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Jasmine’s story (PGCE biology, class of 2011)

“I've always enjoyed physics but it has a reputation for being boring and difficult to understand. I've found there are some topics that kids nearly always find intriguing: space science, nanotechnology, radiation and nuclear physics. If you can start a lesson on something they will immediately engage with, it makes teaching more enjoyable.

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Nigel’s story (PGCE biology, class of 2011)

“My degree is in Biological Science but I worked in general management for over 20 years. I missed science and helping my own children through GCSEs and A-levels made me decide to be a teacher.

“I am training to teach general science up to GCSE and biology at A-level. The funny thing about physics is actually not the numbers, it’s the words. For example, ‘force’ means something quite specific. A lot of pupils think about such words in the context of their everyday usage, which gets in the way of understanding the physics. Finding a way to explain it so they understand it scientifically is both challenging and rewarding.

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Our children are growing up in a world where physics is central.

The UK economy benefits from an increasing number of physics-based businesses, while the solutions to global environmental and societal challenges require input from physics. It is vital that our future citizens understand the importance of physics and can appreciate its beauty. This can only be achieved through good physics teaching at school.

Keeping teachers in the profession is an ongoing concern. Fewer than half of new physics teachers are uncomfortable teaching across the science curriculum. Others are put off by their perceptions about life in schools and teachers’ workloads. We need 1000 new specialist teachers training each year for 15 years to reach our goal of a third of science teachers having a physics specialism. We are optimistic about the future. In early 2011, the government introduced targets for the recruitment of new physics teachers – 925 for 2011/12. This is an important recognition of the chronic shortage and a welcome commitment to investing in the future of physics in schools.

We know that specialist physics teachers (and non-specialists who have appropriate training) have a significant, positive impact on pupils’ success in and uptake of physics. We also know that there is a deficit of 4000 physics teachers in English schools and an estimated 500 schools have none.

The need for Learning to Teach Physics

• We need 1000 new specialist teachers training each year for 15 years to reach our goal of a third of science teachers having a physics specialism.

• Historically it has been difficult to recruit specialist physics teachers. Physics graduates are highly employable, so many don’t even consider teaching. Some decide not to teach because they are uncomfortable teaching across the science curriculum. Others are put off by their perceptions about life in schools and teachers’ workloads.

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The Institute of Physics wants all new science teachers to be able to teach physics topics with confidence, so we have put together a new programme for trainee and newly qualified science teachers, called Learning to Teach Physics.

Learning to Teach Physics is for all new science teachers, whether graduates in physics or other sciences. The programme’s resources are available to all trainee science teachers and those in their first years of teaching, enabling them to become empowered teachers of physics.

What is Learning to Teach Physics?

Learning to Teach Physics is a range of support for new science teachers that builds both subject knowledge and teaching expertise. It includes:

- materials to help teachers develop their own physics understanding
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- teaching resources at all levels, with dedicated lesson plans at post-16
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What’s included?

• learning materials
• electronic communications at relevant points in the year
• online discussion and support forums
• early-career advice
• dedicated lesson plans for post-16

Our Marketing Initiative for Teacher Recruitment

The Institute of Physics (IOP) project has been exploring ways to do this by:

• providing marketing support to teacher-training providers
• visiting physics and engineering undergraduates on campuses to promote teaching careers and tackle misconceptions
• advising prospective teachers on their teacher-training applications
• linking up with schools to enable prospective teachers to gain classroom experience

¹ 2007 ‘state of the nation’ report The UK’s science and mathematics teaching workforce, Royal Society
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Our team of physics network co-ordinators (PNCs), who are themselves teachers, run free hands-on workshops demonstrating engaging, entertaining and effective approaches to teaching physics, which are available to all secondary schools. We also provide intensive support for approximately 300 selected schools, offering coaching and peer-to-peer support for teachers, including in-school physics workshops for non-specialists.

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