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Recruiting, Training and Retaining Secondary Physics Teachers

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Aims

- To bring together what is currently known at a national level with experiences from the perspective of a HEI with a specialist physics ITT programme and undergraduate physics course.
- To raise questions and engage in a conversation around the challenges of physics recruitment with the teacher education community

Outline

1. Positionality and context
2. National context of physics teacher recruitment and retention
3. Overview of initiatives/ideas to increase recruitment and retention
4. Focus on UG teaching experience modules
5. Discussion

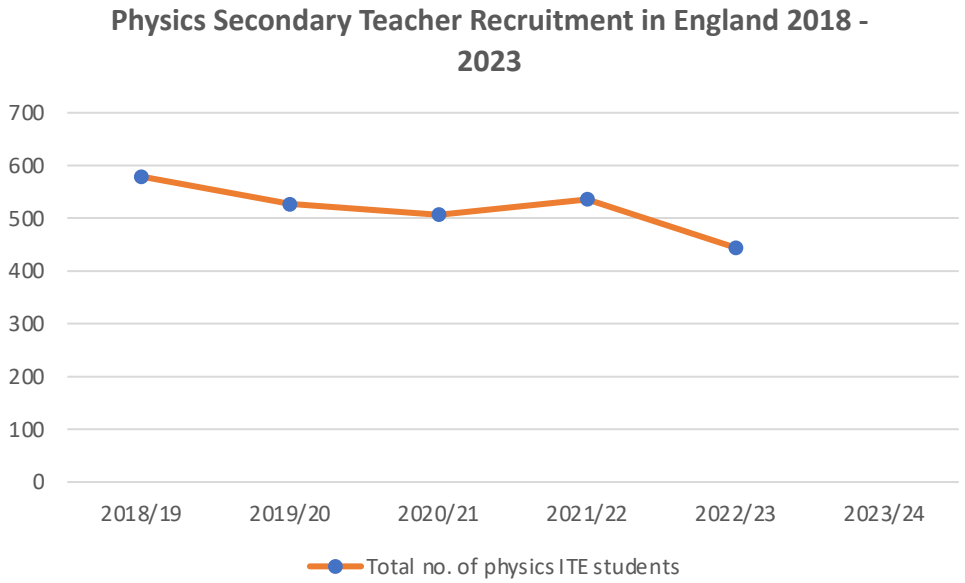
Positionality:

- Physics graduate
- 15 years as a physics teacher in a mix of schools in West Midlands
- Was Head of Science in large mixed selective grammar school in Birmingham.
- Physics is important! Involved in outreach and teacher CPD through IoP, Ogden, STEM Learning etc..
- Aim to increase both the quantity and quality of physics education for children by training physics teachers, researching physics education.
- Current doctoral student in education

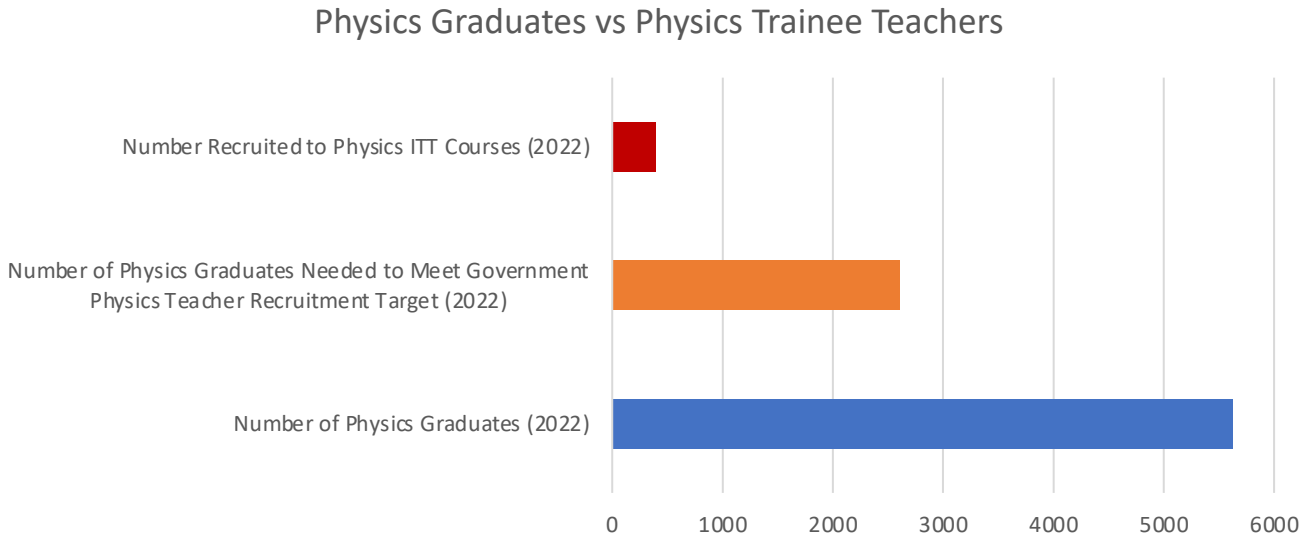
Context:

- University of Birmingham – Physics and Engineers Teach Physics PGDipEd (soon to be PGCE) ~60 Science trainee teachers aiming for 20 physics p/y (not there yet)
- Large Physics UG course ~170 students per year.
- Currently 50:50 in School of Physics and School of Education at University of Birmingham.
- Teach a variety of UG and PG modules
- Run projects in: Widening participation in physics, improving quality of physics education, physics teacher education.

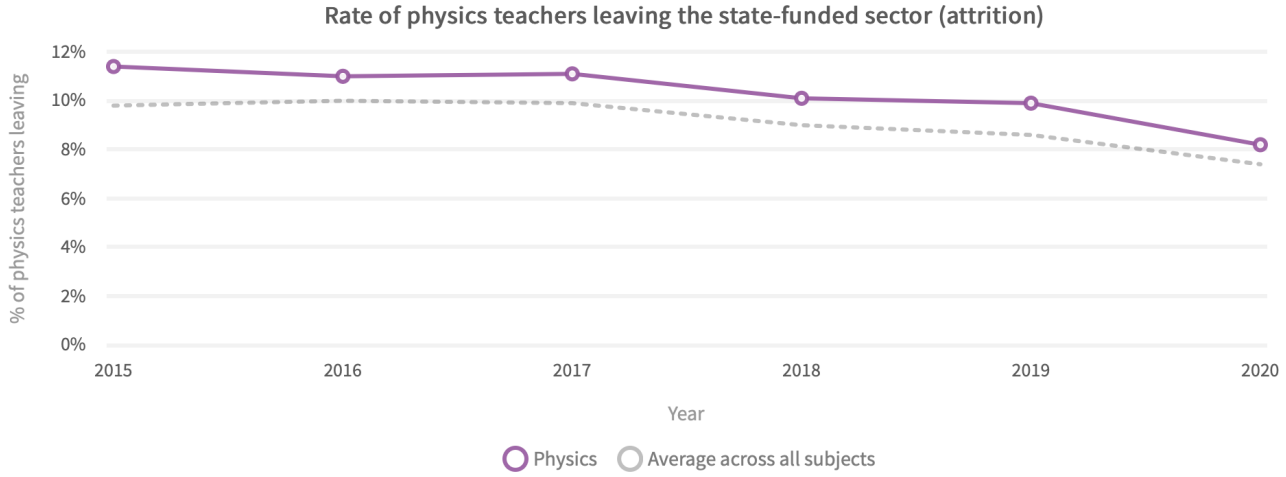
National context



Department for Education (2022). *Initial Teacher Training Census*. Data available at: https://explore-education-statistics.service.gov.uk/find-statistics/initial-teacher-training-census

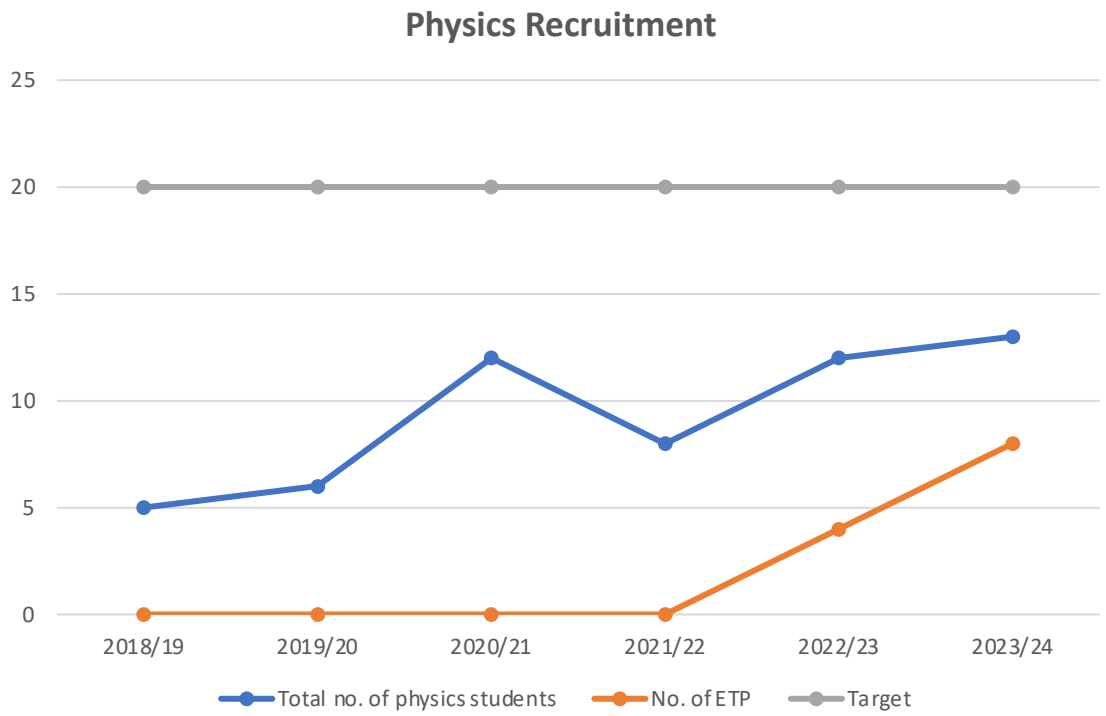


HESA (2023). Data available at: www.hesa.ac.uk



NFER (2023) Teacher recruitment and retention in England data dashboard. Available at: https://www.nfer.ac.uk/key-topics-expertise/school-workforce/explore-by-subject/

An example of an HEI provider:



On average recruit ~40% of students from UG physics

Physics graduates often teach maths instead.

Challenge finding enough specialist physics school placements and mentors.

Pressures of re-accreditation and ITT CFF ->

How to retain subject specialism focus?

Some current initiatives/ideas to increase recruitment and retention…

- IoP Limit Less Campaign
- Increased bursaries and scholarships
- Engineers Teach Physics
- International Relocation Payments
- Teaching internships
- Physics teacher retention proposals
- UG Teaching modules

IoP Limit Less Campaign

- High profile action on inclusion in physics building on Improving Gender Balance project.

- More training for teachers and in ITT on inclusive science teaching

IoP (2023). *Dismantling barriers to inclusion in physics*. Available at: https://www.iop.org/education/dismantling-barriers-to-inclusion-physics

Increased bursaries and scholarships

- A £10,000 bursary increase leads to 29 per cent more ITT applications

- Trainees induced by the bursary have the same completion and retention rates as others

- The additional teachers are more likely to work in areas of disadvantage

- Overall bursaries are cost-effective

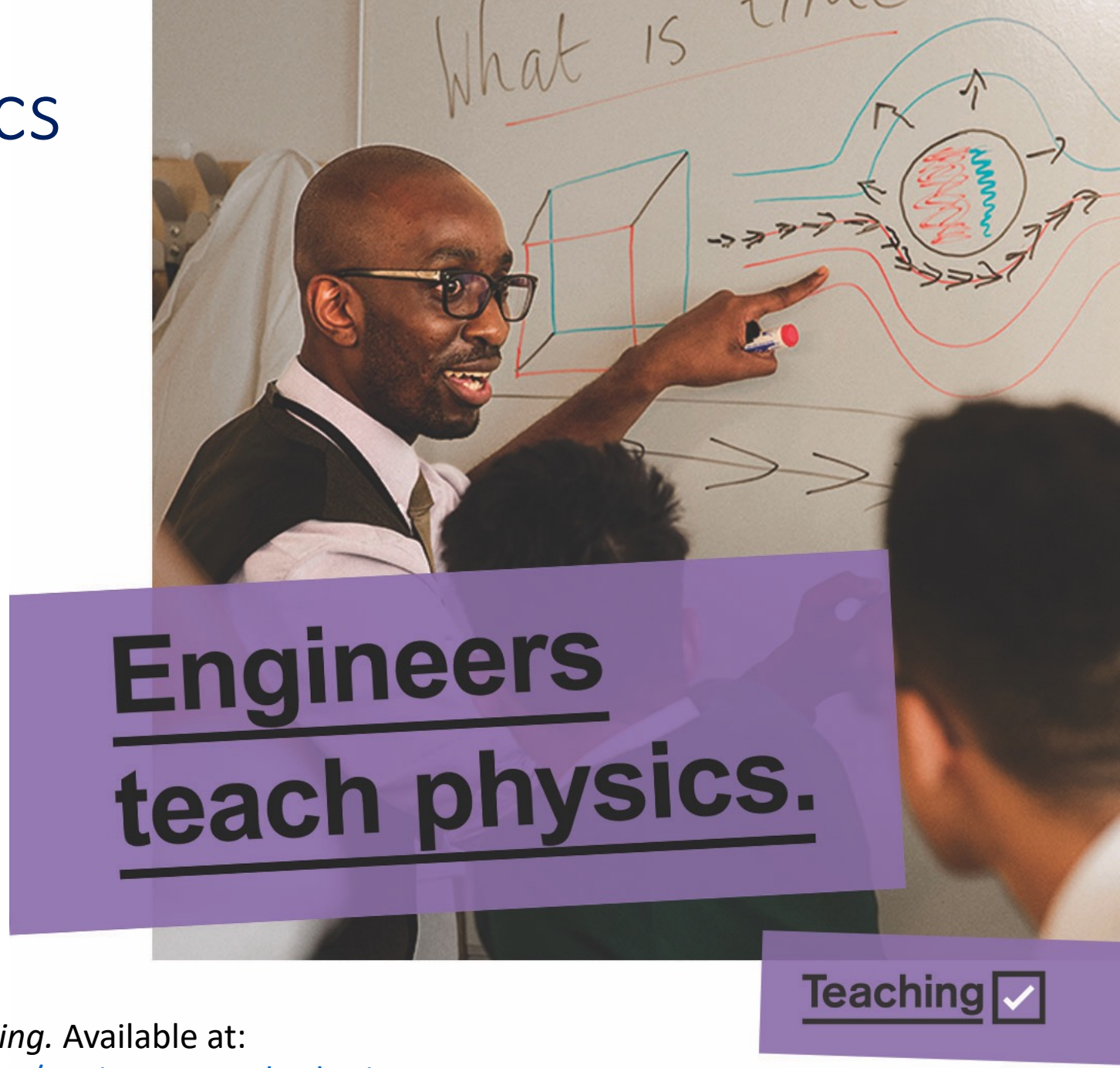
To what extent is there bursary tourism?

Are bursaries keeping up with other physics graduate salaries?

Dawson, S., Tang, S. and Worth, J. (2023). *The impact of training bursaries on teacher recruitment and retention: an evaluation of impact and value for money.* Slough: NFER. Available at: https://www.nfer.ac.uk/publications/the-impact-of-training-bursaries-on-teacher-recruitment-and-retention/

Engineers Teach Physics

- Targeting engineering graduates and career changers
- Same financial incentives as Physics
- Bespoke or adapted ITT courses
- National backing from engineering community (RAEng, IMechE etc..)



Department for Education (2023) *Get Into Teaching.* Available at: https://getintoteaching.education.gov.uk/subjects/engineers-teach-physics

International Relocation Payments

£10,000 one off payment (after first term of ITT) designed to cover: the costs of visas, the immigration health surcharge, other relocation expenses

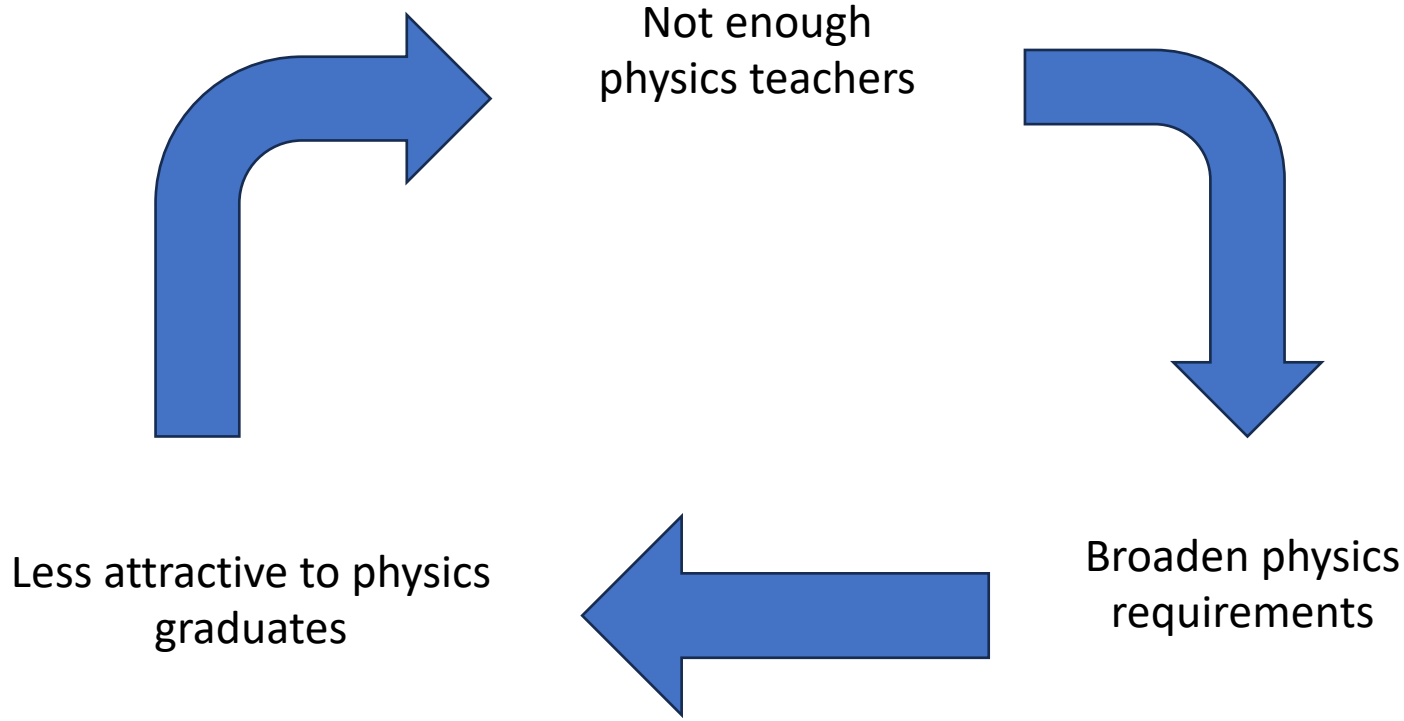
Impact on applications?

	To 10/11/22	To 10/11/23
Number of Physics ITT applications	5	192
Number of Offers	1	6
	5:1	32:1

Department for Education (2023) *Guidance: International Relocation Payments.* Available at: https://www.gov.uk/government/publications/international-relocation-payments/international-relocation-payments

Have we given up on UK physics graduates?

Does it matter if physics is not taught by physicists?



DfE Physics Teaching Internships

- 3 weeks long, paid and in shortage subjects.
- 89 currently offering physics
- Schools only eligible for funding (not HEI's)

Teaching
Every Lesson Shapes a Life

Ogden Trust Teach Physics Internships

- 4 weeks long, paid.
- ~50 places around England

The Ogden Trust

Teach Physics internships

Teach Physics internships provide four-week school placements for undergraduate students to give an intensive experience of teaching physics. Applications for placements in 2023 are now closed.

Department for Education (2023) *Get teaching experience with an internship.* Available at: https://getintoteaching.education.gov.uk/is-teaching-right-for-me/teaching-internship-providers

The Ogden Trust (2023). *Teach Physics Internships.* Available at: https://www.ogdentrust.com/teacher-support/teach-physics/

Physics Teacher Retention

IoP Perspective:

- Improving recruitment through dedicated marketing to engineers in relevant disciplines, and passing financial incentives on to initial teacher training providers to recruit to specific targets.
- Improving retention through reducing workload by deploying teachers to teach within their specialism, especially in their early careers.
- Supporting specialist teachers of the other sciences who are expected to teach physics through a formally recognised retraining programme for physics, coupled with a teacher bursary and funding for schools to buy out classroom time.

Rentala, H (2023) Why non-specialist teaching is harming retention. Times Educational Supplement. 18th September 2023. Available at: https://www.tes.com/magazine/analysis/general/why-non-specialist-teaching-harming-teacher-retention

CPD Support for New and Non-Specialist Physics Teachers

Ogden Trust Teaching Core Physics

https://www.ogdentrust.com/teacher-support/teacher-network/early-career-teacher-support/

Stimulating Physics Network – STEM Learning

https://www.stem.org.uk/secondary/cpd/stimulating-physics-network

Early career payments

https://www.gov.uk/guidance/early-career-payments-guidance-for-teachers-and-schools

UG Teaching Modules

- These modules help students make confirmatory decisions

- Difficult to assess whether these modules contribute to increasing recruitment

- Outcomes of modules are often about employability skills rather than just teaching

- Modules are often about outreach and community engagement for universities

Morris, R., Perry, T., Chung, S., Till, R. and Smith, Emma (2023) Trying out teaching : mapping and understanding undergraduate teaching experience modules in the UK. Coventry, UK: Department for Education Studies, University of Warwick. Available at: http://wrap.warwick.ac.uk/173053

Other perspectives…

Attraction and recruitment strategies based on 'seduction' approaches have a downside: although they may attract applicants in the short term, they may lead to unrealistically high expectations and lower job satisfaction

Klassen, R.M., Granger, H. and Bardach, L. (2021) Attracting prospective STEM teachers using realistic job previews: a mixed methods study. *European Journal of Teacher Education*, pp. 1–23.

Undergraduates in England, when considering future careers are most concerned about job satisfaction/enjoyment and interest in their subject area.

For undergraduates considering teaching, they are more motivated by having a chance to share their knowledge and give something back to society, than their peers are.

Gorard, S., Maria Ventista, O., Morris, R., et al. (2021) Who wants to be a teacher? Findings from a survey of undergraduates in England. *Educational Studies*, pp. 1–23.

What do physics UG students considering teaching think of physics teaching as a career?

- Final year physics undergraduates on a teaching physics module.
- New teachers claim to know about the demands of the job - but are often not prepared for the reality.

Perryman, J. and Calvert, G. (2020) 'What motivates people to teach, and why do they leave? Accountability, performativity and teacher retention'. *British Journal of Educational Studies* 68 (1): 3–23

- Realistic job preview approach

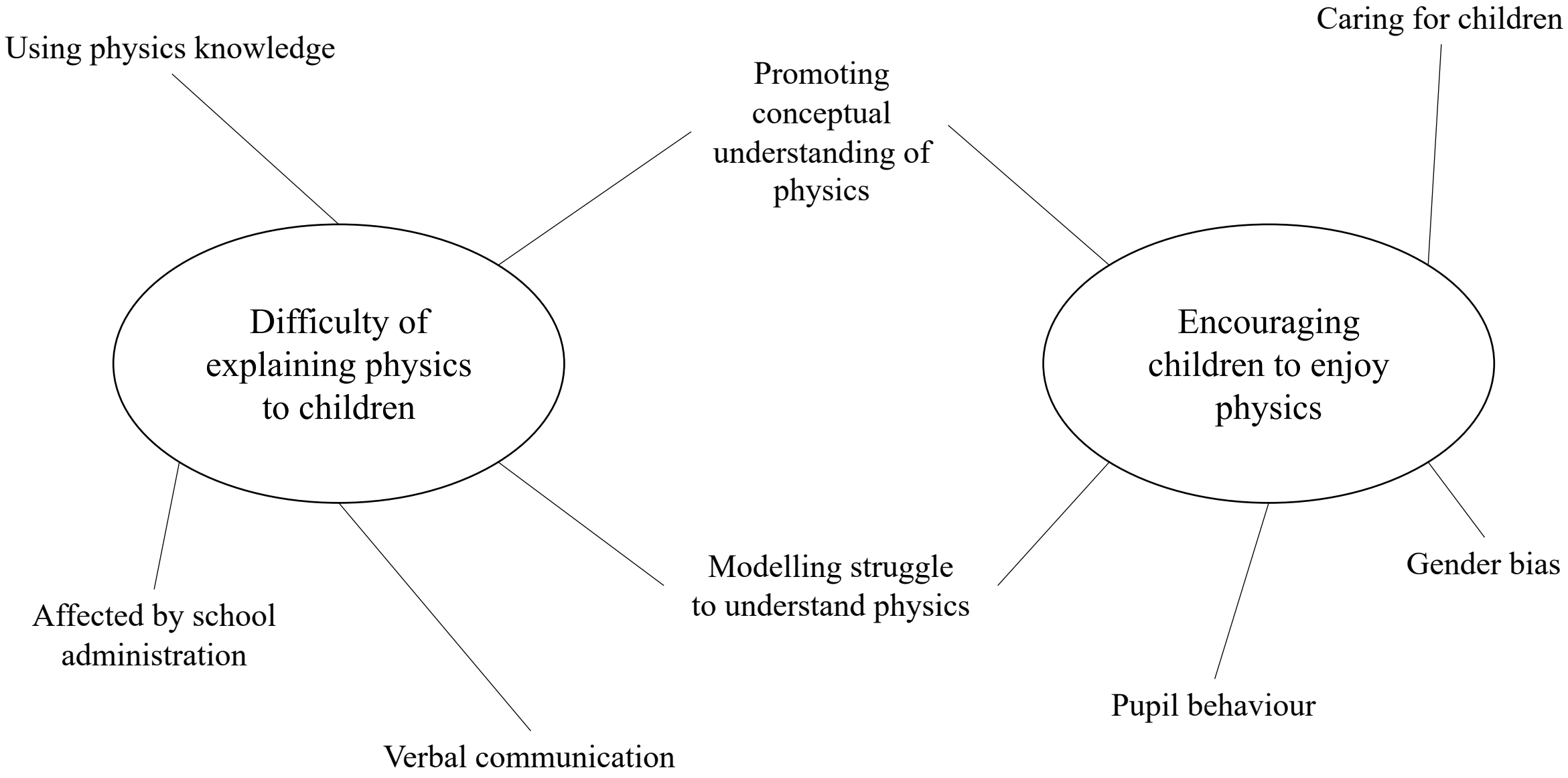
Wanous, J. P., (1973) Effects of a realistic job preview on job acceptance, job attitudes, and job survival *Journal of Applied Psychology* 58(3): 327–332

- Small scale survey (n=5) and follow up interviews (n=2) around teaching career perceptions and intentions after school placement

-Thematic analysis of data

Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3 (2): 77–101.

What do physics UG students considering teaching think of physics teaching as a career?



Cottle, D (2023) Exploring the experiences of undergraduate physics students taking a 'Teaching Physics in School' module and the effects on their intentions to become a secondary physics teacher. *Arxiv*. Available at: https://arxiv.org/abs/2311.06024

What do physics UG students considering teaching think of physics teaching as a career?

1 participant changed their mind about teaching – decided it was not for them e.g.

“Hard work, emotionally draining, and thankless”
“I'm not cut out for it”

2 intended to train to teach straight after their undergraduate degree e.g.

“I think it is a profession where I will get a lot of job satisfaction. It is a job which I am confident I can do well and make an impact into other's lives. Also, there is a national shortage of science teachers so I feel like I would be contributing towards a greater standard of science education by becoming a science teacher.”

“Felt worthwhile when you had positive experiences with students and made you feel like you are actually having an impact on someone’s learning.”

Others still undecided e.g

“My mum was a teacher and had to leave the profession because it was (un) sustainable for her in terms of her stress levels and enjoyment of work despite knowing the impact and positive parts of her job”

Cottle, D (2023) Exploring the experiences of undergraduate physics students taking a 'Teaching Physics in School' module and the effects on their intentions to become a secondary physics teacher. *Arxiv*. Available at: https://arxiv.org/abs/2311.06024

Discussion

1. Sharing and learning about each others context…

2. How does physics teacher education sit within the ITE curriculum and in the university and school context in your area?

3. To what extent is physics similar or different to other subjects in ITE?

4. Are current recruitment and retention strategies working? What would work better?

5. How much is known about what might influence physics undergraduates to consider teaching?

6. Are UG physics and ITE physics linked in any way? Is there any value in this?

7. What data would it be useful to obtain around physics teacher education?