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The *Equator* Research School participants

Widening participation: Lessons from the *Equator* Research School

Access to geoscience research is not equitable. Munira Raji, Rebecca Williams and Natasha Dowey discuss the *Equator* Research School, which set out to increase access and participation in doctoral study and beyond for ethnic minority students in the geosciences

THE RACIAL and ethnic diversity crisis in geoscience in the Global North is now well-documented in both the UK and USA (for example, Bernard and Cooperdock, 2018; Dutt, 2020; Dowey

et al., 2021). This is an issue throughout the pipeline of academic progress and careers (Leading Routes, 2019): low numbers of students from diverse backgrounds join undergraduate geoscience degrees and, typically, even lower numbers of these students are retained in postgraduate research, leading to dire representation at faculty and leadership levels in academia and research in industry.

The disparity in representation in our subject is a result of structural, cultural, and organisational biases. These inequities range from academia-wide issues, such as an awarding gap between white and ethnic minority students, to geoscience-specific issues, including legacies of colonialism and resource exploitation, fieldwork accessibility, discriminatory stereotypes, a lack of visible role models, and poor perceptions of careers.

Geoscientists cannot ignore these problems – they must be addressed. Our subject is crucial in addressing global challenges, and we must work with people from all walks of life to overcome these issues. Geoscience knowledge is



EQUATOR RESOURCES

The *Equator* project: <https://equatorresearchgroup.wordpress.com/>
 Read the full report here: Dowe, N.J. et al. (2022) The Equator Project
 – Full Report. EarthArXiv Preprint; doi.org/10.31223/X5793T

critical for an equitable and sustainable future; but how can we achieve this if we do not have equity within our discipline?

The *Equator* project

In December 2021, the *Equator* project was awarded six months' worth of funding by NERC to tackle specific issues around widening access and dismantling barriers to postgraduate research and research careers. The project aimed to develop: (1) a working group of doctoral training organisations to remove discriminatory recruitment practices that act as barriers to underserved groups; (2) a mentoring network to improve sense of belonging and retention; and (3) a Research School to increase access to and participation in doctoral study and research careers (Dowe et al., 2022). Here we discuss the Research School: how it went, whether it worked, and, importantly, how it can be replicated by others, both in academia and industry, to further the impact of the intervention.

Equator was novel; it brought together academics from multiple universities across England and, crucially, united Geography, Earth and Environmental Sciences (GEES) in tackling issues that affect our entire discipline. *Equator* was developed by a diverse steering group community of academics, students, professional bodies, grassroots networks, the public sector, and those with experience in widening participation.

The Research School

We worked in our community to co-create a plan for the Research School using a Theory of Change method, which explains how a set of interventions will lead to developmental change. First, we identified our end goal: to increase participation and retention of ethnic minority students in geoscience postgraduate research. Then, we identified changes that would contribute to that goal, such as an increased sense of belonging, confidence,

and awareness of research careers. We then developed interventions to achieve those changes, for example, increasing confidence in moving into geoscience research through targeted applications training, or increasing awareness of postgraduate careers by showcasing the PhD journey of mentors with shared lived experiences. In just six months, *Equator* could not hope to tackle the many structural inequities that contribute to low representation in geoscience, but, through the Research School, we sought to create an intervention that impacted student experience factors, such as the sense of isolation felt due to structural inequities.

We spent considerable time planning the details of the Research School to ensure it was as inclusive as possible. The school was ring-fenced for British citizens from ethnic minority backgrounds, who were over 18 years old and currently studying or graduates of GEES subjects. Thirty eligible applicants were chosen at random to participate in the school using a lottery system. The demographics of the participants were highly diverse (for full details, see Dowe et al., 2022). Participants were paid for their time and expenses so as not to exclude any who were missing paid work or had caring responsibilities. The school was residential in a city centre location central within the UK (Sheffield) and held over five days in April 2022. The timing of the funding meant that the school unavoidably fell during Ramadan, so accommodations were planned in advance, with breaks at prayer times, no food during networking sessions, and proximity to prayer spaces. We developed a code of conduct to ensure the safety of all participants and gave much thought to the invited speakers to ensure that appropriate role models and trainers were involved in the event.

The Research School was designed to take two streams: one for undergraduates and postgraduate Master's students, and one for PhD students and postdoctoral

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researchers. The programme began with two days of sessions with all participants, including networking time, training in science communication, an introduction to academic publishing and pre-printing, and a workshop on public profiles and visibility. The streams were then split for two days of targeted training on funding, grants and fellowship writing (PhD/postdoctoral researcher stream) and an introduction to PhDs, applications training, CV and interview sessions, presentation skills, and PhD careers sessions (undergraduate/Master's stream). Opportunities for daily interactions between all participants, speakers, mentors, and the *Equator* project team were provided throughout. The participants were exposed to and heard talks from diverse role models at various stages of their research careers. On the final day, all participants presented on a research topic of their choice at a conference-style session to bring the school to a close.

Research School results

We took an action-research-based approach, whereby we consulted with participants in formal, anonymous online surveys before and after the Research School to evaluate participants' experiences and reflections. We also provided informal methods for feedback during the school →

Build a Community and Co-Create

Take the time to build a diverse steering committee. Reach out to grassroots initiatives. Collaboratively decide on your goals, and co-create interventions to make change happen.



Accessible and Detailed Planning

Check if the location (online or in person) is accessible, in terms of physical access and for neurodivergent participants. Check if the timing is accessible for those with caring responsibilities.



Involve the Right People

If your interventions require mentors, training leaders, or specialist speakers, carefully consider who is best placed to provide support to marginalised communities.



Ring-Fence to the Target Audience

Ensure that your planned intervention impacts the right audience by clearly ring-fencing the opportunity for those groups. Make your criteria for recruitment clear, and offer a way for applicants to ask questions about eligibility.



Make it Discipline-Specific

Discipline-specific efforts may be more appropriate. Connecting across related subjects can be effective at building relevant networks to improve representation and tackling barriers specific to a discipline.



Pay for Time as well as Expenses

Pay for participants' time as well as their expenses. Many field, lab and training opportunities that provide vital exposure to, and experience of, GEES research involve explicit or hidden costs.



Create a Safe Space

By carefully defining codes of conduct, expectations and guidelines up front, participants are given a clear framework within which to engage.



Give the Full Picture

By sharing the full spectrum of possibilities in research, it is possible to build greater awareness, improve perceptions, and show futures away from the traditional structures of academia where some students may feel less comfortable.



Be Open to Feedback and Change

Create spaces for both formal anonymous feedback, and informal and continuous idea-sharing. Crucial to the process of gathering feedback, however, is the responsibility to then do something with it.



Take Time, and Take The Long View

Improving participation cannot happen with rushed efforts that are not joined up or well thought through. Where possible, account for longitudinal study to follow impacts in the long-term.



Figure 1 – Building successful interventions to improve access and inclusion in postgraduate research

Illustrations by Canva and Storyset

itself. Additionally, the *Equator* project team attended the Research School all week, leading and/or participating in sessions, and made informal observations of how the school was going based on participant engagement, speaker feedback, and the overall atmosphere of the event. We used early participant feedback to help us frame some sessions and used the survey results to conduct the final formal evaluation of the school's success against the changes we set out to achieve in our original theory of change.

The surveys showed that the Research School met all its immediate objectives (see online article for results graphics). Participants overwhelmingly agreed that the school had given them an improved awareness of geoscience research careers, broader networks, an increased sense of belonging, a more favourable opinion of research careers, and more confidence about the possibility of moving forward with a career in geoscience research. These data were supported by informal observations by the team; we saw the growing confidence and engagement of participants throughout the week, we watched personal connections being made, and saw after-school walks and dinners planned independently by the participants. The atmosphere throughout the week was positive, and made the whole team and participants alike start to ask: When can we do this again? Why can't this happen more?

Impact and replication

The *Equator* project had a significant impact that will hopefully be lasting for those who attended. However, due to limited funding, the school could only impact 30 students and, due to the time-

limited nature of the project, we cannot follow the future progress of the students in a formal study.


To help others working in this area, we have put forward a set of recommendations for building effective interventions to improve access and participation in geoscience subjects (Fig. 1). We recommend doing this amidst a backdrop of broader work to remove structural inequities, including the removal of bias from application and awards procedures, as well as tackling awarding gaps. We must also work to decolonise our subjects, by facing up to the centuries of colonial attitudes and origins that underpin the creation of much geoscientific knowledge.

Targeted efforts

Equator showed that ring-fenced, discipline-specific, fully funded interventions work. We should not shy away from this – we must target our efforts where needed most, and ensure those efforts are relevant and accessible. The project also demonstrated the importance of working with a diverse group of people, across multiple contexts and from multiple backgrounds, to create interventions. We must ensure that the voices of historically excluded communities are involved in co-creating and reflecting on the best ways to widen participation. It is important to take a long-term view; *Equator* had already built a community prior to being funded, but six-month projects do not provide enough time to build trust, develop a strong community, and design and implement actions. Longer projects are needed to build effective interventions and to observe and measure the impact of those interventions over time.

The time given to ensuring the Research School was as inclusive as possible was invaluable in achieving its outcomes. Detailed planning was crucial to create a safe space for participants. Equally, the time spent considering who were the right people to involve, and ensuring all speakers were compensated fairly for their involvement, was vital in creating the right atmosphere for the school, and for providing a full and transparent picture

to the participants. After all, research is not about writing a thesis in a vacuum. It is about communication, confidence, presenting – a whole spectrum of skills and experiences – and can lead to a variety of careers, far beyond academia.

Equator was a one-off event with limited funding, and we don't know if it will be repeated or in what form. We want to see more funding for projects and events that widen participation in geoscience. Diversifying our discipline should fall on all of our shoulders – it is a matter of social justice. To ensure the equitable, sustainable future that geoscience is essential for creating, we need equity and representation within our discipline. Everyone should consider how they can fund or support initiatives like *Equator* within their own contexts. 



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FURTHER READING

A full list of further reading is available at geoscientist.online.

- Bernard, R.E. & Cooperdock, E.H.G. (2018) *Nat. Geosci.* 11, 292–295.
- Dowe, N.J. et al. (2021) *Nat. Geosci.* 14, 256–259.
- Dutt, K. (2020) *Nat. Geosci.* 13, 2–3.
- Leading Routes (2019) *The Broken Pipeline Report*; <https://leadingroutes.org>