
THE IMPORTANCE OF INTENTIONALLY INCLUSIVE SPACES IN STEM

Reviewing the experiences and lessons learned from LGBTQ+, disabled and BAME attendees of Polar Horizons 2021

Creative Tuition Collective Report



Natural
Environment
Research Council



Foreign, Commonwealth
& Development Office



DIVERSITY
IN UK POLAR SCIENCE



British
Antarctic Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

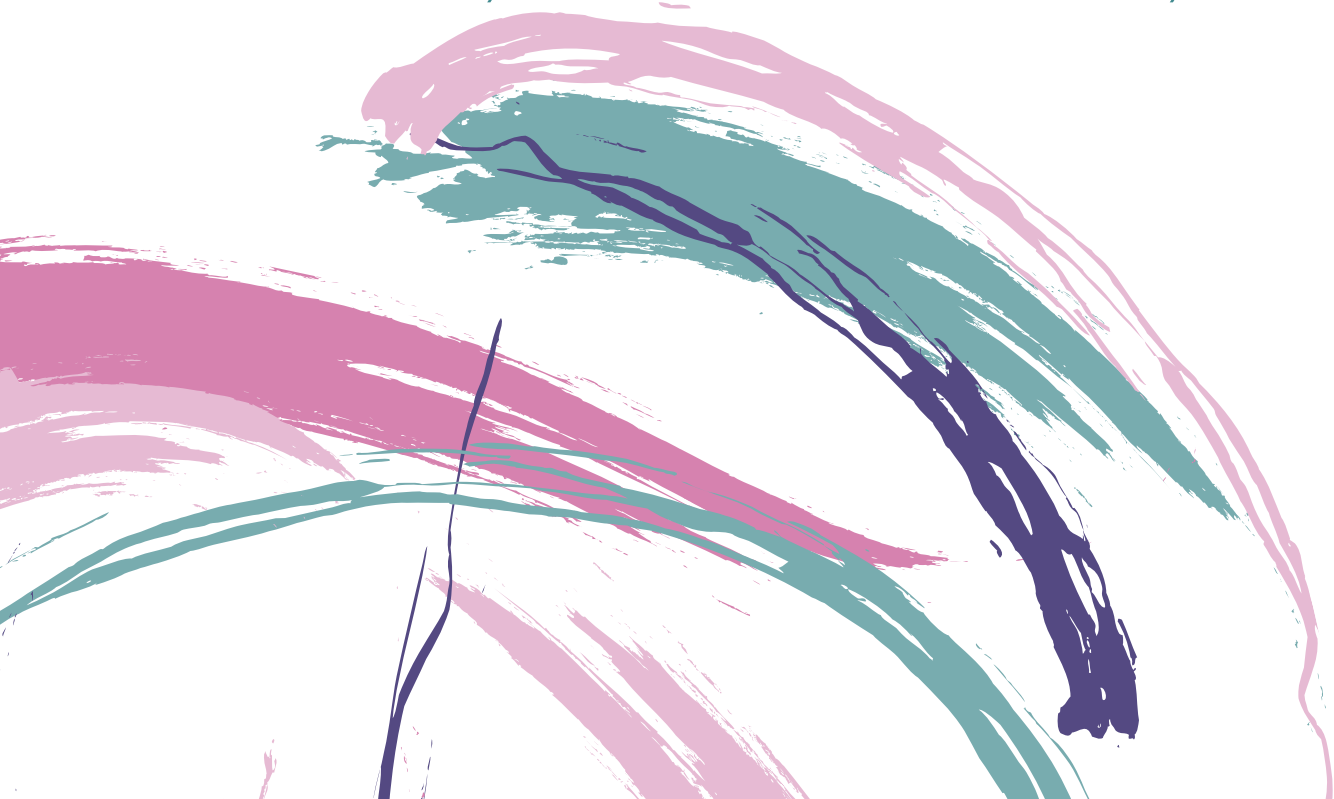
ACKNOWLEDGEMENTS

We would first and foremost like to thank everyone within the Diversity in Polar Science (DiPSI) steering group for their guidance and support. Special mention to Donna Frater, Huw Griffiths and Pilvi Muschitiello for all of their hard work on creating the platform that is the Polar Horizons Programme in 2020 and 2021 for researchers from underrepresented backgrounds despite the challenges faced.

We extend our gratitude to Jane Rumble and the Foreign Commonwealth and Development Office for supporting and funding the Polar Horizons Programme and the DiPSI steering group. Special thanks to the Natural Environmental Research Council (NERC) for funding this particular research project and supporting increasing inclusivity within the scientific community.

And finally, we would like to thank all of the focus group participants who dedicated time to participate in the focus groups and whose responses helped us in our research.

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EXECUTIVE SUMMARY

In March 2021, Creative Tuition Collective were able to speak with participants of the Polar Horizons Programme 2021. Polar Horizons is an initiative run by DiPSI and funded by the UK Foreign, Commonwealth and Development Office and NERC to introduce folks from currently underrepresented groups such as LGBTQ+, Disabled and BAME to UK Polar Science. Over two days, Creative Tuition Collective held 6 online focus groups with 33 conference participants using zoom. In a separate discussion, the researchers were able to speak with event organisers to find out about the practicalities and challenges they faced when designing this event.

Together, these findings provide an eye-opening compilation and analysis of the experiences of university students and early careers researchers in STEM. Focusing specifically on students' experiences in education so far, this research explores what inclusivity means, what makes a space inclusive, what expectations students have for organisations in terms of diversity, representation and inclusivity. Additionally, this research serves to amplify the voices and experiences of the participants, who are either LGBTQ+, Disabled and/or BAME. With the data gathered in this study we have been able to compile an action-plan of practical steps that can help to make education and work environments and be truly inclusive and welcoming to all.

Awareness of Polar Horizons Programme and Reasons for Attending

- Attendees developed an awareness of the Polar Horizons Programme from a variety of social media sources such as Pride in Polar Research on Twitter, Huw Griffiths' personal Twitter account, and Lara Lalemi's LinkedIn profile
- Reasons for attending the conference were divided with some participants citing a specific interest in Polar Science and others feeling primarily attracted to the inclusivity of the event. In this instance, the subject of Polar Science was of secondary interest – with participants saying their research areas were either loosely related to Polar, or they hadn't even considered Polar prior to attending the Polar Horizons Programme



Experiences of diversity and representation in academic, education and professional settings

- Participants of all identities often felt that there was little or no representation for them in their educational environments
- When participants interact with someone with the same characteristics as them, in a role that they aspire to, this gives participants confidence that “they can get there too”
- Representation of diversity builds confidence for folks who are LGBTQ+, BAME and/or have a Disability and contributes to creating a sense of belonging within an education environment or workplace
- Participants cited class representation needs to be improved, specifically lower-socioeconomic representation and the intersection between this and other characteristics (Disability, LGBTQ+, BAME) can be significant, with finance often proving a significant barrier to participation in education / events


Defining Inclusivity

- Participants overwhelmingly felt that current experiences of inclusivity and inclusive educational environments or workplaces were tokenistic and not supplemented by long lasting, meaningful actions
- Inclusivity was often expressed as a ‘feeling’ people recognise after picking up on a mixture of subtle and explicit cues in an environment
 - Subtle cues involve pre-existing visible representation and diversity within an organisation and/or in lieu of that,
 - Overt clues involve people in positions of power proactively expressing how they value diversity and how they create an inclusive environment by doing things such as introducing pronouns and explaining support available
- In a practical sense, for participants, being inclusive means being actively involved in breaking down barriers to participation
- It felt important for students who are perceived as being more privileged than others, that inclusive environments are encouraging spaces that allow people to make mistakes as long as they are willing to learn.

Consequences of Inclusivity

- Inclusivity results in students feeling able to be fully themselves without the need to hide parts of themselves – for example, distort their accent or adopt a specific ‘workplace persona’ based on the perceived expectations of others (colleagues, bosses etc.,)
- For participants, being in an openly inclusive environment like the Polar Horizons Programme improves how they feel about themselves – they are less likely to view themselves negatively (e.g. as a “burden”)
- Participants notice positive impacts on aspects of their wellbeing and profession/academic attainment when they are in an environment that is accepting and supportive of them – for example, students reported feeling hopeful for their future, and being able to simply get on with the job they know they can do
- Inclusive environments are empowering for those in them because they feel able to challenge discriminatory behaviours / practices that affect others
- Overtly acknowledging the difficulties that LGBTQ+, Disabled and BAME people face in relation to accessing STEM created a strong sense of validation, of being seen, heard as well as creating an atmosphere of belonging for participants involved in the Polar Horizons Programme.

Feedback on Polar Horizons 2021

- There was persistent support and praise for Polar Horizons 2021 and its organisers from the participants
 - Inclusivity should be widened to include those from lower-socioeconomic backgrounds and recognise the barriers that low-income presents in relation to participation in STEM
 - Participants shared that DiPSI’s commitment to recognising racism and colonialism within science was surprising and positively challenged their perceptions of the polar institutions
 - Mentoring was a significantly beneficial part of the conference as students felt comfortable speaking with a variety of STEM practitioners they would otherwise not be able to. These comfort levels were significantly and positively influenced by the awareness of Polar Horizons being an intentionally inclusive event.
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LANGUAGE USED IN THE REPORT

BAME

BAME is an acronym that stands for 'Black, Asian and Minority Ethnic', often conflated with BME (Black and Minority Ethnic), BAME is pronounced to rhyme with 'name'. We realise that not everyone is comfortable with being referred to as 'BAME' as it highlights certain ethnicities (Black and Asian) and not others, especially White ethnic minorities such as Gypsy, Roma and Traveller of Irish Heritage groups. We have made the decision to use BAME as it is the exact term used by DiPSI when recruiting for Polar Horizons 2021 and is a widely used and commonly understood acronym when talking about ethnicity, especially in an academic context.

We believe that when speaking about an individual it is important to be specific about who you are referring to if it is relevant. Always remember to capitalise the ethnicity and remember everyone has an ethnicity - it isn't a bad thing in and of itself.

Cis-Gender

Cis is used in this report (short for cis-gender) to refer to folks who's gender remains the same as that which was assigned at birth. In most cases, a gender is assigned at birth (either male or female) and is congruent with the person's biological sex. We recognise the experience of intersex folks can be more complex. Whilst this remains the case in Western society, we would like to specifically state here that we realise a person's biological sex does not determine a person's gender and we recognise male and female are not the only genders that exist, though in Western society these are the most commonly assigned-at-birth genders.

"Diversity
is having a seat at the table

Inclusion
is having a voice, and

Belonging
is having that voice be heard"

-Liz Fosslein





Disability

Creative Tuition Collective advocate for the Social Model of Disability. This model has been developed by people with disabilities and describes people as being disabled because of the barriers in society, not because of their differences. The social model of disability helps us recognise barriers that make life harder for Disabled people. These barriers are identified as being the physical environment, people's attitudes, the way people communicate, how institutions and organisations are run, and how society discriminates against those who are perceived as 'different'. As such, the language we use in this report is 'Disabled person' or 'person who identifies as having a disability' (if this is the language used by a participant).

LGBTQ+

This acronym stands for Lesbian, Gay, Bisexual, Transgender and Queer. The '+' symbol is a way of including all other gender, sexual and romantic identities such as Intersex, Aromantic, Demi-sexual amongst many, many others. There are alternative acronyms such as LGBTQIA+, LGBTQIA2+ which all include the same identities but specifically name more identities in the acronym. We have used LGBTQ+ in this report to recognise further inclusion of a wider range of identities.

Folks

We like to use folks as a gender neutral and informal way of talking about people within a group. This is to avoid saying 'people with a disability' or 'Disabled people' or 'LGBTQ+ individuals'.

STEM

This acronym stands for 'Science, Technology, Engineering and Maths' and is often used in academic, education and policy contexts to refer to a range of subjects and professions linked to any of the four areas.



INTRODUCTION

Who are Creative Tuition Collective?

MISSION:

To provide extracurricular educational and mental health support to children from underrepresented communities, helping them to improve their grades and career prospects. To ensure these intentions, all our services are provided free of charge at the point of use.

VISION:

A model based around a core ethos of Inclusion, Innovation, Inspiration, to help students from all identities and backgrounds with a diverse and accessible educational programme. There is a particular focus throughout the services of decolonising STEM; both deconstructing eurocentric models of scientific knowledge and improving access of underrepresented young people to STEM degrees and careers.



WHAT THEY DO NOW:

STEM TUITION

- Tuition in specific STEM subjects for one hour each week, with each student receiving personalised teaching. All tuition sessions include a general check-in on wellness and workload beyond the session.

RUNNING WORKSHOPS

Workshops that provide knowledge and skills that students would not receive in their standard curriculum. These go from life skills like personal finance, arts and music to discussions of pre-colonial scientific practices in Africa. These are aimed at generally broadening students' worldview and providing them with the life skills they need to succeed alongside educational excellence.

PERSONAL DEVELOPMENT

Provide students with access to a mental health professional and allows them to discuss anything they want advice or guidance on, whether it is related to school career prospects, or general life.

Lead Researcher

Polly Sheehan



Hello! I am an early-career social science researcher due to complete my MSc in Social Science Research Methods (Sociology) from the University of Bristol in 2021. I heard about Creative Tuition via conversations with Epiphani Sié and CEO Lara Lalemi and after expressing an interest and summarising my research experience I was kindly asked to get involved and act as a research consultant to design and conduct research into the experiences of Polar Horizon Conference attendees. I have a particular interest in inclusive, ethical and reflexive research practise and really enjoy sharing my experiences with others to help people do good research!

Being involved with this research was an incredible opportunity for me to lead and run focus groups and speak with students about their experiences.

About the Research

This research is funded by the Natural Environment Research Council (NERC) via British Antarctic Survey (BAS) in partnership with UK Research and Innovation (UKRI). The research was carried out by Pollyanna Sheehan and Epiphani Sié of Creative Tuition Collective and supported by Diversity in Polar Science Initiative (DiPSI).

Who are BAS?

The British Antarctic Survey (BAS) deliver and enable world-leading interdisciplinary research in the Polar Regions and are striving to become a world-leading centre for polar science. BAS is a component of the Natural Environment Research Council (NERC). NERC is part of UK Research and Innovation (UKRI). UKRI is a non-departmental government body that manages research and innovation funding in the UK and is sponsored by the Department for Business, Energy and Industrial Strategy (BEIS). BAS was asked by the Foreign, Commonwealth and Development Office to host the Diversity in UK Polar Science Initiative.

DIVERSITY IN UK POLAR SCIENCE INITIATIVE

To mark the the 200th anniversary of the discovery of the Antarctic, the Diversity in UK Polar Science Initiative (DiPSI) was conceived, created and funded by by the UK Foreign, Commonwealth and Development Office (FCDO) Polar Regions Department in order to celebrate both inclusivity and science within the Polar science community. Guided by a steering group composed of representatives from across BAS, experts from the UKRI Equality, Diversity and Inclusion (EDI) Advisory Board, the Natural Environment Research Council, the Scientific Committee on Antarctic Research, European Polar Board, the International Arctic Science Committee, UK Polar Network and a BAME in STEM consultant.

Figure 1 represents data from the 2017 Office of National Statistics Research Report on the percentages of minority groups in UK society compared with data from STEM higher education and BAS (as a proxy for UK polar science). This is a benchmark from which DiPSI hope to measure improvement.

The graph demonstrates the underrepresentation of women, BAME, LGBTQ+ and people with a Disability in Higher Education in a STEM subject and within UK Polar Science. Women make up 50.7% of the UK population, yet only 45% of those in higher education in STEM are women. Women are further underrepresented in UK Polar Science (39%).

Proportional representation in STEM at a higher education level and within UK Polar Science is lower for people with a disability, who are LGBTQ+ and have a BAME background. The proportion of folks with a disability in UK society is 19%, which compares to 1.8% reported in UK Polar Science. LGBTQ+ folks make up 5% of UK Society, yet only 2% of folks in UK Polar Science report being LGBTQ+.

Whilst there may be issues of under-reporting, the gap between the proportion of folks who are from a BAME background, report a Disability or identify with the LGBTQ+ community in the general UK population, versus UK Polar Science (using BAS measurements as a proxy) is stark.

DIVERSITY IN UK POLAR SCIENCE INITIATIVE

What is Polar Horizons?

The Polar Horizons Initiative was created with the aim of improving the diversity of UK polar science. The Initiative has been funded by the UK Foreign, Commonwealth, and Development Office and is aimed at building new connections and collaborations between the UK Polar Science community and those from currently underrepresented groups, particularly BAME, LGBTQ+ and disabled.

Why is Polar Horizons needed?

As is evident from figure 1, UK polar research does not reflect the wider population of people in UK society. Polar research is essential in understanding the future for all people on Earth and so it is vital to attract and retain diverse talent at the early career stage. Though the imbalance in underrepresented groups can vary between organisations, research disciplines and nations, proactively addressing this issue will only further enrich and enhance polar research, dispelling the stereotypical figureheads associated with polar science.

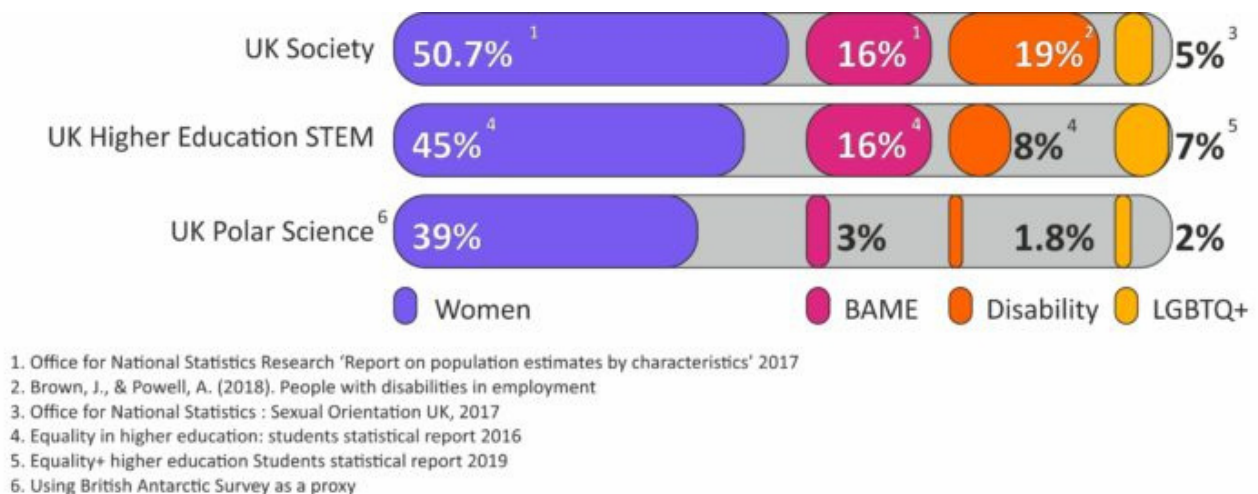


Figure 1: The representation of protected characteristics in UK Polar Science

RESEARCH DESIGN

Event organisers from DiPSI made contact with current and previous Polar Horizons cohorts to engage them with this research on behalf of Creative Tuition Collective. These individuals indicated whether they would like to take part in a focus group and stated their availability from a choice of two dates, near the time of the 2021 Polar Horizons Programme. Approximately 70 attendees indicated interest from a total of 110 attendees. The organisers of the Polar Horizons Programme scheduled prospective participants into groups and allocated time slots in line with their availability. The focus groups took place online via zoom on two separate days (5th March and 12th March, 2021). Friday 5th March coincided with the final day of the Polar Horizons 2021 Programme.

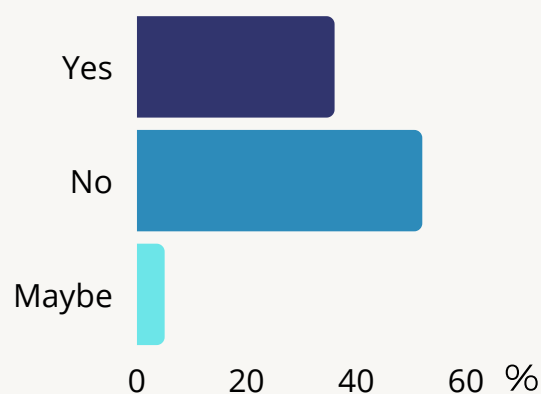
PARTICIPANTS**

% Ethnicity

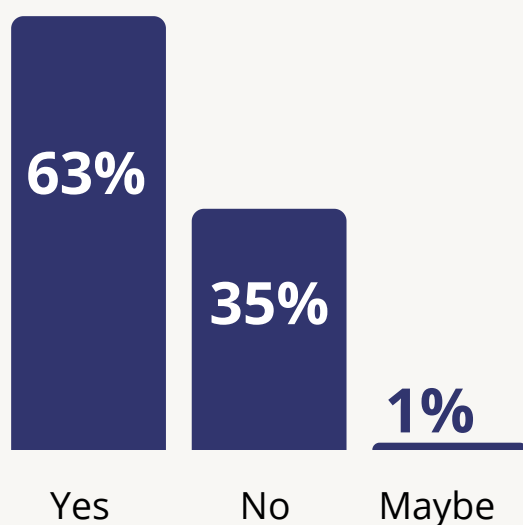


77% BAME students

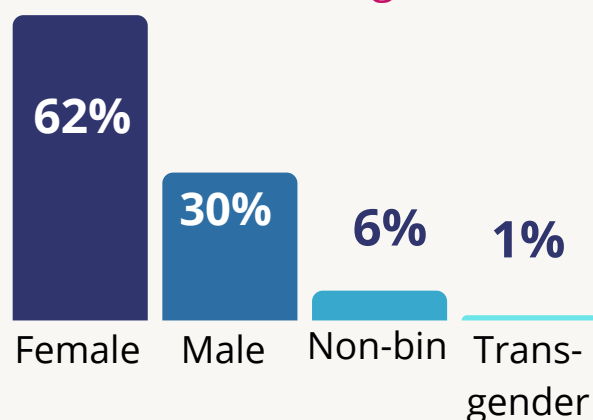
% of students with a disability *



% of LGBTQ+ students*



Distribution of gender*



*The total may under 100% due to rounding.

**These statistics are based on optional disclosure. Not all participants disclosed.

The characteristics recorded in this table may be less than, equal to or more than the total number of focus group participants. This is because a participant may identify as having any combination of characteristics. Alternatively, as participants were not asked to explicitly disclose which of the characteristic(s) they identified with, the characteristics recorded should not be matched directly to the number of participants in each group.

METHOD

Philosophy of Research

The choice of method was informed by the practical considerations and limitations involved in this research which will be detailed in this section.

Recruitment and scheduling for this study was carried out by the event organisers within DiPSI due to the event organisers having direct access to the participants. The short timeframes and administrative resource available at the beginning of this project meant the timeframes for conducting the research had been decided (by virtue of the conference date) in advance of designing a cohesive research strategy. Participants were given a choice of two dates to be involved in a qualitative research study – March 5th 2021, the final day of the Polar Horizons Programme, or the following Friday, March 12.

The response rate for the participation call-out was 64%, meaning that 70 out of a total of 110 programme attendees indicated an interest in participating in the research. Because of the high number of participants the research team wanted to be able to make best use of the potential participants and we decided that 1 - on - 1 interviews would not be the best use of this availability and/or researcher resource. As such, given the number of participants available and the loosely defined research aim of understanding what inclusivity means and the consequences, online focus groups were agreed upon as the most appropriate method.

Once the method had been confirmed, the specific nature of the research and topic areas were refined to ensure they suited the method. The topic areas were finalized by meetings between Creative Tuition Collective (CTC) and staff from DiPSI. This transparency allowed DiPSI to recruit participants and answer questions from potential participants and funders. A further email including a consent form and information sheet was sent to participants (see Appendix 2A) when they were allocated a time slot.

Aims

This research was designed with the aim of allowing CTC to highlight inclusive practices that demonstrate what happens when inclusivity is centred with the hope that academics can carry this learning forward when considering how to make educational spaces or work environments inclusive. A further interview with event organisers was designed to explore the organisational aspects of creating such environments in order to create guidance for inclusivity-focused event organisers. This is included in Appendix 1 of this report.

The research was designed to investigate the following key themes:

- Motivations for attending Polar Horizons Programme 2021 and/or 2021
- Experiences of representation and diversity in education or workplaces in relation to disability, LGBTQ+ or BAME
- Exploring and defining what inclusivity means
- Understanding the consequences of intentionally inclusive spaces, with a specific focus on the Polar Horizons Programme
- Discussing how environments can be made to be more inclusive

Sample

The sample for this qualitative research study was taken from a total population of 110 Polar Horizons 2021 attendees. In order to attend the conference, the attendees had to identify with any one or combination of the following: LGBTQ+, disabled, BAME and complete an application form.

Prior to finding out the ratio of alumni to new students for those prospective participants, we were hoping to conduct an even split of 5 focus groups with attendees of Polar Horizons 2021, 5 focus groups with alumni from Polar Horizon 2020, as well as a conversation with the event organisers. This would have allowed an in depth assessment of the phenomena of inclusivity at the different hierarchical levels of involvement with the conference (first-time attendee, alumni and organiser) and allow an in depth comparison of perceptions, understandings and experiences.

However, due to scheduling limitations and no-shows, a total of 6 focus groups were achieved, involving a total of 33 participants. Five groups were made up of attendees from 2021, 1 focus group included 1 attendee from 2020.

ETHICS

The key ethical considerations prior to this research concerned the sensitive nature of the interview topics as there was a high likelihood that the focus groups would not be homogenous in terms of people's characteristics due to the random nature of allocating participants into focus groups. Meaning, focus groups would comprise people of different ethnicities, some may be LGBTQ+, some may not and there may be folks with a variety of disabilities.

The research was designed carefully to ensure the safety and wellbeing of participants. Potential negative consequences were mitigated by emphasizing that participants did not have to disclose anything that they did not want to. Additionally, participants were reminded that their consent is voluntary and they could withdraw from the focus group at any moment. To further prevent the likelihood of participants encountering harm or distress, we outlined focus group ground rules at the start of each session, making it clear what behaviour would be expected.

In terms of protecting the researchers from any harm or distress, the researchers ensured there were debrief sessions following the interviews, and during the write-up process.

Focus Group Design

The researchers conducted 6 focus groups in total. Each focus group was structured to contain a maximum of 10 participants and scheduled to last for a maximum of 1 hour 15 minutes.

Ground Rules

During the introduction of each focus group, the researchers spoke through a series of ground rules for participation. The rules involved asking participants to respect the views of other participants, acknowledge that people may express an opinion that they do not agree with and that this should be handled respectfully – if necessary we assured participants that if we deemed a discussion to be harmful, or if someone disclosed a discussion as inflicting harm, we would finish that discussion point and ask participants how they would like to proceed. Finally, we explained to participants that we would be utilising the 'raise hand' feature on Zoom as this would help prevent participants speaking over one another, or dominant members to continue speaking. Once a question was introduced, participants were invited to raise their hand if they wanted to respond or offer a contribution, and to raise their hand if they wanted to respond to someone else. Zoom allows meeting hosts to view the order in which participants raise their hand.

This feature was helpful as it allowed us to be fair and democratic when calling on people to speak. We opted to use this feature instead of allowing participants to freely speak as it allowed us as moderators to be able to facilitate the conversation and ensure that quieter participants were not spoken over, which can happen more easily in a digital space without us noticing.

We randomly assigned numbers 1-9 to focus group participants as they joined the online 'room'. The purpose of this was to allow all students to introduce themselves neutrally, without introducing a power dynamic of having confident members raise their hands first.

Reliability

Qualitative research has the power to produce generalisable findings in the same way that quantitative data can via the application of various statistical tests. The key difference is that qualitative research is focused on the nature and diversity of a phenomenon and is less concerned with producing reliable data on the frequency of such phenomena.

Due to philosophical differences that underpin these two research approaches, discussions of reliability and validity (which are crucial for quantitative analysis) are not so easily applied with the same level of rigour to qualitative findings. Yet it is important that principles such as these are applied to qualitative research as they help to uphold a level of integrity for research findings.

Reliability typically refers to the extent to which research findings can be replicated. There are many factors at play when conducting qualitative research which makes this challenging. For example, interviewer-interviewee dynamics, internal focus group dynamics and the personal experiences of interviewees are some of the factors that can and do affect the data that is generated. Whilst these are not things that can be avoided, it is necessary to evaluate and critically assess the ways in which these factors may have interacted and shaped the data. In relation to this study involving speaking with folks that are either LGBTQ+, disabled and/or BAME, the researchers were somewhat outwardly matched to the participants as both researchers introduced their pronouns, which include 'they/them' for both researchers. Pollyanna is a White British researcher and Epiphani Sié is a Black British research assistant. Both researchers are in their mid to late twenties – a similar demographic to the research participants. Conscious diversity amongst the researchers can be helpful in terms of addressing the researcher/researched power dynamic. In this case, this diversity was unintentional, because of the nature of the research, but I believe it was helpful and resulted in a successful research environment.

In order to support reliability we ensured that an interview schedule was prepared in advance and was followed with each focus group. Secondly, the focus groups were designed to involve the same interviewer and moderator(s). However, because of the variety of experiences that were being shared, which is reflective of the diversity of human experience, the follow up questions asked of each focus group were not identical.

Validity

Validity is concerned with how precise the data is. Assessing the validity of qualitative research is similarly challenging and debated amongst qualitative researchers. However, when analysing the data gathered from this study, the following steps were taken to help support validity. Firstly, the data was analysed using a systematic and rigorous set of codes. A code is a way of labelling data points across multiple interviews. These codes were assessed and the data further examined for data that did not support the codes – i.e. if there were contradictory points of view. When finalising the codes, the overall impressions synthesized from the data were considered in relation to other sources and existing knowledge available on the same phenomena. Following these steps, in addition with other critical qualitative research practices, helps to ensure that the findings being presented are representative of the reality of the experience for those involved, as well as having the power to be generalisable.

Confidentiality

As part of the participant information and consent form, we included the following statement on confidentiality: “Any information derived from this research project that personally identifies you will not be voluntarily released or disclosed without your separate consent, except as specifically required by law. The researchers will take steps to anonymise the data by obscuring participant characteristics before disseminating research findings.” In addition to this, we reminded participants to respect the confidentiality of the group and asked that they not discuss the contents of the discussion outside of the group setting.

Anonymity

Participants were assured anonymity, meaning that no personally-identifiable information would be included in the research report. In practise, this has meant being careful when discussing specific participant experiences and ensuring I do not include a combination of characteristics which would lead to identification such as gender, disability status, whether or not someone is BAME and/or LGBTQ+ and their research interest(s) and institution.

Reflexivity

Reflexivity forms an important part of qualitative research practise and can help to explore the credibility of knowledge that is produced via qualitative means. More specifically the validity and reliability of qualitative data are popular and contentious issues. Even though the extraction of knowledge is markedly different, qualitative data is often held to the same scrutiny as quantitative data, where reliability and validity are paramount in being able to make generalisations about a wider population.

Reflexivity is a research practise stemming from the assumption that all research will be influenced by the researcher in some way. As such, reflexivity is the process of becoming conscious of the biases you hold based on your lived experiences and how these may intersect with and impact the research.

In this case, the reflexive process I undertook involved me bringing a conscious awareness to how my own experiences as someone who is white, LGBTQ+, with a non-physical disability and experience of higher education environments will interact with the themes of this research. I considered how I may be perceived by the research participants and the impact this may have on the data I am able to gather. As such, realising this, there were several steps that I could take as a researcher to be able to create an inclusive environment for participants. I made sure to introduce myself with my pronouns and put these on my screen name. As a result, when introducing themselves, many participants also introduced their pronouns.

Additionally I reflected on my preconceived ideas and understandings of the research topics, which proved to be useful when analysing the data as I was able to check for my own biases causing an overrepresentation of experiences similar to mine in the data. To control for this, when selecting quotes to emphasize the findings I recorded which participant, focus group and characteristics I was representing. This helped me to ensure that I was drawing from the full range of experience, and I was able to notice and question why one participant was being over-represented in the data.

During this research I decided not to disclose any of my personal experiences; being LGBTQ+ and Disabled. This was a conscious decision as I did not want to introduce an imbalance into the focus group dynamic because even though I identify as being LGBTQ+ and Disabled, there are many other intersecting factors that contribute to my experiences being very different to the experiences of others. Having the same condition as someone else does not mean my experience will be the same. Additionally, I cannot talk about my experiences of being LGBTQ+ whilst being someone who experiences

‘straight passing privilege’, or without the intersections of my gender, class and whiteness being part of the discussion. Aside from not wanting to risk alienating participants, I felt confident making this decision because the focus groups would involve people that were either LGBTQ+, Disabled or BAME and this was a fact the participants were aware of prior to participating. Because of this, I felt the environment would facilitate discussion without needing to explicitly center my own experiences. The decision about whether or not to disclose is one to be carefully considered and conducted on a case-by-case basis. In some cases, disclosing personal information with participants can be beneficial; even if not in detail. If the focus groups had been homogenous by design, and the characteristic was one I personally identify with, e.g. LGBTQ+, I would have reconsidered disclosing as it can assist building a positive relationship with research participants. I advised the assistant researcher, Epiphani, to consider similar implications and advised them to not centre their experiences but offered them the space to empathise because of the visibility of their ethnicity.

Limitations and Further Research

The following limitations should be considered when reviewing this data and the accompanying recommendations.

These focus groups were conducted with a limited budget and slim recruitment timelines. Yet the heterogeneity of the focus groups strengthened the breadth of experience this research is able to represent. However, in places, this research is lacking an in-depth exploration of specific experiences due to the heterogeneous composition of the focus groups. This is most notable in reference to the practical steps that can be taken to create an inclusive environment. I feel this may be due, again, to the nature of the focus groups as folks from different minoritised characteristics and identities have different requirements and ideas of what constitutes ‘inclusivity’ due to the subjective nature of this phenomenon. In this instance, follow-up conversations based specifically around exploring the social construction of an ‘inclusive environment’ would be beneficial to inform this in more detail. Lastly, this research represents the experiences of folks who are LGBTQ+, disabled and/or BAME at a minimum of Master’s level. Meaning these are folks who have had to navigate institutions and workplaces for several years. In other words, this research represents the stories of the so-far ‘successful’. This is an important piece of context when considering the experiences detailed in this report. For this reason, this research is not able to explore those who have faced severe barriers to participation based on their minoritised identity which resulted in them discontinuing their academic career. It is these stories that are likely to provide a much needed set of perspectives to complement this research and further the conversation and work around increasing inclusivity, diversity and representation.

This research would benefit from a more in-depth assessment of the impact of the Polar Horizons Programme. A starting point of this assessment of impact should involve research designed to ascertain whether there is any relationship between involvement in the programme and continued participation in STEM. A second area that would benefit from further research is the experience of the mentors and their perceptions of diversity and representation in STEM, and specifically within UK Polar Science.

Analysis

This section will detail the choice of analytical method that was chosen and applied to the data.

Each of the sessions were recorded digitally using Zoom and a function of this process meant the recordings were auto transcribed using Otter AI, which is integrated with Zoom. The automatically generated transcripts were reviewed by the researcher and, with the help of the audio-recording, sections of the transcripts that contained inaccuracies were clarified and formatted ready for analysis.

The transcripts were analysed using a thematic analysis approach. Thematic analysis involves combing through the transcripts in a systematic way to uncover patterns of meaning within the data. During this process, themes are identified as being key data that help to inform the research questions. Combing the data produces a top-level descriptive set of codes which aids familiarization with research data and assists the general analytical process.

The data was analysed cross-sectionally, meaning the set of labels (also called codes) were devised and applied systematically across each of the transcripts (the dataset). This process was repeated 3 times, with several days in between each round to ensure that the dataset had been thoroughly coded and labelled with initial codes and sublevel-codes. This approach was appropriate as it allowed for a comparison between participants' experiences of the same events, for example their exposure to representation in previous or current education environments.

FINDINGS

This section will discuss the findings from the focus group discussions and is organised by theme. Each subheading covers a specific set of responses related to the main theme. Where applicable, the corresponding questions asked to elicit these responses will be included.

REASONS FOR ATTENDING POLAR HORIZONS 2021

Question: “Why have you opted to attend the Polar Horizons Conference 2021?”

When designing the questions, we wanted to capture data on why people had chosen to attend Polar Horizons 2021. Intentionally positioning this question at the start of the interview allowed participants to reflect on their personal reasons for attending and their perceptions of Polar Horizons. It was hoped that this question would act as a primer question, bringing relevant personal experiences to the fore of the participants' minds. This also allowed an opportunity for participants to discuss their reasons for attending a conference which is a common feature amongst them.

Due to the inclusion criteria and application process which checked the suitability of prospective participants, the reasons for participation were contained within a fairly limited range. There were two dominant reasons for participation which were either: a strong interest in Polar Science or BAS and identifying with at least 1 of the inclusion criteria; or having a more general STEM background and being interested in this conference because it was specifically for people like them (LGBTQ+, disabled and/or BAME) and would be discussing inclusivity in STEM.

For some, polar science is a strong passion and specific area of science they want to pursue but they reported picking up on signs which made them question whether pursuing this was the right decision. Attending an event centred around inclusivity, with explicit awareness and encouragement for LGBTQ+, BAME and Disabled folks was exciting, reassuring and encouraging.

Finding the conference

The social media platforms LinkedIn and Twitter were specifically mentioned as places where attendees recall seeing the event being advertised. The Pride in Polar Research Twitter and Huw Griffiths' personal Twitter were specifically mentioned in response to this question. Additionally, some participants recalled a post from Lara Lalemi (CEO of CTC) promoting the event on her personal LinkedIn page.

EXPERIENCES OF DIVERSITY AND REPRESENTATION IN ACADEMIC, EDUCATION AND PROFESSIONAL SETTINGS

Question: Could you please tell me about your experiences of diversity and representation in education so far?

The first key question was designed to capture data around participants' experience or lack of experience of diversity and representation so far in relation to education environments or the workplace. It was frequently commented upon that, given their experiences so far, most STEM environments were often dominated by white cis-men, which was realised by both cis-men and participants of other genders and ethnicities. This shared experience was reported to have a variety of consequences across participants. Specifically, participants expressed experiencing a lack of diverse representation of folks of other ethnicities, folks who openly discuss their disability/disabilities, and folks who are openly LGBTQ+ in STEM.

The discussion evolved and picked upon some key themes in terms of different expressions of representation. It was noted that some forms of representation, by virtue of their nature, are more visible than others. For instance, it is often easier to discern diversity in terms of ethnicity, than it can be to ascertain diversity of other characteristics such as LGBTQ+ and/or a disability. It is important to note here that participants did not express they felt folks who were LGBTQ+ or disabled should disclose these parts of their identities – realising themselves the reasons one may not feel comfortable or able to do so – but they did comment upon the ability for some people to be able to – to some extent – 'mask' or hide parts of themselves. Masking refers to behaviours a person displays to conform – often to protect themselves from potential discrimination.

Participants shared they chose to hide parts of themselves and not disclose aspects of themselves – predominantly either being part of the LGBTQ+ community and/or having a 'hidden' disability – for a multitude of reasons. Most commonly this was to aid their own comfort. Parts of this report will explore what helped students feel comfortable disclosing parts of their identity that they had previously felt the need to keep hidden from others. Often mentioned was overhearing homophobic jokes in an office environment. Another common reason for not feeling able to fully be themselves in certain environments was due to respondents not seeing themselves represented amongst their peers. This results in an uncertainty as to how they will be treated.

"Throughout school and university I've just been in predominantly white male spaces and it's almost like I have to bring a different...version of myself to those spaces and it's... exhausting."

In particular, the Polar Horizons Programme has helped participants realise why visible representation matters to them and reflect upon role models, or the lack of role models in their experiences so far. Participants often mention that seeing someone like them succeed in STEM boosted their confidence and self-belief. Furthermore, having visible representation helped to create a sense of belonging amongst participants; a way of seeing themselves succeed in STEM environments if people like them are already there. This is a hugely helpful explicit signal that participants pick up on, which aids their comfort to be themselves in environments where they would previously feel they had to hide these parts of themselves.

"After this week I've had that feeling that I haven't really had in my entire life and educational history. Someone could be like 'But why does it matter? Why does it matter that you see someone else who's Black? ...But, it's like... it sounds really simple, but even until this week I haven't seen any other Black women who completed a PhD. When you do see people who look like you, it does genuinely help and you [think] 'I can do it too.'"

"I think there's still sort of a traditional image of a scientist as being like a sort of middle aged man with glasses and so seeing like... seeing and giving a platform space to scientists who don't necessarily fit that sort of regime was nice."

In certain cases, participants mentioned diversity in senior positions at a university or workplace as an encouraging sign which has a significant impact on their decision making process. This was expressed even if the participant did not see someone exactly like them, but saw folks who did not fit the typical image of a scientist as described earlier. Where visible representation of diversity was not present, the promotion of the importance of welcoming diversity was felt to be paramount. One participant shared that when making a decision between academic institutions, whilst her choices were both dominated by white academics, she felt "a lot more included" in one institution over another because of perceived signs of an environment that welcomed diversity; "I may have been in the minority, but I wasn't ostracized because of it."

If an institution was seen to not have a visibly or openly diverse workforce, or a published commitment to hiring diversely and welcoming diversity, this would be perceived as a "red flag" and would be discouraging for participants as they expressed the burden would be on them to "be the diversity".

This feeling creates apprehension for participants who don't want to feel like they are a 'tick-box' exercise. Additionally, without visible representation, this creates concern in regard to their wellbeing. Participants questioned how they would cope in an organisation (be it education or employment) if there is no one like them there already. This lack of visibility from an outsider perspective creates a strong impression that they are not welcome, or their experience will be difficult. Having to forge a path for themselves proves an extra barrier to participation – especially for early careers researchers in competitive environments where the focus on 'getting a foot in the door' is often based on academic merit alone. As expressed by the following participant:

“[Diversity] played a massive influence [on] where I wanted to apply and where I wanted to go to university. I'm never looking for someone who [looks exactly like me] because that doesn't... it doesn't exist – well, it does, but very rarely. But just **any sort of diversity is what I was looking for** in the department and the people that they were hiring, especially for a subject like geography and other STEM subjects that can compare...knowledge of the whole world, **I really wanted to see that represented within the department** and, as an ethnic minority – oh! I always had a struggle between going to these institutions that weren't well represented and being that representation, or going somewhere where I was part of some of that representation that already existed. I ended up going for the latter, because it's... **it's more comfortable, it's less daunting and it's less of a... less of a challenge trying to, you know, get your voice heard because there are other people who can understand your point of view.**”

Diversity and representation were felt to be particularly important in STEM because of the responsibility these subject areas have in relation to representing and influencing knowledge of the world. Participants expressed the importance of reflecting diversity of the world in the people working and researching within STEM for this reason.

For clarity, the remainder of this section is split into three subsections: LGBTQ+ Representation, Disability Representation and BAME Representation. This allows for an in-depth discussion of participant response in relation to the variety of representation.

LGBTQ+ REPRESENTATION

According to the 2017 ONS Sexual Orientation study, an estimated 5% of UK Society identify as part of the LGBTQ+ community. This compares to 2% of those in UK Polar Science. Being LGBTQ+ can be made more difficult due to compounded prejudices and discrimination that intersect with characteristics like a BAME identity or having a disability.

For participants that had previously seen one of the event organisers being an out gay man on social media, this factored into their comfort and eagerness to attend Polar Horizons. Participants that identify with the LGBTQ+ community, that were not exclusively gay men, felt that having LGBTQ+ representation at in the Polar Horizons Programme was significant because it assisted with participants seeing themselves pursuing a career in polar science. In the words of one participant, this visibility was a signal that said *"it's okay being a gay scientist in this area"*.

This is further elaborated on by another participant who said:

"Huw was one of the only people that I'd seen [as] being openly gay in...science... and I was like, 'oh, there's actually people like me who've managed to do the career that I want to do so I have to go to this [Polar Horizons Programme] just to feel a little bit less alone on the career path that I'm choosing."

Being able to experience the visibility of someone from the LGBTQ+ community for participants helped to create a sense of belonging and validation for early-career STEM practitioners and students who felt uncertain that Polar Science would provide a welcoming environment for them because of their sexual, romantic and/or gender identity.



DISABILITY REPRESENTATION

Brown & Powell (2018) showed that 19% of people in employment have a disability. This compares to a reported 1.8% of people in UK Polar Science. Disabilities refer to physical and/or non-physical (e.g. mental health) conditions that have an impact on a person's day to day life. Disabilities can be permanent or temporary, experienced from birth or develop later in life and the expression of a disability may vary from person to person.

Without representation, participants shared this can cause them to question their place in STEM; the discussions of disability representation proved to be no exception. Talking about their experiences of being person with a disability in STEM, one participant shared how this made her feel:

"I've not really come across anyone in my field so far that is disabled or has disclosed that they're disabled... and yeah that's been a concern for me and made me feel a bit like... 'should I be here?'"

Another participant who identifies as being disable shared: "It got to the point where I was literally googling disabled scientists to see if there's anyone I can talk to and all I was getting was pictures of Stephen Hawking, which wasn't helpful!"

Where there was discussion of representation that touched on 'hidden' disabilities, participants expressed that due to a lack of this kind of representation, it was not something that participants expected to see.

A participant with dyslexia, a hidden disability, said: "It's [Dyslexia representation] not something I've ever looked for. It's not anything I've ever expected to see because it's not something that [people] are particularly vocal about".

In general, participants that discussed representation of disability, felt DiPSI and Polar Horizons had handled discussions around disability sensitively and were well informed with an awareness of the different kinds of disabilities and the variations in language used to describe various conditions. Participants expressed pleasant surprise at the inclusion of disability and felt the steps that the institutions were taking to normalising disability amongst STEM practitioners was encouraging.

BAME REPRESENTATION

Black, Asian and Minority Ethnic people make up 16% of UK Society, yet only 3% of folks who are either Black, Asian or Minority Ethnic are in UK Polar Science.

The feeling that white men were overrepresented in STEM was expressed by LGBTQ+, Disabled and BAME participants alike. Figures from the Office for National Statistics somewhat support this – whilst 50.7% of UK society are women, they represent only 39% of UK Polar Science.

The particular intersections of ethnicity and STEM were brought up by several participants who commented positively upon DiPSI's commitment to speaking out about science's colonial history. Below, one participant discusses her experiences of being a Black person in STEM and the impact that being in a predominantly white, male space has on her.

"I feel like it's not overt – you don't always see it. It's not like they're [white men in STEM] actively racist and the issue is when you have a representation issue it kind of, you know,...it puts up barriers and [it makes it hard] sometimes to see yourself... They're all white and you're like 'okay, well, now I kind of feel a bit like an 'other''. That's kind of how I've been feeling. So, like, it's nice to see at this Polar Horizons talk, people...from different backgrounds actually talking about – not just talking about it – but actually acknowledging you know... that science does have a legacy of colonialism and racism in there as well, and...many other issues, and actually I found it quite refreshing to just hear about it being spoken about – it was a good."



CLASS REPRESENTATION

Whilst participants felt that Polar Horizons involved strong representation of BAME, LGBTQ+ and Disabled folks, and diversity within those characteristics as well as involving people from a range of positions – from junior to senior, the majority of groups commented that representation around lower-socioeconomic status was missing. Lower-socioeconomic status can be used as an indicator of social class. Class-based discrimination is a complex type of discrimination that is often hard to determine because of the subjectivity of the indicators (for example, name, accent, education history etc.). Yet a lower-socioeconomic background has been found to have significant long-term consequences on someone's life outcomes from health to life expectancy, education and employment. One participant shared his experience of such discrimination:



"You know I have had loads of people comment on my accent and it comes across very working class – I've got a proper farm one. I've been turned down for internships because of it."

Where socioeconomic status was discussed, it was often cited it had a more significant impact on their ability to participate in STEM than any of the other characteristics they may identify with – the characteristics that the Polar Horizons Programme specifically focused on. For participants where this was true to their experience, it was often cited that financial barriers were the most prohibitive. Such barriers include university application fees, cost of field trips, networking events and travel. These physical barriers to participation were categorically different to the experiences of barriers faced because they are BAME, LGBTQ+ and/or disabled. Additionally, it was commented on by many participants that because they are either disabled, LGBTQ+ and/or BAME, they were more likely to be in a lower-socioeconomic status, which was usually synonymous for coming from a family with fewer financial resources to support them whilst at University.

UNDERSTANDING INCLUSIVITY

Question: “What does inclusivity mean to you?”

This question was positioned after participants had discussed their motivations for attending Polar Horizons and shared their experiences of representation and diversity in their education journeys so far. During these discussions, there were frequent positive interactions between participants who often echoed and showed support for others' definitions which resulted in each group creating a broad definition of inclusivity based on their experiences.

Central to the construction of a definition of inclusivity were three main themes. The first of which was how inclusivity can feel like a facade without meaningful action. Secondly, participants recognised inclusivity as a feeling influenced by a combination of explicit and subtle signs and signals. Thirdly, inclusivity was defined as referring to an environment where participants are made to feel themselves as well as feeling able to challenge peers but also make mistakes and learn. This last facet of an inclusive space was especially significant for participants who had a limited lived experience or knowledge of the breadth of disability, BAME and LGBTQ+ identities. For example, white male participants frequently expressed that whilst they realise they have a place of privilege in relation to some of their peers, they can often feel apprehensive to talk about issues that they don't identify with for fear of making a mistake. Meanwhile, they would like to be able to interact and be part of conversations so they can learn.

Talking about how inclusivity often feels like a facade, participants describe in their own words how important meaningful action is:

“Inclusion, to me, is not only acquiring or attracting people from different backgrounds into a space, but supporting them through the unique challenges that they may face as a result of being part of that community once that continues into a space.”

“Inclusivity is about people feeling like they're able to just... completely be themselves...and that they're in a space where they don't have to...change how they present themselves or...hide something about yourself, because they don't feel comfortable about that.”

An example of the kind of meaningful action that participants would like to see is people who are 'safe' in these spaces working to actively break down barriers to participation for others. Whilst what constitutes meaningful action wasn't explored in depth, there was explicit discussion around realising that the responsibility shouldn't be on people from a marginalised group to have to advocate for themselves. Instead, everyone in a space should have an awareness of the experiences of disabled, LGBTQ+ and BAME folks and feel empowered to conduct themselves in a way that is welcoming and aware of this diversity. In practical terms, participants expressed a desire for people in managerial positions to proactively ask what support can be offered instead of making assumptions or avoiding such conversations altogether.

The consequences of being in an intentionally inclusive space are wide ranging. Participants spoke about feeling safe, secure and valued while also commenting upon how they felt their self-confidence improve. There is a wealth of evidence from these focus groups to support the positive consequences of designing intentionally inclusive spaces. This is exemplified by the following participant:

"In programs like Polar Horizons...they are the spaces where I have been my full self and just feel nurtured and...really fit in with my environment. It does help in terms of...like, it translates through to even my educational work because I just...if I feel, you know, I can just be myself - I don't need to worry about any of that. I can just do my work, and you know perform better in general."

"Joining Polar Horizons has given me so much more hope and inspiration and, kind of, confidence in that like...you know, I do have a place and something to offer. I feel a lot more confident talking to my host and talking to people who are, you know, so much higher up on the ladder than me and because I'm in a comfortable environment that gives me confidence."

FEEDBACK ON POLAR HORIZONS

Overall, the feedback about DiPSI and Polar Horizons was overwhelmingly supportive and positive. The steps taken by the event organisers, from carefully matching participants with a mentor, to speaking candidly about themselves and their experiences - including the mistakes they've made along the way - created what participants describe as an inclusive environment and because of this they felt comfortable and able to be themselves in an environment where, for some, that was a new experience.

The purpose of this research report has been to contextualise and reflect on the discussions the participants engaged in. Previous sections have detailed participants' experiences and the impact Polar Horizons has had on them. This section is intended to give a platform to the voices of attendees of the 2021 Polar Horizons Programme. I have selected a series of quotes that represent the diverse experiences and perspectives of programme attendees.

"I've been based in lots of different research institutes and things that haven't necessarily been great when covering disability stuff. So I was like, 'I don't know how much experience they have with it' Um... but you know, I was willing to turn up and ask the questions and it ended up being the best thing I've ever done."

"It's only really at Polar Horizons have I actually seen and engaged with people who I feel are similar to me in terms of my sexual orientation and working in similar fields."

"Here in the Polar Horizons Conference for me was the first time I've ever experienced scientist even acknowledge race as a thing or LGBT issues as a thing ...So it's honestly just been amazing to see, like, any diversity at all"

FEEDBACK ON POLAR HORIZONS

"...and there's just these moments I can pinpoint in my education, such as the Polar Horizons conference, that you get that feeling and you're like 'yeah, this is good, I like this. These people are actually making a difference.' This is how I want to feel in the workplace or in education, but you know it's not always like that."

"I'm really grateful for being able to be a part of polar horizons this year and I don't think I've ever been to an event that's been this inclusive."

"It wasn't the sort of thing that it seemed like 'oh yeah we did this three day event and we're a diverse company now' and then they're just sort of gonna abandon those ideas. It does seem like they [DiPSI] want to improve and they're going to continue supporting us. It wasn't just a survey and ticking a box."

"I think polar horizons was obviously the first time I saw other people who looked like me, and I think it was the first time in science, I felt comfortable speaking about issues that concern me"

FEEDBACK ON POLAR HORIZONS

"You see BAS and you think it's quite an impenetrable organisation and maybe not the most diverse organisation traditionally so, I think it's been an eye opener just how open they are trying to be. It's not just been a box ticking exercise, they genuinely want to learn and want to get better and want to reach out to certain minority groups, which has been really good.

It's been a learning experience for everybody, including the organizers. They've wanted to learn from us as much as we have from them and it's about equipping each other with the necessary education, the language and the action that's needed to create inclusion - proper inclusion in scientific spaces."

"It's been a bit mad in that I felt like I - I sort of am allowed to know that all these people can exist or I'm allowed to know and be more encouraged even!"

-Participants reflections

CONCLUDING REMARKS

The conversations with participants were incredibly insightful, emotive, reflective and reflected an encouraging diversity of experience due to the heterogeneous nature of the focus group design. It has been a privilege to conduct this research and reflect the lived experience of the LGBTQ+, BAME and Disabled students and early-careers STEM practitioners I spoke with. Often the focus groups ended with the participants expressing extreme gratitude for the opportunity to be heard and share their experiences.

This research has demonstrated that diversity and representation of BAME, LGBTQ+ and Disabled STEM practitioners have been lacking in education and in employment organisations – with significant and detrimental consequences. Without seeing people who are similar to them, participants reported a range of concerns which should be interpreted as serious and significant barriers to continued participation in STEM. This feels particularly prevalent within STEM, where there was a detectable undercurrent of competitiveness, which is particularly applicable to UK Polar Science as a niche within STEM. The intersection of competition in this area with a notable lack of visible and diverse representation, often resulted in students reporting they did not feel comfortable being themselves. Organisations cannot continue to move forwards and create a nurturing environment for future cohorts when there is a lack of acknowledgement of individual struggles.

These feelings were further validated when participants discussed their experiences of diversity and representation. In these instances, students felt affirmed not only in their place within an institution or organisation, but also in their choice of career.

When considering how to further widen inclusivity, future Polar Horizons Programmes would benefit from more explicit awareness and discussion around the intersections of class and socioeconomic status in relation to the minoritised characteristics of interest. Whilst realising the incredible commitment to inclusion made by DiPSI via the Polar Horizons Programme, participants commented on the reality that their socioeconomic status – often expressed by a lack of access to adequate funds – has on their ability to participate in STEM. Most notably, this referred to the exorbitant fees charged by elite universities at the point of submitting an application. Awareness around socioeconomic factors and participation in STEM would be a beneficial barrier to break down and help reduce stigma around what is perceived as an elite faction within STEM.

APPENDIX 1:

In conversation with Polar Horizons Programme Organisers

***In Conversation
with the Polar
Horizons
Programme
Organisers***

During the Polar Horizons Programme 2021, Creative Tuition Collective were fortunate enough to spend almost two hours in conversation with the programme organisers Donna, Huw and Pilvi. During this time, we talked about each of the organisers' backgrounds and delved into what drives their determination to make UK polar science more inclusive. A small but dedicated team of three, meet the organisers of the Polar Horizons 2021: Donna, Huw and Pilvi.

Donna Frater

Originally from Australia, Donna entered STEM via the Australian mining industry and soon this resulted in her traveling and working internationally. From quite early on in her career, Donna had become acutely aware of how gender inequalities manifested in this field and sought to explore this with academic credence by pursuing a gender studies MSc in London, though she soon came to realise that decades of lived experience in the field had taught her most of what she needed to know. Realising her position as a woman with decades of industry experience under her belt, Donna felt more able to mobilise discussions and action around gender diversity in the industry. Working and living in the UK gave Donna an understanding of the nuance of the UK class divide and furthered her understanding of the systemic barriers faced by many entering STEM in the UK. Fuelled by her own fortune of working around the world – even making it to Antarctica – Donna expressed a persistent and continuing passion to help everyone into science and help them have the lived experiences she has been privileged to have.

In conversation with Polar Horizons Programme Organisers

***In Conversation
with the Polar
Horizons
Programme
Organisers***

Pilvi Muschitiello

With a background in social and political science and experience working and living across the globe, Pilvi is the logistics and operational driving force behind the Polar Horizons Programme. Reflecting on her own personal growth in the last 18 months organising the Polar Horizons programme, Pilvi feels much more confident acting in line with her values when it comes to creating an inclusive environment for all. She realises it's better to stand up and get something slightly wrong than to say nothing at all.

Huw Griffiths

Last but not least, the third member of the organising committee is Huw. Growing up in West Wales, he describes his upbringing as "very privileged" and going to university was just part of what all the other middle class white kids he grew up with did – so he did it too. After graduating, Huw became acutely aware of the inequalities in STEM when he got a job at BAS and moved to Cambridge. Contrasting this experience with the gritty reality of being a student in Liverpool, he said "almost everyone was struggling – not just students." In Cambridge, Huw recounts being aware that there were virtually no people of colour and income inequality was much more stark. Excited about starting a career in polar science and working at BAS, Huw believed in change from the inside.

POLAR HORIZONS

The Beginning

Polar Horizons was an idea born out of Huw's experience shadowing an MP who encouraged Huw to flesh out a plan for some early-career STEM practitioners to shadow polar scientists and engineers. Following conversations internally and externally, Huw, Pilvi and Donna created the Polar Horizons Programme 2020.

Donna was hired with funding from the Foreign, Commonwealth and Development Office and her role evolved to include the Polar Horizons Programme. Specifically, Donna was interested in widening the net of inclusivity and conducted conversations around 'influencing up' – targeting those already in the system, those most likely to be on board to ensure the programme could have the best chance of success.

Polar Horizons was always going to happen as a positive action networking activity. The lingering uncertainty was concerned with what it would look like. Huw, Pilvi and Donna weren't sure how many applications they would get back, however, research and social media promotion helped them reach their designed communities.

The result was the first Polar Horizons Programme in 2020 which successfully matched 22 students and early careers researchers with mentors from the polar community. The student-scientist matching was crucial and formed a key element for establishing the credibility of the programme amongst the polar community. Ensuring the scientists were considered when organising the event and were aware of the benefits of volunteering their time was fundamental to the success of the programme. Acting as a host (as well as organiser) for both programmes, Huw realised the importance of explaining the programme to the host researchers as it was a way of networking and mobilising allies within the wider polar science community.

Reflections on Inclusivity

For Donna, to be in a workplace where people knew she is gay and married to a woman, and this is just one part of who she is, took her on a journey of self-reflection. Whilst there were still some uncomfortable moments – like when a colleague would make a remark about the LGBTQ+ community, Donna recounted how she felt able to interrupt the conversation and advocate for the community. The awareness of what an inclusive space is and what an uncomfortable space is helped Donna in her role within DiPSI and helped her think about the practical steps required to make the programme inclusive, safe and welcoming to all.

Speaking about creating an inclusive environment, Pilvi recounted one of the most important things they did early on was describe what they meant by an inclusive space and made sure they set the standard for the hosts and the polar community about what they mean when they're talking about inclusivity. This included introducing basic terminology and including an explicit message that they understand these conversations and realisations can be difficult and uncomfortable for many and there is no shame in getting it wrong – a willingness to learn is the most important thing. For Pilvi, the aim was to get people comfortable and get everyone involved in conversation in a respectful way.

As part of community-wide work, Huw and Pilvi designed an internal EDI 1-0-1 talk to assist scientist hosts with students. For example, if a host is paired with a transgender student, there was a guide in place to make sure that the hosts are comfortable and informed about what is appropriate and expected of them and what is not. This piece of work, stemming from a glossary of terms, would go on to be crucial in raising the profile of Polar Horizons Programme and the need for wider diversity and inclusivity in polar research.

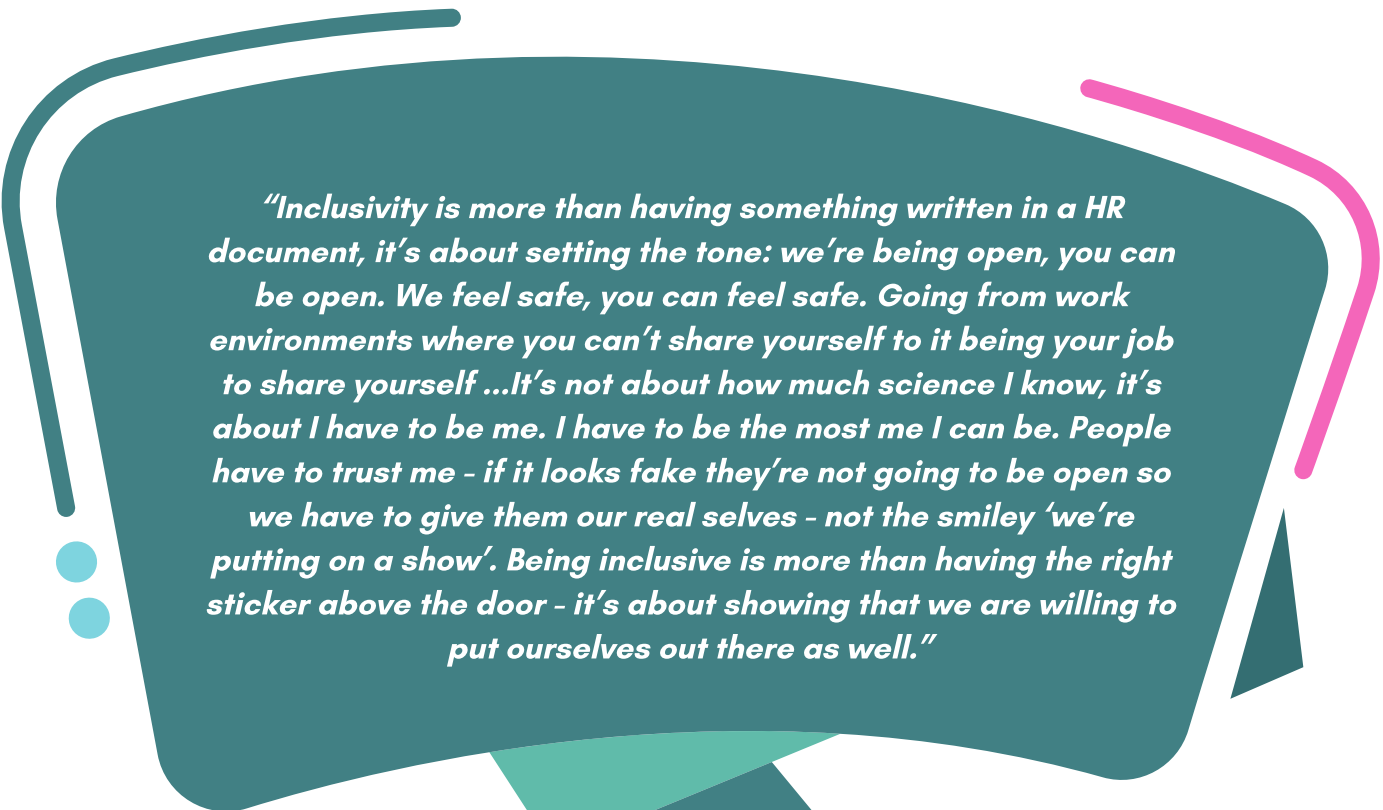
Whilst doing this work in DiPSI, the three organisers soon realised that actually, most people that want to be nice about something won't say something because of a fear of making that thing awkward by drawing attention to it. This realisation was crucial in terms of demonstrating how the organisers needed to build a safe educational environment for everyone. Pilvi, Huw and Donna realised that they had to say something to put everyone on the same page and explain "this is the environment that you're walking into. This is how we expect you all to treat each other." These realisations, and continuing to deliver and iterate the EDI talk, helped the confidence of Donna, Huw and Pilvi. All three admitted prior to the last 18 months, they never would have been confident enough to talk about what terminology should be used when and for whom, because they admit not knowing enough about the wide range of issues. The Polar Horizons Programme work changed this.

Donna recounts conversations around the acronym 'BAME' where she was faced with people saying individuals don't like being referred to as BAME. These comments started a conversation where she was able to respond without becoming defensive. In response to this complaint, Donna welcomed space to discuss the use of the acronym with her further, and explained why the acronym was chosen. BAME is used with an awareness that while it doesn't suit everybody, and not everybody is happy with it, for now it gets conversations started and there is the flexibility to update our language as we continue to evolve, not assuming the students and mentors had any familiarity with the language they used, giving a space for people to be uncomfortable with that and being open to feedback and evolving were key principles throughout this process.

Lessons from the programme

All organisers agree that involving personal experiences was incredibly helpful when getting stakeholder buy-in and obtaining support from the wider community. Whether disclosing things about themselves, or discussing how their understandings have changed over time, this helped create a welcoming environment for students and researchers to be open about their own experiences. Reflecting on this, Donna commented on the stark contrast between her experiences of growing up in the 60s, compared with students now: "There's a lot to learn from the younger generations - we didn't talk about these things. Suddenly, students were introducing themselves with their name, sexual and gender identity, ethnicity, and disability all in the same sentence as their name and research interest. We didn't have that in my day."

The top-down acknowledgement and proactive approach of DiPSI to improve diversity and inclusivity within the polar community meant Huw, Pilvi and Donna felt supported with this work. During the EDI 1-0-1 sessions, Huw and Pilvi use the punchline - "Diversity is a fact and inclusion is an act". This reinforces the values each of the organisers aim to live by. Within the polar community, there is a thread of wanting to do the right thing, which is incredibly supportive for the programme organisers. Huw summed this up by saying,



"Inclusivity is more than having something written in a HR document, it's about setting the tone: we're being open, you can be open. We feel safe, you can feel safe. Going from work environments where you can't share yourself to it being your job to share yourself ...It's not about how much science I know, it's about I have to be me. I have to be the most me I can be. People have to trust me - if it looks fake they're not going to be open so we have to give them our real selves - not the smiley 'we're putting on a show'. Being inclusive is more than having the right sticker above the door - it's about showing that we are willing to put ourselves out there as well."

How to Have Success When Organising an Inclusive Event

The organisers cited many different elements of their experiences that helped them achieve success for themselves, Polar Horizons attendees, hosts and DiPSI when organising the Polar Horizons Programme. Below are the key tips and pieces of advice offered by the programme organisers if you or people in your organisation want to create an inclusive event:

- **Engage people most likely to support you.** Start by reaching out to the groups in your organisation that are most affected by your event to get feedback and scope for any additional support e.g. LGBTQ+ staff networks, BAME staff networks etc. These groups may even have some budget for your event too!
- **Consult with a variety of people** – Ensure you are obtaining a wide range of feedback to account for the many intersections of lived experience. This will help to widen the net of inclusivity and by virtue of this you'll design an event inclusive of more people than you consciously intended.
- **Start off small** – To ensure long-term success, start small. This can be as simple as targeting certain behaviours, raising awareness or educating folks on language. If you want to have success, thinking about how to embed the changes you want to see in everyone's day to day is a good, low-budget, minimally resource intensive starting point.
- **Get feedback and act on it.** Whatever you do, make sure you factor in collecting and actioning feedback from folks you engage with. If you are responsive to the needs of people around you, this will help you have an impact and support your future projects.
- **Acknowledge difficulties and discomfort people may have when discussing certain topics.** Realising the diversity of human experience, that people have different levels of familiarity with various factors like ethnicity, disability and LGBTQ+ and taking steps to overtly acknowledge a shared discomfort can help dispel the silencing power of discomfort.

-
- **Don't assume anything!** One of the most valuable lessons the organisers of Polar Horizons shared was the power of sharing their own experiences. This ranged from explaining why they have chosen to use a certain term to describe an experience, giving space for conversations around discomfort if that arises due to the certain terminology, and acknowledging that language, like human experience, is fluid. Ensuring people are on the same page was instrumental in creating a safe and inclusive environment. Having people be demonstrably committed to learning and saying the right thing, helped reduce the stigma and shame of getting it wrong.



APPENDIX 2

Example Statement of Ethics, Information Sheet & Consent Form for Participants

The following is an example of information shared with the participants prior to the event:

INTRODUCTION

Creative Tuition is an inclusive organisation striving to tackle educational inequality in STEM by conducting research, providing mentoring services and events to improve educational support and facilities. Our ambition is to break down barriers faced by young people from under-represented groups and make STEM more accessible to those that face challenges when attempting to enter scientific spaces.

We are conducting this research because it is important to understand and document examples of inclusive spaces in STEM, such as the Polar Horizons Programme. Through this research we hope to analyse the impact and benefits of the conference and aim to share our findings to improve access to STEM spaces. We hope to gain information about the factors that influence under-represented groups' lack of mobility into STEM.

As part of ongoing work to decolonise spaces and create more inclusive scientific environments, we wish to investigate the merit of science spaces being made more diverse, inclusive and accessible to a wider audience. We will ask attendees of the Polar Horizons Programme 2021 - IMPROVING THE DIVERSITY OF UK POLAR SCIENCE - to discuss what impact the conference has had on them and how increasing science access to underrepresented groups can have an impact on their experiences and outlook.

WHO IS THIS FOCUS GROUP FOR?

This research is funded by the Natural Environment Research Council via BAS in partnership with UK Research and Innovation (UKRI). The Polar Horizons Initiative builds new connections and collaborations between the UK Polar Science community and those from currently commonly underrepresented groups, particularly BAME, LGBTQ+ and Disabled.

WHAT WILL THIS FOCUS GROUP CONTRIBUTE TO?

These focus groups aim to provide evidence to inform decision making with regard to the creation and maintenance of inclusive spaces in STEM as well as highlighting the impact this has on students (prospective and current) and early career STEM practitioners.

A further focus group with event organisers hopes to discuss the organisational aspects of creating such environments.

WHO WILL PARTICIPATE IN THE FOCUS GROUP?

DiPSI made contact with the current and previous Polar Horizons cohort to engage them with this research. These individuals indicated whether they would like to take part in a focus group and stated their availability. From this, DiPSI secured around 70 research participants which have been scheduled into groups and allocated time slots in line with their availability. The focus groups will be taking place online across two days (5th March and 12th March, 2021).

The participants of the Focus Groups will be composed of early career STEM practitioners and students who form the Polar Horizons 2021 cohort, members of the Polar Horizons 2020 alumni and the organisers of the conference.

The groups have been defined in this way so that we can assess the phenomena of inclusion at the different hierarchical and experiential levels of people who interact with the Polar Horizons Programme.

ETHICS

HOW WILL WE ENSURE AN ETHICAL APPROACH TO OUR FOCUS GROUP?

Research ethics exist to bridge the benefit of obtaining knowledge about the world with the rights and welfare of people. Because this research involves engaging with people it is important that there is a thorough consideration of the implication of this and that the researchers act in accordance with commonly practised research ethics. This research will be informed by ethical principles outlined by the British Sociological Association (BSA), which is a body that sets out guidance for professional sociologists. It is not the only guidance available, but is familiar to the researchers involved and thus is the framework that will be used to inform this research.

In accordance with BSA guidelines, research should be carried out as far as possible with the freely given informed consent of research participants. We will obtain informed consent from participants before proceeding with focus groups by sending a consent form via email which is to be completed and sent to Creative Tuition before the focus groups commence. The researchers accept the responsibility to ensure that those present for the focus group have submitted a signed consent form. To be able to facilitate informed consent, we will ensure the respondent's are aware of the following via the aforementioned consent form:

- The aim of the research
- Potential uses of the research
- What is required of them
- Potential benefits / risks
- Right to decline / withdraw
- Incentives
- Confidentiality
- Opportunity to ask questions (by being provided with a research contact for a set duration)

The consent form and participant information is attached to this statement (Appendix 2A).

HOW DO WE PROTECT THE VULNERABILITY OF THOSE TAKING PART IN THIS SURVEY?

We acknowledge that discussing one's personal experiences and thoughts in a group setting can be a challenging experience. To mitigate the potential occurrence of discomfort, the focus groups have been designed to include a statement on ground rules before starting and the facilitators will play active roles in diffusing any serious conflict. Furthermore, the researchers will clarify the aims and purpose of the research at the beginning of each focus group and participants will be given an opportunity to ask questions and will be reminded of their right to withdraw.

These focus groups are being carried out with a knowledgeable social science researcher who will strive to protect any vulnerability and foster a positive focus group experience. The researcher will also exercise the right to halt the focus groups if they feel participants are experiencing undue harm. Participants will be able to contact the researcher if they have any questions that have arisen due to participating in the research. Additionally, to ensure participant wellbeing, participants have been made aware of the length of time of the focus group and the researchers will be strict in their time keeping to ensure the participant's time is respected.

THE DATA, OUTCOMES AND USES OF THIS RESEARCH

Data that is generated will be anonymised and during the process of creating the research report, if there is an instance where the researcher feels the use of raw data in combination with additional attributes may render a participant personally identifiable, the researcher takes responsibility to inform the participant and renegotiate consent before proceeding.

A decision has been made in relation to this research to not share full transcripts with research participants as these transcripts will contain data from other participants and whilst participants give consent to participate in focus groups, as a researcher, I will not be negotiating consent for sharing the collaboratively produced raw data. If there is a request made to Creative Tuition Collective about the use of this Focus Group Data that is outside of the stated uses of research that have been consented to, Creative Tuition Collective must obtain further consent from participants before any data is shared.

In the case of research involving focus group participants that possess a combination of attributes that result in them likely being identifiable, the researcher will actively remind these participants that it may be difficult to disguise their identity without distorting the data (BSA, 2017). The researcher will act on a case by case basis and if this is present, will contact the particular participant to obtain specific consent pertaining to the use of their data.

The data gathered through this research will be held securely by the Creative Tuition Collective team for up to 1 year after the completion of the project. All data will be anonymised and will go through a process to erase identifiability where possible. The raw data will not be shared outside of the Creative Tuition team, this raw data will be restricted, meaning it will only be accessed by those that are specifically involved in the synthesis of raw data. We plan to use the data to produce a research report which will be presented to our collaborators in DiPSI and UKRI. Conclusions from this report will inform development stages of future events and allow for Creative Tuition Collective to be involved in community engagement. Participants will be informed of the research findings via Polar Horizons and DiPSI networks.

WHAT DOES THIS FOCUS GROUP INVOLVE?

This research will involve between 7 and 9 homogeneous focus groups designed to reflect the three groups of interest. Each focus group is to contain a maximum of 10 participants. If there are fewer than 4 participants (due to drop-outs), that focus group session will be cancelled after 10 minutes waiting time. Each focus group is scheduled to last for a maximum of 1 hour 15 minutes. Researchers have a duty to respect participants' time and honour their wellbeing by not running over this allotted time. Between 5 and 6 groups will be made up of early career STEM practitioners and students, 1-2 groups will involve members of the Polar Horizons alumni and 1 group will include those involved with organising the conference.

The question set for the focus group participants depends on their characteristics. For example, all early-career STEM practitioners and students will be asked the same

questions, but these questions will be different to those we ask of the organisers. Each question set involves 3 questions. The focus groups are designed to involve the same interviewer and moderator(s) and, for the sake of ensuring reliability in our data, will be run with as much similarity as possible. The order of the focus group will be as follows: a welcome statement providing an overview of the topic, the focus group ground rules, assurance of confidentiality and the chance for the participants to introduce themselves and for researchers to check the clarity of the recording. The questions will start with a discussion of general experiences before delving into the key question area of focus and finally wrapping up the discussion.

APPENDIX 2A: INFORMED CONSENT DOCUMENT

Exploring the Impact and benefits of Inclusive Spaces in Science - Focus Group

CONSENTING TO RESEARCH

We are asking you to be involved in a research study funded by NERC the Natural Environment Research Council via BAS and in partnership with UK Research and Innovation (UKRI). The purpose of this consent form is to give you the information you will need to help you decide whether or not to be in the study. Please read the form carefully. You may ask questions about the purpose of the research, what we would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. You can do this by emailing in advance or by asking questions during the allotted time at the start of the focus group. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called 'informed consent.'

PURPOSE

This research is part of ongoing work to decolonise spaces and create more inclusive scientific environments. We wish to investigate the merit of making science spaces more diverse, inclusive and accessible to a wider audience. By being part of this research you will help us uncover much needed insight on the lack of mobility by young people and under-represented groups into STEM related university study and vocational jobs.

PROCEDURES

As a participant you will be involved in one focus group that will last for a maximum of 75 minutes. The focus group will involve a maximum of 10 participants and 3 facilitators. The focus group will be video recorded. You are welcome to turn your video off if you do not wish to be video-recorded. The recording will help the interviewers attribute comments to the correct respondents.

Your researchers are: Pollyanna Sheehan (she / they), Epiphani Sié (they / them) and Lara Lalemi (she / her).

POTENTIAL FOR RISK

We acknowledge that discussing one's personal experiences and thoughts in a group setting can be a challenging experience. To mitigate the potential occurrence of discomfort, there will be a discussion of ground rules before starting and the facilitators will play active roles in diffusing any serious conflict.

WITHDRAWING FROM RESEARCH

As a research participant, you have the right to withdraw from this focus group at any time during or **up to one week** after the focus group has taken place. If it has been more than one week, researchers will consider erasing your contribution under exceptional circumstances. The timeframe of one week is given as, after this time, the researchers will be analysing the data.

You may withdraw during the focus group by simply leaving the online discussion, or by informing a researcher by directly messaging them. You may withdraw from the research after the focus group has taken place by emailing Epiphani Sié (they/ them) - epiphanisie@creativetuitioncollective.com.

OTHER INFORMATION

The data gathered through this research will be held securely by the Creative Tuition Collective team for up to 1 year after the completion of the project. All data will be anonymised and will go through a process to erase identifiability where possible. The raw data will not be shared outside of the Creative Tuition Collective team and the raw data will be restricted, meaning it will only be accessed by those that are specifically involved in the synthesis of raw data. We plan to use the data to produce a research report which will be presented to our collaborators in DiPSI and UKRI. Conclusions from this report will inform development stages of future events and community engagement.

PARTICIPATION

Participation in this research is entirely voluntary and there is no incentive offered for participation. You may refuse to participate or withdraw from participation at any time without jeopardizing your employment, student status or any other entitlements. The researchers may also withdraw you at their professional discretion.

CONFIDENTIALITY

Any information derived from this research project that personally identifies you will not be voluntarily released or disclosed without your separate consent, except as specifically required by law. The researchers will take steps to anonymise the data by obscuring participant characteristics before disseminating research findings.

CONTACT INFORMATION

If at any time you have questions regarding the research or your participation, you should contact the research assistant, Epiphani Sié (they/ them), who will answer any questions. Their email address is epiphanisie@creativetuitioncollective.com.

PARTICIPANT'S STATEMENT

I have read the above purpose of the study, and understand my role in participating in the research. I volunteer to take part in this research. I have had a chance to ask questions. If I have questions later, about the research, I can ask the researcher listed above. I understand that I may refuse to participate or withdraw from participation at any time without jeopardizing my relationship with DiPSI or Polar Horizons Programme or other rights to which I am entitled. The researcher may withdraw me at their professional discretion. If I have questions about my rights as a research participant, I can contact Epiphani Sié (above). I certify that I am 18 years of age or older and freely give my consent to participate in this study. I will receive a copy of this document for my records.

Signature: _____ Date: _____

Print Name: _____

RESEARCHER'S STATEMENT

I have discussed the proposed research with this participant, and in my opinion, the participant understands the benefits, risks and alternatives (including non-participation) and is capable of freely consenting to participate in the research.

Signature: _____ Date: _____

Member of the Research Team

Print Name: _____



Creative Tuition Collective exists to aid and improve social mobility for those from low socioeconomic and underrepresented backgrounds.

We are a community led social enterprise specialising in STE(Arts)MM.

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