ASSOCIATION FOR SCIENCE EDUCATION

ASE POLICY PERSPECTIVES

Addressing Science Teacher Shortages in Schools and Colleges

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About the ASE

The Association for Science Education (ASE) is the UK's largest community of science educators. We support science teaching and learning through professional development, a community of support, resources and advocacy. Our policy positions are informed by evidence, member expertise and our commitment to excellent science education for all learners.

Summary

There is a serious shortage of science teachers in schools and colleges across the UK; particularly of physics teachers, followed by chemistry teachers. Other STEM subjects, mathematics and computing, have teacher shortages too. Issues around working conditions and salary within an increasingly competitive employment landscape have exacerbated this problem. Young people are being disadvantaged by having their science educations affected by high staff turnover, as well as by varying levels of staff expertise and experience. Young people in areas of higher socio-economic deprivation are more likely to experience such challenges and with this their opportunities to pursue science at 16+ and 18+ are reduced. The ASE believe that the shortage of science teachers cannot be solved through salaries alone, action must also be taken to improve leadership, workload, professional development, and our understanding of why science educators are leaving the profession.

Background

Science education is a compulsory component of the National Curriculum in England and of the Curriculum for Wales and the Northern Ireland Curriculum. In Scotland, science is a mandatory part of the Broad General Education phase of the Curriculum for Excellence, typically up to age 14, after which they are entitled to study the senior phase of Curriculum for Excellence from 15 – 18 which includes the sciences.

A scientifically literate population is crucially important as we navigate the complex global challenges of the 21st century. The economic benefit that can be derived from young people entering further and higher education, training and employment in areas reliant on science is immense, but these roots can only be assured with a stable and well qualified population of science teachers who represent the three core disciplines of biology, chemistry and physics.

Key messages

- **Failure to recruit and retain science graduates into teaching**

The UK has consistently failed to attract and retain science graduates into teaching in recent years. In England, just 61% of the target for postgraduate trainees for secondary STEM subjects was met (up from 54% in previous year) and just 31% of the target for secondary physics teachers (up from 17% in previous year).

In Scotland 18% of probationers are reported to have dropped out before completing the course. Whilst teacher attrition in Wales is generally low, there are problems with recruitment in rural areas and less affluent urban areas outside Cardiff.

The average annual rate of teacher attrition is around 10% but the attrition rates amongst science teachers are much higher. A third of science teachers report that they plan to leave their role within the next five years. 18% say this is for reasons other than age or retirement and the numbers of science technicians leaving the profession is also increasing.

As a result, there is now an unprecedented and severe lack of specialist science teachers with current science industry knowledge. This means young people are being taught physics and chemistry by biology or mathematics teachers or by those teachers with little science or mathematics background.

- **The impact of workload and stress**

Problems with recruitment and retention are not attributable to salary alone: lack of status, professional autonomy, workload leading to stress and burnout as well as a lack of subject specific learning and development opportunities are all contributing factors to the retention crisis.

- Improving attrition rates through effective leadership
- Clear links between teacher job satisfaction and their likelihood of remaining within the profession have been established.

Therefore, it is a priority that action is taken to improve the job satisfaction of science teachers, and in so doing reduce the likelihood of them leaving the profession, taking with them experience and expertise which is not only of benefit to students but also other teachers.

Some of the factors impacting teacher attrition are systemic and therefore beyond the control of school leaders, however school leaders are responsible for school culture and internal policies and could implement evidence-based practices that could help to improve retention. Measures include:

- improving access and removing barriers to CPD;
- cultivating an atmosphere of trust and support;
- supporting autonomy and shared decision making; and,
- actively supporting teachers with student behaviour and discipline problems.

This is particularly important in schools and colleges in disadvantaged communities – where promoting supportive environments, recognising staff efforts and setting clear expectations can reduce emotional strain for teachers.

Recommendations

ASE believes that the shortage of science educators can only be detrimental to the quality of science education provision in the UK, but that the problem cannot be solved through financial incentivisation alone. We recommend that a comprehensive strategy for the recruitment and retention of science teachers is needed that addresses high attrition rates, the lack of specialist science teachers and the unique workload challenges of science educators.

Specifically, we recommend that:

- teacher retention is explicitly addressed in all of the relevant national leadership development programmes including specific elements of the NPQ suite in England and the National Leader Development Programmes in Wales and equivalent frameworks in Scotland and Northern Ireland;
- inspection processes highlight positive practices undertaken by school leaders which contribute to the retention of their teaching staff;
- a nationwide approach to exit interviews and surveys be introduced to help properly understand the reasons behind science teacher attrition;
- greater investment is made into high quality subject conversion courses to ensure all science teachers are fully prepared if required to teach outside of their discipline area/s; and
- a national review of teacher workload is undertaken to better understand, manage and reduce the demands placed on science teachers.

ASE policy positions are developed through consultation with our members and advisory committees. For more information or to contribute to our policy work, visit: ase.org.uk/our-policy-work.

This policy perspective is applicable to: England, Wales, Scotland and Northern Ireland
Thank you to the following contributing authors: Dr Mark Whalley; Marianne Cutler, Members of Policy Group
Reviewed by: ASE Policy and Advocacy Group, ASE Education Group
Last updated: July 2025
Next review due: July 2027

Supporting Evidence

Hutchinson, J., Kelly, J., Sibieta, L., Zuccollo, J. (2024). Incentives to recruit and retain teachers in Wales. Education Policy Institute (Welsh Government) https://www.gov.wales/sites/default/files/publications/2024-11/Incentives%20to%20recruit%20and%20retain%20teachers%20in%20Wales.pdf

McLean, D., Worth, J. and Smith, A. (2024). Teacher Labour Market in England: Annual Report 2024. Slough: NFER.

Nguyen, D., See, B. H., Brown, C., & Kokotsaki, D. (2023). Reviewing the evidence base on school leadership, culture, climate and structure for teacher retention. Education Endowment Foundation https://educationendowmentfoundation.org.uk/education-evidence/evidence-reviews/leadership-approaches

Whalley, M. (2024). Why did they leave? Exploring the reasons why former physics teachers left teaching. School Science Review – In Depth, 106(392)

Worth, J. (2023). Short Supply: Addressing the Post-Pandemic Teacher Supply Challenge in England. Slough: NFER.

Initial Teacher Training Census: (2024) Available here: https://explore-education-statistics.service.gov.uk/find-statistics/initial-teacher-training-census/2024-25 [last accessed 06/08/25]

The Science Teaching Survey 2024, 2023, 2022 Available here: https://www.rsc.org/policy-and-campaigning/education/the-science-teaching-survey [last accessed 06/08/25]