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Videoconference brings Durban closer to the classroom

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Conference: Physics brings the community together Training: CERN trains physics teachers
Education: World conference fosters physics collaborations Lecture: Physics education live at
ASE Prize: Physics teacher wins first Moore medal Festival: European presidents patronize

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2012 Phys. Educ. 47 137

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YOUR NEWS WANTED

The news section gives updates on what has been happening in physics education worldwide. Items included show how events in one country could be relevant to good practice elsewhere in the world. Contributions are welcome from all of our readers. They should be about 200–300 words long and can include pictures. Please e-mail your news items for the May issue of *Physics Education* to ped@iop.org before 19 March 2012.

CONFERENCE

Physics brings the community together

The 15th New Zealand Institute of Physics/Physikos biennial conference took place in Wellington in October 2011. The theme of the conference was ‘Physics in our lives’, which was particularly apt given the recent large earthquakes that have hit Christchurch in the last 12 months. This conference is rather unique in that it involves the entire physics community. The conference attracted 150 delegates, from researchers and academics to teachers, and we all enjoyed a stimulating round of posters, research reports and equipment demonstrations. Prof. David Perry opened the conference with a keynote address about the physical implications of fibrous molecules in living structures. This was a great way to start the conference because the information was directly relevant to secondary school physics teaching. Dr Hamish Campbell, from GNS, explained what is happening beneath Christchurch, right now.

Dr Elizabeth Swinbank, from the University of York, spoke about the Salters Horners Advanced Physics (SHAP) programme in the UK. SHAP integrates the content of traditional physics courses into a series of practical and appealing contexts. The scheme shows the promise of providing student appreciation, as well as effective preparation for



Tony ‘Haggis’ Henderson entertains everyone with one of his latest ‘physics hits’—The Nuclear Physics Song.

further study. The contexts chosen, and their carefully designed activities, can be patched into any physics course at almost any level and definitely boost student ‘buy in’. New Zealand has recently introduced a new national curriculum based on key competencies. The applicability of programmes such as SHAP to a competency-based curriculum was a source of considerable debate among educationalists at the conference. Other highlights from the conference included Tony ‘Haggis’ Henderson performing (and dragging out audience members for) his latest suite of physics songs, Dr John Campbell in his recent incarnation as film producer giving us a preview of what looks to be a vivid documentary on Rutherford and the final round of the

Junior Young Physicist Tournament (JYPT) involving students from Australia, New Zealand and Korea. This is a physics competition for junior secondary students based on the traditions of the International Young Physicists’ Tournament (www.iypt.org). The enthusiasm and ability generated by tackling and presenting the results of real investigations makes this competition another way to inspire students as well as involving the wider community.

Delegates were left with the inspiration and sense of community to sustain their involvement until the next conference. See you in Palmerston North in July 2013.

David Housden and Paul King
New Zealand Institute of
Physics, New Zealand

TRAINING

CERN trains physics teachers

The three-week CERN residential programme, which has been taking place every year since 1998 at CERN during July, is open to physics high-school teachers from all CERN member and observer states, as well as from other countries subject to funding availability, who would like to update their knowledge of particle physics, its associated technologies and related subjects.

The goals of the high-school teachers' programme are:

- to promote the teaching of physics and, in particular of particle physics, in high schools;
- to promote the exchange of knowledge and experience among teachers of different nationalities;
- to expose teachers to the world of research;
- to stimulate activities related to the popularization of physics within and beyond the classroom;
- to help CERN establish closer links with European schools;

- to encourage the co-operation between CERN and existing programmes sponsored by the European Union in the area of scientific education.

The work produced during the three-week programme is documented and collected by the participants at <http://teachers.cern.ch/>. Please consult this site for more details about the programme and for a good collection of materials to be used in the classroom.

Who can attend?

All high-school teachers from the CERN member states can apply. Some funds may be available to support teachers from non-member states as well. Please note that all applicants should:

- have a good working knowledge of the English language (this is very important because the programme will be delivered entirely in English);
- have some basic computing

skills (use of mail and the internet);

- be committed to attend in full the three weeks of the programme (no late arrivals, no early departures).

Preference in the selection will go to teachers who have a proven experience of extra-curricular activities, such as:

- participation in EU-sponsored programmes (Comenius, etc);
- organization of educational activities (physics olympiads, summer courses for students);
- contribution to the planning of national curricula;
- writing of textbooks;
- involvement in the activities of National Teachers' Associations, or other national and international educational bodies.

No *a priori* knowledge of or experience with high-energy physics is required.

The 2012 programme will take place at CERN on 1–21 July.

EDUCATION

World conference fosters physics collaborations

The paper submission deadline for the World Conference on Physics Education will have passed by the time this issue of *Physics Education* gets to readers, but the early-bird registration will be available on 13 April. The conference will take place on 1–6 July in Istanbul. The fee for GIREP members is €295 if you register before 30 April 2012. After this date

the price increases to €395. There are various pricing structures available on the conference website.

The vision for the 2012 World Conference on Physics Education is to follow a global participative process before, during and after the conference. It will be structured to help foster collaborations on physics education research and development, which

can transcend national boundaries. The goal will be reached through working sessions, which will develop action plans that strengthen the teaching and learning of physics at all levels and in many countries.

For more information visit the website at www.wcpe2012.org/index.html.

Gary Williams

LECTURE

Physics education live at ASE

For quite a few years the editorial board of *Physics Education* has searched the journal's pages to find ideas that they can present at the annual Association for Science Education Conference, which this year took place at the University of Liverpool. Once again, the lecture was filmed ready for inclusion on the *Physics Education* YouTube channel, www.youtube.com/user/physicseducation. Not all of the demonstrations this year were spectacular, but they certainly generated surprise! This was the main theme running through most of the presentations, showing something surprising and then doing the process of thinking. Although sometimes there was less thinking and just more of being very surprised.

Clare Thomson started the metaphoric ball rolling by going through some of the articles of interest that have appeared in *Classroom Physics* this year (www.iop.org/education/teacher/affiliation/newsletter/page_41506.html). Jon Clarke then started an actual ball rolling with a neat demonstration of an old fairground puzzle, which will grace the pages of *Physics Education* fairly soon having come from the Exploratorium in San Francisco (www.exploratorium.edu/) and having then been discussed on TalkPhysics (www.talkphysics.org/).

Caro Garrett concentrated on light by showing off a fantastic photo of a spectrum taken using a digital camera and a simple homemade spectro-



David Featonby (left) explains the two-balloon problem and Caro Garrett (right) concentrates on light with a photo of a spectrum.



scope, and then analysed with free software Tracker (www.cabrillo.edu/~dbrown/tracker/). Gary Williams carried on the light theme looking at waves and polarization including a favourite longitudinal wave animation (www.kettering.edu/physics/drussell/Demos/waves/wavemotion.html).

David Featonby of 'What Happens Next?' fame then went into depth explaining the two-balloon problem and how the outcome can be whatever you want it to be depending on how much and how often you blow the balloons up. That was followed by an idea from *Physics Education*, the falling spouting bottle, and a further demonstration to explain exactly what happens, but that seems rather impossible to carry out without getting very wet.

Frances Green and Richard Bonella then gave the audience a speedy version of how to make a large cloud chamber from a fish tank. A longer, much more detailed film had already been

shot so readers will be able to view this online. This will also be the subject of an IOP Teacher Network workshop that is currently being rolled out, so if you're in the UK or ROI get in touch with your local network co-ordinator and express an interest (www.iop.org/education/teacher/support/network/index.html).

As ever, David Smith kept the biggest surprise until last. Wearing a very fetching silk, hand-made and decorated tie, one of many we were told, David made connections between his Marie Curie poem and the piezoelectric buzzer in a smoke alarm. With something of a bang he then demonstrated the piezo popper but returned to radioactivity with his crockery. It has to be said that not many teachers would consider crockery (intact and staying that way) to be much of a demonstration. However, David's red Fiestaware generated gasps of surprise when it was placed in front of a Geiger counter. The

vaseline glass that followed was tame by comparison, but everyone was surprised at the amount of clicking generated by the 'safe' Fiestaware, especially considering the measures that have to be taken in schools with much less active sources. David finished off with a violet laser pointer writing on glow-in-the-dark film, available from Mindsets (www.mindsetsonline.co.uk/product_info.php?products_id=528).

Gary Williams



Gary Williams (left) demonstrates waves and polarization. Jon Clarke (right) starts the ball rolling with an old fairground puzzle.

PRIZE

Physics teacher wins first Moore medal

Dr Becky Parker, head of physics at Simon Langton Grammar School, has won the first Royal Astronomical Society (RAS) Patrick Moore Medal in recognition of her outstanding work as a teacher of astronomy. Her award was announced at the society's Ordinary Meeting on 13 January.

Dr Parker has been an enthusiast for astronomy and physics throughout her career in education, work that includes time as head of education at the Institute of Physics. The award principally recognizes her achievements in her current role in her school, a maintained state secondary in Canterbury, Kent, and will be presented to her at the National Astronomy Meeting that will take place in Manchester on 27–30 March.

Since her arrival at Simon Langton Grammar School, Dr Parker has established and is director of the Langton Star Centre, a specialist facility with laboratories, classrooms and an astronomical observatory.

Pupils, particularly those at sixth-form level, are given the opportunity to join collaborative astronomy and space projects, with the most prominent of these being the Langton Ultimate Cosmic Ray Detector (LUCID), a UK schools experiment that will fly on the TechDemoSat-1 built by Surrey Satellites Technology. Dr Parker developed LUCID, following up on an idea she had while visiting CERN, and raised £60 000 to build the detector.

She and her pupils work across regional and national boundaries, collaborating with NASA and ESA scientists and schools in the UK and elsewhere in the world. They have particularly close links with Dr Obote College in northern Uganda, providing welcome support for an institution that has in the past suffered the effects of the insurgency led by the Lord's Resistance Army. Ugandan and UK students will both be able to analyse results from LUCID once it begins operation.

Using instruments like the

Faulkes Telescope Project as well as the school's own observatory, pupils also take part in the Langton Universe Astronomical Research (LUNAR) programme, work that has seen them discover several near-Earth asteroids.

The positive results from this work are clear, with pupils from Langton making up 1% of the national cohort of physics undergraduates. For her work in physics education, Dr Parker was awarded the MBE in 2008.

Her boundless optimism, willingness to innovate and collaborate, and her enormous success make her a fitting winner of the first Patrick Moore Medal.

RAS president Prof. Roger Davies congratulated her on her achievement: 'Becky is a truly outstanding teacher who has directly inspired a large number of young people to pursue careers in science. I'm delighted that she is the first recipient of the Patrick Moore Medal, an award she richly deserves for her work in astronomy education over many years.'

FESTIVAL

European presidents patronize Science on Stage festival

The German Federal President Christian Wulff and the Polish President Bronisław Komorowski declared joint patronage over the European Science on Stage education festival, which will take place on 25–28 April 2013 at the Polish-German border in Słubice and Frankfurt (Oder). For the first time, the festival will be organized by two countries, represented by the Adam Mickiewicz University in Poland and Science on Stage Germany, under the motto ‘Crossing Borders in Science Teaching’. Around 350 teachers will meet to exchange teaching ideas and discuss current topics in education.

The European education festival is the culmination of all Science on Stage activities. Every two years, teachers from across Europe present innova-



tive concepts for science teaching from primary to secondary school level in a fair, in workshops and on stage. Participants are chosen through competitive national events in 27 countries. Interested educators and the public are welcome to attend the festival. More information can be found on the website at www.science-on-stage.eu.

After the festival, follow-up activities throughout Europe will take place to ensure the uptake of good-practice teaching examples in class. The Adam Mickiewicz University and Science on Stage

Germany are both members of the network Science on Stage Europe. In accordance with the guiding theme of Science on Stage, ‘for teachers by teachers’, both the festival and the follow-up activities focus on teachers, including training courses and workshops.

The main sponsor of the festival in 2013 and the association Science on Stage Europe is the Federation of German Employers’ Associations in the Metal and Electrical Engineering Industries (GESAMTMETALL) with its initiative THINK ING. (www.think-ing.de). More information can be found at www.science-on-stage.eu.

A short film and photos of the last festival, which took place in April 2011 in Copenhagen, can be found at www.science-on-stage.de/?p=254.

VIDEOCONFERENCE

Videoconference brings Durban closer to the classroom

There is something wrong with the sound. In Durban, Lena Ek, the Swedish minister for the environment, was ready to answer questions from students, in a shared Google document, communicators and teachers worked together to sort out the technical problems, while a couple of details about the par-

ticipants were edited by a third participant.

From live streaming in a Bam-buser transmission, the spectators saw the four participant screens connected to the video meeting, two of them in Durban. Each participant screen showed a meeting room with students or a minister with staff and commu-

nication specialists.

After five minutes, the communication between Lena Ek and the class NV 10—the Science Program—from Porthälla upper secondary school in Sweden started. It was a Q&A hour, but not quite in the usual way. The climate summit in Durban—COP17—was brought directly

into the classroom, where on Monday 5 December the Swedish environmental minister held a Q&A session about the climate summit.

ICT can bring the discussion directly into the classroom. The class was well prepared, having already worked through a lesson sequence by role playing 'Climate change in the classroom', including an online debate with a Danish class. The session is one example of the possibilities offered by the development of ICT.

Lena Ek answered a number of questions about the summit and the difficult negotiations. She also asked what the students thought that they would do if they had to make these decisions. This question led to a long pause. Most students were perhaps not used to a minister asking them about their own thoughts. One of the suggestions from the students was that the richer countries might act as 'mentors' for developing countries to offer support for production and use of more climate-friendly energy sources. The sharing of green technology is one of the topics in 'Climate change in the classroom'.

The Porthälla school wanted to share the session, and created a Bambuser account, enabling spectators to follow in real-time what happened during the meeting. In this way, highly up-to-date information and knowledge was sent directly to the classroom, while at the same time the events unfolded, sharing themselves online.

The session ran on the UN videoconference system, while the live session was referred to in a joint Google document. In addition,



Students take part in a videoconference session with Lena Ek, the Swedish minister for the environment.

Fact sheet

'Climate change in the classroom' is a free, ready-to-go, teaching sequence and role play about the climate summit, connected to the meeting in Durban 2011.

Curriculum fit: Secondary school, natural sciences, social sciences, language. The material is available in English, Danish, Swedish, Norwegian, Icelandic and Finnish.

Time required: The sequence requires three to six lessons (depending on students preparation at home).

Preparation: About two to three hours (plus additional time to set up and international collaboration, if desired). The 'bilateral negotiations' can take place with another class, using Skype or Messenger.

'Climate change in the classroom' was developed by the UNI-C (<http://uni-c.dk/>) in Denmark (running the Danish

National Educational portal), the Norwegian Board of Technology (www.teknologiradet.no/) and the Swedish National Resource Centre for Physics Education (<http://fysik.org/>) and was supported by the Nordic Council of Ministers (www.norden.org/).

'Climate change in the classroom' is an extended version of a project developed by the Norwegian Board of Technology in 2009.

Meet us on Facebook at www.facebook.com/pages/Klimatoppm%C3%B8te-i-skolen-Climatoppm%C3%B8te-i-skolen-Climatoppm%C3%B8te-i-skolen-Climatoppm%C3%B8te-i-skolen/208390669215376. You might also find a class for collaboration.

Pictures from the event are available at www.partille.se/Gymnasieskolan/elevsidor/Bildgallerier/Bildgallerier-2011/Klimatdebatt-med-miljoministern/.

tion, the pupils could chat on the Bambuser chat channel, where the access was less limited than

the sound channel of the meeting.

Ann-Marie Pendrill