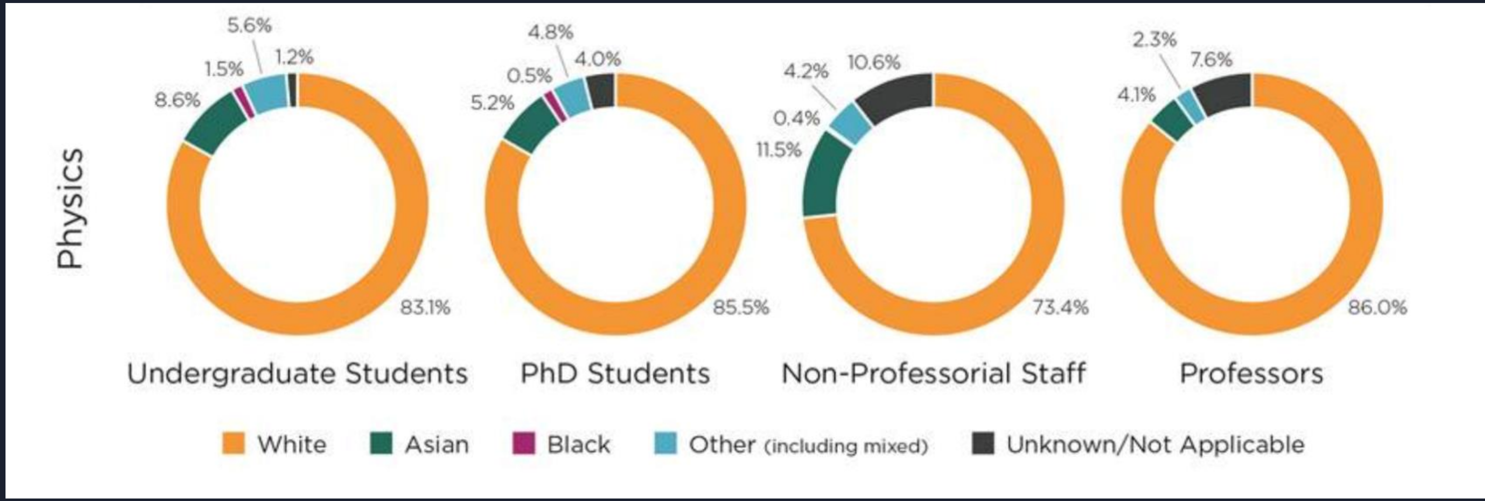
ORBYTS

Research-with-School Partnerships

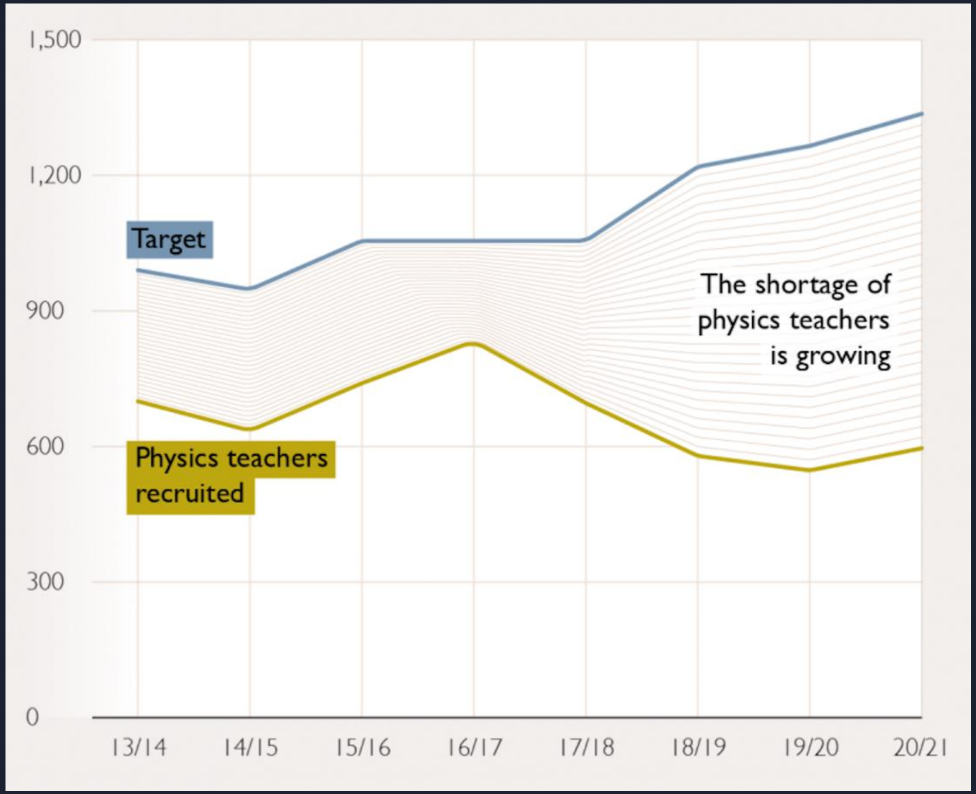
2021 Widening Access Initiative

UK PHYSICS CHALLENGES:

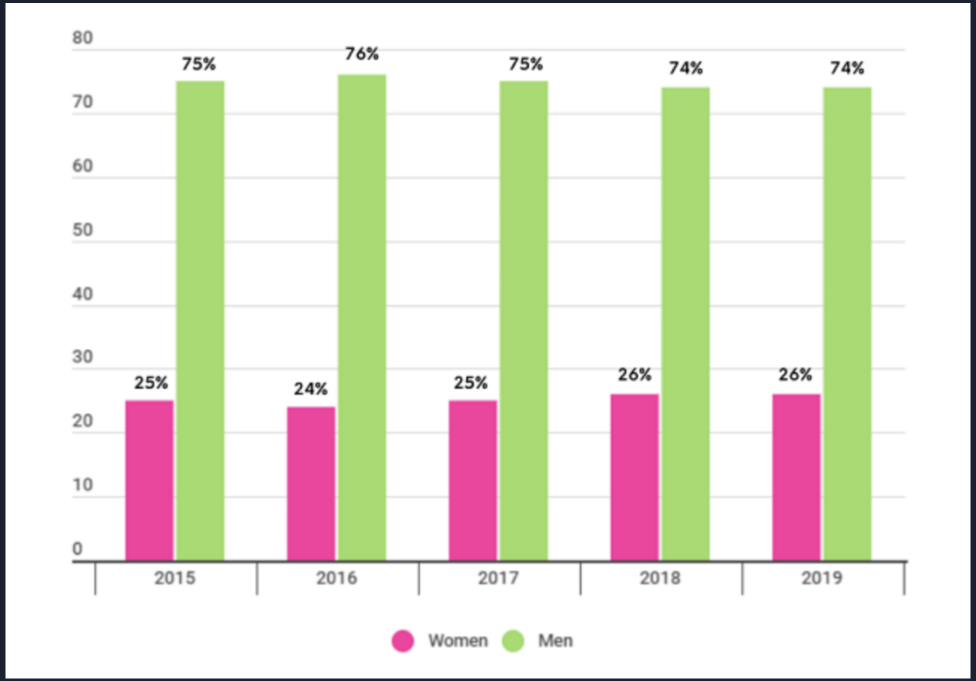
- Chronic Teacher Shortages



Royal Society of Chemistry – data from HESA 2017/2018



Gatsby Foundation – data from Department for Education



STEM Women - data from UCAS

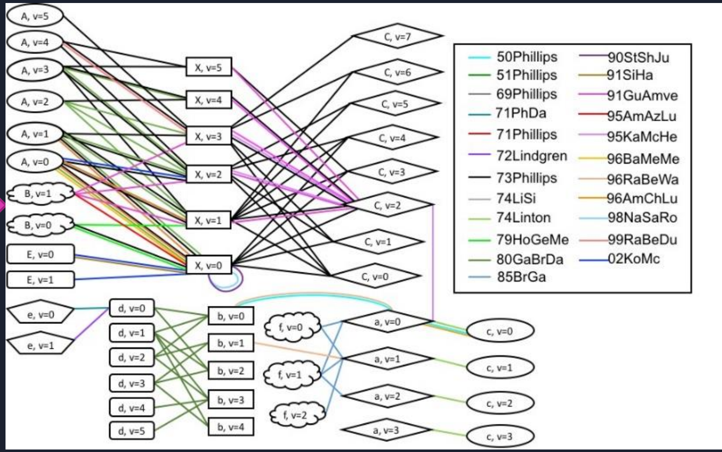
- Chronic Diversity Issues

WHAT IS ORBYTS?

PARTNERING RESEARCHERS WITH SCHOOLS

Researcher
(Dr Clara Sousa Silva)

School Students
(Higham’s Park – state school in low SES region in North London)



Cutting-Edge Research
(and subsequent publication)

HOW DOES THE PROGRAMME WORK?

- PhD/Postdoc researchers mentor research project
- ~1.5 hours/week Nov-April
- Groups of ~10 pupils per tutor
- Performing original research
- Present at schools' conference
- School groups must be at least 50% Pupil Premium and at least 50% girls

WHY DOES IT WORK?

1. Long-term engagement
2. Relatable role models
3. Giving students a sense of agency and ownership of science
4. Supporting over-worked/over-timetabled/non-specialist teachers

WHAT IMPACT DOES ORBYTS HAVE?

- 100% increases in the uptake of post-16 STEM by girls
- ~90% of Orbyts students go on to take a STEM subjects at the next level
- Orbyts students are in the top 1% value added
- Since 2018, enabled 192+ school students to author papers
- 100% teacher retention over the last 4 years
- 100% University uptake following the programme at A-level from those schools who we have the data from.

WHAT IMPACT DOES ORBYTS HAVE?

“in a tough year with significant professional challenges to overcome, this has been a real "get me out of bed in the morning" kind of project…The ***project has fed back down through the school*** *with ORBYTS members giving presentations to lower year groups and* ***it's even changed my teaching*** *to my 13 year old students…Multiple other staff have become involved and have had* ***valuable subject knowledge gains*** *and through the school publications the wider school community -* ***parents etc have also become enthused*** *and are talking with their children about the project even if they're not directly involved.* ***ORBYTS is definitely one of the coolest things I've been exposed to in my 15 year career****.”*

THIS DOESN'T ONLY BUILD THE SKILL BASE OF OUR SCHOOL STUDENTS, IT'S ALSO TRANSFORMATIONAL FOR RESEARCHERS

Symbiosis of researcher and school

Real communication training

Extensive pedagogical experience

New perspectives on your research

Leadership & management training

Chance to change the lives of young people

Fun Factoid

SUMMARY

- Orbyts creates meaningful partnerships between researchers and schools
- Students experience original science research and researchers gain valuable professional skills
- Schools see significant improvements in diversity in A Level STEM subjects and improved teacher retention

We very much welcome new partnerships and are happy to discuss any aspect of the programme

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WHAT IMPACT DOES ORBYTS HAVE? TESTIMONIALS FOR SHARED SLIDES

Teachers say things like:

“Putting early-career researchers in front of school students is massively important. It's had an unimaginably powerful humanising impact for our students…”

“More than half of the students in the project are female. The confidence building I've seen them go through in the last few months has been amazing. Most of them started the project very nervous, thinking there was no way they'd ever understand anything and doubting that there'd be anything they could possibly offer of value. The first time I heard one of these students cry out "hey wait I get this .. this is cool"... m heart skipped a beat. This was coming from a student who at the start of the project didn't know about the basic wave properties of light due to the combination of courses undertaken in previous schools and subject choices since joining ours.”

“All bar two students in the project speak English as a second language - their levels of scientific literacy and their scientific vocalublaries have grown immeasurably…”

“As for how useful I've found the project - in a tough year with significant professional challenges to overcome, this has been a real "get me out of bed in the morning" kind of project. When X first explained the project to the students, I was whiteboarding out as he explained to help them see key words and help draw together threads. At the end of the session I stood back and said to myself "this is literally the coolest thing I;ve ever written on a whiteboard". The project has fed back down through the school with ORBYTS members giving presentations to lower year groups and it's even changed my teaching to my 13 year old students - all my magnetism stuff is now fed through the lens of the importance of our magnetic field and what the aurora on Earth tell us about the conditions necessary for life here. Multiple other staff have become involved and have had valuable subject knowledge gains and through the school publications the wider school community - parents etc have also become enthused and are talking with their children about the project even if they're not directly involved. ORBYTS is definitely one of the coolest things I've been exposed to in my 15 year career.”