Unemployment of engineering graduates: the key issues

Professor Helen Atkinson¹ (hva2@leicester.ac.uk), Martin Pennington² (martinpen@btinternet.com)

¹University of Leicester, UK; ²Martin Pennington Consulting, UK

Abstract: Engineering employers say publicly at national level that they need more engineering graduates, with surveys by, for example, the Engineering Employers Federation, proving there is demand. This project investigated the apparent contradiction between this high demand for engineering graduates and an unemployment rate of about 13% amongst UK engineering graduates (HESA data, July 2010). Employability has received huge attention but there remains a distinct issue of why some engineers do not get graduate level work within a short time of graduation.

This National HE STEM Programme project interviewed a selection of unemployed graduates, identified from the Destinations of Leavers from HE (DLHE) survey six months after graduation, in order to investigate their experiences and gain an understanding of factors impeding their entry into graduate engineering employment. Questions ranged from whether the graduate decided to put off looking for a graduate level job until after graduation (and therefore ‘missed the boat’), through to academic and personal skills attributes, motivation and regional location. The data was analysed in the context both of previous research, and of data from interviews with engineering employers and employed graduates.

Emerging from this study is that there is no single reason for unemployment amongst engineering graduates, with key findings centring on the importance of: students’ early engagement with career planning and the final year application process; relevant work experience; the distinction between the MEng and the BEng in employers’ recruitment criteria; and the ability of graduates to articulate their skills and competences effectively.

Context

In 2008-09 there was a 13.2% unemployment rate for UK full-time, first degree engineering graduates (Higher Education Statistics Agency [2010]). Whilst some disciplines had a higher unemployment rate (e.g. Computer Science 16.5%; Media/Communications 15.1 %), others, including some STEM subjects, had a lower rate (e.g. Chemistry 9.2%; Maths 10.4%; Physics/Astronomy 11.8%). At the same time, there has been an unprecedented focus on employability within higher education, for engineering in common with many other disciplines. Whilst graduates from less vocational disciplines might be expected to struggle more to obtain graduate level employment, as the routes into such employment are less obvious and more diverse, the same cannot be said for engineering graduates. Many engineering employers maintain a significant profile on university campuses or in recruitment publications, both paper-based and online, and the value and availability of work placements are well publicised within the industry and universities. In addition, many engineering departments and university careers services maintain strong links with employers and organise events for engineering students. Clearly, smaller engineering employers have less of a voice than their larger counterparts, but there is a strong case for engineering generally to be considered an industry with a high profile within higher education. There thus remains a distinct issue of why some engineering graduates do not obtain graduate level work within six months of graduating.

There is a clearly defined recruitment problem in UK engineering with two main facets. Firstly, there appears to be a shortage of engineers overall. Research by the Royal Academy of Engineering (2007) states that the UK’s ‘basic output of engineers is effectively stagnating’, indicating that between 1994 and 2004 the number of students on engineering degrees in UK universities remained at 24,500 each
year despite a 40% increase in university admissions generally over the same period. This finding is echoed in more recent work by the Royal Academy of Engineering (2010) which states that ‘there are indications that the number of engineering graduates will not be sufficient to meet the longer term skills demands of industry’. It quotes research by the Institution of Engineering and Technology (2008) that ‘33% of respondents were experiencing problems recruiting graduate engineers’ identifying ‘civil engineering and energy as areas with high recruitment needs’. The Institution of Engineering and Technology (2010) also reveals that many organisations were experiencing difficulties in recruiting staff in 2010, in particular graduate engineers, after these problems had receded somewhat in 2009.

Secondly, there is a perceived problem with the quality of engineering graduates. Research by the Royal Academy of Engineering (2007) draws attention to the recruitment problems of many companies in attracting ‘enough of the best’. More specifically, employers expressed concerns about graduates’ ability to apply their knowledge to real industrial problems. The findings of the Institution of Engineering and Technology (2010) include data on the incidence of skills gaps amongst new engineering recruits at different levels. Although the proportion of organisations reporting that, across all engineering and technical staff, ‘recruits do not meet expectations’ had reduced from 39% in 2008 to 32.7% in 2010, the proportion reporting such a deficit for graduates remained fairly constant at 43%. More specifically, the report indicated that the primary area where graduates exhibited a deficit was in practical experience (29.5% of employers reported this). Research by the National HE STEM Programme (2011) draws together a range of findings from other bodies and, in relation to graduate skills, notes the growing importance of a ‘T-shaped’ skills set where ‘the depth of the functional or disciplinary skills is enhanced by the horizontal ability to apply knowledge across various work-based situations’. Similarly, research by the Royal Academy of Engineering (2007) defines three distinct elements in the role of the professional engineer in the business world: ‘that of the technical specialist, imbued with expert knowledge; that of the integrator able to operate across boundaries in complex environments; and that of the change agent providing the creativity, innovation and leadership necessary to meet new challenges’. It also identifies the ability to apply theoretical knowledge to real industrial problems as the ‘single most desirable attribute in new recruits’, more highly regarded by employers than other important attributes, but also more elusive.

Research also points out the importance of work experience in preparing graduates for engineering careers and in employers’ recruitment strategies. The Royal Academy of Engineering (2007) concluded that it is a ‘primary factor in the recruitment policies of the great majority of companies and is highly influential in determining the selection of job applicants for interview’. Many large graduate employers use their in-house work placement programmes as a channel of recruitment, whilst for SMEs, with their ‘distinct preference for graduates with some experience of the commercial world’, the value of work experience is possibly even greater. On the other hand, a study by the Department for Business, Innovation and Skills (2011), in its overall conclusions, surmises that many STEM graduates choose to enter non-STEM careers because of lack of knowledge or experience of STEM careers and concludes that ‘Increasing opportunities for STEM-degree related work experience would be beneficial in developing better understanding of these areas’.

The same study also makes some clear points about career choice and questions the assumption that STEM graduates, and so by implication engineering graduates, necessarily intend to pursue a STEM-related career: ‘This ‘default’ career direction is clearly not what many STEM students or graduates have in mind or are adhering to’. Students and graduates’ career decision-making is very fluid and many graduates are undecided about career direction when they graduate, delaying making any job applications until after they have left university, and ‘those choosing to take time out or enter temporary work were amongst the least ‘decided’ and potentially the most likely to drift away from STEM’. Overall, the report suggests that policy makers need to take more account of the broad career aspirations of STEM graduates, and the impact of contingency on their plans, and to have less faith in the simplistic model that ‘choosing to study a STEM subject leads to entering a STEM job’.

Finally, various studies indicate the need for industry and academia to work more closely together in the interests of all parties – students and graduates, employers, and institutions – and the requirements of the UK economy more widely. That of the Royal Academy of Engineering (2007), for example, identifies two levels of engagement: strategic advice and operational engagement. More recently, the Royal Academy of Engineering (2010) stressed the communication channels that ‘help to inform universities about the skills requirements for engineering graduates’ and cites a range of formal to informal interactions exemplified by the institutions within the study. The same report also identified the importance of ‘experience-led’ components within engineering degrees and emphasised that the
successful delivery of these ‘depends on a strong tripartite relationship between staff, students and industry’ that impacts ‘directly on both teaching and curriculum development’.

Research questions

The above research, largely based on the evidence of employers and academic staff, provides the context and rationale for this project in that, to the best of our knowledge, there has been no research based on interviews with unemployed engineering graduates: a major gap in the evidence. Without fully appreciating their experiences, it is hard to assess the difficulties that unemployed graduates face in the job market, why they perceive these to be problematic, and what provision or practices might help them to overcome them. The qualitative research approach adopted by the project, involving semi-structured interviews, has allowed a more experiential and nuanced understanding of these issues to emerge and is intended to fill this gap.

Methodology

Prior to beginning the field research elements of the project, each partner institution obtained ethical approval for the project from their institution. Each partner then identified a cohort of 2010 graduates who had indicated, at the DLHE census point in January 2011, that they were unemployed. The total target number for the project was set at 80 with Aston, Birmingham, Coventry and Loughborough contributing 19 graduates each and Leicester (with a much smaller graduating cohort than its partners) making up the balance with four. To provide a contrasting group, it was decided to interview a smaller group of 2010 graduates (15 in total; three from each institution) identified as being employed at the same DLHE census point.

A Graduate Interview topic guide was constructed and used as the basis for the Graduate Interview Record (GIR) to record the interview outcomes and to ensure consistency in the quality of data collected. Graduate interview guidelines were also produced, again to ensure consistency and to help interviewers deal with issues they might encounter. Graduates from both unemployed and employed cohorts were invited to participate through various appropriate channels, including careers services and alumni relations offices. All graduates were contacted and interviewed, usually by telephone, between July 2011 and April 2012 with the 30-45 minute interviews, being conducted by project team members or careers service staff. All the GIRs were then monitored by the project consultant for eligibility and quality and entered onto a central database for analysis.

As it proved very difficult to identify enough 2010 graduates willing to participate in the project (contact details quickly become outdated meaning graduates were hard to locate), it was agreed that the survey would be extended to 2011 graduates who had responded to the DLHE survey in January 2012. The final numbers of graduates in the survey were 66 unemployed and 12 employed. All graduates in the survey were assured of their anonymity under data protection regulations and were given a £20 gift voucher in recognition of their time and contribution.

The project partners agreed also to collect new data from 20 engineering employers, both large and small enterprises recruiting graduates, in order to address the particular questions that had been identified. Leicester conducted the majority of these (16), through the project consultant, with Aston, Birmingham, Coventry and Loughborough taking one each. In the event, 19 employer interviews were completed and it was felt that this number was sufficient for the purposes of the study.

An Employer Interview topic guide was constructed and used as the basis for the Employer Interview Record (EIR) to record the interview outcomes. The employers were identified by the partner institutions either from among their own contacts or from those provided by the careers service. The interviews were conducted between July 2011 and February 2012, in most cases face-to-face although a few were done by telephone owing to distance, for example.

The project consultant also carried out a literature review covering a range of published material relating to the engineering industry and, in particular, the engineering graduate employment market and the views of employers and professional bodies.

In addition to the fieldwork, five meetings of the Project Steering Group took place in May 2011, September 2011, December 2011, February 2012, and April 2012 to monitor project progress and share emerging findings.
Findings

1. Graduates’ difficulties in the job market

Well over half the unemployed graduates cited external factors referring to one or a combination of the following: the state of the economy; lack of graduate opportunities; competition for jobs; and the number of graduates. A small group felt that employers’ lengthy recruitment processes resulted in the inevitably delayed entry of graduates into employment.

Other graduates cited factors more within their control including: degree class or level (MEng/BEng); lateness in starting to apply for jobs; difficulties with the application process including applications, interviews and aptitude tests; and limitations on job choice or location. The biggest single reason cited by unemployed graduates in this respect, however, was their general lack of experience or work experience specifically. Nearly a third of unemployed graduates identified this as the main or a contributory reason for their difficulties, with many expressing regret that they had not taken up the option of a placement during their degree course.

A small number, by contrast, mentioned that they had found it easier than they anticipated or that there were plenty of jobs and they were confident about their ability to secure one before too long.

2. Academic Requirements

Of the unemployed graduates in the survey, 64% had a BEng degree, 35% an MEng (one graduate had a BSc). About 67% had a 1st or 2:1 degree with the vast majority of the remainder having gained a 2:2; only a handful had a 3rd. In comparison, a third of the employed graduates interviewed had an MEng, all but two had a 1st or 2:1, and none had below a 2:2.

In general, academic requirements were the key entry criteria with most employers seeking a 2:1; only a minority would accept below this level. Many also expressed a preference for the MEng, or BEng plus MSc, rather than the BEng level linked to the requirements of chartered status. For one employer this was partly due to a need to demonstrate the greater achievement of graduates relative to those recruited onto its apprenticeship programme. Some employers also filtered candidates on ‘A’ level scores (at about the 300 points level) with Maths, Physics and Chemistry commonly sought.

The proportions of unemployed graduates with MEng degrees and 1st/2:1s suggest that degree level and class alone cannot explain graduates’ lack of success in the job market, although about a tenth of the unemployed graduates referred to their academic background as a factor hindering their employment prospects. There is a perception amongst University staff that it is those students with weaker degrees who are unemployed but the data here suggests this is not the case.

3. Work experience

A third of the unemployed graduates had been on a year’s work placement as part of their courses. Whilst just under a half had had an unrelated part-time or vacation job, nearly a quarter had had no work experience at all, thus reducing their attractiveness to employers. When asked, just under a third blamed their difficulties in the job market partly on their lack of work experience. All the employed graduates had gained some work experience, three-quarters in a related field.

Employers valued graduates with work experience as this demonstrated their motivation, interest, understanding and commercial awareness. Some employers insisted on applicants having work experience in engineering whilst others felt that any type of work experience was useful as it provided graduates with an insight into work place values and practices.

4. Extra-curricular activities

Whilst just under a half of unemployed graduates had become involved in Students’ Union activities, only about a third had participated in other voluntary activities, and many had not been involved in either. A small number had taken on responsible roles with clubs and societies but many maintained that concentration on their academic work prevented this. Slightly higher proportions of employed graduates had taken part in such activities and a couple referred to the value of this in job/placement interviews.

Generally, employers regarded extra-curricular activities, such as students’ union activities and volunteering, as valuable evidence of graduates’ wider ‘perspective’, ‘get up and go’ or ‘something extra’, linked to their overall motivation. Such experience also provided the chance for graduates to learn new skills such as ‘leadership’ and ‘teamwork’. Whilst most employers agreed that these did not
carry the same weight as either academic qualifications or work experience, some gave more credit for other activities based on an interest in engineering such as car mechanics.

5. Location and mobility

About half of the unemployed graduates expressed a strong desire to remain within a particular location with the remainder considering any locations (albeit with some preferences). Employed graduates were slightly more willing to consider any location, although many still had preferences.

For larger employers, either on several sites or operating internationally, graduates’ mobility was important, especially for those selected for more explicit leadership roles. A few larger employers were willing to be more accommodating, however, whilst, for smaller employers typically based in one location, mobility was less important.

6. Skills gaps

There was a fair degree of consensus amongst employers about the kind of skills that they sought from new graduates. In general, these included: leadership; teamworking; communication and interpersonal skills; analysis/problem-solving; creativity/innovation; planning and organising; business understanding/commercial awareness; and performance.

Whilst most employers were satisfied with the quantity of applicants, they would have preferred better quality from which to select. Vacancies often remained unfilled owing to a lack of suitable candidates. This was particularly the case with electronic and electrical engineering graduates, although some employers had identified other shortfalls and many referred to the perennial problem of recruiting women engineers. Many employers also felt that good graduates were attracted to better paid jobs elsewhere, for example in the financial services sector.

Many employers stated that often graduates lacked the ability to apply their technical skills and knowledge in a business or workplace context, describing this as, not just the ability to recall engineering principles and techniques, important though this was, but also an almost innate feel for how these could be applied to a particular problem. This factor was regarded as being related to whether or not graduates had significant work experience, and not particularly connected to degree class.

7. Application process

Nearly half the unemployed graduates had made no applications whilst at university, with those that had making typically fewer than 10 applications. After graduation, their application activity increased hugely. Just under a third of graduates had had at least one interview before graduating and over two-thirds since, whilst only a few had reached an assessment centre before graduation and just under a third since. Almost all of the employed graduates had made applications before or during their final year, although not huge numbers of these (up to 30), and two-thirds had attended assessment centres before graduating.

The majority of employers started their recruitment process in September/October with closing dates in December/January; many felt that this enabled them to catch good graduates applying early. Most placed vacancies on university websites usually via careers services but occasionally directly with departments. In general most (and, in particular, the larger employers) used a three-stage process: first stage - application form (usually online); second stage - telephone interview and psychometric tests; third stage - assessment centre/final interview. Smaller employers departed from this model when it suited their needs to shorten the process. The majority of candidates were rejected at the first stage with those applicants getting to the third stage having a strong chance of being selected.

8. Graduates’ difficulties with application process

Over half the unemployed graduates reported that their biggest areas of difficulty in the application process were:

- completing application forms especially the competence-based questions (for example, ‘Describe a situation where you worked in a team: what was your role and what were the outcomes?’; and
- handling interviews (again, particularly competence-based interviews).

Small numbers also referred to aptitude tests, finding out about vacancies, and selling themselves. Several found the whole online application process repetitive, making it difficult to give fresh responses, whilst others commented that it was very cold and impersonal and complained of the lack of response from employers. Whilst over half of employed graduates reported encountering no
difficulties in the application process, the comments from some reinforced those of their unemployed counterparts.

To place the above into context, at the first stage (when most are rejected) the commonest reasons cited by employers for rejecting applicants were as follows:

- Poor spelling, grammar and punctuation
- Poor responses to ‘competence’ based questions
- Cutting and pasting material from companies’ own websites
- Graduates not selling themselves on the application form
- Not showing enough knowledge or understanding of the post or company.

At the second stage, reasons included:

- Failure to live up to the impression created by the application form, or not being able to substantiate this with evidence
- Graduates’ inability to sell themselves through lack of enthusiasm or brevity of responses.

At the final stage, reasons included:

- **Group discussions**: poor or inappropriate contributions, for example being either too quiet or too dominant
- **Presentations**: inadequate preparation; ignoring evidence or failure to grasp the key issues; confusing content with clarity; or running over time
- **Interviews**: poor interview technique or presentation; lack of research into company; low confidence leading to an inability to sell themselves effectively; lack of commercial awareness; limited grasp of the importance of teamwork and communication skills in a business environment; an inability to apply basic engineering principles and techniques to everyday work situations and problems.

9. Careers input into courses and employers’ links with institutions

Nearly a third of the unemployed graduates recalled no or little specific careers input within their courses, although many referred to the importance of understanding employers and the graduate job market and felt that this, along with placement advice and CV/application/interview support, were the main areas in which universities could improve their provision for students. A minority also felt that making careers elements compulsory within the curriculum, and possibly assessed, would ensure that more students took them seriously. Some also commented that placing the majority of this input into the final year was a case of ‘too little, too late’ and conflicted with the pressure of academic work. Slightly more employed graduates were able to recall careers inputs whilst some echoed the call for more at an earlier stage.

Most of the large employers in the survey had links with a small number of institutions, normally through the careers service, and some maintained a presence at a considerable number. Employers’ choice of institution was often based on a combination of geography and a judgement of where they might find the best graduates, linked to course discipline, ratings of departments, and past success in recruiting graduates. Careers fairs were the commonest activity on campus with presentations and workshops also prevalent.

Significantly, many employers were trying to link more closely with engineering departments in order to reach students directly, and to do this from an early stage in students’ university careers rather than towards the end. Similarly, they were interested in working more closely with both careers services and students unions in providing skills sessions to students in order to improve their employability.

Although several of the employers interviewed said that they were also involved with institutions in other ways, through research agreements or curriculum development, in general it was rare that such relationships had any bearing on, or connection with, the company’s recruitment needs.

10. Use of institutional careers services

Most of the unemployed graduates had used their careers services whilst studying although it is not clear that all completely understood the full range of services available to them; about a quarter had not used the service at all. Most of these users had found the service helpful, although, echoing employers, a few expressed concerns about its generic nature and the lack of specialised advice. Many now expressed some regret that they had not used the careers service more whilst at university whilst some were continuing to take advantage of their provision for graduates and alumni. The experience of employed graduates was similar where the opportunity to meet employers and CV advice were highlighted as key elements of provision.
Employers generally used careers services as their main contact point within institutions and this relationship worked well, particularly where careers services had a dedicated employer liaison team. Employers gave examples of effective and proactive collaborations with careers services in the interests of students and employers alike and it was clear that a true partnership approach worked well for all parties. Some employers pointed to possible weaknesses in some careers services, however, owing to their lack of resources or a limited understanding of the engineering industry.

11. Advice for institutions

Both unemployed and employed graduates felt that they would have benefited from:
- Better placement advice (why these were useful and how to secure them)
- CV/application/interview/assessment centre guidance tailored to engineering students
- Employer contacts and networks and advice on vacancy sources
- More careers activities provided on a timetabled basis within the curriculum
- More publicity about, and resources for, the careers service.

Employers’ views on this fell into the following main categories:
- Developing curricula to better reflect the realities of an engineering career
- Helping students understand the practical application of engineering theory in solving the types of problems that engineers in industry often faced
- Increasing students’ understanding of careers and the major employers in engineering through talks, visits etc.
- Developing students’ understanding of the recruitment process and how to negotiate this successfully and sell themselves effectively.

12. Advice for students

There was considerable commonality between the advice from employers and graduates to current students. Unemployed graduates suggested that current students should:
- Get some relevant work experience for both its intrinsic benefits and the employer contacts
- Start thinking early about careers and making applications in the final year
- Use all the support provided by the institution especially the careers service
- Develop skills through volunteering, the Students’ Union and other extra-curricular activities and ensure that applications and CVs are tailored to employers and sell skills and experience effectively
- Get as good a degree as possible and an MEng if possible
- Be persistent, resilient and flexible within the current economic climate and graduate job market.

Employed graduates, in addition to many of the above, suggested that students:
- Apply widely to employers without being restricted as to location
- Practise application form questions and research employers before interviews
- Attend all lectures, take proper notes and revise effectively.

Employers advised current students to:
- Get some relevant work experience
- Stand out from the crowd by participating in extra-curricular activities
- Take advantage of all opportunities offered by institutions especially those provided through the careers service
- Research employers properly before applying and be positive about their achievements and skills.

Conclusion and recommendations

Overall, it is clear there is strong demand for engineering graduates in the UK with many employers expressing frustration at their inability to meet recruitment needs. At the same time, there appears to be great enthusiasm for an engineering career amongst recent graduates and, most interestingly, no major differences between the characteristics and behaviours of those graduates who are unemployed and those in graduate jobs six months after graduation except that the latter would seem to be better motivated and keener whilst at university to take the necessary action to move on successfully.

What is clear from this study is that there is no single reason for unemployment amongst engineering graduates but there are steps that they can take, with the support of their university, to improve their chances of securing a graduate level engineering job soon after graduation. The project aims to draw
out the actions for students and universities and to identify potential mechanisms for further improving interactions with employers.

More specifically, the following major conclusions have been drawn:

1. Employers, particularly larger ones, express a clear preference for graduates with either an MEng (the four year course which generally requires upper second class performance) or a BEng plus MSc, regarding these qualifications as a fast route to chartered status. In some cases, employers have linked this requirement to the expansion of their apprenticeship intakes and want to see graduates as distinctively ‘high fliers’. Graduates with these qualifications give themselves a distinct advantage therefore over those with the three-year BEng. Our findings, however, indicate that, whilst several unemployed graduates referred to their lack of an MEng as being responsible for some of their difficulties in the job market, over a third of this cohort nevertheless possessed this qualification.

2. There is sometimes an assumption that it is the graduates with the lower class degrees who tend to be unemployed. We did not find this in our study, with the unemployed having the full range of potential degree classes suggesting that the reasons for graduate unemployment are more complex than solely, or even mainly, academic attainment.

3. When unemployed graduates are asked what they wish they had done differently, many stress the need to begin their career planning and job seeking early, well before graduating. Employers reinforce this. Key skills in this context include time management, as many of the unemployed appear to have prioritised academic study over career activities such as applying for jobs. Of those who were unemployed, nearly half made no applications during their final year, in contrast with the employed graduates, the vast majority of whom had done so.

4. There appears to be a strong correlation between graduates’ work experience, particularly in engineering, and their employability. Employers rate the former highly and about two-thirds of the unemployed graduates either had unrelated experience or, in the case of about a quarter, none at all; all of the employed graduates had some work experience. All groups made this a major recommendation to current students.

5. Location of employment and mobility is a key issue for both unemployed graduates and employers. Whilst many employers, especially larger ones, stressed the need for mobility, about half of the unemployed graduates preferred to work in a more specific location, mainly in order to be closer to family and/or friends.

6. Most employers reported recruitment difficulties in certain disciplines. Smaller employers felt that they were competing not just with the larger employers with greater resources but also with other sectors such as financial services. There is a case for considering the type of support structures available to smaller employers to help them develop positive relationships with universities for recruitment.

7. Students and graduates require effective communication skills, including the ability to articulate their attributes and competences in both applications and at interview, in order to be successful in the application process (and certainly to get through the ‘initial sift’). These skills need to be inculcated at an early age and further developed within higher education with particular attention paid to the different skills required at different stages of the recruitment process.

8. Careers services are key players in any institutional strategy to improve engineering graduates’ employability. Whilst the survey found much evidence of positive collaboration between careers services and both engineering departments and employers, and of overall graduate satisfaction with their services, there remains scope for earlier input into the curriculum targeted specifically at engineering students, and better publicity for the range of provision offered by careers services.

9. The research identified evidence of excellent practice within particular institutions, as evidenced by the recall and comments of graduates. The Add+Vantage and Respect programmes at Coventry and Birmingham respectively seem worthy of investigation as possible models for other institutions to consider developing.

10. Employers have identified the main reasons why they reject applicants during the recruitment process, and both unemployed and employed graduates have indicated both the areas where they most struggle and the areas that they felt universities could provide more help with. These findings have many implications for student support, advice and guidance that universities need to acknowledge and act on.

References


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