Diversity and Inclusion
Mapping Approaches to Opening up Science

National Forum for Public Engagement with STEM

October 2018

Introduction

This document was compiled to assist members of the National Forum in developing a common framework that captured the activities and initiatives that can be linked to opening-up STEM so that people from all different backgrounds can engage with science.

It was developed through conducting a rapid-review of the information available on member's websites including corporate strategies, action plans and public engagement strategies (see Annex B for examples). It also builds on an earlier mapping exercise to create the 'five approaches to opening up science paper', produced in 2016.

The paper has led to several responses from the Forum. Including:

- Scoping out a place-based approach to engaging underserved audiences;
- Conducting a sector survey to help develop a better understanding of the diversity profile of the sector;
- Initiating a deeper investigation of ways to track and evaluate the change we're making across the three focal points.

From the review, we have identified **three focal points** for our collective work in this area. We have described these as:

- **How we work:** The approaches that we use to reach out to new audiences and involve them in our work
- **Who we are:** The approaches that we use to create a diverse and inclusive work culture and staff / volunteer profile
- **What we know:** The insights and explanations that we use to understand our audiences (potential or current) and the experiences of staff in relation to matters pertaining to equality and diversity

Drivers for this work

Across each of these three focal points, Forum members appear to be universally agreed on some **fundamental drivers** for addressing diversity and inclusion. These can be summarised briefly as:

- There is a **clear business case.** For example:
    - It leads to better Science by developing talent, diversifying perspectives, fostering creativity, and enhancing productivity[1]
    - It leads to better products and services, and enhanced corporate image[2]
    - It contributes to the economy by reducing the costs of inequality for example in areas such as health, crime[3]

[1] https://wellcome.ac.uk/sites/default/files/the-diversity-dividend-briefing.pdf

[2] https://royalsociety.org/~/media/policy/projects/leading-the-way/exec-summary-diversity-business-case-june-2014.pdf

[3] https://www.equalitytrust.org.uk/sites/default/files/The%20Cost%20of%20Inequality.pdf

- It helps create a **fairer, more equal and more capable society.** For example:
    - researchers from under-represented groups are better equipped and more likely to pursue research on the health needs of these groups
    - it addresses issues pertaining to social justice through improving educational and health outcomes
    - it is 'the right thing to do'

Framework at a glance

We have summarised the areas of shared activity below, and the challenges.

FP1: How we work

1. Targeted investment/resources aimed at fostering more engagement in particular geographical areas with new audiences
2. Making programmes more accessible
3. Outreach activity
4. Working in partnership with other organisations that engage underserved audiences
5. Participatory methods
6. Supporting critical reflection, training and professional development, for instance through Implementing Science Capital approaches

FP2: Who 'we' are

1. Positive recruitment/promotion strategies (i.e. tools and techniques to support recruitment of traditionally under-represented groups)
2. Responsive measures
3. Reasonable adjustments (i.e. Buildings, infrastructure, working arrangements)
4. Influencing policy and other stakeholders
5. Mentoring, training, coaching, development schemes
6. Auditing, charters and awards
7. Organisational change and learning

FP3: What we know

1. Prioritising research on under-represented groups
2. Research into organisations that work with underserved groups
3. Research into what works
4. Research into who we are engaging with; and who 'we' are (i.e. audience data / staff data)
5. Learning from other sectors and fields

Challenges

- Challenges with measurement
- Challenges with language, purposes and definitions
- There are gaps in our knowledge base and existing knowledge that is under-utilized
- There is limited funding to sustain engagement with communities and partnerships
- There a deep, stubborn structural barriers which are really difficult to shift

Three focal points

Across each of the focal points we have identified illustrative examples of activity. **Please note that the examples provided in this document are illustrative and are not intended as a comprehensive record of activity.**

Focal Point 1: How we work

The approaches that we use to reach out to new audiences and involve them in our work

We identified a range of strategies deployed across the Forum:

1. **Targeted investment/resources aimed at fostering more engagement in particular areas or with new audiences, for example:**
    - *Ring fenced funding* to engage underserved audiences – for example Scottish Government offer ring-fenced funding to cover admission fees, transport costs of science centre visitors. See Golden Ticket (Dundee Science Centre).
    - Several funders have started to make underserved audiences a priority through their schemes and grants. See BSA's work on CREST AWARDS or RAENG Ingenious Grants for example. Relatedly there is a growing interest in piloting new approaches:
        - *Access lab* (BSA) project aims to improve access to and the judgement of information, through direct citizen-scientist pairings. https://fo.am/accesslab/

2. **Making programmes more accessible, for example:**
    - *Early Birds* - a programme that specifically targets families with children who are on the autistic spectrum – opening the museum for a total of 300 people who can exclusively access the museum in a way that they would not normally be able to (Science Museum, London; National Science and Media Museum, Bradford)
    - *SIGNtific*, the use of Interpreters, audio assistance etc. (Science Museum)
    - Shaping our existing activities to better reach underserved audiences. See for example:https://www.britishscienceassociation.org/Handlers/Download.ashx?IDMF=ef6fa1ac-4736-432d-82a8-03a07a4ce0b2

3. **Outreach, for example:**
    - Touring programmes in local festivals and communities. (See Newcastle's Centre for Life Rural Outreach Programme)
    - Digital and online engagement (i.e. the use of YouTube, Social Media, QR codes and various forms of media to expand reach and diversity).

4. **Working in partnership with organisations that engage underserved audiences, for example:**
    - *Dark Sky Discovery* – there is a huge latent interest in dark skies amongst the outdoor sector. This has informed partnerships with over 100 organisations that are not typically part of the STEM network.
    - Science Museum, Wellcome and others are working with **Princes Trust** helping us to reach and engage new audiences. For example, by helping train their staff, and providing STEM content that can be delivered within their programmes.

5. **Asset based or participatory methods, for example:**
    - People Like Me – an asset based approach to engaging girls with careers in STEM https://www.wisecampaign.org.uk/people-like-me

6. **Supporting critical reflection, training and professional development, for example:**
    - Embedding a Science Capital approach – focusing on five principles in how we work[4]:
        - Building on specific dimensions of science capital (e.g. People's disposition?)
        - Valuing what people bring with them?
        - Offering personalised and localised science?
        - Broadening 'what counts' as ways of doing/ being in science?
        - Challenging stereotypes about science?
    - The development of tool-kits and guidance. For example, the Welsh Government's Equality, Diversity and Inclusion Tool-kit

Focal Point 2: Who 'we' are

The approaches that we use to create a diverse and inclusive work culture and staff / volunteer profile

We identified a range of strategies deployed across the Sector:

- **Positive recruitment/promotion strategies (i.e. tools and techniques to support recruitment of traditionally under-represented groups), for example:**
    - *WP and Outreach* activities of Universities to support student recruitment including bursaries.
    - *The Works*, University of Manchester. Targeted professional support, training and opportunities to support job seekers local to the university - including pre-recruitment training[5].
    - *Royal Society* have published 150 personal stories of scientists who are combining their roles as parents and carers.
    - *Destination STEM (Royal Society)* a one year mentoring programme for Black students living or studying in Greater London

- **Responsive measures, for example:**
    - Refusing to take part in male only panels

- **Reasonable adjustments (i.e. Buildings, infrastructure, working arrangements), for example:**
    - Aiming to accommodate flexible working arrangements across all roles;
    - Meeting the government requirements for reasonable adjustments.

- **Mentoring, training, coaching, development schemes for example:**
    - *Unconscious bias (Royal Society)* – training for staff and panels
    - *Dorothy Hodgkin Fellowship (Royal Society) - supports scientists at an early stage of their career who require a flexible working pattern due to personal circumstances.*
    - *Research enrichment scheme (Wellcome)* – This funding enables Wellcome grant holders to identify and tackle barriers to diversity and inclusion in their work. It supports activities that make the scientific community more diverse and inclusive help to make sure that every great idea that could improve health thrives.

- **Influencing policy and other stakeholders**
    - The All Party Parliamentary Group on Diversity and Inclusion in STEM - aims to promote the inclusion and progression of people from diverse backgrounds in STEM, and to encourage government, parliamentarians, academics, businesses and other stakeholders to work

[4] https://transformingpractice.sciencemuseum.org.uk/examples-of-a-science-capital-approach-in-action/
[5] https://www.manchester.ac.uk/connect/jobs/equality-diversity-inclusion/the-works/

towards a STEM sector that is representative of the population: https://www.britishscienceassociation.org/appg (BSA)
    - The Huxley Summit - Create the space for key decision and change makers, both within and beyond science, to debate and agree radical new ways of using science to advance society. https://www.britishscienceassociation.org/huxleysummit (BSA)

- **Auditing, charters and awards for example:**
    - Athena Swan
    - Public Sector Equality Duty
    - The Times Top 50 Employers for Women
    - Other external benchmarks including (BEIS):
        - Stonewall is a lesbian, gay bisexual and transgender charity that campaigns for equality at work and throughout society. It publishes an annual list of the Top 100 employers for lesbian, gay and bisexual people.
        - e-quality benchmarking tool from the Employers Forum on Age allows BEIS to analyse our performance in relation to diversity.
        - Opportunity Now is a gender campaign that empowers employers to accelerate change for women in the workplace.
        - Mindful Employer initiative

- **Organisational change and learning, for example:**
    - SMG looking at developing a framework for equity and community partnership work to align with the organisational value 'Be Open for All''

Focal Point 3: What we know

The insights and explanations that we use to understand our audiences (potential or current) and the experiences of staff in relation to matters pertaining to equality and diversity

- **Prioritising research on under-represented groups, for example:**
    - Experiments in Engagement (Wellcome) commissioned to provide insights into what young people from disadvantaged backgrounds do in their free time.

- **Research into organisations that work with underserved groups, for example:**
    - The context of youth workers (Wellcome) - sets out the drivers and motivations of youth workers and explores how science engagement might help them achieve their goals.

- **Research into what works**
    - Science Capital, see for example Science Capital Teaching approach
    - Science Learning+, see for example awarded projects - https://wellcome.ac.uk/what-we-do/directories/science-learning-projects-weve-funded
    - UK Science and Discovery Centres – effectively engaging underserved audiences.

- **Research into who we are engaging with; and who 'we' are (i.e. audience data / staff data, for example:**
    - Royal Society – Scientific Workforce Report – sets out to analyse and understand the composition of the scientific workforce in terms of gender, disability, ethnicity and socio-economic status and background.
    - Monitoring data for example the Crunch evaluation
    - PAS and Wellcome Monitor

- **Learning from other sectors and fields, for example:**
    - SMG drawing on learning from 'the participatory museum' and feeding this into organisational strategy.
    - Expert speaker programme at National Forum including contributions from HLF and Shift.
    - Drawing on relevant research and methodologies used in other sectors to better understand underserved audiences and approaches. For example, Derby Silk Mill's non-visitors research and Culture on Demand (DCMS).

Challenges

Across the three focal points we found a set of challenges:

- **Challenges with measurement:**
    - Addressing and measuring success against the purpose: for example - as means to ends (such as efficiency or productivity), or as ends in themselves (such as equality and rights)
    - Measures of inclusivity (or discrimination) need to go beyond measuring the make-up of groups and representativeness to look at how they function, and degrees of inclusivity or discrimination

- **Challenges with language, purposes and definitions:**
    - Forum members have defined different underserved audiences and different priorities for engaging them. There are different assumptions that then inform how we engage and different strategic priorities that are informing our work:

Label	**Perception of problem**	**Typical response**
Hard to reach	They are not 'coming to us' and are outside our sphere of influence	Make it more interesting and appealing and you will 'pull' people in; go to places where they are
Under-served	They are 'missing out'	Target resources / re-prioritise activity to try to reach them
Dis-engaged	They are not interested	Seek to understand why science doesn't appeal and use this intelligence to design new methods
Disadvantaged	Their experience of economic or social disadvantage excludes them	Seek to address the consequences of disadvantage in the way you design interventions

- **There are gaps in our knowledge base and existing knowledge that is under-utilised:**
    - For example, how can we more effectively work with partners that have access to audiences we want to reach (i.e. young people's charities, International agencies etc.)
    - The availability of audience insight from specific underserved audiences, and the capacity to translate this insight into practice

- **There is limited funding to sustain engagement with communities and partnerships.**
    - See for example, the funder/provider discussions that took place in meeting 9

Stepping back, it is also important to state that these are **deep, stubborn structural barriers** which are difficult to shift. Progress is at best slow and incremental.

Annex A: Further Reading and Resources

ASDC

UK Science and Discovery Centres: Effectively engaging under-represented groups: https://www.sciencecentres.org.uk/national-impact/uk-science-and-discovery-centres-effectively-engaging-under-represented-groups/uk-science-and-discovery-centres-effectively-engaging-under-represented-groups/

British Science Association

A world where science is at the heart of culture and society: https://www.britishscienceassociation.org/Handlers/Download.ashx?IDMF=ef6fa1ac-4736-432d-82a8-03a07a4ce0b2

Inclusion and Diversity: https://www.britishscienceassociation.org/diversity-and-inclusion

Institute of Physics

Championing Diversity (2016-19) - https://www.iop.org/policy/diversity/file_69299.docx

LLywodraeth Cymru | Welsh Government

Equality, Diversity and Inclusion Toolkit: https://beta.gov.wales/sites/default/files/publications/2018-06/equality-diversity-and-inclusion-toolkit-for-the-work-based-learner-provider-network-april-2018_0.pdf

Science, Technology, Engineering and Mathematics (STEM) in education and training
A delivery plan for Wales: https://beta.gov.wales/sites/default/files/publications/2018-02/science-technology-engineering-and-mathematics-a-delivery-plan-for-wales.pdf

Royal Academy of Engineering

Engineering Diversity Concordat - https://www.raeng.org.uk/publications/other/concordat-resource-guide

Diversity Programme Report - https://www.raeng.org.uk/publications/reports/diversity-programme-report (2011-2016)

Diversity and Inclusion Strategy (2016-2020) - https://www.raeng.org.uk/policy/diversity-in-engineering/diversity-and-inclusion-programme-strategy-2016–20

Royal Society of Chemistry

Diversity landscape of the chemical sciences - http://www.rsc.org/globalassets/02-about-us/our-strategy/inclusion-diversity/cm-044-17_a4-diversity-landscape-of-the-chemical-sciences-report_web-2.pdf

Gender pay gap - http://www.rsc.org/globalassets/02-about-us/corporate-information/gender-pay-gap-report-2017.pdf

Royal Society

Diversity Strategy **-** https://royalsociety.org/~/media/policy/topics/diversity-in-science/diversity-strategy-2015-2018.pdf?la=en-GB

Scottish Government

STEM – Education and Training Strategy for Scotland:
http://www.gov.scot/Resource/0052/00526536.pdf

UKRI

Equality, Diversity and Inclusion - https://www.ukri.org/about-us/policies-and-standards/equality-diversity-and-inclusion/

Principles and statement of expectations - https://www.ukri.org/about-us/policies-and-standards/equality-diversity-and-inclusion/principles-and-statement-of-expectations-for-equality-diversity-and-inclusion/

Wellcome

Success framework - **https://wellcome.ac.uk/sites/default/files/wellcome_success_framework_chart.pdf**

Diversity and inclusion - https://wellcome.ac.uk/what-we-do/our-work/diversity-and-inclusion

Produced by Paul Manners and David Owen
National Coordinating Centre for Public Engagement (Secretariat)