

A Limit Less life with physics

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The Limit Less campaign, launched by the Institute of Physics, is reaching out to everyone who has an influence on a student's beliefs about what physics is and whether someone like them has a future in physics. We are campaigning for more young people from underrepresented groups to take physics from the age of 16, through changing attitudes and shaping policy decisions. By building a diverse and inclusive physics community, young people can make their own choices about doing physics and enjoying the opportunities that it offers. No one should feel excluded because of stereotypes or someone else's idea about whether physics is for them – physics is for everyone. We need teachers and school leaders to add their voice to the manifesto (<https://campaign.iop.org/manifesto>) to show our elected leaders that there is a demand for change that they cannot ignore.

Last month's exam results underscore the inequity in physics. Not studying physics is going to hit those who would benefit most the hardest. Physics is a living, empowering subject that allows you to be creative, think for yourself

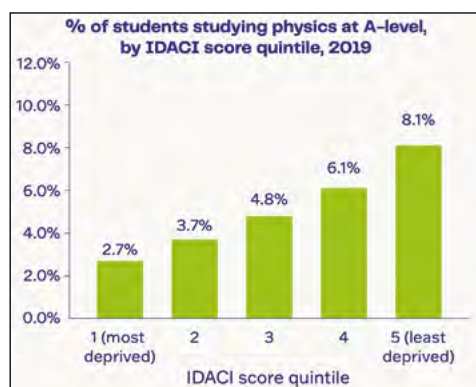


Figure 1. All state schools in England, 2019. Source: Improving Gender Balance and Drayson Foundation Pilot Project Evaluation Report.

and provides a raft of transferable skills that are respected by employers and universities alike.

There is a growing demand for physics skills outside the traditional academic route post-16 through to university. Climate change and the energy crises need a skilled workforce; there are jobs for everyone in physics. Many young people are missing out on rewarding studies and well-paid jobs because of where they're from, what they look like and who they are.

Whether 'girls don't like physics' or 'found the maths too hard' sparked much debate earlier this year, but inequity in physics is not a new problem. The percentage of female students taking physics post-16 has remained at around 23% across most of the UK for several decades. In Northern Ireland, although overall uptake remains low, this year the proportion of female students has increased to 29%. But it's not just girls who are left out of the equation.

Students of Black Caribbean descent had the lowest progression rate to A-level physics in the 2019 reported data for English state schools.

This year's GCSE results in England show that we are far from 'levelling up' and that the gap in student attainment for higher grades has widened, notably between the North-East and London. Coming from a poorer background poses another barrier to studying physics courses required for universities (see Figure 1).

Disabled young people and LGBT+ young people are also less likely to study physics or else face an unwelcoming environment. But we can influence those whose opinions matter most to young people...

Over 2,000 parents and carers were involved in a recent study that examined



factors affecting the likelihood of taking A-level physics. Hamer and Jones (2022) found that **having a parent or carer who agreed that 'physics is useful for getting a good job' was the most significant factor affecting subject choice** and that this had double the effect on the 10-point likelihood scale as 'being a boy'.

Involving parents and carers from the start can help children and young people to challenge inequality in wider life. Taking a whole-school community approach, including having regular conversations about careers and jobs from physics can help to challenge the stereotypes and societal expectations about who does physics. The IOP has created a new suite of resources for 12-15 year-olds and their families, along with lesson plans and PowerPoints for teachers.

The start of the school year is an excellent time to start conversations about where physics can take you and to join other schools who have signed our manifesto.

References and resources

Limit Less resources for 12-15-year-olds and their families, teachers and volunteers
www.iop.org/careers-physics/careers-resources

Teaching without limits: nurseries, schools and whole school equity plans
www.iop.org/strategy/limit-less/nurseries-schools

Improving Gender Balance and Drayson Foundation Pilot, Project Evaluation Report, <https://tinyurl.com/IOPdata2020>

Jones, K. & Hamer, J. (2022) 'Examining the relationship between parent/carers' attitudes, beliefs and their child's future participation in physics', *International Journal of Science Education*. 10.1080/09500693.2021.2021457

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