University of Nottingham
UK | CHINA | MALAYSIA

Engineering and Physical Sciences Research Council

Equality, Diversity and Inclusion:
A Technician Lens

University of Liverpool

John Innes Centre

Technician Commitment

Science Council

Introduction

For the first time, utilising quantitative data and qualitative feedback from national workshops and presentations, this report identifies the equality, diversity and inclusion (EDI) challenges facing the technical community in UK higher education and provides sector recommendations to advance equality, diversity and inclusion for all.

STEMM-CHANGE[1] is an EPSRC-funded Inclusion Matters[2] project driving a positive change in culture and practices in EDI across Science, Technology, Engineering, Mathematics and Medicine (STEMM). The STEMM-CHANGE programme has several linked projects that will enable a step change in approaches to promoting EDI in the workplace. It is led by a multi-disciplinary team at the University of Nottingham in collaboration with a diverse range of project partners.

STEMM-CHANGE takes a team science approach and acknowledges the diversity of staff roles that contribute to the research effort. Technicians make vital contributions to universities and research institutes. Their expertise enables teaching, research, knowledge exchange and outreach activities. This is being increasingly recognised through the Technician Commitment[3], a sector wide initiative to ensure visibility, recognition, career development and sustainability of technical skills and roles within UK higher education and research. The Technician Commitment currently has 83 institutional signatories with a further phase of signatories due to announced in December 2019.

Historically, initiatives to advance equality, diversity and inclusion in higher education have focused on the academic and research community. It is vital to appreciate that EDI challenges do not just apply to these staff groups. The expansion of the Athena Swan Charter[4] to include professional and support staff has ignited a greater interest in the equality, diversity and inclusion of non-academic staff groups. Indeed, it is arguable that the issues are often more serious in these communities, which include technicians, where EDI practices are often not as advanced. STEMM-CHANGE has been working with Technician Commitment signatories the University of Liverpool and the John Innes Centre, and project partners the Science Council to highlight and address EDI challenges facing technicians alongside academic and research staff.

Equality, Diversity and Inclusion: A Technician Lens

Technicians in higher education

The technical community has a vast range of job titles – technicians, skills specialists, technologists, experimental officers, laboratory managers to name a few – and is recognised as being critical to the success of the UK's Higher Education (HE) sector[5]. A highly skilled workforce with a diverse range of expertise, technicians underpin the primary activities of Higher Education Institutions (HEIs), providing the technical excellence essential for research, teaching and knowledge transfer. Alongside this, many technicians are researchers and teachers in their own right. They also play a fundamental role in the development of technical skills that students require to pursue a career in research, academia and/or industry.

The Technician Commitment, with support from the Science Council and the Gatsby Charitable Foundation's Technicians Make It Happen campaign is working in parallel with signatories to ensure visibility, recognition, career development and sustainability for technicians working in higher education and research, across all disciplines.

Methodology

There is limited data on the number of technicians working in UK higher education, in part because the definition of a technician is contested and varies across institutions and because HEIs 'code' their technicians in staff data in different ways. To explore EDI in the technical community, this report identifies and maps technicians within UK higher education through secondary analysis of data from the Higher Education Statistics Agency (HESA), using Standard Occupational Classification (SOC) codes to identify technician roles. This provides an insight into the profile of the technical community working in UK universities including age, mode of working, sex, ethnicity, disability, career level and subject discipline.

For the purposes of this report we have identified technical roles through the use of the following SOC codes. This is in line with the methodology and categorisation recently used by the Russell Group[6].

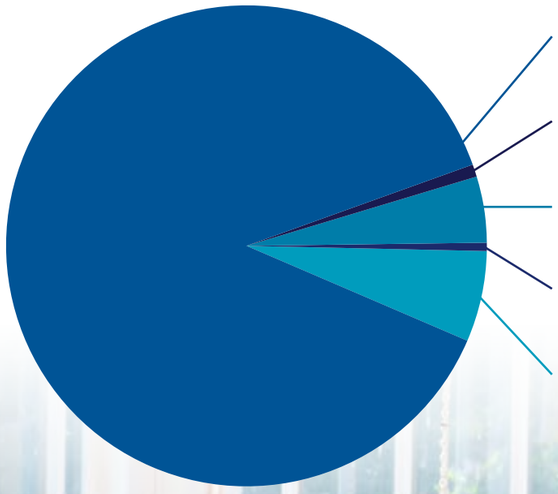
311	**Science and engineering technicians**
312	**Architectural technicians**
321	**Medical technicians**
355	**Environmental technicians**
613	**Animal technicians**

In line with previous reporting[6], SOC code 313 (Information Technology Technicians) has not been included in this analysis as this report focuses on those technical roles that are research and teaching facing. The SOC code 313 includes technical specialist roles along with roles such as IT helpdesk support. Because of this, and due to differences in the ways HEIs define and code their technical staff in HESA returns, it should be noted that the overall number of technicians in UK universities will be higher.

Mapping the technical community in higher education

SOC code analysis[7] showed there to be 14,375 full-time education (FTE) 'technician' roles in UK universities in the academic year 2017/18.

Total numbers FTE 2017/18



12,658
Science and engineering technicians (311)

135
Architectural technicians (312)

648
Medical technicians (321)

81
Environmental technicians (355)

852
Animal technicians (613)

Equality, Diversity and Inclusion: A Technician Lens

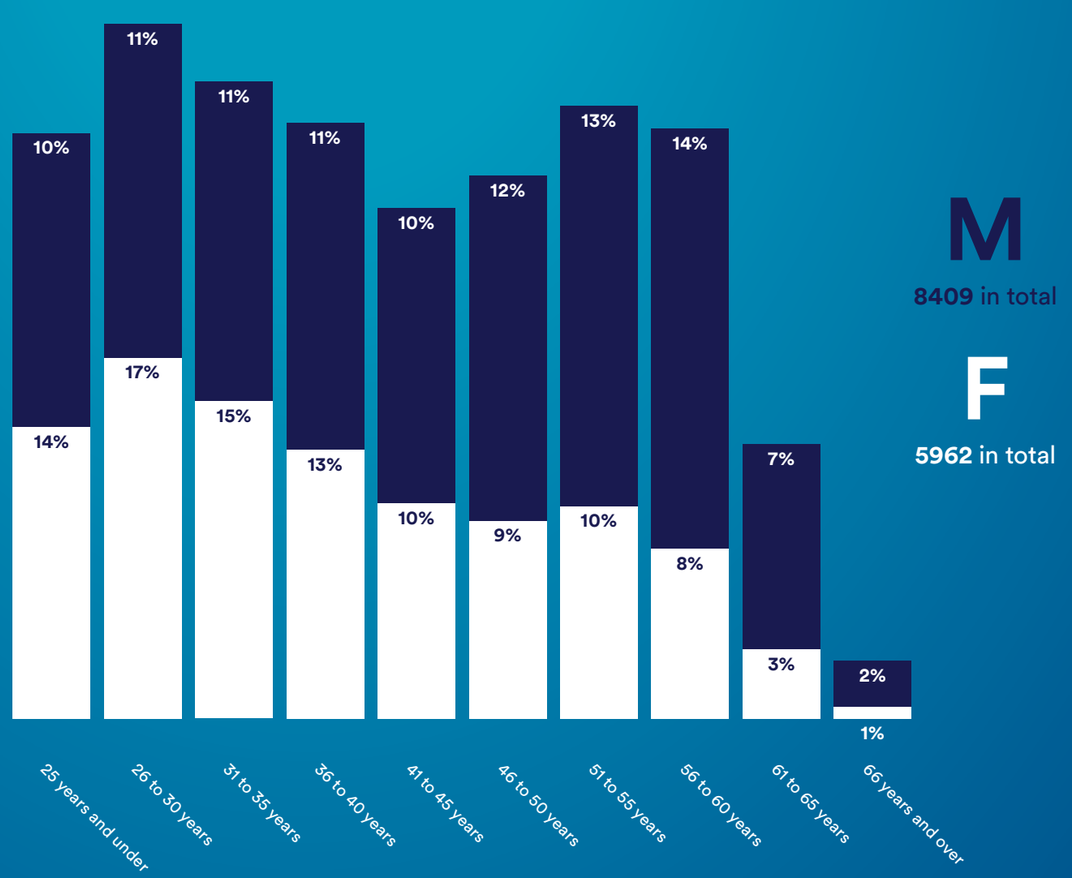
The roles were analysed by age, mode of working, sex, ethnicity, disability, career level and subject discipline.

Sex

The data available offers an insight into legal sex only, and currently this is a binary category. HESA do not include a 'prefer not to say' option or a non-binary gender identity option with regards to gender in their data returns and HEIs are asked to provide data based on the options of Male, Female and Other. Other accounted for 1%. This means that the data is looking at the legal sex of role holders, which may be the same or different to their gender identity.

Age

Age split for Females and Males



Disability

6% of technicians have a known disability.

Those who are marked “no known” and “unknown” as a disability are considered not to have a disability as per HESA guidance. Only those marked as “known disability” are considered to have declared a disability.

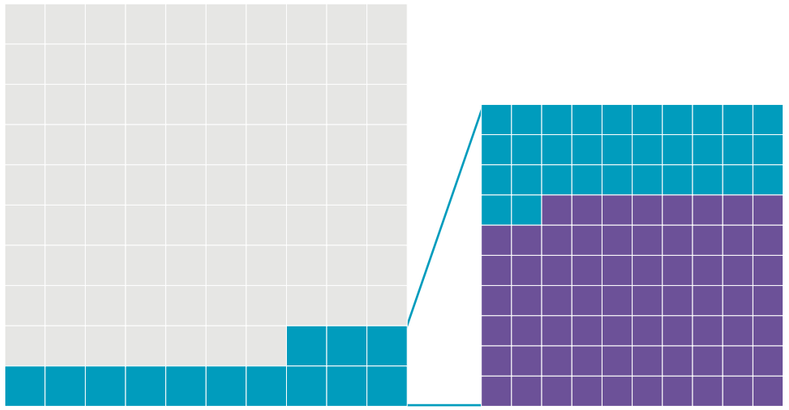
Ethnicity

10% of technicians are Black, Asian and Minority Ethnic (BAME)

84% of technicians are white

The ethnicity of **6%** is unknown

Part time



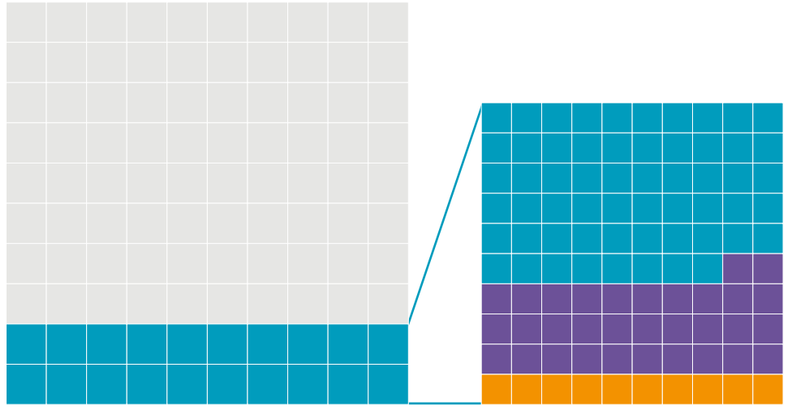
13% of technicians work part time

of these **68%** are female

Equality, Diversity and Inclusion: A Technician Lens

Career level

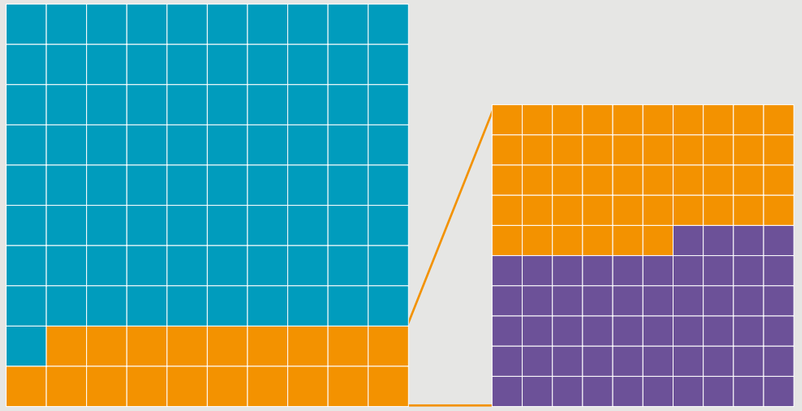
For the purposes of this report contract levels have been utilised to ascertain an indication of the levels of seniority in technical roles. The contract level field records the UCEA or XpertHR defined level of the contract[9]. This report uses level K0 and above as a marker of seniority. Staff working at contract level K0 operate at an experienced, professional level without supervision and may coordinate the activities of a team.



20% of technicians are working at level K0 or above

of these **32%** are female and **10%** are Black, Asian and Minority Ethic (BAME)

Contract type



81% of technicians are on permanent or open-ended contracts

19% are on fixed term contracts

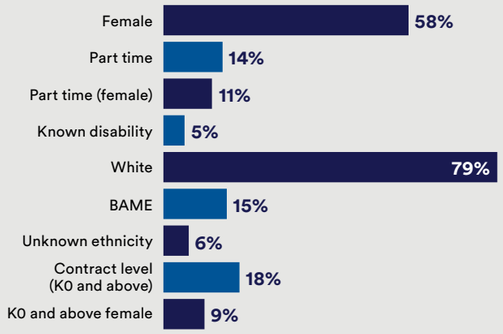
of these **54%** are female

Technicians by subject discipline

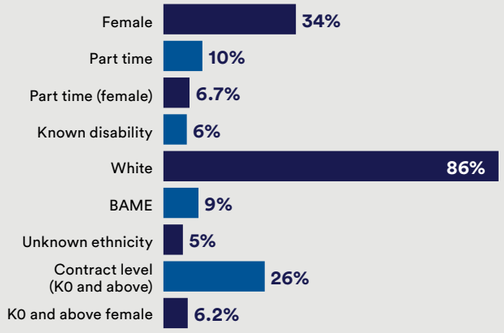
In order to understand trends and patterns with individual subject areas the data was analysed by HESA academic cost centres. There are caveats to the analysis, in that in some cases HEIs don't submit a subject cost centre against their technical staff and attribute them to generic cost centres. For example, 1129 FTE are categorised in the cost centre 'Total Academic Services' and 538 FTE are attributed to 'Central Administration and Services'.

This analysis looked at technical roles, as defined by the SOC codes 311, 312, 321, 355 and 613 aligned to the following cost centres: Medicine, dentistry and health, Chemistry, Physics, Engineering, Biosciences, Earth, marine and environmental sciences, Agricultural, forestry and veterinary science, Design, creative and performing arts, Mathematics.

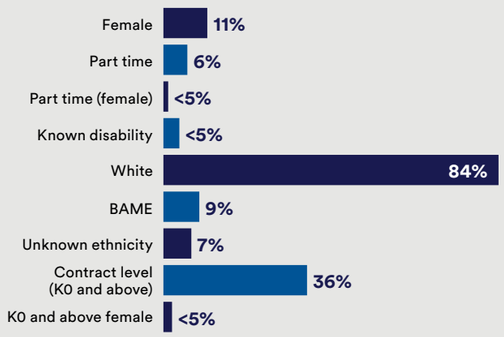
Medicine, dentistry and health (3669)



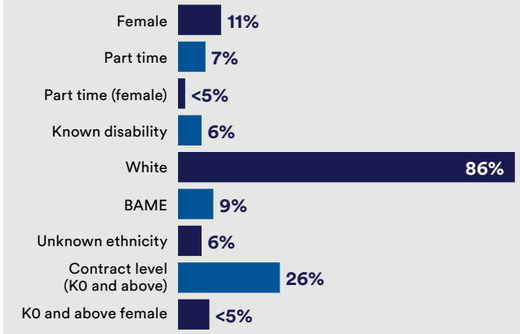
Chemistry (647)



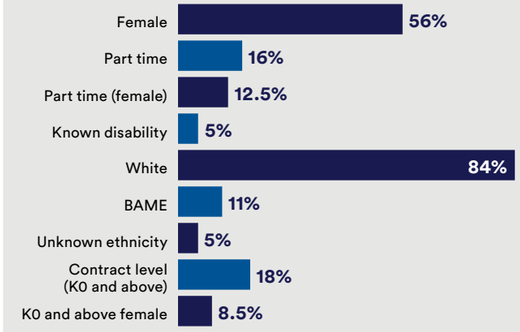
Physics (593)



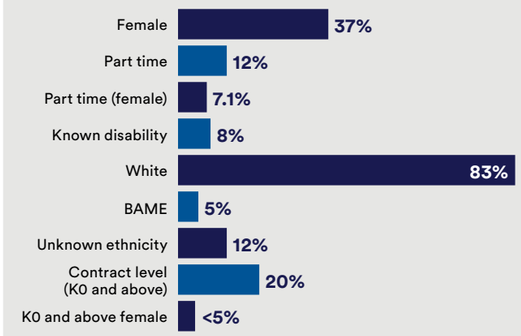
Engineering (2200)



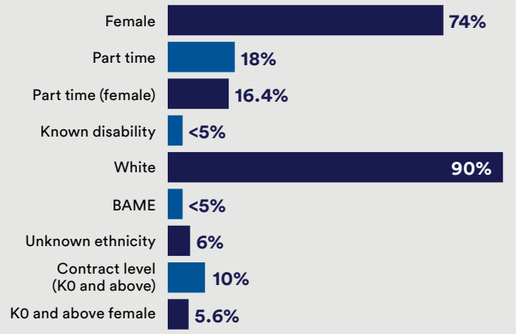
Biosciences (2550)



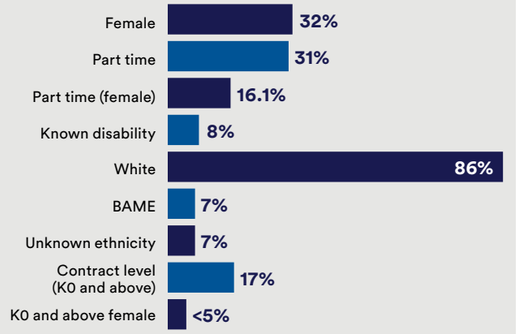
Earth, marine and environmental sciences (436)



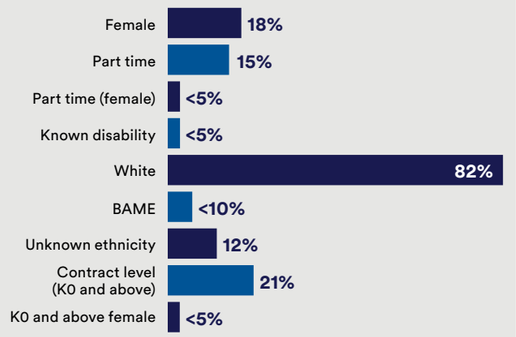
Agricultural, forestry and veterinary science (949)



Design, creative and performing arts (408)



Mathematics (34)



Equality, Diversity and Inclusion: A Technician Lens

Qualitative data

Alongside the analysis of quantitative data, we sought qualitative feedback from the technical and EDI professional communities. Four workshops on equality, diversity and inclusion for the technical community in UK Higher Education were hosted at national events between April 2018 and June 2019, engaging over 200 colleagues.

- Technical Managers in Universities (TMU) National Conference, Nottingham, April 2018[10]
- Equality Challenge Unit (Advance HE) 'Innovation, Change, Impact' Scotland's Conference – Glasgow, April 2018[11]
- Advance HE Equality Challenge Unit 'Practice and progress: advancing a strong culture of learning, professionalism and pride in EDI work' Annual EDI Conference 2018 – Liverpool, November 2018[12]
- UK Higher Education Technician Summit (HETS) – Birmingham, June 2019[13]

These workshops highlighted a number of key points:

- In some cases, it was clear that technical colleagues were unaware of the EDI challenges they faced within their own community and were unfamiliar with initiatives such as the Athena Swan and Race Equality Charters.
- Where technical colleagues were aware of institutional programmes of activity, many reported a lack of inclusion of technical staff and consequently a lack of technical representation on institutional EDI committees.
- Inequity in working arrangements (i.e. flexible working) between academic and technical staff groups were cited by some technical colleagues as a barrier to advancing EDI in the technical community.
- Female technical colleagues in engineering and physical sciences reported a lack of practical considerations in traditionally male dominated subject areas. Examples given included a lack of changing facilities and PPE equipment and safety wear/footwear being unavailable in appropriate sizing.
- A number of institutional equality and diversity champions/professionals demonstrated a lack of awareness of the roles of technical colleagues. This is perhaps unsurprising given the historical invisibility of technical roles. It was evident that the two communities rarely came together.

Equality, Diversity and Inclusion: A Technician Lens

Conclusions

This report provides an insight into the profile of the technicians working in UK higher education and, through quantitative and qualitative data, highlights some of the the equality, diversity and inclusion challenges facing the technical community.

It is recognised that the data available on technicians in the UK higher education sector is limited and as such the conclusions are based on what is currently available via the analysis of HESA data and qualitative findings from workshops at national conferences.

Medicine, dentistry and health, Biosciences and Engineering are the three largest subject disciplines where technicians are employed in UK HE with 59% of technicians working in these subject areas.

The majority of technicians working in UK HE are male. The proportion of female technicians (41%) closely mirrors the proportion of female academics (46%).

When examining specific subject disciplines, EDI challenges become more apparent. For example, in both Physics and Engineering, only 11% of technicians are female. Female technicians outnumber males in Biosciences, Medicine, dentistry and health and Agricultural, forestry and veterinary science. Unfortunately we are unable to provide analysis on non-binary gender identities due to the limitations of the data collected in this regard.

There is a general decline in the number of female technicians from the age of 30 years with the exception of those aged between 51-55 years where numbers increase slightly. The number of male technicians is relatively stable across all age groups but increases significantly from the age of 51 and declines again from the age of 61. The largest proportion of male technicians are over the age of 56.

30% of all technicians are over 51 years of age. This reflects reports that the technical community is aging leading to large numbers of highly skilled technicians retiring every year, taking their knowledge and experience with them. The relatively low number of technical staff under the age of 25 years demonstrates that there is more work to be done by the sector to ensure appropriate succession planning to ensure retention of technical skills. This is particularly prevalent in Physics and Engineering where 45% of technicians are over the age of 51.

The data shows that 84% of technicians are white. It is likely that the number of technicians who are of white ethnicity is larger given the proportion of unknown information.

10% of technicians are of BAME ethnicity. When analysed by age group, the same proportion of those under the age of 25 are of BAME ethnicity, suggesting limited or non-effective measures are underway to increase diversity in recruitment. In some subject disciplines, the proportion of BAME technicians is alarmingly low, for example Earth, marine and environmental sciences (5%) and Agricultural, forestry and veterinary science (4%). These figures are likely lower given the proportion of unknown data.

The proportion of technicians that are of BAME ethnicity (10%) is lower than the proportion of BAME academic staff (16%). It is also lower than the proportion of all BAME non-academic staff (12%). The low numbers of BAME technical staff presents a significant challenge, and also a significant opportunity, for the technical community in UK HE. Reports cite a need for greater numbers of technicians across Science, Technology, Engineering and Mathematics (STEM) in the UK across all sectors. Recruiting from diverse communities presents an opportunity to grow the UK's technician community and enhance the skills base.

6% of technicians have a known disability. This is slightly higher than the total number of university staff with a known disability.

A larger proportion of female technicians work part time. There are low numbers of technicians working part time in Physics, Engineering and Mathematics, which could be due to the low numbers of female technicians in those disciplines.

Females in technical management/leadership positions (32%) are not representative of the total proportion of technicians who are female (41%). In all subject disciplines the numbers of female technicians in technical management/leadership positions is lower than 32%. This suggests that female technicians are either not applying for, or are unsuccessful in being recruited to technical management/leadership roles.

There is a balance between the proportion of males and females on fixed term contracts (54% female).

Equality, Diversity and Inclusion: A Technician Lens

Recommendations

The findings from this report highlight the important and potentially overlooked EDI challenges in the technical community. The following recommendations are made to the higher education and research sector and to individual institutions to ensure awareness, recognition and interventions where appropriate to advance equality, diversity and inclusion in the technical community.

To the Sector

1. There is a need for improved data collection, both nationally and locally, on the profile of the technical community, to include recruitment.
2. EDI initiatives, both sector and institutional should be inclusive of all roles within UK HE.
3. The Technician Commitment should seek to specifically ask institutions about their measures to ensure EDI in the technical community in their guidance on institutional returns.
4. Professional bodies and learned societies should ensure that EDI initiatives are inclusive of the technical community.

To Institutions

1. It is important that institutions recognise the need to ensure appropriate succession planning for their technical communities and to strategically assess technical skill sets in order to meet both present and future needs. This is of particular urgency in Physics and Engineering where 45% of technicians are over 51 years of age.
2. HEIs should consider increased investment in apprenticeship and trainee technician programmes to ensure succession of technical talent. Consideration should be given to the advertisement of such programmes to ensure they appeal to and attract an inclusive pool of applicants.
3. More needs to be done to increase diversity in technical roles. There should also be a focused effort to support technicians from underrepresented groups into technical leadership and management roles. HEIs should look to role model technical leaders and technical colleagues from underrepresented backgrounds and consider interventions in this area. The STEMM-CHANGE Changemaker Programme is one example of an intervention designed to increase EDI in technical roles[14].
4. HEIs should provide appropriate facilities and PPE equipment for all technical colleagues recognising that some will take smaller than standard sizes.
5. Technical staff should be represented on all institutional Athena Swan Charter and Race Equality Charter committees.
6. There is clear synergy between the Technician Commitment, Athena Swan Charter and Race Equality Charter. HEIs should maximise this synergy and ensure initiatives are aligned within their institutions.
7. All technical colleagues should receive EDI training, particularly around recruitment.
8. HEIs should look beyond HE for examples of best practice in terms of EDI for the technical community. For example, the University of Nottingham are working with STEMM-CHANGE project partners Kohler Mira and the University of Liverpool are working with Unilever in this regard.
9. There is a need to raise awareness of EDI amongst technical leaders and managers.
10. Outreach activities, aimed at encouraging people from a range of backgrounds into technical careers should be encouraged and promoted.
11. Positive action should be taken to ensure advertisements for technical roles appeal to and attract an inclusive pool of applicants.

This report offers the first step to understanding and improving EDI in the technical community in UK higher education. By working together to increase awareness and recognition of EDI challenges, and by designing and implementing interventions to address them, we can advance equality, diversity and inclusion for all.

Equality, Diversity and Inclusion: A Technician Lens

Acknowledgments

The collaborating organisations wish to express their appreciation to all participants of the workshops who took the time to share their experiences. This collaborative piece of work has been funded by the EPSRC Inclusion Matters STEMM-CHANGE project based at the University of Nottingham.

References

1. stemm-change.co.uk
2. epsrc.ukri.org/funding/edi-at-epsrc/inclusion-matters
3. technicians.org.uk
4. ecu.ac.uk/equality-charters/athena-swan
5. www.skope.ox.ac.uk/wp-content/uploads/2014/04/WP103.pdf
6. russellgroup.ac.uk/media/5571/impact-of-brexit-on-the-technical-workforce-september-2017-final.pdf
7. Vere, K. 2019 'Technicians in UK Higher Education'. University of Nottingham*
8. ukri.org/files/infrastructure/progress-report-final-march-2019-low-res-pdf
9. hesa.ac.uk/collection/c17025/combined_levels
10. tmu.uk.net/events-notts-apr18-tmu
11. ecu.ac.uk/events/innovation-change-impact-scotlands-conference-2018
12. ecu.ac.uk/events/ecus-annual-conference-2018-practice-progress-building-strong-culture-learning-professionalism-pride-edi-work-liverpool-31st-october-1st-november
13. midlandsinnovation.org.uk/programmes/hets2019.aspx
14. stemm-change.co.uk/wp-content/uploads/2019/10/STEMM-CHANGE-Brochure-Change-Maker.pdf

University of Nottingham
UK | CHINA | MALAYSIA

Contact us

STEMM-CHANGE
University of Nottingham
University Park
Nottingham
NG7 2RD

+44 (0)115 748 7411
STEMM-CHANGE@nottingham.ac.uk
@STEMM_CHANGE

This publication is available in alternative formats:
+44 (0)115 951 5559

DIVERSITY BY DESIGN | Diversity solutions to strategic questions

IOP Institute of Physics

ROYAL ACADEMY OF ENGINEERING

ROYAL SOCIETY OF CHEMISTRY

Science Council

Newcastle University

UNIVERSITY OF LIVERPOOL

WARWICK THE UNIVERSITY OF WARWICK

University of Kent

UNIVERSITY of BRADFORD

NOTTINGHAM TRENT UNIVERSITY

VirginiaTech Invent the Future

mira SHOWERS

KOHLER