



Science and Technology Committee

Oral evidence: Diversity and inclusion in STEM, HC 903

Wednesday 27 April 2022

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Members present: Greg Clark (Chair); Dehenna Davison; Rebecca Long Bailey; Carol Monaghan; Graham Stringer.

Questions 197-251

Witnesses

I: Dr Gayle Brewer, Senior Lecturer in Psychology, University of Liverpool and representative, National Association of Disabled Staff Networks, Dr Jasleen Jolly, Associate Professor in Vision and Eye Research, Anglia Ruskin University and representative, National Association of Disabled Staff Networks, and Katherine Sparkes MBE, CEO, Lightyear Foundation.

II: Katharine Birbalsingh CBE, Headmistress, Michaela Community School and Chair, Social Mobility Commission.

III: Dr Izzy Jayasinghe, Senior Lecturer School of Biosciences, University of Sheffield, and representative, LGBTQ+ STEM, and Dr Katie Perry, Chief Executive, Daphne Jackson Trust.



Examination of witnesses

Witnesses: Dr Gayle Brewer, Dr Jasleen Jolly and Katherine Sparkes MBE.

Q197 **Chair:** The Science and Technology Committee continues this morning our inquiry into diversity and inclusion in STEM—science, technology, engineering and maths. I am very pleased to welcome our first panel of witnesses. Dr Gayle Brewer is senior lecturer in psychology at the University of Liverpool and a representative of the National Association of Disabled Staff Networks. Also from that organisation is Dr Jasleen Jolly, who is associate professor in vision and eye research at Anglia Ruskin University. Joining us virtually is Katherine Sparkes, chief executive of the Lightyear Foundation. The Lightyear Foundation is a charity dedicated to breaking down barriers to disabled children taking part in STEM.

Welcome to all three of you, and thank you for informing our inquiry. Perhaps I can start with a question to Dr Jolly. Perhaps you might say what we know about the representation of people with disabilities in the STEM workforce.

Dr Jolly: First, thank you for having us here; we are delighted to have the opportunity. The data is woefully flawed—there are lots and lots of problems with it. According to Government stats, about 30% of the population have a declared disability or chronic illness. In the general workforce, it is less than 20%. Within the academic workforce, it is about 4%, and the rates become less and less the higher up the academic hierarchy you go, but there are major problems with disclosure. Many people do not disclose because of the perceived problems—the attitudes that you get against them.

There are problems with time to diagnosis. With my condition, for example, the average time to diagnosis is seven years, so where do the people within that timeframe fall? With rarer conditions there is an even longer lag in time to diagnosis, and because we fall so much within the medical model of disability where you need to have a medical diagnosis rather than it being based on what difficulties you have in day-to-day life, without that actual diagnosis you are not entitled to any help or support.

Then, even if you have a diagnosis, the time to acceptance is a whole other step. I know that for me it took many years to accept that I have a chronic health issue and that I need help, and to accept that label of “disabled”. Even coming and presenting here, I had to think long and hard about it, because it meant outing myself on a national level as having a disability and declaring that. But, because of my promotion six months ago, I felt that I had an obligation to do so, to fight for those who are more junior and have less power to do that for themselves. I feel I have to advocate for them, to bring them better working conditions, but it was an internal battle because it is not easy to emotionally accept that.

Then, a lot of people—especially those with chronic illness—do not realise that they fall under that banner of “disabled”, according to the definition set out by the UN convention. There is a lot of internalised ableism,



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especially when your condition varies so much on a day-to-day basis. If you are on a good day, you start thinking, “Am I really disabled?” and so that can affect how much you disclose as well.

There is also a big problem with medical science catching up with rates of diagnosis. Even epilepsy was originally considered to be a mental health issue, until the neuroscience caught up and we found the physiological cause. There are many conditions that are not considered to be real until the medical science catches up. All those situations mean that the rates of disclosure are really low.

Q198 Chair: Thank you, and we are grateful that you have been willing to give evidence to us today; we appreciate that move you have made.

Dr Brewer, perhaps I can address a similar question to you. Do we know whether there is a greater problem of representation or access to posts in STEM professions for people with disabilities than in other walks of life?

Dr Brewer: I would say that there are a number of challenges and barriers to disabled people in the workforce regardless of the sector they work in. It is important to reference the UN convention on the rights of persons with disabilities, which acknowledges that discriminatory attitudes and social inequalities are as disabling as the impairments themselves.

Within STEM subjects—obviously, that is a very broad range; you have people working in education, you have researchers, clinicians—you clearly have some particular issues that are going to be more apparent for those with disabilities.

For example, in academia, there is an expectation that most people will be working 50 or 60 hours a week—that they will be working evenings and weekends. That is clearly problematic for many people, such as those with energy-limiting conditions. There is an expectation that you will travel to conferences. That is, of course, more difficult and more challenging if you have mobility issues and you are dependent on certain types of transport. Of course, addressing these issues doesn’t just address disability and STEM; it also provides opportunities for other people.

One of the positive outcomes we have seen during the pandemic, for example, was the opportunity for people to engage remotely in conferences and training opportunities. Doing that has benefited not only disabled people, but those who don’t have the funds to travel to those locations and those with caring responsibilities.

I think there are particular challenges in STEM—we have provided some additional evidence where it comes to accessing chemistry labs, for example, and how those can be improved in terms of accessibility—but it is very hard to make comparisons across different sectors because, as Dr Jolly has said, it is very difficult for people to disclose. People will typically be asked to present evidence. They will perhaps be cautious about a negative reaction to that disclosure and so they will typically test the water. They might talk about health conditions. They might talk to colleagues to see if they are likely to be accepted.



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So we don't necessarily have reliable data across the sector, but the important thing is that we know that people with disabilities are not appropriately represented and not appropriately treated when they are in STEM subjects. We have the recommendations to be able to change that.

Dr Jolly: One thing I would like to add is that disability doesn't exist in a vacuum. Disability intersects with all other characteristics. I am a female, brown, disabled academic. All those individual characteristics combine in such a way that the difficulties I have faced are greater than the sum of each of those parts. When we look at EDI, we often try and box these characteristics, but intersectionality is vital because looking at the individual characteristics doesn't give you the whole picture. We are all made of multiple identities, and how those work together gives us far more information than looking at each of those individual things in isolation. We need a multi-lens approach.

Chair: Thank you very much indeed. That is understood.

Q199 **Graham Stringer:** Dr Jolly, you said an interesting thing there, to start with, about medical science catching up before disabilities can be recognised and defined. Can you give us two or three examples where medical science has caught up, and disabilities have then been recognised?

Dr Jolly: Yes. Epilepsy was one. Long covid has given us another example. Long covid has given a lot of proof for chronic pain and chronic fatigue syndromes, which previously were not given much basis in evidence, and were not really believed. However, we are now seeing, in the neuro-imaging, physiological changes in the wiring of the brain pathways, so we are now recognising that chronic fatigue syndrome, for example, has a physiological basis. Of course, with the pandemic, long covid disability levels are going to go up.

The other interesting area is neurodivergence. Neurodivergence is often equated with autism, but actually there is a whole array of different types of neurodivergence. Again, as our neuroimaging techniques are improving, we are realising that the way our brains are wired varies in a huge array of ways. That means that we are processing our information quite differently in different people. This can actually be an asset, because it brings in creative thinking, lateral thinking, and creative problem solving, which can be an asset, but it can also mean that we don't navigate a lot of social interactions in a very traditional way.

Q200 **Graham Stringer:** Thank you. Continuing that theme, Dr Brewer, apart from long covid, has covid-19 had a disproportionate effect on workers with disabilities working in STEM?

Dr Jolly: Yes, very much so.

Graham Stringer: Sorry, I was asking Dr Brewer that question.

Dr Brewer: First, I would like to make the point that the pandemic has had a disproportionate impact on disabled people generally. Of course, it is

not just that people have been placed at greater risk but that they have had less access to medical care and to carers. There is also the rhetoric, which has basically devalued disabled people's lives; there has been a discussion around whose lives are more valuable than others, and obviously the encouragement of things such as the "do not resuscitate" orders.

In terms of STEM and research, I think there has been a negative impact on many people, particularly due to things like isolation and mental health issues, and, as you said, disruption. One example would be somebody who is particularly immuno-compromised. They might be required to shield for a longer period of time, and therefore not have access to their lab, where they would be in contact with other people.

However, I do think that the pandemic has presented us with a number of opportunities. It has shown us a new way of working. It has shown us that you can hold meetings remotely, that you can work from home, and we now have a much better infrastructure to support those sorts of accommodations. It might be that it is easier, then, for somebody to rest or for somebody to take medication that might make them drowsy, as they would not want to drive into work.

As I have said before, those sorts of accommodations will benefit not only the disabled community but people who require flexibility for other reasons. So there is certainly both a positive and negative impact on disabled people, and disabled people in STEM specifically.

Q201 Graham Stringer: Thank you. Katherine Sparkes, can you briefly explain the barriers to children in pursuing STEM subjects and describe how they change as children become older? How do they vary with age, effectively?

Katherine Sparkes: Absolutely, and good morning. I asked the members of our SEN in STEM Network—a collection of 174 member organisations that span the science sector—for their thoughts on this, and everybody came up with pretty much the same thing: there is a lack of informal science experience at school for disabled children, particularly in special needs schools. They have very few people coming in and doing informal science experiences, which are so important.

But there are some incredible providers out there—for example, Sarah's Cloud Factory. There is the Explorer Dome, which is a pop-up planetarium. There are lots of amazing projects out there, but getting them into special needs schools seems to be a real challenge. Additionally, when we get children out into visitor attractions, museums and science centres, there are also lots of accessibility issues, which can make that first experience of science not always a positive one. That is why our SEN in STEM Network is so important for bringing people together and sharing best practice.

There is still so much nervousness around using the wrong terminology, not knowing how to make adaptations, and communication methods such as Makaton and symbols, so it is so important that, as a sector, we are collaborative, sharing best practice and breaking down those barriers to be



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able to get children excited about science and have that first spark to ignite their passion and interest, which goes a really long way.

I think you also asked about the age of children. Typically, people say that around 10 is the age when you start to think about science or rule it out. The Primary Science Quality Mark, for example, currently has three special schools taking part, but this year's cohort is 700 schools, so it is so important that we change things like that, get more special educational needs primary schools taking part in such schemes, and get science on the agenda.

In some of the schools that we work with, the teachers often have a very low level of science capital, so it is about enthusing the teachers and getting real scientists into special schools to support them. Where we have been able to do that, it has made an incredible difference. In some instances we have actually seen children from special schools then being able to access mainstream provision and go on to take single sciences, and it has been transformational.

Q202 Graham Stringer: The consequence of not pursuing those policies is a loss of the talent pool to society as a whole, but is it particularly damaging for the children themselves when they miss out on that kind of science education?

Katherine Sparkes: Hugely, and I can give you a really lovely, anonymised case study. We had one young girl who started in one of our active learning workshops, which are a unique fusion of music and science. She then moved on to our virtual lab programme and, most importantly, she met a role model. She met an amazing scientist who, like her, has autism. This completely made her re-evaluate what she was capable of, and we were able to work with her parents and the school so that she could start accessing mainstream science provision from the special educational needs school where she was. She is now outperforming her mainstream peers.

I guess it is a great example, because the alternative for this child probably would have been going through the special educational needs system. I understand that in that particular school only 2% of children go on to get jobs, and the majority of those jobs are in things such as cleaning. She is the most incredible asset. Her retention of knowledge, attention to detail and love of science is infectious, and she can now go on and have a viable opportunity to share her talents and make a big impact on the science sector. It is about stories like that. We particularly see children with moderate learning disability, where there is real potential but also a real risk of them slipping through the cracks. For me, that is the area of most untapped potential.

Q203 Rebecca Long Bailey: Ms Sparkes, can you explain the approach that Lightyear Foundation takes to helping children with disabilities access STEM education?

Katherine Sparkes: Yes, absolutely. We have five project streams. The first is our active learning workshops, which are a unique fusion of music



and dance with science. We have a virtual lab programme, which is online and exploratory. We have our role models programme, and I cannot reiterate what an impact that makes. There is lots in the news at the moment about the fact that you can't be what you can't see. It is so important for our young people, and also our teaching assistants, teachers and parents and carers, to be able to re-evaluate what their children are capable of.

We also run a work inspiration programme, where we take groups of young people out for a day-long work experience opportunity. We found that that works much better in terms of confidence and impact than individual trips. The last strand of our work, which I have briefly mentioned before, is our SEN in STEM network. We have 175 members across the science spectrum. It came about after I spoke at the Royal Society. I was talking about some of the challenges around accessibility in the sector, and I was inundated with people afterwards coming up to me and saying, "We are trying to do this, but we don't know how to. We don't know where to go and we are afraid of adjustments." We realised that if we could bring everybody together and share best practice in a really practical, needs-based way, it could be transformational.

You can see the quality of our membership. We have all the science institutions, membership organisations, visitor attractions, science centres, zoos and corporates such as Airbus and Aerospace, but we also have individuals, such as teachers. It is very practical. A museum may come and say, "I want to create new autism kits for visitors." We can then put the museum in touch with two or three other places that have recently done that. It saves them reinventing the wheel, because everybody is working together. It has totally increased the confidence of people and the collective impact the sector can have.

Q204 Rebecca Long Bailey: Are there elements of your work that could be incorporated into the school curriculum?

Katherine Sparkes: Absolutely. Our virtual lab programme very much does that. As well as us working with the children and doing online practical experiments, which are very sensory, we do a separate session with teachers, so that we can upskill and assist them. In one of the schools we are working with at the moment, 11% of the staff have a science GCSE. That is the highest level of science education they have within the special school. The school has been so grateful for having external scientists come in and share techniques, which upskills teachers and builds confidence. We have rolled it out across all age groups in the school now.

Q205 Rebecca Long Bailey: Thank you. Would you highlight any proposals outlined in the recent Government SEND review as particularly important for STEM education more broadly?

Katherine Sparkes: I am also speaking as a parent. My daughter has cerebral palsy. One of the things that really resonated with me was technology. There was mention of digitising EHCPs, which I would really

welcome. Dr Brewer, I think, mentioned earlier the changes that technology has been able to bring for disabled people post covid. It has been fantastic. Speaking as a parent and on behalf of my daughter, being able to attend medical appointments virtually has been transformational for us. I think that any ways to harness that, decrease the amount of paperwork that has to be completed and make things simpler by harnessing technology are really important.

The other thing I think is particularly significant is that there is so much focus on just mainstream schools and special needs schools, but there are so many children that fall between the two. One of the things I noticed in the paper was that parents still have the choice to send their children to mainstream schools, which I think is very important. I think parents need support with making that decision. When I was making the decision for my daughter, at the time she was non-verbal, so I was very much reliant on teachers at school and their views of what she is like in the classroom. Obviously, as a parent you do not see that. When it came to making the decision about whether she should go into a special school and which special school, we asked for help and were advised that health, education and social care professionals could not provide recommendations.

Additionally, as a parent I think there is quite an emotional lens because a lot of us parents fear that if you send your child to a special school they will lose their independence, whereas there are many benefits from going to a special school, and my child could not be happier now. An important change would be more support for parents around navigating that huge decision, and also hearing the voices of the young people themselves so that they are informed and helping to make that decision, too.

Q206 **Rebecca Long Bailey:** Thank you. Dr Jolly, what more should the Government and research funders do to increase the number of people with disabilities in STEM roles?

Dr Jolly: There is so much that can be done. There is some support out there for students, but very little for staff, so retention is really poor. I think we need compulsory disability officers in all universities who, on one level, provide practical support to guide them through getting help and adaptations in place, because you are putting on to these individuals a huge administrative burden when they have already got so much on their plate. Secondly, the officers need to be involved in policing the policy of universities to make sure that they are inherently disability-friendly and not ableist. There needs to be a disability charter that all institutions must adhere to—with very real consequences, such as funding cuts—because that is the only way that anyone will actually stick to it. Funders should have a separate pot of money that is automatically awarded to any disabled researchers for adaptations on successful peer review. I don't think that money should form part of a peer review because that disadvantages those researchers.

The NIHR currently have an excellent PPI strategy—patient and public involvement—but they are not currently doing anything about the workforce. By not having a diverse workforce, we are losing a lot of



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valuable talent and voices. I am a healthcare researcher, and I am doing my patients a disservice by treating them but not creating an equal society, because many of my patients are very talented researchers themselves.

We need a new Access to Work system that is suitable for researchers. Access to Work is brilliant. I would not be able to continue what I am doing without it, but it is not fit for purpose for scientists because we don't have a traditional employer-employee relationship with the university, because of the way the funding system works. Sometimes the university does not want to take responsibility because they are just administering the grant, effectively. The funding body does not want to take responsibility for our adaptations because they are not our employer, so where do we turn to for help? We are stuck between a rock and a hard place sometimes, and the timescales can be quite slow.

I am six months into my new job, but I still haven't got everything in place. Short-term contracts are a major problem. Before I started in my new position I was hopping from six-month contract to six-month contract, and some of my grants were so small that I could not afford to pay myself a full-time salary. I was doing a full-time job, but paying myself a part-time salary because that was the only way I could fund myself.

Currently, implicit bias training often has no reference to disability, chronic illness and neurodivergence, so that needs to change. The training needs to be written by people with lived experience of it. We need to recognise that people have diverse needs. For example, because we both have immune system disorders, we have requested that people wear masks today, but we are very cognisant of the fact that that is not great for anyone who relies on lip reading—although, we know that a transcript will be available for anyone who needs it.

We know that one solution does not fit all, so workplaces need to have a culture of openness that encourages communication, so that we can build inclusivity into the culture of the workplace and come up with solutions that fit everybody. We need to stop using the medical deficit model and instead start focusing on what difficulties people face in day-to-day life, and on fixing them.

A lot of accessibility planning seems to fixate on wheelchair access, so we need to broaden that and start thinking more holistically and inclusively, and recognise that conditions change from day to day. For example, a lot of conditions come with sensitivities to noise or light levels. Some visual impairments might require higher lighting levels, while others might require lower levels, so let us build in adjustable lighting. There has been a move to agile working, with big open workspaces. Why don't we build in zones where people can work in areas where they are more comfortable?

Why don't we build in height-adjustable desks as standard? Remember that not all scientists work in a lab with a lab coat. I am a clinical researcher, so I work with patients in a clinical setting, but in my



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neuroscience work I spend a lot of time on the computer. Height-adjustable desks support not only those with back or neck pain, but those who are of different heights, so they reduce the incidence of work-induced back pain and physio bills, saving the NHS money. Making lighting softer reduces glare in the workplace. If we build things like that into building accessibility, we will create much better environments.

A lot of workplaces are unwilling to do that because of the initial cost, but actually in the long term they would save a lot more and improve productivity, so there is a lot that we can do. Dr Brewer mentioned a paper on accessible lab spaces that has been published by some of our colleagues.

Dr Brewer: There are certainly a lot of recommendations out there. For example, the statistics on disclosure have been referred to. Typically in the workplace somebody will be asked to declare or disclose a disability, but my telling you that I have x condition is not necessarily that informative, even if I have a diagnosis. It is far better to ask, "What is your experience? What do you require additional support with?", because the same mechanisms of support will be there that can assist people with different conditions. Likewise, two people can have exactly the same condition but very different experiences, either because of the way they experience the condition or because of the role and tasks they do day to day.

We also need a much better understanding of fluctuating conditions, as Dr Jolly mentioned. At present, we tend to find that either you are on a full-time contract and deemed to be well and healthy and able to work 50 hours a week or you are off sick—unless you are contractually working part time or you are, perhaps, returning to work in a phased return. But certainly people have shared with me good practice whereby they have been able to talk to their managers and say, "Actually, I'm having a flare-up of this condition right now. I can do those tasks, but I can't do these." Adopting that flexible approach means that that person can carry on working and not go off sick. They are not being overburdened and then perhaps going off long-term sick. So there are plenty of things like this that we can take into account.

My last point is that a lot of these recommendations or a lot of this advocacy work at the moment is being done by people who themselves are disabled or have other protected characteristics. People are happy to do it; they want to contribute. We want to make the workplace—and society—better for people in our community. But unfortunately that is not recognised or acknowledged. Typically, you are not given hours or time to do that work. Also, when those people go for promotion, what is being looked at is their subject-specific research. Both Dr Jolly and I obviously have our normal research areas, as well as doing this kind of advocacy work. And it is the subject-specific work and funding that people are normally looking to when they are making those decisions, so people are not progressing.

Q207 **Rebecca Long Bailey:** Dr Brewer, you have already touched on a few of



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these aspects, but what should STEM employers do to improve the situation for current workers with disabilities and to attract more people with disabilities to undertake STEM roles in the future? And ultimately, who should be responsible for monitoring and evaluating the success of these initiatives?

Dr Brewer: There's a number of things that employers can do. If we look at the typical process for somebody starting in a STEM role, where they might be asked to declare or disclose, that might be a very difficult decision for somebody to make. People might want to wait, talk to colleagues and find out whether it is an accessible and supportive environment, before they do that. So there need to be opportunities to make the environment accessible for all. Therefore you are reducing the burden on people to disclose. Some people will still need to, but you will reduce the number of people who need to disclose in order to have an accessible workplace.

If that person then goes to occupational health and a number of recommendations are made, those unfortunately are recommendations. It will typically be the decision of their manager whether they will be implemented, and while there are excellent managers, there are also those who will not support that. That is particularly problematic if the funding for those things, if they require funding, comes from a departmental budget that they are closely monitoring. It would be far better if those sorts of accommodations were funded centrally at the university, so that there isn't a position where a colleague is saying, "I can't do this training" or "I can't do this conference," because there are these access needs.

In terms of who should be responsible for this, organisations obviously have a responsible role, but as Dr Jolly mentioned earlier, there isn't a charter mark for disability, so there isn't the close scrutiny of the way organisations are catering for their disabled staff. We have talked about researchers and academics, but this also relates to professional services, technicians, students and so on, so it needs to be a broader approach, where there can be that monitoring.

Q208 Rebecca Long Bailey: And finally, a question for all members of the panel. If you had to choose a couple of priorities for improving diversity and inclusion in your respective STEM fields, what would they be? We will start with Ms Sparkes.

Chair: Quick-fire, please—just very briefly.

Katherine Sparkes: From my perspective and that of the work that we do, it's quite a simple fix, because there is so much great stuff happening already. It's about amplifying that impact. It's about bringing organisations together to work closer together and share that impact.

Also, so many things that Drs Jolly and Brewer have said have resonated with me, particularly around data. STEM Ambassadors is an amazing programme: 37,000 role models go out into schools. However, they do not track the number of those who have a disability. That may be about the



disclosure issue that you are talking about. Role models make such a significant impact in the work that we do, but we find it really difficult to find enough case studies and enough role models with disabilities who are prepared to champion and showcase what they do. So for me, it's all about sector collaboration; it's about creating that space. We do it in our SEN in STEM network, but there is so much more to be done, and that impact could be magnified.

Dr Jolly: Training to break down ableist attitudes and to recognise the talent that we bring—there is so much evidence to show the role of patient researchers in the value that we bring to research—governance, the disability charter that we keep mentioning, and how they need to enforce change from the top down. Funding bodies need to be more accountable, having specific funds to support disabled researchers, and considering how they evaluate us and recognise our contribution through our EDI work, as well as how they evaluate not through an ableist lens, but through a more realistic lens.

Dr Brewer: I will be brief, but will say that we change the way that disclosure is handled and that accommodations are funded. I would also refer back to the phrase, “nothing about us without us”. There is only so much that people can do if they do not have that lived experience or understanding of disability. For example, if organising a conference, somebody might think that they need to organise an interpreter for somebody during the conference presentations, but they might fail to recognise that they also need to do that at other times, so that people can network and form collaborations. It really does need to be led by the disabled researchers themselves and, as Dr Jolly said, acknowledged and rewarded.

Rebecca Long Bailey: Thank you.

Chair: I thank our three witnesses, Dr Brewer, Dr Jolly and Katherine Sparkes, for kicking off our session today. We are very grateful for your evidence, in person and your organisations' written evidence.

Examination of witness

Witness: Katharine Birbalsingh CBE.

Q209 **Chair:** We now come to our next witness, Katharine Birbalsingh, CBE, who is joining us virtually. She is the headmistress of the Michaela Community School in Wembley and the relatively recently appointed chair of the Social Mobility Commission. Thank you for joining us, I assume from school. It is good of you to fit in this session for us.

I will start with a question. This inquiry is looking at the inclusion of people into science, technology, engineering and maths, including as we have just heard people with disabilities, people from ethnic minority backgrounds, girls and women, and people from more deprived and less advantaged socioeconomic backgrounds. A lot of this is about social mobility. Drawing on your experiences as an educator, as a teacher in schools, what is your



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assessment of where we are with access to science, technology, engineering and maths, and its role in social mobility?

Katharine Birbalsingh: It is hard to find good teachers in science and maths. Ask any headteacher, they will tell you the same thing. That has big—huge—impact on the quality of lessons that can take place across the country, and the more deprived places will struggle more in finding excellent teachers in science, maths and so on. That is one area.

Successive Governments have struggled with the shortage subjects like science and maths. What you can do, I don't know. It is a hard one. One of the things that we forget is, for example, if the teaching of science is poor in schools, we do not have that many children—whatever their background—who go on to study science, and in the end we do not get that many teachers, because there are not enough people doing science, full stop.

I am a great believer in trying to improve the quality of the teaching in the classroom and of our schools generally. People tend to think, "Well, this is the problem, so we need to fix this problem and we need to address it head-on," as opposed to thinking in a more global fashion. For instance, rather than thinking, "We need more ethnic minority women in science, therefore we need to address that problem," I suggest that we need to address good teaching and good schools generally. When you are in an environment where things are not optimal in terms of teaching quality, discipline and so on, the children who suffer the most are the most vulnerable, and they are the ones who are less likely to choose certain subjects. The ones who survive those kinds of environments are the ones who typically might choose those subjects and are well supported at home and don't come from a lower socioeconomic background and so on.

If we improved all of our schools, I think you would see a real rise in uptake from the more vulnerable groups, because those vulnerable groups are the ones who get hit hardest by, perhaps, poor discipline, poor teaching and so on. That does not look at the problem directly, and people are less likely to see it in that way because it is not as tangible—it is not as obvious—but I think that is the thing that would have the most impact.

Q210 **Chair:** Thank you very much. Let me pick up a couple of those points. On good teachers in science and maths, you run a school; you have to find good teachers, just as you described. Have you found it especially challenging to source STEM teachers? What do you do to make sure that you attract them?

Katharine Birbalsingh: That is a really good question. Yes, I find it more difficult to attract science and maths teachers, but we do a lot of training on site for our teachers. I would say that that is one way in which we differ from many schools. The way most schools go about things is that they train their student teachers, who are just starting out, and then they give extra support to their newly qualified teachers, but if they hire a teacher who has been teaching for a couple of years, they just slot into the school and go about teaching.



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When we take on new teachers, we train everyone. Even if you have been teaching for seven, eight, 10 years—it doesn't matter—we train you as if you are brand-new. That is because we would say we have a Michaela way of teaching and a Michaela way of doing things, so everyone needs to get on board with that. The idea is that we are training everybody to teach in a Michaela way because we need consistency across all our classrooms. That consistency is supportive for both the children and the staff. I have employed staff, for instance, who had left teaching. They said, "I can't do it." They come here, we train them, and then they feel supported enough to be able to deliver in the classroom. That is because of the consistency towards discipline, teaching styles and teaching methods used in the classroom, which everyone is delivering.

In schools, there tends to be a sense that teachers need to have autonomy to do whatever they want. When I say "whatever they want" I don't mean they can walk out the door and not teach and stuff; there are obviously certain basic expectations. What I mean is that people are reluctant to talk about one best way of teaching. People are reluctant to talk about strict discipline being a good thing, for instance. People will say things like, "Different intakes require different things." There is some truth to that—I am not going to deny that—but I do think that good discipline is good for all children, whether they are rich or poor, black or white.

It doesn't matter. I think that teaching methods, with the teacher leading the learning from the front of the classroom and the desks being in rows and the children being led by the teacher, who is an authority, as opposed to the desks being in groups and the children leading themselves in what is called child-centred learning—*[Interruption.]* Sorry, those are our pips, for the children coming in from break.

Chair: Of course. We have them as well, but ours are bells.

Katharine Birbalsingh: The sort of more progressive way is that the children lead the learning, as opposed to the teacher leading the learning. Desks are in groups. They work together. The teacher is then keeping children on task, as opposed to being at the front of the class leading the learning. What I would say happens is that when you have the authority of the teacher in the classroom, and the authority of the discipline, so the children are listening and are focused, then those more vulnerable groups are the ones who benefit the most, because they are the ones who often get left out or aren't able to be seen in a class that is a more chaotic sort of environment.

Knowing I was coming on here, I asked my head of sixth form to break it down—I had never done it before, so I didn't know. It is interesting. Even with us, in physics for instance, it is 16% girls, a very small number, and it is 84% boys. When it comes to chemistry, biology and maths, they are 69%, 60%, 65%, 59% girls. It is mainly girls who are doing the STEM subjects here, apart from physics.

Q211 **Chair:** Why do you think physics is different?



Katharine Birbalsingh: From my own knowledge of these things, physics is not something that girls tend to fancy. They don't want to do it. They don't like it. It wouldn't be something here that they don't choose because they feel it is not for them—that would certainly not be the case. And it wouldn't be the case here that they wouldn't choose it because they didn't have a good physics teacher—my teachers are excellent, and they are doing all the things that I believe are the right things, leading from the front, there is excellent behaviour and the children perform well at GCSEs before going into A-level. My explanation for the children we have here is just that they don't want it. They would prefer to do biology and chemistry.

Q212 **Chair:** You know children better than probably anyone here around this table. What is your insight—even your guess—into what it is, in an outstanding school with excellent teachers, that means girls are not choosing physics in the same proportion as boys might? What might be the reasons for that?

Katharine Birbalsingh: I just think they don't like it. There is a lot of hard maths in there that I think that they would rather not do. That is not to say that there isn't hard stuff to do in biology and chemistry—there is—but it is not mathematics.

Q213 **Chair:** Why would girls not want to do hard maths any more than boys?

Katharine Birbalsingh: In the research generally, people say that that is just a natural thing. I don't know. I can't say. I am not an expert at that sort of thing. That is what they say. I don't think that there is anything external. When it comes to our kids, they are being taught very well. They are doing well at GCSE and they choose the subjects that they want to do.

We are certainly not out there campaigning for more girls to do physics. We wouldn't do that, and I wouldn't want to do that, because I don't mind that only 16% of them are taking it—I want them to do what they want to do.

To be honest, it is really interesting, because obviously you are all concerned about the numbers of children taking STEM subjects, but I find it is quite the opposite problem actually. There are far too many young people wanting to do STEM subjects and not enough wanting to do things like philosophy, theology and history and so on. I would say that one of the reasons for that is that because if you come from an immigrant background and especially from a poorer background and you manage to do well in school, you are more likely to want to pursue a career that brings more certainty with it. When you are doing sciences, you think, "I am going to become a doctor" or "I am going to work as a lab assistant." Those are more certain professions. If you come from a very privileged background, you might decide to become a poet, an actor or a writer—professions that are far less secure and far less obvious in their financial reward and in success in the eyes of family members, community members and so on. If you become a poet, people think "What?", whereas if you become a doctor, that is something that people would admire.



In actual fact, we are not going around trying to persuade people to do physics; we are trying to persuade them to do things like philosophy, history and so on, because we believe those subjects are as interesting and as important. For any society, it is good for us to have fair representation in all these types of subjects. When it comes to leaders of thought and culture in our country, I want my children representing in those discussions, and if they all go off and do sciences, they are not necessarily going to be representing on that side of things. So, yes, I would say that we have quite a number choosing STEM subjects and fewer choosing the other types.

Q214 Chair: I am going to turn to my colleagues, starting with Dehenna Davison, but just on that point—which is a very interesting point—do you think it is known among students that a set of science qualifications links more to vocational outcomes than, for example, arts and humanities subjects? Do you think that when people are making choices, it is well known that in essence, it is a bit more vocational?

Katharine Birbalsingh: Yes. I do not think they would actively say that—well, maybe.

Chair: But you think that is in their minds.

Katharine Birbalsingh: They think that those A-levels are more respected, and they think, “That is going to get me the kind of job that I would want.” A history degree does not tell you what kind of job you do; of course, there are lots of history grads who get jobs, but that is something that we have to do a lot of work on, in terms of encouraging them to think outside the box of “Well, the STEM subject is going to get me the definite job.”

Chair: Thank you.

Q215 Dehenna Davison: Ms Birbalsingh, thank you for your time with us this morning. I remember a speech you gave back in, I think, 2010, when you were talking about your experience in teaching. You said at that point in time that you thought the school system was “broken” because it “keeps poor children poor.” Obviously, we are covering social mobility today, and the bits I really want to focus on are kids from disadvantaged backgrounds and how they get on, so I want to come back to a point you made there about security in job outcomes, and particularly earnings.

Greg asked just now about whether kids who are choosing subjects know that they are going to have more secure jobs if they take those subjects. Do you think it is still the case that the system is broken, or do you think it is improving and we are seeing more kids from disadvantaged backgrounds choosing those sorts of subjects?

Katharine Birbalsingh: I think it is improving. I wish it would improve faster, but we are going in the right direction. For instance, phonics has become pretty standard in primary schools, so there are fewer kids who are coming out who can’t read. Literacy and numeracy started some time ago, with the literacy and numeracy hour that you will remember, and the



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concentration on reading and numeracy in primary schools has become part of the bloodstream now, so we see better-educated children coming through into secondary schools.

We do have a fair way to go in terms of discipline across our schools and in terms of the teaching methods I was talking about, but 15 years ago, we were not talking about teaching methods at all. That was not up for discussion. The progressive way of doing things—the desks in groups, children leading their own learning, authority being with the children as opposed to the teacher, and so on—was just normal. That was what it was to teach, whereas nowadays, there is a debate that is had.

In fact, I was just speaking to a couple of teachers of mine who are going to join in September, and they were saying that in Teach First nowadays, it is very clear. They are told, “There is this one extreme way of doing things, and then there is this other extreme way of doing things”—traditional versus progressive, is what they say—“and there is this in between.” There is a discussion, and people are allowed to discover things and look at that range of variety, which just did not exist 15 years ago. We are definitely moving forward. The narrative has changed. What has been demonstrated to work has also changed in the last 15 years, I would say. That is really positive, because schools and education play such a huge part in enabling social mobility for children.

Q216 Dehenna Davison: Quite right. We know that one of the crucial things in promoting social mobility is having role models—when kids can see people like them who have managed to break out of tough parts of the city or country to actually make it. On that basis, do you think there is a link between the under-representation of certain groups in STEM subjects and the number of young people taking them up?

Katharine Birbalsingh: Yes. I mean, you would have to ask different schools what they do. I totally believe in role models. We have people coming in every couple of weeks, if not more often, from different backgrounds and professions to come and speak to the children and say, for instance, “This is what I do, and here are some things to think about.” We then make sure that all the children are signing up. You have 100 or so kids in each of these talks listening to what they are saying. That is one area where I think more could be done from Government to get these people into schools.

There is an organisation you can sign up for to get speakers in, but I am not sure that enough is done to encourage ordinary people in the workforce to go into schools and talk about their professions. I just do it on my own. I go on Twitter and say, “I need people to come and speak in my school.” Because I am me and I have loads of followers, I get loads of people replying. I just get all these people coming in who I have just found on my own. Not every headteacher can do that, obviously.

I think it is huge. I myself am learning from these people who come in. They come and have jobs that I have never even heard of. I think, “Great! Come and tell us what you do.” It is very eye-opening for the children and



teachers. That is one way in which I think you could support schools better.

Q217 Dehenna Davison: Thank you. Can we talk about subject choices and the points at which young people are making those decisions? What would you say are some of the key influences for young people in choosing, say, their GCSE subjects?

Katharine Birbalsingh: That is a really good question. What I would say—which will not be very popular—is that I do think we want to reduce the amount of choice we give young people. The younger they are, the more you reduce that choice. You don't say to a five-year-old, "Cross the street as you like. It is up to you." You don't leave them to it. You wouldn't do that. You would hold his hand, point out the green man and do all of that stuff. You would scaffold him to get across the street successfully.

I think the same thing goes for children at secondary school. Too often we think that children are all grown up when they join school at 11 years old. I often say to the families here that when they are 15 or 16 and coming up to their GCSEs—I say it before as well, but particularly then—"Look, when they were two, you did not just let them walk on their own. You were helping them. You have to do the same now. That means supporting them with their homework, talking to them about their school day in the evening, checking the system the school uses to see if they have had any merits or demerits and having those discussions."

Because kids get big, you look at them and think, "You're grown up now and you can look after yourself." But they really can't. They need the help of their families and their teachers to scaffold them and help support them. When it comes to decisions on options and things, I think schools would do better to have fewer options and choices and to give very robust support to children in making the right decisions for them.

You could just leave it up to kids, and just say, "Well, it is up to you—you do it", or, as is sometimes done in schools, it is just sort of left up to the head of that particular department: if you have got a really engaged head of modern languages, suddenly everybody wants to French and German, and if you have a really engaged head of science, everybody wants to science. But it shouldn't just depend on that. I would say things need to be more centralised.

What I would say is that you need to give fewer choices so that children are guided into the right sorts of things for them, at a lower age. That is what I would say. When it comes to A-level and so on, they are sort of old enough then to be able to make the choices. As I was saying, we don't go around saying to the girls, "Come on, take physics!" I want them to do the things that they want to do and that's that. The younger they are, the fewer choices you give and the more scaffolding you give. Then, gradually, as they get older, you take that away.

Q218 Dehenna Davison: Can you explain the kind of support you have available to your students to make GCSE choices at the Michaela school?



Katharine Birbalsingh: Well, there aren't that many choices. They are choosing between history and geography, for instance. Some of them will take art or photography. But that's it—there isn't that much. We deliberately reduced the choice. At other schools, you will find a huge host of choices.

Everybody takes science. Everybody does double or triple science. I am sure we probably have kids who would say, "Oh, well if I knew that I could have done single science, I would have done that." We don't tell them that there is the option of single science—we just get them all to do double science. That is because I think they all ought to do double science. They are capable of it. They can succeed at it. If they have been taught well from year 7, even the kids in the bottom set can do double science and do well at it. I think it is my duty to make sure that they do it.

Not everybody would agree with that. They would say, "No, it is up to the kids." Kids make wrong choices all the time, because they are young. It is our duty as parents and teachers to help them make the right choices for them, I'd say, because then they are going to be in a stronger position later, when they are going for jobs and are out in the world and so on. It is our duty to make it so that they are going to succeed later, I think.

Q219 **Dehenna Davison:** On that point about kids making wrong choices or choices that they may later regret, do you think that the current education system is forgiving enough in letting kids change their minds and diverting on to a different path?

Katharine Birbalsingh: What do you mean? Change their minds when?

Dehenna Davison: As in, if they decide to take a certain set of subjects at GCSE and go through it and then decide at A-level that they want to do something else. That can be quite difficult, can't it? Do you think there should be a bit more flex?

Katharine Birbalsingh: It is not so much about whether there should or shouldn't. It can be quite difficult if you haven't got a background in that subject. If you are super, super able, then you will probably be okay, but for the vast majority of people, it is a real disadvantage if you haven't been properly educated in that sphere.

A-levels are hard, you know. If you haven't got a GCSE before that—it is already hard enough if you have got a GCSE in it. There is a massive gap between the standard required at GCSE and the standard required at A-level. That is something where disadvantaged children can fall into that trap. They don't realise. If you don't have family members who did that jump themselves, who also did A-levels and who can explain that to you, and if the school hasn't done a great job of explaining that gap, you then end up taking A-levels that perhaps aren't right for you and then you end up failing them and that is not a good thing.

I think it is just the fact that A-levels are hard. If you are doing single science, for instance, in order to go on and do science at A-level—you can't do it. You will really struggle if that is the case. You really want to



have done double science or triple science in order to succeed in sciences at A-level.

Q220 **Dehenna Davison:** A final question from me. Do you find that certain groups are less likely to engage with career advice services?

Katharine Birbalsingh: It depends on how much the school leans on the children. Like I said, we have these people coming in from everywhere to talk to them about their careers, and we have 100 kids going into these talks. I don't think 100 kids have genuinely chosen it. If we say to them, "You can go home, because it is the end of the day, or you can go and hear this talk about engineering," the vast majority of them will go home.

But if they have a form tutor who has got them, who has got those emotional ties and who says, "Come on, you've got to go there, and don't let me down. I expect you to be there. Tomorrow I am going to be asking you these three questions, and you are going to give me a talk on it. You are going to answer this one and that one," suddenly they are all signing up and going.

Anyone who is a teacher knows the influence that a teacher can have on a child and what happens when you give this sort of free choice to them. If you say, "You can go home, or you can go to the talk," obviously they will go home. The ones who might not will come from backgrounds where the mum has said to them, "You better make sure you are at that talk." Somebody has said it to them—that is the point. Somebody is putting pressure on them to do the right things and to choose the right things.

If you do not have the background, because your mum is working two jobs, has three kids and is not able to engage with your life in that way, or because your family is in a difficult situation at the moment, or because your family do not speak English, or because they are refugees, or because of any number of reasons, you are not able to get that support.

The school and the teachers need to be able to stand in and give that support, but if the culture in our schools, and in our society generally—I am not blaming schools here. I just think this is our culture in the west, which is one of, "No, no, no, no, everybody is free to do what they want. Let the kids just choose." All kids, but even more so the disadvantaged—this is where I started at the beginning, with the vulnerable groups—will end up making the wrong choices for themselves. The only way they will make the right choices for themselves is if you are strongly encouraging them.

Then what happens is that, because we have been doing this for a while and these people are coming in every other week, it just becomes part of the culture. Children know that the expectation is that they should go to these things, so they go, just like they know the expectation is to come to the school in the morning, to go to assembly and to eat lunch. Kids just do what everybody else is doing, and that changes your culture. That is what I mean by saying that, rather than trying to address the specific thing of, "Why don't we have these kids in here, and why is this not happening?"



we have to have a particular programme that addresses the specific problem. What we need is a general understanding of culture and how you can change the culture in your schools to make it so that these kinds of kids make the choices that we would like to see them make. I hope that makes sense.

Chair: Thank you.

Q221 **Rebecca Long Bailey:** Looking broadly at social mobility, how important is a joined-up, cross-Government approach to improving social mobility?

Katharine Birbalsingh: What do you mean by that?

Q222 **Rebecca Long Bailey:** A joined-up, cross-Government approach—across Departments, rather than just focusing specifically on the Department for Education, for example.

Katharine Birbalsingh: Well, one is trying to moot that. Certainly with us in the commission, we are not just looking at education. The Social Mobility Commission is not under the umbrella of the Department for Education anymore. We are looking at routes into the workplace, apprenticeships and early years, so we are doing a number of things. We are looking at families. It is not the case that we are just looking at education. I think that is important, because obviously education is not the only thing that has an impact on the social mobility of a child.

Q223 **Rebecca Long Bailey:** How have you viewed recent White Papers on schools, levelling up and skills, as well as the Government's response to the Commission on Race and Ethnic Disparities? How will the proposals that they outline affect social mobility?

Katharine Birbalsingh: Well, there are some lovely targets in the schools White Paper. Of course, the devil is in the detail on how you actually achieve those targets. No one would argue with any of those targets—it is the same with the levelling-up White Paper—but it is about how you do that. There are difficulties around getting 95% of children to get 5s and so on. It is not easy.

Things such as teacher shortages and the culture that I just spoke about in our society and in our schools generally, where there is not enough authority in the classroom from the teacher, need to be addressed, and they can take time to address. I suppose I worry about the targets that we have announced we are going to achieve. I am not sure how we are going to achieve them. That is my worry.

Having said that, I think there is lots of good stuff in the CRED report, with suggestions on how people can achieve. What are the cultural motivators to help young people—or adults, for that matter—make the most of what they have? That is always our approach here at Michaela. There are obstacles that will be in front of our children; there is no doubt. In order to succeed in life, we need to give them the knowledge and the skills that will help them overcome those obstacles as best they can. That is not just about learning science, history or English. It is also about building resilience, determination, ambition and a real sense of purpose. It is about



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understanding personal responsibility, what you are responsible for, and not always trying to find fault on the outside.

Even when the obstacles are on the outside, it is about thinking, "How am I going to get over that obstacle?" That growth mindset and resilience is very powerful in making young people successful. I am very supportive of all of those ideas wherever I see them, including when I see them in Government papers.

Q224 Rebecca Long Bailey: You have mentioned concerns about the targets that were outlined there. Have you got similar concerns about the targets outlined in the recent "Inclusive Britain" paper, such as teaching an inclusive curriculum and replicating the factors of educational success for all communities?

Katharine Birbalsingh: I don't know the specifics on that, but generally speaking, yes. What was said with regard to the report, "Inclusive Britain", I tend to agree with, although I do not want to say definitely because I don't know that specific thing. What do you think they mean when they say "all communities"? Can you explain that to me?

Rebecca Long Bailey: That's the million dollar question, isn't it? It's very vague and ambiguous.

Katharine Birbalsingh: Okay. It's hard for me to answer because I don't know what they mean—I don't know. I'm trying to think what they mean by that. I'm not sure. I can't really say because I just don't know.

Q225 Rebecca Long Bailey: Thank you. Moving on, do you think the Government are right to focus on improving the numeracy outcomes of pupils not meeting expected standards?

Katharine Birbalsingh: Yes, but how are we going to do it? That's the thing. With permission, we would like to look at early years. I would really love for us to try somehow as a country to make it obvious to families what they need to do in the early years. Although I look at improvement in schools and education—that's always been my thing, and still is my thing—I know the impact that families can have, particularly long before the children ever go to school. All the literature talks about the divide that happens at three years old between the haves and the have-nots. The child growing up in a home with a poor background will only have access to 25 hours of stories as opposed to 100 hours of stories. Their literacy will be far behind the literacy of another three-year-old from a different background. By the time they get to school, the school is then playing catch-up.

What I find with many of these families is that it's not that they do not love their children, and it's not that they do not want their children to become Prime Minister or whatever. It's that they do not know what they need to do. They do not know, for example, that they need to talk non-stop to their little toddler, even though the toddler is not talking back. They don't know that they need to read to their toddler. They just don't know.



I would love to see campaigns, in the same way as we have campaigns on four to five vegetables or fruit a day. While we may not all achieve that, we all have a sense of it. We once did a survey of all our kids on a whole variety of things. We asked them that one—the fruits and vegetables—and how many glasses of water a day, giving them multiple choice. They knew it was meant to be eight glasses of water a day. That is in the ether—they have got it, they know. You are meant to drink eight glasses of water a day, and to eat those four or five fruits or vegetables.

I would love it if you were to ask people, “How often should you read to your kids?”—so, daily—and, “How much every day?” That is a question I don’t think anyone could answer. We need to quantify, to have a little tag line, by which everyone would know, and to have a campaign out there, so that children coming from more disadvantaged backgrounds would be more likely to compete even at the age of five, because they would enter at a higher level at that point. That is obviously not the case for disadvantaged families, although some disadvantaged families are managing to do that just fine—but I would like to see that number increase.

Q226 Rebecca Long Bailey: Finally, what other actions would you prioritise to improve educational outcomes and increase social mobility across the UK?

Katharine Birbalsingh: Well, that is one—I was talking about early years. What we are working on, and soon we will have a report, coming out in June—we are aiming for the end of June—is being really clear about the evidence and making sure that the narrative around social mobility matches the evidence. The narrative around social mobility needs to address the things that will genuinely help people to be more socially mobile. I don’t have time to go on to that now, because obviously we will do that in our report and so on.

At the moment, I think that there is a bit of a mismatch. Sometimes, we are saying things that we think are the same as what the evidence is saying, and it is not the same. It is because this stuff is quite hard to get your head around and distinguish. When you look at the detail, it is hard stuff. We would like, really, to alter that narrative so that we are all saying the right kinds of things, and are on the right track to make sure that we enable social mobility for the greatest number.

Chair: Thank you, Katharine Birbalsingh, for joining us today. You have important responsibilities at the school, so we are very grateful for you for cutting into your time with the school to give us evidence. Thank you.

Examination of witnesses

Witnesses: Dr Izzy Jayasinghe and Dr Katie Perry.

Q227 Chair: I invite our final panel of witnesses this morning to join us here in the room at the table: Dr Izzy Jayasinghe, who is Senior Lecturer and UKRI Future Leaders Fellow at the School of Biosciences, University of



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Sheffield, and a representative of LGBTQ+ STEM; and Dr Katie Perry, Chief Executive of the Daphne Jackson Trust, which is a charity that specifically supports returners across all areas of research who have taken a career break of two years or more for family, caring or health reasons. The trust helps them come back into research. Welcome and thank you, both of you, for joining us today.

I will start with Dr Jayasinghe. Is there a particular problem that we know about with the representation of LGBTQ+ people in STEM?

Dr Jayasinghe: Thank you for having me. I will start with the rather stunning statistic that LGBTQ people in STEM, broadly—not broadly, but the physical scientists in the UK—tend to consider leaving their jobs twice as much as their non-LGBTQ colleagues. That is quite a large disparity in experience.

Q228 **Chair:** How do we know that? What is the source?

Dr Jayasinghe: It comes from a survey conducted about three years ago by the Institute of Physics, the Royal Society of Chemistry and the Royal Astronomical Society of about 1,000 scientists in the physical sciences. It is a limited poll, but it is some of the best data we have from the UK.

Drilling down, I think the problem exists in two layers as far as this Committee is concerned. The first is what LGBTQ+ colleagues experience, which happens in two layers. First, there is the workplace culture that they find hostile, and that leads them down the path of thinking that they do not belong or that they cannot bring their authentic selves to work—I can explain that in more detail. The second part of the experience is structural blind spots in our sector, in the universities, in professional societies and in the industry.

The second layer of the problem is how we observe the experience across the sector. There are a lot of new data, new studies and new papers detailing their experiences, but the data is incomplete, especially relating to the UK, and it is incomplete in two different ways. One is that the data is not detailed enough to capture their experiences. For example, what kind of experiences lead them to think that they need to leave their job? Those nuanced experiences are not captured by the surveys we have been conducting in the UK. There are better examples from the US and other countries, and a really good example of good practice is the 2015 US survey of transgender people, which captured specific things like how they experience harassment in their place of education or place of work, and whether that led to them leaving college.

The second blind spot or shortfall in the data is that we fail to capture what we call the “intersectional” effect. The Committee may have heard that term before. LGBTQ is a very broad umbrella, but the idea is that some people within that umbrella also belong to another marginalised group, which amplifies the impact. I can give a metaphor: if you go to the cafeteria after this panel and there is suddenly a rule that everyone who is left-handed is not served food and everyone who cannot roll their tongue is not served drinks, people who are right-handed and can roll their

tongue will not be impacted, and perhaps have no intention of taking up the issue, whereas people who are left-handed and cannot roll their tongue are doubly impacted.

An ongoing joint project is starting to shed light on this. It is a US-UK bilateral project called “improving LGBT retention in STEM” and it is conducted by the National Science Policy Network in the US and by the UK Science and Innovation Network. This is an outline, but I can leave a hard copy with the Committee.

Chair: Thank you. We will obtain that and draw on it for our report.

Dr Jayasinghe: The effect of the outline is that, within the LGBTQ community, women, people of colour and people with disabilities have experienced a greater impact, so it is not a flat landscape.

Q229 **Chair:** You are absolutely right, and this has come up in several sessions and in our written evidence. May I ask some contextual questions? You gave some striking figures on people dropping out of the STEM workforce. Do you know anything about, as it were, recruitment into the workforce? Is there any particular relative lack of LGBT people going into the workforce, or in so far as there is a problem, is that about people having bad experiences and dropping out?

Dr Jayasinghe: There are qualitative, documented experiences on this. A report that came out through a major UK charity championing LGBTQ rights last year said that among school students and undergraduate students, LGBTQ students are under-represented.

Q230 **Chair:** In STEM?

Dr Jayasinghe: Not in STEM—in general, in education. By proxy, I would extrapolate that, but I think that reflects the gaps in our data and in our understanding.

Q231 **Chair:** Have you seen any evidence as to whether there is a particular problem, or a greater problem—in so far as there is a problem at all—in STEM, compared with other disciplines?

Dr Jayasinghe: There is data outlining the specific experiences that are problematic. A paper published in *Science Advances*, which is a highly respected journal in science, early last year said that LGBTQ people are less likely to get jobs or opportunities and are more likely to be socially excluded. Remember, science and technology is a social game. We work in teams, so if there is social exclusion, you are not really bonding into the teams.

There is an experience that they described as “professional devaluation”. That is the idea that for a certain task that you perform, your contribution is undervalued compared with a non-LGBTQ colleague, and this paper outlines that with specific data from a survey across the US. We know that similar experiences exist in the UK, but the data—the numbers—do not. There is a real need to learn from the surveying approaches in the US and

have an introspective approach here, to understand if it is corroborated here as well.

Q232 **Chair:** So there is not a great deal of data around it. In terms of the data that you mentioned about people leaving careers because they feel discriminated against or unwelcome, does the data show that that is a STEM problem within academia, or is that across the full range of academic disciplines?

Dr Jayasinghe: The answer to that specific question does not exist in the data because that has not been surveyed, but we know that even within STEM, that experience can vary quite a lot across different disciplines. There is a survey that I referred to earlier in the physical sciences—that captures chemistry, physics and engineering, I believe—and there are differences within those disciplines.

Q233 **Chair:** Can you describe them? Can you summarise them?

Dr Jayasinghe: I do not recall the exact numbers, but I believe the experiences were slightly more negative for physics backgrounds.

Q234 **Chair:** Is there any reason to suppose that that negative experience captured in that survey is a particular problem for STEM, or is it something that happens across academic research generally? Is there any research or insight into that? Is there any reason to suppose that STEM is worse, as it were?

Dr Jayasinghe: For a very long time, STEM has had this stigma of what I would describe as a “don’t ask, don’t tell” culture that we are starting to break down. I think in other disciplines, like the humanities and social sciences, sexual orientation and gender identity have been talked about in a broader sense for a longer time. We are starting to break those stigmas down in STEM, so that is why there is a renewed interest, but we just have not had enough time and invested enough effort into understanding that.

Q235 **Chair:** You have had your career in universities. You are now at Sheffield and you have been at Exeter, and I think the University of Auckland as well. Of all the environments in which you would think that to be LGBT would not be a problem compared with other environments, you would think that a university environment is probably the most supportive. Tell us about your experiences as someone who has worked in universities. Do you observe that?

Dr Jayasinghe: Again, I think I am heavily biased, because I have spent my entire career in universities; I cannot say faithfully how it is in industry—

Chair: And other places, yes.

Dr Jayasinghe: But my experiences have varied quite a lot. The University of Auckland, for example, has a very progressive and really big inclusive culture. They have a queer community, a network, a safe space for queer people. Some other universities didn’t. In some other universities that I have worked in, which I will not name, there have been



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quite exclusionary cultures, where departments have included Christmas dinners that have involved an open mic for homophobic jokes. That is not a workplace where you can bring your authentic self to work, let alone build a career and be creative and open your mind to innovation. I think that until we really dial down the hostility, you are not going to extract the best out of these individuals.

Q236 Graham Stringer: It would be much more interesting if you told us which institutions you have found to be prejudiced.

Dr Jayasinghe: I will refrain from doing so, because I have colleagues and collaborators in some of those institutions and I think, for some of them, that experience is still ongoing. So it is quite confronting for me to go on record and—

Q237 Graham Stringer: I understand that; it would still be more interesting. You talked about Christmas dinners. Do you mean because Christmas dinners are associated with one particular faith, or it was homophobic jokes “at Christmas dinners”?

Dr Jayasinghe: It is homophobic jokes at Christmas dinners.

Q238 Graham Stringer: Right, that’s clear. As Greg said, there is, particularly in universities but also generally, good will towards taking discrimination out of the system. What changes, what radical action, would lead to the best changes in the system? Could you both answer that?

Dr Jayasinghe: The universities are not solo actors in this situation; the funders have a big role to play in enabling careers and awarding the funding to individuals who are diverse—this Committee is all about that. So I think that the funders have a responsibility to take, and there are two things that I would really recommend. One is to take a really systematic approach of collecting the data in the areas where we have blind spots, the areas that do not currently capture the experiences of LGBTQ people. That needs to be done by both the universities and the funders. The second recommendation that I would make is that there needs to be a mandate—it could be held by a public body or a charity—to really adjudicate on how the workplace culture is being improved. We have equivalent charters on gender equality. We have an equivalent charter on race equality. We have a charity that has a track record in assessing how universities are doing when it comes to LGBTQ equality, but they don’t have a universal mandate; they have the framework. I think that, as a Government, as an institution, you can instil that.

Dr Perry: Certainly for universities, thinking about policies that will help with this area, one thing is not allowing those from under-represented groups—obviously, you have been talking about LGBTQ; I am thinking about all under-represented groups—to be invisible, and championing returners, women, those who are disabled and those who are LGBTQ, and leading from the top in departments. It has been my experience that many organisations are putting in place policies and procedures that allow barriers to be broken down, which will allow more representation of these groups. However, within university departments, there are still pockets of



extremely bad practice, perpetuated by these hierarchical structures that remain in place.

I think in metaphors, and on the train on the way here, an interesting metaphor popped into my head. University departments are quite often populated by those who have their permanent contracts; they're the ones in control, they're the ones in power. It is almost like they are sitting in a lovely, cosy, warm room, with a fire and their slippers on. What we need to do is, metaphorically, take them outside and put them in a freezing cold garden in their underwear. Then, they will understand the sorts of struggles that other people from under-represented groups are facing when they want to progress in STEM. That may seem an odd metaphor, but, really, that is what we have to do. We have to be radical; we have to challenge the status quo.

Departments and universities have to lead from the top. That is not just vice-chancellors; they can't take all the rap. Heads of departments could really show by example that they are welcoming to people from under-represented groups. In the department in which we sit, at the University of Surrey, the head of department quite boldly stood up at a meeting and said, "I have to leave now, because I have to go and see my children in a school play." That sort of behaviour shows that it is acceptable to have a work-life balance, and it is acceptable to have children. Flexibility is commonplace in the department in which the Daphne Jackson Trust is based.

Q239 Graham Stringer: You said a couple of things that I would like briefly to follow up. I cannot remember your exact phrase, but basically, it was that if people are gay or lesbian, the evidence shows that it is easier for them if they are out and people know that situation. Was the implication of what you were saying that coming out should be encouraged?

Dr Perry: I feel that we are now focusing on an area that I do not think that I can comment on from any position of knowledge. I will say, though, that what I meant—and I will give a reference to returners. I have spoken to university departments where I am talking about the Daphne Jackson Trust and they say, "Oh, I didn't even know we had a returner or a Daphne Jackson fellow in our department." What I am saying is that the supervisors and the heads of department need to make other staff aware that they have a Daphne Jackson fellow—a returner—and that they are valued within their cohort.

Q240 Graham Stringer: Right. You also mentioned, with the metaphor of the academic in his underwear outside in the cold, that having secure contracts would be of benefit. Do you think there should be a more generalised policy for early-career scientists, after a probationary period, to have more opportunities for permanent contracts?

Dr Perry: I certainly do. That is something that I mentioned at a previous meeting. I feel that the situation at the moment is a tremendous disadvantage to early-career researchers. The security that they need, which will help them to really establish a research career, is not there for



them. If you are moving from short contract to short contract, with no stability and security, then it is going to be very difficult, whereas we are looking at late-career researchers who have all of the security.

My suggestion was, "Let's be radical; let's change this completely. Give the early-career researchers—those starting out in their careers—some stability and a permanent contract, and, after a certain time in somebody's career, let the short-term contracts be fought over by those who are at a later career stage." I know that a lot of academics on permanent contracts will recoil in horror at that suggestion, but to be honest, if they have established themselves and are good enough at their job, they should not be worrying about that at all.

I would be for being bold, being radical and trying to do something that will shake things up completely. If we think about covid, three years ago, somebody would have sat at a table like this and, if they had been suggesting that the majority of the workforce would be working from home, they would have been laughed out of the place. We have to do things that are bold and radical.

Graham Stringer: You looked as though you wanted to come in, Dr Jayasinghe.

Dr Jayasinghe: I completely agree with that approach. I am in complete support of it.

Q241 **Graham Stringer:** You have talked about policies. Are there any legislative changes in this area that you think would improve things dramatically?

Dr Perry: Some legislation to allow more flexible working as a matter of course, so that people don't have to go and request it. I think that legislation around flexible working would be an advantage.

Graham Stringer: You are nodding in agreement, Dr Jayasinghe.

Dr Jayasinghe: Yes, I think so too. Also, connected to the funders, there needs to be more accountability. I think that previous witnesses before this Committee have said that it is not a transparent process if organisations like UKRI, for example, get to mark their own homework. They need to be held to account through an independent process, especially when it comes to monitoring diversity and inclusion, and how they are performing. A lot of these cultures that Katie has spoken about are not unique to universities; they are handed down by the funders. It is only right that they are measured by an independent body and not by their in-house diversity and inclusion team.

Q242 **Graham Stringer:** In terms of solutions, you have mentioned twice monitoring bodies. Can you be clear? Do you just want monitoring to know what is going on, or do you want to pass control to these bodies?

Dr Jayasinghe: It is not passing control; it is basically about having accountability and transparency in the way the data is collected, curated



and interpreted. At the moment, all of that lies in the hands of either the funders or the individual universities. They don't tend to speak to each other. I think this is a theme that you may have heard about from previous witnesses. What you want is a body or an organisation or a person that does that, and then collaborates with UKRI or the universities to find out whether their conclusions check out. UKRI cannot conclude or pass judgment on their own practices.

Graham Stringer: Thank you.

Q243 **Carol Monaghan:** I have a few questions based on what I have heard already. I think there are points for further discussion that probably go far beyond this Committee, but one of the things I want to talk about is recruitment. You have painted a picture, Dr Perry, of the cosy person sitting in their office, and when you painted that picture I automatically went to my stereotype: white, male, grey-haired or nae-haired, as I say. Unfortunately, it is not just among that type of demographic. I have had informal chats with groups of young students and they are quite clear, regardless of their gender or their sexual orientation, that they want any appointments to be based on ability and the best person for the job.

We can have a whole big discussion about that, but how do we break down those kinds of attitudes among new potential academics who are coming through? Maybe that is a question for both of you.

Dr Perry: I am just trying to work out what the question was.

Carol Monaghan: The question is: if young, potentially early-career researchers or academics have some of those ingrained stereotypes and have heard these messages of, "I want to be appointed on ability," how do we break that down and say, "Actually, at the moment appointments are not always made on ability"?

Dr Jayasinghe: I think the LGBTQ community in STEM do this quite well at the moment. My organisation—LGBTQ+ STEM—is the longest-running conference in the world, to our knowledge, that gives a platform to LGBTQ+ researchers. The idea is that, by boosting their visibility and celebrating their achievements, you really break down the stereotypes. A young person who aspires to be a scientist can see that person on the stage talking about science and aspire to being that way, if they identify that way.

Q244 **Carol Monaghan:** What about those youngsters who are not necessarily identifying that way? How do we break down the stereotypes for them as well?

Dr Jayasinghe: With some of the platforms that we have created, yes, the platforms are there to showcase LGBTQ+ scientists, but we always make it very clear that science is a team environment. I lead a research group, for example, and currently I am the only LGBTQ+ person in that group. It is a small group of five people. When we talk about work, we acknowledge people correctly for their contributions, whether they are LGBTQ+ or not. I do not think it is helpful to think of inclusion of LGBTQ

people or women or people from ethnic minorities as a zero-sum game. We are not improving the visibility of those minorities at the expense of someone who does not identify that way. It does not seem to work that way in universities from my professional experience.

Dr Perry: Transparent hiring practices and accountability are key within universities.

Q245 **Carol Monaghan:** Thank you. Dr Perry, you talked about heads of departments. How do we monitor the behaviour of heads of departments?

Dr Perry: Well, at the moment, I would have to say that each individual university will have different procedures and policies in place for that. There are a number of organisations that offer a way of, if you like, assessing a whole department, such as Athena Swan or, in physics, Juno. Those measure the whole department and the culture within it. But it is down to individual universities how they monitor what happens within their university. I would say that from the top—from the vice-chancellor down—there should be transparent, accountable practices. Those who are working in these departments know what the real situation is and whether the culture is good or not. That is a bit of a million-dollar question, really.

I am talking from my experience of dealing with returners, so I am kind of side-stepping out of my area of expertise here with some of the answers I am giving. I wouldn't want to say anything and then realise that it is not the case, but my knowledge is that there is nothing that will routinely monitor heads of departments and how they act.

Q246 **Carol Monaghan:** That is useful. I just want to ask you one final question. The Daphne Jackson Trust is about returners to academia. How are you measuring the long-term impact of the work that you are doing? Are you following them through their career journey?

Dr Perry: Absolutely. Every five years we do a survey of our former fellows. In fact, our impact report is about to be published. We had a 90% response rate to the survey that we sent out to our fellows. We have a tremendously good relationship with former fellows, so we can show the impact of a Daphne Jackson fellowship in a longitudinal way over the course of an entire career, from when Daphne Jackson first started offering the fellowships. We can certainly say that 90% of our former fellows stay in research or teaching for a period of at least five years post fellowship. For every £1 that is invested in a Daphne Jackson fellow, they secure nearly £2 in additional research funding subsequent to their fellowship, and 10 of our former fellows have gone on to become professors. That rate is five times the national average.

We keep very close track of our fellows. Our fellowships work. The data is all there. We have also done a barriers survey, which looked at the barriers to progression in careers. We did that with our cohort of Daphne Jackson fellows and with the Wellcome Trust research career re-entry fellows. That data will be published as well, listing the barriers that returners are experiencing and why they do not either return to a career or progress in careers.



Chair: Thank you. The Committee would be grateful to have that evidence.

Q247 **Graham Stringer:** I would like to return to a point with Dr Jayasinghe. I hope you don't find this offensive. Discrimination in the south of the United States was dealt with by legislation because people knew that Georgia and Alabama and Texas were racist. Equality Acts were passed in this country because people knew that Ford at Dagenham, among other places, discriminated against women. If you aren't to tell us which universities you think have discriminatory practices, how are we to help?

Dr Jayasinghe: Sorry—I missed the last part of the question.

Graham Stringer: We are a Select Committee looking at improving the situation in STEM for people who are discriminated against, potentially and really. How are we to carry out that job if you won't tell us which academic institutions you believe to be discriminatory?

Dr Jayasinghe: I think the problem is that there is no mechanism. The only mechanism that exists is to take the university to court. There are currently court cases in the UK relating exactly to that—for example, court cases relating to how universities' IT systems have systematically discriminated against LGBTQI people. These are court cases that are in front of a court of justice. That is the only mechanism that we currently have. A Committee like this would want to look at other failsafe mechanisms.

Q248 **Graham Stringer:** I think you are missing my point. You are here at the centre of the democratic process in this country. We want to find out as much information as we possibly can. Having your view and experience of which academic institutions have been discriminatory would certainly help me, and I guess it would help the other members of this Committee. I understand your original answer, that it is difficult because of colleagues.

Dr Jayasinghe: It is also difficult because I don't know of all the discriminatory practices that go on—

Graham Stringer: But any would be helpful.

Dr Jayasinghe: That's true. I think there has to be a process for academics, scientists and STEM professionals to submit complaints. That is a process. I think you cannot expect one witness who you have summoned to the Committee to capture all of those specific cases.

Graham Stringer: No, not all, but just some of it.

Dr Perry: Might I answer? I feel that you are touching on something here where we need to dial it back a little. There is certainly a culture of fear, certainly for returners. It came up in our barriers survey—that there is still a view that they feel they cannot state bad practice. They cannot talk about it, for fear of retribution, for fear of being labelled awkward, for fear of it negatively impacting on their career. Unless we sort that out, you are not going to have people willing to say, "Look, I've experienced this



bad practice.” This is why you have whistleblowers, because they wish to remain anonymous and they don’t want their career to be negatively impacted.

We work a lot within the EDI area with a number of other organisations who are doing extremely laudable things to try to promote EDI and therefore more inclusion. Social media is a killer; people can get out there and say one thing with slightly the wrong terminology and be absolutely castigated on social media. It remains that, even among collaborating organisations that I work with, people are extremely fearful of putting their head above the parapet and saying what they are doing for fear that they don’t quite say it in the right way and then they have an army of people on social media trashing their organisation.

On our website, even a short while ago, we still had the terminology “men” and “women”. We had an organisation on social media that was saying, “I think it is absolutely disgusting that the Daphne Jackson Trust is not open to those who are gender non-binary.” Well, of course we are, but because our terminology stated “men” and “women”, they took deliberate offence at that. We have obviously changed the terminology now to say that our fellowships are open to “individuals”. We are open to all. There was that intended offence that was taken. None was intended from our side, obviously.

What got me most about that was that the organisation making these allegations had “women” in its title; it was the women-in-whatever academic network. You have touched on something that is a much larger issue. Unless we stop this culture of people not wanting to say what they are doing for fear that they will say it in slightly the wrong way, we are not going to get anywhere with people calling out bad practice.

Graham Stringer: Thank you.

Q249 **Chair:** I want to pick up on Graham’s initial exchange with Dr Jayasinghe. I quite understand that individuals, for understandable reasons, often do not want to raise their head above the parapet and report instances of bad practice, but it seems to me that in terms of discrimination or bad behaviour towards LGBT people, every university that I am familiar with would be horrified at such a thing. While the individual academic may feel concerned about raising a complaint, surely a network like yours—a national network of LGBT people—can do precisely that. You could tell us that that you aware of a particular pattern in a certain institution without it being remotely traceable to the individual complainant. Isn’t that not only an important but a very direct way of tackling a problem, rather than the indirect and rather difficult way of conducting research and surveys?

Dr Jayasinghe: Yes and no. On reporting and holding institutions to account, our network alone would not be able to do that. We are a small organisation with a very small budget and remit; we would need a mandate and resources behind that. But a network like that exists already, and it is called Stonewall. Stonewall has been monitoring how universities



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are performing in terms of meeting human rights and basic human dignity for LGBTQ+ people. Certain universities have opted to pull out of Stonewall, and I am not here to comment on that. That is a choice made by their leadership.

The argument for the need to collect data is the same as the needs that we have seen for other marginalised groups. The data that we will collect will be a yardstick for you to implement proportionate and appropriate adjustments to improve LGBTQ inclusion. It is a yardstick to measure how well you have done in retrospect, perhaps in five years' time. Data collection has to happen independently.

Q250 **Chair:** I do not want to imply that we should not collect data; that is obviously, always and everywhere, useful. But in addition to that, the Committee will be all ears to hear from your network, and you in particular, reports of bad practice by any individual institution. I would have thought that the effect of you putting that into the public domain, anonymously for the complainant, would be pretty instant in galvanising a response.

Dr Jayasinghe: That is happening right now. The biggest barrier to that happening more broadly, as Katie outlined, is the sort of approach that institutions implement that necessitates whistleblowers. Institutions such as universities are very good at issuing non-disclosure agreements in response to events of harassment. The data exists that the harassment experienced by LGBTQ people in academia, in science and in STEM is worse statistically. We know that universities carry out this practice broadly in the UK. It is one of those situations where, when a victim is essentially silenced, what are their options? Yes, networks that champion LGBTQ inclusion can play a role, but we will be going directly up against a university and we will be legally liable to defamation and all sorts of other accusations that universities will make.

Q251 **Chair:** You do have the opportunity of parliamentary privilege to be protected from that here as a witness to the inquiry. I think you have understood the point: if there is bad practice that ought not to be taking place, this inquiry by this Committee, with parliamentary privilege, gives you the opportunity to do something about it, and it is available to you while the inquiry continues.

Dr Jayasinghe: I can give you an example. There is an ongoing dispute at the University of Leeds—it is leading towards a court case—where a number of employees who identify as transgender or non-binary are suing the employer. Those employees have made their transition during their time in the university, and the university's IT system has not complied with what the Equality Act says—that the new names of those employees and students must be updated and they must be referred to by those new names and pronouns. That is an example where an institution has failed its students and staff, and this happens up and down the country.

Chair: Thank you. That is a helpful specific to conclude this very instructive session. I thank our witnesses in this third panel, Dr Katie Perry



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and Dr Izzy Jayasinghe. That concludes this meeting of the Committee.