

Disciplinary and gender variations in employability-related support across higher education.**Simon O'Leary**Regent's University London, Inner Circle, Regent's Park, London, NW1 4NS, UK.
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Abstract: Graduates across higher education have indicated a strong desire to see employability-related support incorporated into undergraduate degree programmes (O'Leary, 2016) and this research explores in further depth whether the support provided across disciplinary areas matches that desire. It is shown here that it is those disciplines that are predominantly populated by female students that are less well provided for in terms of employability-related support. The Higher Education Statistics Agency (2016) highlights significant disciplinary gender imbalances across the higher education sector. At Faculty levels, Humanities (63%) and Social Sciences (63%) tend to be female-dominated while Sciences (55%) and Engineering (80%) have predominantly male students, with even more pronounced splits in specific disciplines and subjects. This research provides proposals on how to enhance the provision of employability-related support, such as developing academic staff, using external speakers, utilising business and management expertise, cross-disciplinary liaisons and incorporating professional services into the curriculum.

Keywords: employability; trends; higher education; subject; discipline; gender

Introduction

Although female students and graduates now outnumber their male counterparts and have done so for over a decade (Higher Education Statistics Agency, 2012 and 2016), there have been concerns expressed for some years (Barbulescu and Bidwell, 2012; BBC News, 2016; Brown and Hesketh, 2004; Elmuti et al, 2009; Goodman et al, 2003; Harvard Business Review, 2013; Hoobler et al, 2011; King et al, 2012; Laff, 2007; Nelson and Levesque, 2007) that the balance, particularly in terms of subsequent seniority and salary, tips significantly the other way when they enter employment and their careers progress. The aims of this research are to explore these issues in more depth in the light of recent research (O'Leary, 2016) which shows that graduates' experiences of, and attitudes towards, employability-support during undergraduate degree programmes varies markedly by subject discipline. Given that there are also significant gender imbalances across the disciplinary areas studied (Higher Education Statistics Agency, 2012 & 2016), gender issues may actually lie hidden within such data. Therefore, this study aims to expose such issues and highlight what it could mean for male and female students and graduates, as well as for the providers of higher education, employers and other stakeholders.

Research method

Johnston (2003) highlights the need for validated research on graduate perceptions of their employment experiences after they have completed their higher education. Therefore, the literature survey here is supplemented with a survey, undertaken in 2011 and analysed since 2012, of over one hundred selected graduates from different undergraduate eras and disciplines. The research has been designed to capture graduate perceptions in the years since graduation, after increasing years of employment experiences. The graduates surveyed have between them over two thousand years of employment experience since their graduations. This methodology follows Denscombe's (2002) approach to social science research where the aim is to clarify the aim of the research, to interpret the results with accuracy and originality, and to develop findings from which cautious generalisations can be made in an objective and ethical way. Both deductive and inductive methods have been used in this multi-method approach (Bryman and Bell 2007; Saunders et al 2009), with the literature survey helping in a deductive manner, this being researched and developed further in an inductive manner through the graduates' survey.

Graduate employability

A widely accepted definition of employability has been developed by the UK Higher Education Academy (Pegg et al, 2012), building upon earlier work by Moreland (2006):

'A set of achievements, skills, understandings and personal attributes that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy.'

The phrases 'chosen occupations' and 'more likely', as well as the breadth of stakeholders described, indicate that its purpose is to enhance the likelihood of success in achieving suitable employment and that the beneficiaries are widespread. Nevertheless, distinctions between different graduate types are not made, and indeed concerns exist as to whether the expectations of industry are actually being met (Jackson, 2014; Wilton, 2012; Hinchcliffe and Jolly, 2011), if gender is being sufficiently considered (Gracia, 2009; Wickramasinghe and Perera, 2010; Moreau and Leathwood, 2006) and if disciplinary variations are adequately addressed (Jackson and Chapman, 2012; Stiwne and Jungert, 2010). The overall critique is that although graduate skills, attributes and competencies are clearly important for enhancing employability, insufficient attention has been given to how these vary according to the subject discipline and the gender of the graduate, and therefore it is worth exploring these subtleties further.

Graduates' attitudes towards employability-related support

Given this breadth of research and the importance attached to linking education with career preparation, it is worth considering if the experiences and views of graduates towards the inclusion of employability-related support in higher education differ across disciplines and by gender. Nabi and Bagley (1998) found differences in attitudes towards employability skills between male and female graduates and, while O'Leary (2016) confirmed that such differences do exist, it was the disciplinary

variations that were significantly more pronounced and only subtle gender differences in attitude were reported. As illustrated in Figure 1, across all the disciplines, one in ten of the graduates surveyed indicated that the focus should be on the degree subject alone. However, nine in ten graduates wanted employability-related support to be available, key differences lying in whether that should be on an optional or well-managed basis. In other words, how employability-related support is presented needs to be carefully considered.

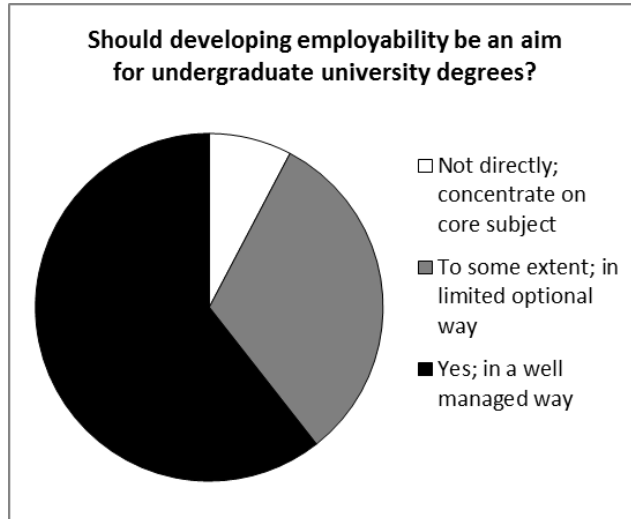


Figure 1: Graduates’ attitudes towards employability-support in degrees. Based on O’Leary (2016).

As illustrated in Figure 2, graduates of the sciences and humanities shared the view that employability-related support be available on a more selective basis, whereas engineering and social science graduates prefer it to be more directly incorporated into the curriculum.

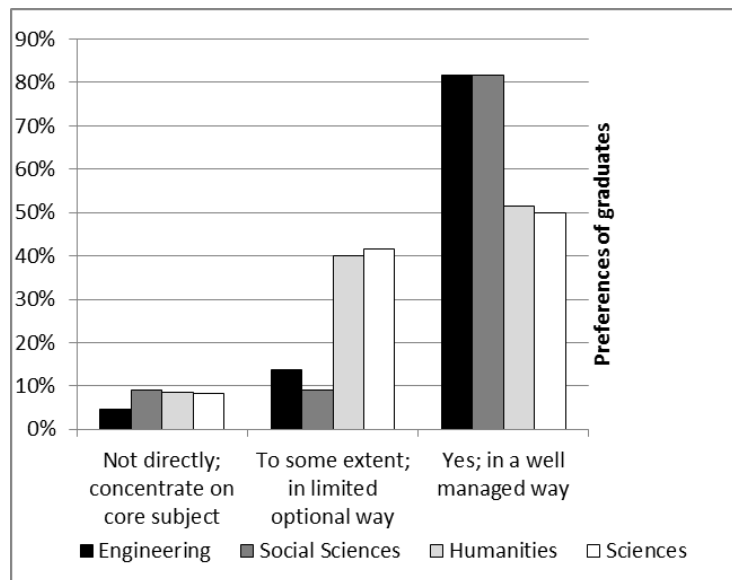


Figure 2: Graduates’ preferences by discipline for employability-support. Based on O’Leary (2016).

Degree selections by gender and experiences of employability-related support

Higher Education Statistics Agency (2016) statistics on degree selections by gender are outlined in Figure 3.

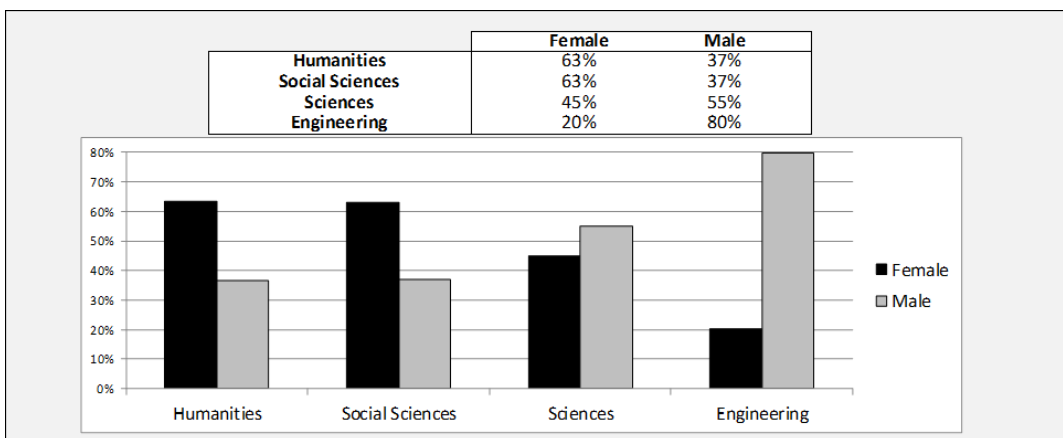


Figure 3: Degree selections by gender; using Higher Education Statistics Agency (2016) figures.

In this research, graduates’ actual experiences of employability-related support during their degree programme, gathered from a targeted survey of over one hundred graduates, are examined in light of these gender variations in choice of degree subject.

As illustrated in Figure 4, the survey undertaken suggests that there have been significant efforts over the decades on this matter and, comparing the views of pre and post-millennium graduates, there has been a significant growth in support from University Careers Services and similar (+49% to 71%) and a rise in the use of External Speakers (+17% to 43%), while the number of graduates who indicated that no such provision was made has fallen from 21% to just 5%. However, these increases are counterbalanced by a halving in the provision of business or management support (from 47% to 24%).

Support provided	a. Business or management	b. External speakers	c. University careers service and similar	d. Other	e. None of these	Average of abc	Ranking of provision
Overall	41%	30%	35%	6%	16%	35%	
Sciences	32%	29%	57%	7%	7%	39%	2
Engineering	58%	58%	21%	5%	16%	46%	1
Humanities	32%	23%	18%	9%	27%	24%	4
Social sciences	50%	0%	40%	0%	20%	30%	3
Male	46%	30%	33%	7%	16%	36%	1
Female	22%	33%	44%	6%	17%	33%	2
<i>Difference</i>	<i>-24%</i>	<i>4%</i>	<i>12%</i>	<i>-1%</i>	<i>0%</i>	<i>-3%</i>	
Before 2000	47%	26%	22%	9%	21%	32%	2
After 2000	24%	43%	71%	0%	5%	46%	1
<i>Trend</i>	<i>-23%</i>	<i>17%</i>	<i>49%</i>	<i>-9%</i>	<i>-16%</i>	<i>14%</i>	

Figure 4: Evaluations of employability-support provided during undergraduate degrees.

From a gender perspective, the most obvious gender differences are that female graduates rank Careers Services as the lead provider whereas, for male graduates, it has been support on business or management. However, with an overall difference of just 3%, there does not appear to be a significant difference in the experiences of male and female graduates on the provision of employability-related support overall. Nevertheless, at a Faculty level, these results suggest that the following rankings, on the provision of employability-related support during undergraduates degree programme, can be attributed:

1. Engineering: Significant use of external speakers and business or management expertise.
2. Sciences: Good provision, although perhaps an over-reliance on University Careers Services.
3. Social Sciences: Business or management expertise utilised along with Careers Services.
4. Humanities: Highest number to indicate that no such support was provided.

These variances are highlighted further in Figure 5 where the Employability provision ratings, based on the averages of abc in Figure 4 compared to what could be considered a likely maximum average of 50%, are set alongside the typical gender splits in degree subject choices.

Employability support by Faculty	Employability provision rating	Student profiles	
		Female students	Male students
Engineering	91%	20%	80%
Sciences	79%	45%	55%
Social sciences	60%	63%	37%
Humanities	48%	63%	37%

Figure 5: Employability-related support provided during undergraduate degrees.

As highlighted further in Figure 6, the graduates of male-dominated Faculties have experienced greater proportions of employability-related support compared to the graduates of female-dominated ones. This would suggest that it is a discipline-related issue rather than a specifically gender-related issue but that, even as such, it is affecting females more than males.

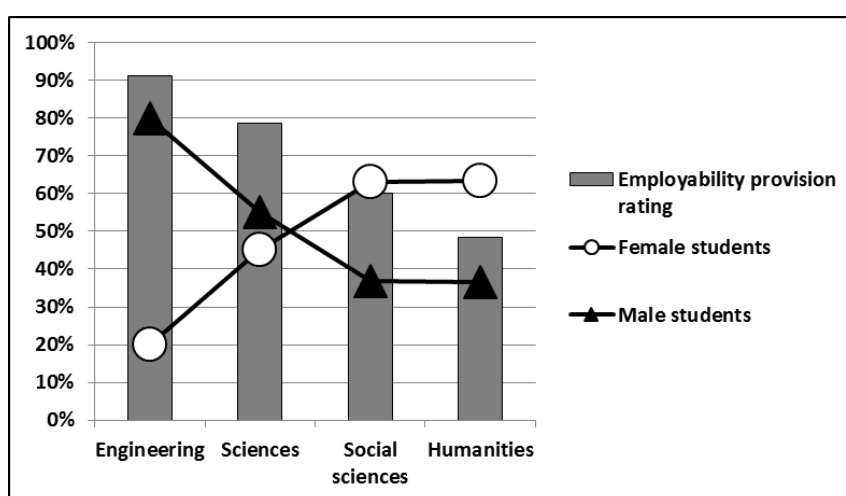


Figure 6: Employability-related support provided during undergraduate degrees and the gender balance of students by Faculty.

Discussion

This work highlights some clear differences in the provision of employability-related support by disciplinary area and that, with clear differences existing in the choices of degree subject by gender, the consequence is that females generally experience less such employability-related support than males do. Moreau and Leatherwood (2006) and Wickramasinghe and Perera (2010) outline in their studies of students in higher education that gender variations could exist in the development of suitable employability-related traits; this research supports those indications but extends it further by providing some further evidence for that view. The Nabi and Bagley (1998) study on graduates' perceptions of their capabilities to deliver certain transferable skills highlights important gender differences, with females demonstrating less confidence in their problem-solving and communications skills. Those findings, coupled with this research indicating that female graduates prefer a more consultative approach to the inclusion of employability-related support during undergraduate degree programmes, suggest that modifications to the delivery method of such support could reap rewards. For example, to achieve success across the full body of students, it may be advantageous to offer an option for mandatory and elective provisions of employability-related support. The indications from this research, that there are potential benefits for each gender in adopting tailored approaches to the delivery of employability-related support, is reinforced by the work of Burbuck et al (2004) on critical thinking, Gracia (2009) on workplace experiences and Ahmetoglu et al (2011) on emotional intelligence where, in each case, differences by gender are shown to exist. Therefore, achieving success across the board appears to require that subtleties in approach be adopted.

In studies on graduate employability across several subject disciplines, Mason et al (2009) identified the benefits of exposing students to employers' involvement in the design and delivery of the curriculum. However, differences between disciplinary areas were not identified and, while this work confirms the benefits to be gained in terms of graduate employability, it also highlights that differentiations across disciplines in the way those services are delivered is likely to result in more students harnessing those attributes. Research in specific subject areas has also yielded some supportive and contrasting evidence. For example, both Rosenberg et al (2012) and Jackson and Chapman (2012) addressed issues concerning the skills and competencies of business degree graduates and, although no particular sub-disciplinary variations were found, they did identify a need for further research in disciplines beyond the field of business; this study is one step in that direction. The findings here show that the graduates' preference in engineering subjects is for a well-structured approach to employability-related support and this is reinforced by the work of Stiwne and Jungert (2010) who, in their study of engineering students and their experiences of the transition from study to work, found that the best learning experience was through a thesis project in a firm, an example of a well-managed approach to employability support. Nevertheless, the findings of the gender analysis presented in this paper are also worth bearing in mind as it may be that the inclusion of more optional approaches to employability-related support may help in the ongoing efforts to attract more females to the engineering profession.

Salter et al's (2010) review of academics collaborating with industry and entrepreneurship in the field of engineering and physical sciences also outlines some interesting differences between engineering and sciences, particularly in the apparent take-up of entrepreneurial activities. Further research to explore these differences is suggested and the research presented here starts to throw some light on the matter from the perspective of a graduate rather than an academic. Interestingly, Cranmer (2006) also focuses on academics' attitudes towards employability issues and, although indications of disciplinary variations are commented upon, they are not analysed further. This study provides analysis and evidence that such variations do exist from the perspective of graduates. Gibson (2014) has suggested that inter-disciplinary approaches can also work well if they are managed carefully and, when using enterprise education as a means of enhancing the employability of students, it is better incorporated into the curriculum rather than being an extra-curricular activity. Clearly, this would need some careful management when working across disciplines.

Conclusions

Graduates across all disciplines have indicated a significant demand for employability-related support during undergraduate degree programmes, with nine in ten across all disciplines wishing to see it provided on an integrated or optional basis, the desired balance varying significantly by discipline (O'Leary 2016). Notable variations in the provision of employability-related support exist across higher education are highlighted in this research, particularly across different disciplinary areas, and it is those disciplines that are predominantly populated by female students that are less well provided for in terms of employability-related support. Suggestions on how to address these imbalances include the development of academic staff, the use of external speakers, the provision of business and management expertise, cross-disciplinary approaches and the integration of professional services into the curriculum. To improve employability provision from a cross-Faculty point of view, the most effective gains may be made in using what at first might seem unlikely liaisons; Humanities and Sciences are most alike on this issue, as are Engineering and Social Sciences. Employability issues could also be further addressed in existing research on developing better understandings of why males and females lean more towards certain subject areas in the first place.

The Higher Education Statistics Agency (2016) figures indicate that significant gender imbalances continue to exist across the disciplines, subject areas and faculties in higher education. At the Faculty level, Humanities and Social Sciences tend to be female-dominated (63%) while Sciences (55%) and Engineering (80%) have predominantly male students. However, important variations in these figures exist within the Faculties: Social Sciences tends to be split between a female-dominated camp in medical (74%) and people-orientated (68%) subject areas and a shared male/female processes-orientated subject area (50% each). In Sciences, a split also exists with numerate subject areas tending to be male-dominated (70%) and biosphere-orientated subject areas female-dominated (60%). In specific disciplines, the differences are particularly stark with female students dominating Education (84%),

Medical Subjects (80%), Veterinary Science (78%) and Languages (71%), with male students predominant in Computer Science (85%) and Engineering & Technology (84%).

These variances are important and signal that the issue of the adequate provision of employability-related support may be more of a disciplinary-related issue rather than an overtly gender issue. This paper has explored these issues with the intention of highlighting both the very high desire by graduates of all disciplines to see suitable employability-related support incorporated into undergraduate degree programmes and to highlight that the most suitable partnerships to achieve this appear to cut across the traditional Faculty groupings in higher education, such as STEM (Sciences Technology Engineering Technology) and Humanities & Social Sciences. It appears that, when it comes to the provision of effective employability-related support, another set of common groupings exist; Sciences and Humanities think along the same lines; while Social Sciences & Engineering think along different lines. Therefore, improvements to the provision of such support may be better achieved by such non-traditional cross-Faculty partnerships. The issue here appears not to be directly gender-related but more related to the subject discipline and the fact that gender imbalances exist across those subject areas. More research into understanding the reasons behind, and consequences of, these gender disparities in subject selection, as well as addressing the disparities across the disciplines in approaches to the provision of employability-related support, would help a breadth of stakeholders across the higher education sector, from students to the institutions themselves.

Recommendations

It may be that, over the years, less of the experienced departmental academics have been devoted to teaching and thus have been less available to pass on their wisdom and expertise, much of which may be directly or indirectly employability-related. This has perhaps been in part due to the influence of the Research Excellence Framework (2014) on funding, university rankings and academic promotions, giving research a focus over and above teaching. The new Teaching Excellence Framework (2016) appears to be an attempt to redress this balance more in favour of teaching but may take some time to embed itself. In the meantime, much can be achieved in the short-term across all the disciplines to enhance the provision of employability-related support for students. This includes embedding employability in the curriculum, an area of focus by the Higher Education Academy (2016) and the appropriate use of external speakers and professional services such as the University Careers Service, appropriate meaning that the link to the curriculum is made clear.

Further research

It would be useful to link this research on employability-related support in higher education with studies on the reasons why there are significant gender imbalances across the disciplines in higher education and why the disciplines vary so much in their provisions of employability-related support for students.

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