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Swedish National Resource Centre for Physics Education celebrates its 20th anniversary

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What Happens Next? goes to Europe

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What Happens Next? goes to Europe



The much-travelled *What Happens Next?* physics lecture/workshop was presented in March in both Slovakia and the Czech Republic by David Featonby, its originator. These workshop presentations were funded as part of Science on Stage Europe's 'Take a workshop' scheme, in which workshops from Science on Stage festivals are shared with other countries, and they were supported by the University of P J Safarik, Kosice and Charles University, Prague.

In Slovakia the workshop was presented by David and Zuzana Jescova to upper and lower secondary teachers, together with pre-service teachers of physics at the Faculty of Science at the University of P J Safarik, Kosice. The workshop was also transmitted live by video conferencing to teachers in university departments in Bratislava, Bawskka, Bystucam, Truava and Nitra, as well as

a school in Poprad. Feedback was very positive. Participants were able to try several of the experiments themselves, following instructions that can be found in the *Physics Education* End Results section.

In Czech Republic (Prague) the workshop was presented to a large gathering of primary and secondary teachers and trainers at the (KDF) Katerdra didaktiky fyziky of Charles University, hosted by Jitka Houfkova. Teachers enthusiastically welcomed the ideas and the approach for pupil engagement, and some lively discussion followed the presentation.

Both universities were keen to engage with this workshop, first presented by the UK Physics Teacher Network, and latterly at Science on Stage. They are actively involved in developing new ideas in this format and producing teaching materials.

What Happens Next? has now been presented in a number of European countries that we know of, including all the countries in the UK; the list includes Republic of Ireland, Belgium, Norway, the Netherlands, Poland, Czech Republic, Slovakia, Poland, Germany, France and Denmark.

Ideas are available through the TalkPhysics social media website, and David is always keen to hear from teachers with new and exciting ideas for the regular *What Happens Next?* column in *Physics Education*.

David Featonby

Using evidence to inform and improve: the IOP National CPD Conference 2014

March saw the annual IOP National CPD Conference take place at the University of Warwick, UK. Over 80 initial teacher educators, education researchers and CPD (continuing professional development) trainers from across the UK and Ireland gathered to share experiences and develop ideas about the best ways to support those who teach physics.

In 2013 participants were asked to consider their engagement with education research, but this year they were invited to examine the extent to which they draw upon any type of evidence to inform and improve their work. Over the course of three days participants learned from each other about the broad range of development opportunities available to teachers, and were



guided through a series of collaborative planning sessions.

There was a good buzz of discussion throughout the event. Popular areas of conversation included how to best gauge teacher misconceptions and how to ensure a good balance between short-term ideas for the classroom and longer-term development. Participants deliberated on the particular issues faced in supporting non-specialist physics teachers, but also agreed that a flexible approach is needed to respond to every practitioner's needs. The conference took on an

international flavour, as social media users from across Europe and the USA joined in an online dialogue about how we can improve our work.

One prominent theme was the need for stronger physics-teaching communities, especially in rural areas. This is an ongoing priority for the IOP Education Department and the conference continues to serve as a reminder of the scale of support that we provide to teachers through our networks of enthused and committed practitioners.

Eliza Selley

Renewed funding and a new pilot for the Stimulating Physics Network

The Stimulating Physics Network (SPN), which had been running since 2006, was recently given renewed funding from the UK Department for Education to support its successful work across England until at least March 2016. With an expanded remit, a brand new pilot project, Improving Gender Balance (IGB), will also be trialled in 20 schools across the country.

The aim of the SPN is to improve pupils' experience of physics at Key Stage 3 and 4 (ages 11–14, 14–16), as measured by an increase in the number of pupils choosing to study A-level physics, particularly girls. The network works with around 400 schools where these progression rates are historically low, or non-existent; typically, these are also schools with high indices of pupil deprivation.

The SPN is based around a team of teaching and learning coaches (TLCs). Each TLC

provides a bespoke programme of teacher continuing professional development (CPD) and pupil engagement activities for 12 SPN partner schools for a period of two years, at no cost to the school. Physics teachers in SPN partner schools without a specialist background in physics can also attend a free four-day residential summer school, held in Oxford, Cambridge and York each year. The project also provides personalized mentoring for over 400 early-career physics teachers each year, which lasts from the initial training year through to the second year as a qualified teacher. In the next phase of the programme, the SPN will be forging links with the new Science Learning Partnerships (SLPs) to provide a national programme of physics CPD that is available to all teachers in England.

The new pilot project, IGB, aims to improve the number of girls progressing to A-level physics by addressing the factors that evidence suggests are important. It involves three distinct interventions, in a total of 20 schools, to identify the most effective ways of improving progression for girls. Strand A involves working with girls directly to improve their confidence and resilience in the subject; strand B will be working intensively with teachers of physics around teaching strategies and classroom management; strand C will be looking at whole school interventions to challenge and raise awareness of gender stereotyping in school culture. The

effectiveness of the strands will be externally evaluated, with the intention that the findings will be applied to and integrated into the main body of support provided by the Institute of Physics to schools.

To find out more about the SPN programme, including how to become an SPN partner school, visit www.stimulatingphysics.org or contact David Cameron (david.cameron@iop.org).

To find out more about the IGB project, contact Clare Thomson (clare.thomson@iop.org).

Clare Thompson

Swedish National Resource Centre for Physics Education celebrates its 20th anniversary

The Swedish National Resource Centre for Physics Education (fysik.org) was created at Lund University by the Swedish Government in 1994. Its 20th anniversary was celebrated 31 March to 1 April at the Island of Hven, which became an EPS historic site in 2013 (www.eps.org/?page=distinction_sitesHI).

Until three weeks before the meeting, it was unclear whether the centre would receive continued support after 1 July 2014. For over a year the centre, together with the corresponding centres in chemistry, biology and biotechnology, and technology in schools, has been under threat. The government had decided to create a joint science education research centre with the purpose of stimulating and disseminating science education research, and this was likely to be accompanied by a closing down of the existing centres, although these have a different mission, with greater focus on supporting teachers with subject content and school practice.

During the period of uncertainty we decided to work together with a nearby school on examples of how deep physics knowledge, combined with skilled teachers, can bring pupils to considerably better understanding than is expected by the existing Swedish national curriculum. A first result of this collaboration was published in *Physics Education* (Pendrill *et al* 2014 *Phys. Educ.* **49** 180)

The theme for the anniversary conference was ‘From science education research to education—on research-based development projects’. It brought together co-workers (past and present), teachers from preschool to secondary school and out-of-school activities, science teacher associations, science education researchers and teacher–researchers who are, or have been, students in different graduate schools in science or technology education for practising teachers. We also had international guests. Clare Christensen from Brisbane, Australia, talked about risk education. Claus Michelsen from the University of Southern Denmark presented a course on mathematical modelling in physics, which had developed from a pilot project in a school into a course for a number of teachers, and finally into a master’s programme. A panel discussion about deeper collaboration for supporting teachers in southern Sweden concluded the 20th anniversary conference.

The national resource centres will be given continued support ‘for now’, while the university of Linköping has been given a coordinating role, and we look forward to a closer collaboration.

Ann-Marie Pendrill



Much to talk about in Frankfurt am Main

From 17 to 21 March 2014 more than 900 physicists and physics teachers gathered in Frankfurt am Main for one of the spring meetings of the German Physical Society (DPG), which offered nine plenary talks and one public evening lecture. Held together with the meeting of the section on hadrons and particles, the physics education division meeting (around 200 participants) included three additional main talks, 87 short talks and 57 posters.

One of the highlights of the meeting was the plenary talk by Michael Kobel (see photograph), who received the Georg-Kerschensteiner award 2014. The award is given every year to a teacher or an educator of teachers for excellent teaching or related projects. Michael Kobel received the prize for his long-term involvement in the popularization of physics and the development of new methods to teach particle physics to young students using the concept of networks and master classes (see e.g. Johansson *et al* 2007 *Phys. Educ.* **42** 636).

The plenary talks offered for both conferences mostly dealt with interesting new results from high-energy particle physics, such as results

from the Alice experiment at CERN, charm and bottom spectroscopy at e^+e^- colliders, or, e.g. double beta decay without neutrino emission. Due to the 100th anniversary of the Franck–Hertz experiment, another plenary talk reported on its history and interpretation, and presented modern versions of electron collision spectrometry with atoms and nuclei. Finally, a somewhat exotic talk was given by a managing director of the Deutsche Bank about natural science methods used in modelling various topics in international banking procedures.

Besides the plenary talks, a panel discussion attracted much interest. Last year, a controversial discussion was started within the DPG dealing with physics facts and didactic issues regarding the ‘Karlsruhe’ method of physics teaching (a special physics course, developed in Karlsruhe, Germany). This year’s conference offered the opportunity to exchange arguments and ideas during a discussion with M Tolan (Dortmund), M Bartelmann (Heidelberg), U Backhaus (Essen) and C Strunk (Regensburg), moderated by R Matzdorf (Kassel)



and G Pospiech (Dresden). Although the issue has not been settled, the discussion, which attracted a

large and interested audience, has helped promote understanding of the 'for' and 'against' viewpoints.

The first of the three main talks was given by Volkhard Nordmeier (Berlin, Germany), who gave an overview of empirical research about university level didactics and teaching at German universities. The second main talk by Christoph Gut (Zürich, Switzerland) focused on modelling and measurements of experimental competences of 12–15-year-old students. The third and last main talk was given by Rita Wodzinski (Kassel, Germany) who summarized results from a 2012 survey dealing with physics teacher training at universities in Germany.

The short presentations covered a huge range of topics from everyday life phenomena, including studies from aeroplanes above clouds via near infrared photography, astronomy and empirical studies and much more. It is planned that most talks and papers of the conference will soon be made public online via the German physics education journal, *Physik und Didaktik in Schule und Hochschule* (www.phydid.de).

Michael Vollmer

New maths and physics 'chairs'

It was announced on 7 May 2014 in a speech by a UK education minister that new 'chairs' would be created.

So today, we're creating new maths and physics chairs. These are postgraduate specialists in maths and physics, hired to inject their enthusiasm and subject expertise into schools—to raise standards and get children excited about maths and physics

This is quite an interesting description and many would imagine that it fits a large number of teachers already. The minister went on to describe the posts.

The new chairs will provide master-classes, online lesson demonstrations. They will help link the classroom to business and universities and complement other great programmes like Stimulating Physics and maths hubs. And some great household names have sponsored the scheme, including GlaxoSmithKline, BAE Systems

and Samsung. These chairs will be paid £40,000—an attractive offer. Recruitment is already underway, and the first chairs will be in classrooms from this autumn. In due course we want to see hundreds recruited.

On a different government web page a slightly different picture is painted.

In addition, top firms including Barclays, Tata Consulting and GlaxoSmithKline are also sponsoring a new scheme called 'Maths and Physics Chairs', to recruit post-doctoral graduates to become science and maths teachers injecting top-level expertise into schools with poor progression in these topics.

For more information see www.gov.uk/government/news/over-2000-new-jobs-and-apprenticeships-from-leading-stem-organisations and www.gov.uk/government/speeches/your-life-maths-and-science-campaign-launched

Gary Williams