RUSSELL GROUP

Impact of Brexit on the technical workforce at Russell Group universities

Summary

In developing a future immigration system, Government has an opportunity to review how it can best support the recruitment of skills needed in the UK, including technical skills that underpin world-class research and teaching in our universities.

Technicians are vital to the success of the UK's world leading universities. They are a highly skilled workforce with a diverse range of expertise, providing essential support to research and knowledge transfer. Many also play a key role in building the UK's future workforce by teaching and developing the technical skills students require to pursue a future career in research.

Our analysis of the technical workforce at Russell Group universities[1] has shown the current immigration system does not support recruitment of non-EEA technicians. If it were applied to EU nationals post-Brexit, our universities could struggle to fill these roles with appropriately skilled staff, which would impact on the world-class research and teaching in these institutions, particularly in STEM disciplines, and compound the current shortage of skilled technicians in the UK. Key findings from our analysis include:

- There are around 9,000 technicians at Russell Group universities. These roles are particularly prevalent in certain disciplines including clinical medicine, biosciences and engineering, showing the importance of technicians to underpin research in these areas.

- Non-EU technicians are not eligible under Tier 2 because the skill level for such roles is classified as too low and the majority are also on salaries below the Tier 2 threshold. However, most technicians are more highly qualified than the skill level currently set for these roles, holding qualifications that would meet the Tier 2 threshold:

    - Nearly 90% of EU and non-EU technicians at Russell Group universities are skilled to national qualification framework (NQF) level 6 and above, and 25% hold a PhD.

- There are 750 EU technicians at Russell Group universities. EU nationals make up a lower proportion of the technical workforce (9%) than they do academics (23%), but their technical expertise provides crucial support to a broad range of research programmes, most notably across the STEM disciplines.

Government's commitment to technical education is important to address the skills gap in this area, but growing the technical skills pipeline in the UK will take time and we will always need to tap into top talent from overseas to enhance skills in the UK. **It is crucial that the UK's immigration system supports recruitment from overseas to fill these positions and train the next generation of technical staff in the UK.**

[1] This analysis was performed on data provided by HESA. Copyright Higher Education Statistics Agency Limited. Neither the Higher Education Statistics Agency Limited nor HESA Services Limited can accept responsibility for any inferences or conclusions derived by third parties from data or other information supplied by HESA Services.

What are the characteristics of technicians at Russell Group universities?

The diversity of the technical expert and skills specialist workforce is illustrated by the large number of groups within the Standard Occupation Classification (SOC) system that contain technical roles and the range of skill levels associated with these (see Annex 1). Our analysis focuses on ***technicians*** at Russell Group universities (RGUs). Annex 2 describes these roles, the SOC groups they fall into and the number of staff in each.

Technicians provide crucial support for research and teaching in universities. They typically work as an integral part of research groups, supporting excellent research to take place, and training PhD and postdoctoral researchers in vital techniques and use of equipment. Scientific technicians at the University of Sheffield, for example, have worked on the Hadron Collider in CERN and are partners in addressing the crucial medical and environmental challenges of our time.[2] Technicians also play a key role in supporting undergraduate education through the delivery of practical laboratory work.

Table 1 shows **technicians at RGUs are concentrated in certain STEM disciplines, underlining their critical importance to underpin research in these areas.** Of all technicians at our universities, 27% are working in clinical medicine and 19% are working in biosciences. They are also highly represented in engineering, with 14% working across the engineering disciplines. A total of 7% of technicians are working in academic services to provide essential underpinning support for research and teaching.

Table 1 – Distribution of RGU technicians by discipline

Discipline[3]	Proportion of all technicians
Clinical medicine	27%
Biosciences	19%
Total academic services	7%
Veterinary science	6%
Physics	5%
Chemistry	5%
Mechanical, aero & production engineering	3%
General engineering	3%
Earth, marine & environmental sciences	3%
Electrical, electronic & computer engineering	2%

Nationality of technicians at RGUs

EU and non-EU nationals make up 13% of technicians at RGUs (Table 2).There are 750 EU technicians, making up 9% of the total[4]. This is lower than the proportion of total staff (15%) and academics (23%). However, **the technical expertise of these 750 EU nationals supports a broad range of research programmes, most notably across the STEM disciplines**. For example, EU nationals make up:

- 17% of technicians in anatomy and physiology
- 13% of technicians in clinical medicine
- 11% of technicians in earth, marine and environmental sciences
- 11% of technicians in biosciences.

[2] Detailed case studies are available here: https://www.sheffield.ac.uk/staff/spotlight/stories
[3] HESA Cost Centre 2012/13 onwards
[4] Note: staff with unknown nationality (175) were excluded from the total for this calculation

Table 2 – Nationality of technicians at RGUs

	Nationality		
SOC Minor group	**UK**	**EU**	**non-EU**
311 – science and engineering technicians	88%	8%	4%
312 – architectural technicians	84%	9%	7%
321 – medical technicians	76%	17%	7%
355 – environmental technicians	100%	0%	0%
613 – animal technicians	91%	7%	1%
Total	**87%**	**9%**	**4%**

Skill level of technicians at RGUs

Technicians are a highly skilled workforce with a diverse range of expertise, providing essential support to research and knowledge transfer. **Although many technicians hold postgraduate degrees and doctorates, the skill level of these roles, as described by the SOC system, is much lower**. There is therefore a considerable discrepancy between the classification of the skills required for these roles and the actual skills level of the individuals in these positions.

Although NQF level 6 qualifications might not be a prerequisite for technician roles, these qualifications are highly valued by university departments and will often be seen as desirable when hiring to these roles. **Graduate and postgraduate qualifications enable technicians to better understand the theory behind research as well as the process including methodology and experimental design**. This understanding means those more highly qualified technicians can directly contribute to research outputs and their impact, improve the efficiency of laboratory operations and play a more important role in training of staff and students.

Overall 64% of technicians[5] are skilled to national qualification framework (NQF) level 6 or above. EU and non-EU technicians are more highly qualified:

- 88% of EU technicians and 89% of non-EU technicians are skilled to NQF level 6 or above
- 25% of EU and non-EU technicians hold a PhD.

Although the majority of technicians at RGUs are skilled to NQF level 6 and above, the SOC system classifies these roles as being NQF level 3 and 4:

- Nine of the 12 HE-relevant unit groups[6] within SOC 311, 312, 321 and 355 are classified as NQF level 3 and therefore ineligible for sponsorship in Tier 2
- The remaining three occupations are classified as NQF level 4.

Given that the skills threshold for Tier 2 is NQF level 6, the current SOC classification of technicians' skill level means they are not eligible for this visa route. Furthermore, none of the roles within these SOC groups are on the shortage occupation list.[7]

Salary of technicians at Russell Group universities

According to the Annual Survey of Hours and Earnings 2014, the experienced salary rate for technicians[8] is £30,764 or lower. On the whole, the salary of technicians at RGUs is in line with this survey, although some do earn more, with 24% on salaries of £32,277 or more (Table 3).

Given that many technicians, across all industries, will be on salaries below £30,000, they will not meet the minimum salary threshold for current Tier 2 eligibility.

[5] Excludes animal technicians due to high proportion (82%) of unknown qualifications for staff in SOC Minor group 613
[6] Peter Elias and Ritva Ellison (February 2012) *Occupational Coding for Higher Education Staff*, Warwick Institution for Employment Research
[7] Home Office (August 2017) *Immigration rules appendix K: Shortage Occupation List*
[8] Those HE-relevant SOC Unit groups in SOC 311, 312, 321, 355 and 613

Table 3 – Salaries of technicians at RGUs

Salary range	% staff
< £18,031	7%
≥ £18,031 and < £24,057	22%
≥ £24,057 and < £32,277	46%
≥ £32,277 and < £43,325	20%
≥ £43,325 and < £58,172	4%
≥ £58,172	0%

Our analysis of the technical workforce at Russell Group universities has therefore shown the current immigration system does not support recruitment of technicians. This means that **if current immigration rules on salary and skill level through Tier 2 were applied to EU nationals post-Brexit, our universities would struggle to fill many technician roles with appropriately skilled staff. In turn this would have a negative impact on the world-class research and teaching in these institutions, particularly in STEM disciplines.**

Why do technicians need to be recruited from overseas?

Technicians are providing crucial support for research in Russell Group universities and playing a key role in training students with technical skills needed for the UK's future workforce. However, many of our institutions face challenges recruiting technical talent. The shortage of skilled technicians in the UK concerns academia, industry and Government. Estimates suggest UK industry needs to recruit at least 70,000 new technicians every year to replace those retiring and to fill new positions.[9] Demand for STEM technicians is particularly acute.[10]

Universities across the UK, including many Russell Group universities, have signed the Technician Commitment[11] recognising the need to ensure sustainability by safeguarding technical skills across their organisations. Government's commitment to technical education is important to address the skills gap and expansion of technical apprenticeships should support training of more young people in the UK.

However, growing technical skills in the UK will take time. We are concerned that if the current immigration system were applied to EU nationals it would compound the current shortage of skilled technicians in the UK. This would make it difficult for our universities to fill these roles with appropriately skilled staff and would certainly impact on the world-class research in these institutions, particularly in areas where the UK is a world leader such as in medical research and other advanced STEM disciplines.

Even with an improved technical skills pipeline for the future (the development of which will see our universities will play an important role) there will always be a need for us to draw on the best technical talent from around the globe. The UK benefits significantly from tapping into new ideas, skills and innovative approaches developed overseas and this is as true in technical skills as it is in research more generally.

It is crucial that the UK's immigration system supports recruitment from outside the UK to fill technician-level positions – which are critical to supporting research and education and for training the next generation of technical staff in the UK.

[9] The Gatsby Charitable Foundation (April 2017), *Building our Industrial Strategy, response to the Government green paper*
[10] Combining current and anticipated difficulties, nearly half of businesses responding to the CBI education and skills survey, view recruitment of technicians with STEM capability as a problem area.
[11] The Technician Commitment is a sector-wide initiative led by the Science Council, supported by the Gatsby Foundation to help address key challenges facing technical staff working in research.

Annex 1 - Job titles and SOC groups of HE technical experts and skills specialists

SOC Major group	SOC Minor group	Example job titles (various Unit groups associated)			
Manager and senior professionals (1)	112	Director, technical (engineering)			
	113	Manager, research, operational			
Professional occupations (2)	211	Assistant/Associate, research*	Manager, research*	Officer, scientific/research*	Technologist (biomedical/genetic)
	212	Assistant/Associate research (engineering)*	Engineer, technical	Officer, scientific (engineering)*	
	215	Manager, research (engineering)	Manager, R&D/laboratory	Manager, technical	
	242	Technician, research/R&D	Coordinator, clinical trials	Bioinformatician	
Associate professionals and technical occupations (3)	311	Assistant/Officer research (medical)	Technician* (inc engineering)	Technologist (medical)	Officer, scientific, laboratory
	312	Architectural technicians			
	313	Technician, IT			
	321	Technician (medical)*	Officer, technical (medical)	Engineer, medical	Technician, pharmaceutical
	353	Coordinator, research	Administrator, clinical trial		
	355	Environmental technicians			
Caring, leisure and other service occupations (6)	613	Technician, laboratory, care animal			

Annex 2 – Technicians at RGUs

The analysis in this paper focuses on technicians found within five SOC groups. These groups and the number of staff within each are shown in Table 4. There are 8,960 technicians in these SOC groups at RGUs, representing 5% of all staff.

The overall number of technicians is likely to be higher, in excess of 9,000, as there will be a number of technical experts among the 3,195 IT technicians in SOC group 313. However, we have not included this group in our analysis as it includes roles such as IT helpdesk support, which are not providing specific technical support to research in these institutions.

Table 4 – Number of RGU staff in each SOC group describing technician roles

SOC group[12]	Number of staff
311 (science, engineering and production technicians) Includes laboratory technicians, electrical and engineering technicians, building and civil engineering technicians and quality assurance technicians	7,735
312 (draughtspersons and related architectural technicians) Includes architectural and town planning technicians	70
321 (health associate professionals) Includes pharmaceutical technicians and medical and dental technicians	515
355 (conservation and environmental associate technicians) Includes environmental technicians	25
613 (animal care and control services) Includes animal technicians and veterinary assistants	610
Total (excluding IT technicians)	8,960[13]

[12] Office for National Statistics, SOC2010 volume 2: version 6 of the coding index
[13] Due to rounding, total differs slightly from sum of parts.