, and to reflect on, work experience. Against this backdrop, it has been argued there may be too many graduates for too few jobs (Bower-Brown & Harvey, 2004) and that this may influence the type of graduates being produced (Boden & Nedeva, 2010). The picture is complex, however, as other factors, e.g. gender, social background play a role in producing graduates (Moreau & Leathwood, 2006). Others (Raybould & Sheedy, 2005) have questioned if graduates have the right skills for employers. Some employers are unable to recruit the types of graduate they require (CIPD, 2011 & 2015 and Branine, 2008) and this may be due to the lack of necessary skills (Cumming, 2010). Notwithstanding these opinions, the importance of communication across the employer/HE interface is clear (Harvey, 2000) and there is a need for clearer rules of engagement between employer, government and education partnerships, where power and accountability is shared (Gleeson & Keep, 2004).

Ways to embed employability within curricula have been discussed widely. Yorke and Knight (2006) suggest a spectrum of delivery, including specific employability related modules, while it has been argued (Wingate, 2006) that such modules are ineffective or even regarded by students as distractions from subject development (Holmes & Miller, 2000). Rae (2007) suggests that employability is a product of the whole university experience combined with the wider world of work. Some institutions, such as the University of Luton (Fallows & Steven, 2000), have taken the strategic decision to embed employability across the institution and have noted positive effects on student performance. Regardless of opinion, it has been recognised that a holistic approach to embedding and integrating employability works best (Harvey, 2005).

Cole and Tibby (2013) have collated a useful framework to support embedding employability. This considers numerous approaches including the USEM (Understanding, Skills, Efficacy and Metacognition) model (Knight & Yorke, 2004) which suggests approaching tasks as opportunities for learning rather than opportunities to demonstrate competency is more successful. Dacre Pool and Sewell (2007) developed the CareerEDGE framework which, they claim, is more accessible to stakeholders than USEM. The name is derived from the five components of the lowest tier of the model: career development learning, experience, degree subject knowledge, generic skills and emotional intelligence. The concept of students developing capability (Stephenson & Yorke, 1998 & Stephenson, 2001) can also assist in embedding employability into programmes. It has been suggested (CBI/Universities UK, 2009) that the focus should be more on graduate attributes rather than employability skills and that any employability model should also involve career management skills (Bridgstock, 2009).

A range of resources designed to support practitioners in embedding employability has also been developed (QAA, 2006 & Pegg et al, 2012). These include Student Employability Profiles, each of which contains a list of subject specific employability skills. An Employment Development Profile has been created at the University of Central Lancashire to support the tailoring of employability learning to students' needs. The University of Ulster has developed the Employability Development Opportunities Review Toolkit which supports course teams in reviewing employability opportunities within programmes. The Redesign of the Learning Experience resource from Birmingham City University supports cultural change and engages students and staff in reviewing employability. The employability toolkit (Clark et al, 2011) is also useful in identifying where gaps occur in existing programmes. There has been recognition that a focus on students taking responsibility for their own employability is important (CBI/NUS, 2011) and resources have been developed to encourage this. A recent survey (QAA, 2016) summarises a range of activities being carried out in over 150 institutions across the UK. These resources are extremely helpful in thinking about embedding employability but there is an apparent lack of practical resources for use in class.

HEIs are keen that graduates are career equipped and the view that students go to university to improve their minds rather than become skilled for the recruitment market (Harvey, 2005) is no longer widely held. It is important when developing and embedding employability skills that the views of employers and recruiters are kept in mind. A survey of over 700 employers (CBI/Universities UK, 2009) found that 78% agreed that employability skills were their top priority and 75% believe that universities should prioritise improving employability skills. More recently a 2016 survey (CBI/Pearson Education, 2016) indicated that 30% of employers were dissatisfied with

graduates' international cultural awareness. This is an improvement from the previous year (43%) but more needs to be done. Companies can assist with this and 84% of large businesses already have links with universities. Additionally employers can help to identify skills which relate to long term employability rather than short term employment (Cox and King, 2006). HEIs need to recognise the changing landscape for graduates (Branine, 2008) and that more sophisticated and objective methods of selection exist than previously. An awareness of the differences in the strategies and priorities for SMEs and global companies (Heaton et al, 2008) is also important. Employers, however, need to take steps to better inform HEIs of their needs (Connor & Shaw, 2008).

Student perception of employability is also important. The majority of students attend university to enhance their employment prospects (Stewart & Knowles, 2007). Some students identify employability as a key motivator and reason for pursuing a university education (Wharton et al, 2014). A separate study (Tomlinson, 2008) found that students believe academic qualifications have a declining role in their employability and have a strong sense of the need to develop and deploy credentials outside of their formal teaching. Others believe, however, that employability is not well understood by students (Glover et al, 2002). In a survey of students 78% believe gaining a degree secured their future while only 14% recognised the whole university experience. While academic colleagues are increasingly involved in developing employability skills in their classes Wharton and Horrocks (2015) suggested more needs to be done to communicate to students how the varied activities within a curriculum enhance employability skills.

Research Questions

Our desire to improve students' employability skills led to the identification of the

following two research questions:

1. Can students' self-reported confidence levels in employability skills be improved through the design and implementation of an external-expert centric module?
2. What are students' perceptions of such a module and can these perceptions be used to further enhance our student employability programme?

Method

Theoretical Framework

A variety of employability frameworks have been developed to allow for the systematic evaluation of facets of employability and these differ in their organisation, detail and theoretical foundations (Jollands, 2015). Knight and Yorke (2003) proposed the USEM model of employability which is noted as encapsulating more than only generic skills important to employability. This model suffers, however, from a somewhat esoteric, scholarly approach in its linguistic descriptors according to Dacre Pool and Sewell (2007) and we have selected their CareerEDGE framework to contextualise our approach. As described earlier, the name is derived from the five components of the lowest tier of this model. Dacre Pool and Sewell suggest that providing students with the opportunity to develop these components will enable reflection and evaluation to take place, resulting in higher levels of self-efficacy, self-confidence and self-esteem and ultimately lead to greater employability. In the context of our study, we recognise that the module we have developed is part of an overall degree course and as such many of the components identified in the CareerEDGE framework will come from other sources. As such, the module has been developed primarily to address the Career Development Learning component of the framework. This is said to comprise activities

to enable students to research the job market, how to present themselves effectively to employers and how to make informed decisions about the future of their careers.

Furthermore, this component recognises the necessity to develop students' ability to effectively communicate pertinent details in application forms, C.V.s and interviews.

Pilot Study

To explore whether our existing framework of employability skills support for students could be improved upon, we carried out a small scale pilot study. To obtain swift feedback, we focussed on our third year Masters students as they undergo competitive recruitment for a fourth year industrial placement year. This pilot, a 90-minute interactive workshop focussing on skills recognition, was developed in conjunction with a long standing industrial partner. After this training, industrial colleagues who interviewed our students indicated their performance was much improved from previous cohorts. The students confirmed this training had increased their confidence in recognising and articulating their skills and own particular strengths.

This limited proof of concept highlighted the benefit of skills recognition training and the impact this can have on recruitment activity. Additionally, the value of having external expert input to ensure activities were current and relevant to the needs of industry as emphasised. The information gathered during this pilot study informed the design of the final module.

Module Development and Design

It was clear from the improved performance of students in the pilot study that additional training could better equip graduates with the skills required for successful transition into employment. Reflecting on the comments from industrial partners, we aimed to expand on the skills recognition activity and create a suite of resources which would

support this transition. These resources would enhance the existing skills of students but also develop new skills. The overall objective was to create resources that would lead to motivated and engaged graduates, prepared to take on significant challenges from the start of their careers.

Final year Honours students were the cohort identified to participate. Although these students experience the substantial transferable skills classes in the earlier years of our programmes, they do not participate in an industrial placement and often lack the skills and confidence to perform well during the recruitment process.

Three key areas for improvement were identified: CV writing, interview preparation and job seeking skills and a series of eight discrete sessions were created to address these key areas. These are summarised in Table 1. External experts were identified for specific expertise and their complementarity to the existing expertise in the project team: transferable and employability skills, personal development planning and marketing.

INSERT TABLE 1 HERE

Each expert was given broad aims and learning outcomes for the session and the requirement that the session should be interactive and activity based. Once a draft plan gained approval, this was developed as a full activity. During the course of this study the sessions have been enhanced, as appropriate, and the resources available are now fixed resources. Broadly speaking they can be grouped in the areas of recruitment targeted activities; business culture; and IT skills, although some of the sessions could be categorised in more than one group.

Funding requirements dictated that the resources be freely disseminated to other education providers and be relevant to all discipline subject areas. They were made available online to the education sector in 2013. While these activities can be presented

by an individual member of staff, we strongly recommend maintaining the involvement of external experts in delivery of the resources. This reinforces the importance of the skills which students gain as the skills are being acknowledged outside of their own particular programme. Resources can be found at <http://www.strath.ac.uk/science/chemistry/studywithus/careersinchemistry/enhancingemployability/>.

Module Implementation

Procedure

The module runs in the first weeks of the academic year. At the last session, students fill out a comprehensive questionnaire on all activities, using a Likert scale to rate the usefulness of each session on a four point scale from 'not at all useful' to 'very useful'. Students are also asked to rate their confidence levels in CV writing, interviews and job seeking skills, using a four point Likert scale ranging from 'not at all confident' to 'very confident' for both before and after the module. The questionnaire also had space for students to provide optional free-text comments in order to gain more insight into their experience of the module.

Participants

The module was implemented across four academic years, 2012/13 to 2015/16, and the participants were principally final year students enrolled in a BSc (Honours) degree programmes; however, some of our 4th year internal placement Masters students and MSc students, were also included. Of the 116 students that undertook the module 108 (93%) fully completed the questionnaire. The student cohort who completed the questionnaire comprised 52.6% female ($N = 108$) with mean age 21.7 years ($SD = 2.69$).

Data Analysis

In an effort to increase the dependency of the interpretation of the data obtained from this study, the research group comprised a multidisciplinary team with varying degrees of closeness to the module delivery (Curry, Nembhard & Bradley, 2009). The team included an experienced academic, a marketing professional and a teaching associate with responsibility for delivery of the existing transferable skills programme. Post module delivery, an education researcher was recruited to assist with data analysis and interpretation of results.

Student Likert scale responses to the usefulness of each session questions were plotted as stacked columns and mean Likert scores were obtained. Histograms were plotted to visualise the shift in distribution of confidence levels across CV writing, interviews and job seeking categories; however, these were further analysed by plotting the frequency of each Likert scale transition. Furthermore, students' free-text comments were subjected to inductive thematic analysis and the protocol for this is outlined below.

Qualitative analytical methods can be divided into two camps: those stemming from a particular theoretical or epistemological position, such as interpretative phenomenological analysis (Smith & Osborn, 2003) and grounded theory (Glasser, 1992); or those independent of theory or epistemology, such as our chosen approach, inductive thematic analysis (Braun & Clarke, 2006). A key advantage of the data analysis method not being constrained within a particular epistemology is the resultant flexibility afforded by this theoretical freedom (Braun & Clarke, 2006). While it is important to be transparent and to explicitly discuss in detail the procedure used during any qualitative analysis (Attride-Striling, 2001), our approach, which follows, is in line with that suggested by Braun and Clarke (2006).

The inductive thematic analysis was carried out by two researchers, the first was the principal investigator and the second was the education researcher recruited for the purposes of data analysis. First, the researchers became familiarised with data, independent of literature theory, to ensure the analysis formed an inductive approach (Tuckett, 2005). The data from the questionnaire was grouped from all four years by session, however coding and themes were actively not constrained by session to ensure the evolution of cross-cutting themes. Each researcher carried out independent code generation on data items then compared codes and checked for consistency through iterative matching between data items and codes. Any generic positive or negative statements (e.g. “the presenter was very clear”) that did not provide insightful information about the data were coded as such but did not form part of the thematic analysis. Once consistent codes were agreed upon, both researchers independently created thematic maps to find meaning in the data. These independent thematic maps were then compared and discussed to define and generate overall themes. Finally, a detailed analysis of each theme was carried out in collaboration, including identification of sub-themes and selection of representative data items. It should be noted that at both the independent item coding stage and the generation of thematic maps stage, both researchers’ interpretations of the data were highly consistent with only the specific name of a code or theme, not the meaning, being the principal difference.

Trustworthiness

There is a plethora of literature relating to the necessity for qualitative research methodologies to adhere to rigorous standards (Krefting, 1991; Merriam, 1998; Shenton, 2004). In keeping with this philosophy we employed a variety of strategies to enhance the trustworthiness of this study. To enhance the consistency of the data the study utilised student participants from across four academic years thus allowing for a

greater variety of students to be involved (Krefting, 1991). Credibility of the data was improved through the triangulation strategy of utilising multiple data collection and analysis methods (Merriam, 1998): Likert-type questions analysed via qualitative and descriptive statistics; and inductive thematic analysis of free-text comments.

Furthermore, credibility of the study was increased through recruitment of an additional researcher for purposes of data analysis thus providing a team with varying degrees of closeness to the study (Shenton, 2004).

Results and Discussion

Individual Sessions

The students' responses to the usefulness of each session within the module are presented in Figure 1 and Table 2. Overall, the students perceived the module to be a useful addition to their curriculum and, acknowledging that there is variability in the usefulness of each session, there were no sessions with notably poor student responses. The top scoring session, with an average Likert score of 3.65, was that devoted to CV writing and represents a key skill that the students clearly perceive as being important. Similarly, the next three top scoring sessions were specific skills necessary to secure employment: Assessment Centres, Psychometric Tests and Interview Skills with Likert scores of 3.38, 3.37 and 3.32, respectively. It is interesting to note that CV writing and interview skills should have been used iteratively throughout a student's education; certainly, each of the students in this study would have been through at least one module at our institution pertaining to these and they are highly likely to have encountered them at high school level also. Assessment centres and psychometric testing are perhaps novel concepts for the students, one reason why we sought to include them in our module, and so it is noteworthy that they found the sessions on

these to be similarly useful to the already encountered CV writing and interview skills sessions. In contrast to the focussed content of the top four scoring sessions, the four lowest scoring sessions were composed of broader concepts, perhaps perceived by the students to be less acutely linked to employability.

INSERT FIGURE 1 HERE

INSERT TABLE 2 HERE

Overall Class

The questionnaire asked students to rate their change in confidence before and after the class in the categories of: quality of CV, interview ability and job seeking skills. The students were asked to rate their confidence in these areas by selecting their confidence before and after the class on a scale of ‘very confident, somewhat confident, not really confident or not at all confident’, these data are presented in figures 2 to 4.

INSERT FIGURE 2

INSERT FIGURE 3

INSERT FIGURE 4

Across all three confidence measures, the distributions before completion of the module were fairly symmetrical around a neutral response notionally between ‘not really confident’ and ‘somewhat confident’. After completion of the module these distributions are significantly shifted to the greater confidence end of the scale, further confirming the usefulness of the module to the students. Moreover, after completion of the module, the vast majority of the students’ confidence responses are situated in the two positive Likert scale categories (100% for CV writing, 94% for interview skills, 92% for job seeking).

The overall shifts in confidence distributions were further analysed by viewing the magnitude changes in Likert scale responses, presented in figures 5-7.

INSERT FIGURE 5

INSERT FIGURE 6

INSERT FIGURE 7

Collectively figures 5 to 7 clearly indicate that participation in the module has significantly improved some students' confidence in all three measured areas of CV writing, interviews and job seeking which is consistent with the students' perceptions of the usefulness of the module and individual sessions. However, there are significant numbers of students for which no self-reported change in confidence has occurred. This could be a failure of the self-reported nature of this measure and perhaps students have not perceived an increase in confidence despite one occurring – longer term evaluation of this may give students greater opportunities to use their newly acquired skills and thus be more aware of an increase in confidence. It is also possible that this analysis has revealed a group of students who have not significantly benefited in confidence levels from participation in this module. This prompted a more in-depth analysis using inductive thematic coding.

Interestingly, there was one instance of a student reporting a negative change for job seeking skills. In a follow up discussion with this student, they reported they had been a bit naive - thinking that it was easy to get a job and they felt that after the class they had a more realistic approach to job seeking.

Free-text comments supplied by the students in relation to the usefulness of the module overall provide much supportive feedback, for example:

At first I wasn't sure what to expect from the class but as it developed it became clear that these are very useful skills for job application processes. It's obvious that

a lot of time and effort went into planning speakers and topics which is reflected in the course material.

Helped me improve across the board in an area that I thought wouldn't need much development while I was still at uni.

Very good idea and I feel much stronger for taking part in these classes.

Extremely useful class will be good for career.

Overall, the data collected strongly suggests that the development and implementation of this module has successfully improved students' confidence in their employability skills.

Thematic Coding

A primary driver for carrying out further, information rich analysis during this study was the observation of a group of students who did not report an increase in their confidence levels across the three themes of CV writing, interview skills and job seeking skills. However, care was taken not to allow this to bias the following analysis. Inductive thematic analysis of the student feedback collated from the questionnaires resulted in the emergence of 3 themes from 8 higher order categories: Interaction, Relevance of Module, and Personal Progression. Some of the higher order categories were further composed of dichotomous student perceptions leading to two lower order categories as depicted in figure 8.

INSERT FIGURE 8

Interaction

A key aim during the design and development of the activities was to ensure they were highly interactive. Any instruction i.e. formal presentations, was kept to a minimum in each session and the majority of time involved interaction of teacher and students and/or

students and students. It was clear from student comments that this approach was welcomed and valued by them.

I found it much more helpful than I first thought it was going to be

At first I wasn't sure what to expect from the course but as it developed and it became clear that they are very useful skills

A specific benefit which student's recognised was the opportunity to interact with external experts. During the design of the activities we believed it was crucial to have external experts who would expose students to ideas and concepts they had not previously considered. Additionally, this provided students with the opportunity to create relationships with professionals from outside their own discipline potentially benefitting their future career choices.

They were able to answer questions, give us a wider picture of what we could do

Good to gain extra and background information from the experts

Having experts in each area was useful. They were able to answer specific questions

I took a lot of information from the external professional speakers

The experts presented a different perspective to students and often reinforced lessons delivered by university staff allowing students to recognise the importance of these activities.

Great to have a chance to ask questions and see how the experts think/feel about the same questions

It was also interesting to note that students acknowledged they received different advice from different people on the same activity. They realised there are often a range of

options, which have different merits, to successfully complete a task. Students recognised that these options need to be considered before taking action.

Conflicting info from what I had been given before

A further thread which emerged within this theme was *teamwork*. We had been particularly keen to provide opportunities for students to participate in this type of activity as much of the laboratory work they carry out is solitary. They have limited experience of working with their peers in team activities in the second and third years of their studies and no or very limited experience working as part of a multidisciplinary team. The assessment centre activity allowed them to recognise their strengths and weaknesses and also allowed them to recognise it is not always the outcome of an activity which is important but how a group of individuals have interacted with each other to achieve that outcome.

I learned a few things about myself – good and bad!

Really good for improving group work and communication

Was good to hear different opinions I wouldn't have considered about situations

A third strand in this theme was *feedback*. The importance of feedback is, of course, well recognised and it is clear that feedback and the fact it was delivered immediately in class was welcomed.

Not just fun and memorable but actually felt useful, good practice and feedback

Good getting continual feedback

Instant feedback allowed the students to immediately feed forward e.g. swift alterations to their C.V.s and supports the argument that students find prompt feedback more helpful than perhaps more carefully constructed feedback which may take some time to be prepared.

Relevance of Module

Students have the opportunity to practice many of the skills within these activities in other areas of their degree programmes but the resources were developed to highlight the importance of these skills and also to provide further opportunities to enhance them and benefit from external expert input. It is interesting to note a particular student's comment.

It was useful to realise that you gain skills from things you don't realise you have gained skills from

Colleagues supporting the development of these skills in other classes have been encouraged to articulate more clearly their importance. Additionally this final year class refers back to these earlier activities to provide a clearer framework for students to identify where these skills have been developed throughout their degree.

Within this theme, the *content* of the resources prompted interesting comments. A dichotomy of student experience clearly emerged. Many students recognised the importance of possessing and improving their skills through our holistic approach.

The idea of branding myself was uncomfortable but useful

Learned much about non-lab based opportunities

Others felt that the activities were not useful as they did not recognise the value of them.

Even though I enjoyed the tasks and felt they gave me more confidence I didn't find the content very useful

May have been better had the topics been more closely related to chemistry

This illustrates a skewed perspective of what a job in 'chemistry' might entail. Clearly an employer recognises if a graduate can 'do' chemistry by the degree classification they have gained. Employers, however, also expect their employees to have the skills to

do many more tasks including working as part of a team and managing interactions with colleagues, understanding business implications, etc.

There were also *temporal* considerations raised by the students. Some students had prior experience of the activities and believed their skills to be well developed.

I had heard a lot of things before

Keeping social media sites appropriate is just common sense

Most of the points made, should already be known, regarding matching your skills to a specific job

Others welcomed the opportunity to practice their skills, while for others the instruction in this area was clearly a revelation. Some expressed the opinion that these activities should have been in the earlier years of their studies.

Helped me realise what I had to do regarding cleaning up my social media site

Very helpful as I have never had to do a CV before

While this was useful, I feel I could have benefitted more from this before

Info that would have been more useful 1st year

These views highlight the importance of recognising the prior experience of students when designing such activities. Incorporating the opportunity for students with prior experience to contribute to such activities could enhance the experience for all involved.

Personal Progression

The majority of students expressed the opinion that they had personally progressed from participation in the activities.

Know now how to show transferable skills in a CV

Had never experienced one before [assessment centre], good to know it is not as intimidating as it sounds

Those who had identified the activities as not useful or of no relevance probably did not articulate an opinion regarding personal progression but this does not necessarily mean that they have not progressed.

Enjoyed the time with course mates, but didn't really take much from it personally

Many students clearly articulated that they had gained *employment skills* during the class but also indicated that actions which they took beyond class instruction allowed the continued development of their skills.

I felt that all the help and advice directly applied to me and I used it a lot since the talk

This indicates a deeper awareness of their skills and that the students were empowered with the ability to continue to enhance them.

There was a clear indication that *confidence* had increased in many different ways.

Some students indicated that they felt they lacked skills when in fact it may be that they lack confidence. Others may indeed lack both confidence and skills.

Enjoyed the debate and felt it gave good confidence for public speaking

I felt the confidence of most students improved over the course of this exercise

As would be expected an increase in confidence should be accompanied by a reduction in anxiety and a number of students articulated this particularly around public speaking, articulating their own skills and dealing with unseen situations.

Good to be placed in an uncomfortable situation – although not an enjoyable day, the process was useful in helping to overcome a certain amount of fear factor

Students also indicated the activities had improved their *perspective* in two specific areas. Their involvement had given them an insight into what skills employers expected graduates to possess when they enter the workplace.

This was a useful session in that it encouraged me to start considering how employers value a varied skill set. I hadn't really thought a great deal about what an employer is actually looking for in candidates until I attended this session.

It opened my eyes and made me realise about what companies are really looking for

Additionally the activities had given the students an insight into their own interests and skills set. They were better able to recognise and articulate their skills and understood that their interests and opinions could influence their choices of where they may wish to be employed. They realised that other career paths were possible and that a 'scatter gun' approach to job seeking should not be adopted.

Making me consider what I like/don't like about companies and where I'd like to work

Was interesting as I hadn't thought about that side and realised should look into the company before applying

Summary

In summary, students did find the activities useful and acknowledged that specific sessions had encouraged them to consider skills they had not previously thought of. A

key finding for the team was the need to recognise students' exposure to employment skills to ensure that what is being delivered is relevant. Additionally, to consider that students' perceptions about what is important might be incorrect.

Conclusions

We have had the opportunity to develop our learning and teaching portfolio while significantly enhancing the student experience and producing more employable/marketable graduates. We have collaborated with a range of external experts and this has produced additional benefits, such as new industrial partners, within the department and institution.

From the data presented it is clear that students' self-reported confidence levels have been improved from the implementation of this external-expert centric module and the first research question has been addressed. The module has clearly been a success but improvements can be made. To develop it further we would include a session on what a career in chemistry actually involves and link the activities which some students' perceived as irrelevant, e.g. crisis management, to that setting.

With reference to the second research question, the recognition that students arrive at this module with very different backgrounds is important and a survey at the start of the module would help us to gauge their prior learning and confidence levels. Certain activities could therefore become optional or, perhaps more usefully, the students with prior learning in these areas could facilitate the sessions and share their experience.

Our future plans would be to continue to include external experts in the delivery of these resources. This need not incur further substantial costs as our experts range from colleagues in other parts of the institution, colleagues from other institutions who work with us on a reciprocal agreement and alumni who wish to share their experiences

with the Department. We will review and evaluate what is delivered each year and include new experts as and when appropriate.

Impact

The impact of using external experts benefitted both students and staff. The messages delivered by internal staff were reinforced by the external experts adding more weight to the information conveyed. Students had the opportunity to create relationships with professionals from outside their own discipline and this could influence their future career choices. The experts presented a different perspective to students, often suggesting other career opportunities that they had not been aware of, therefore widening the students' choice of 'career paths', e.g. science publishing.

The impact of these resources on the students is significant, with increased confidence reported and an enhanced student experience. They now have increased recognition of, and better communication of, their personal skills. We believe that it is also beneficial to the students that they have increased awareness of job seeking and business processes – leading to an easier transition to the workplace.

Out of all the applicants at the assessment centre I seemed to be one of the most prepared, which is 100% due to the careers skills class.

The project has made a significant impact in our department and institution. The resources created constitute a compulsory final year class for all mainstream Honours students in the Department of Pure and Applied Chemistry. Colleagues in other departments and faculties have incorporated individual resources into their teaching, e.g. as part of an industry engagement placement. The impact is wider than the institution, since the resources are available to all education providers via <http://www.strath.ac.uk/science/chemistry/studywithus/careersinchemistry/enhancingemployability/>. The resource contains descriptors and timings, presentations, activity

sheets, marking schemes (where appropriate) and feedback sheets for each activity.

They are suitable for all disciplines and can be used 'off the shelf' for delivery as a class or used for individual standalone activities. To date, the resources have been downloaded 103 times, in 7 countries and across 59 education providers.

The benefits will ultimately reach industry as a supply of graduates with a better understanding of their abilities, strengths and weaknesses will be produced.

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