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# AAPT Approved List Winter 2014 - Orlando Florida

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## Area Committee Chairs Approved Session & Workshop List Reports

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### Submitted Abstracts

#### Committee on International Physics Education

**Chair:** Dean Zollman

**Session Title:** International Professional Development Opportunities for Teachers | **Type:** Inv/Con |  
**Organizer:** Tiberiu Dragoiu-Luca

**Title:**

Gaining First-hand Experience at CERN to Excite the Next Generation

**Meeting:**

WM14

**Session:**

## International Professional Development Opportunities for Teachers

**Paper Type:**

Invited

**Date Created:**

09/17/2013

**Author:**

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Sara Karbeling Central Academy, Des Moines Schools

**Abstract:**

Inspiring students to pursue careers in science is an implied part of our job description. Staying current on the discoveries and research in the fields of science gives us the ability to help students connect to the content and how it impacts their lives. An international high school teacher program hosted at CERN ? in Geneva, Switzerland ? provides an experience for high school teachers to interact with colleagues from around the world and challenges their perspective on teaching physics, all while providing direct access to the particle physicists and engineers that are at the forefront of major discoveries. During this joint presentation, members of the US delegation to the program in 2012 will share their experience, classroom resources and provide information on how teachers can participate in subsequent programs.

**Footnotes:****Conflicts:**

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**Session Title:** International Models of Physics Teacher Preparation | **Co-Sponsor:** Committee on Teacher Preparation | **Type:** Inv/Con | **Organizer:** Dan MacIsaac

**Title:**

Comparing Finland to Germany: Lessons learned in teacher preparation

**Meeting:**

WM14

**Session:**

International Models of Physics Teacher Preparation

**Paper Type:**

Invited

**Date Created:**

09/16/2013

**Author:**

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**Abstract:**

Since the "PISA Shock" after 2001, educational research in Europe has recognized new emphasis on the success of the Finnish educational system: Finland is ?seen as a major international leader in education? (OECD 2010, 118). The approach of integrating core sciences and education curricula in the one-phase teacher preparation studies, was identified as a key factor of success, as well as the intense use of dialogical reflection tools, like portfolio techniques in school and in teacher preparation. The focus is directed towards pupils at schools and students at universities. As is highlighted in this talk, adapting the key factors from the Finnish into the central European educational systems is not an easy task. One example of the University of Cologne is presented. It shows how Finnish key factors and educational ideas can be integrated into teacher education: ?International teacher education laboratory - Developing inclusive values and ideas through e-portfolios?.

**Footnotes:**

**Conflicts:**

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**Title:**

Integrating studies in physics, education and teacher preparation in Germany.

**Meeting:**

WM14

**Session:**

International Models of Physics Teacher Preparation

**Paper Type:**

Invited

**Date Created:**

09/16/2013

**Author:**

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**Abstract:**

At the University of Cologne, seminar structures in the educational sciences embed students' practical experiences during internships in schools and support the reflection of the students' views of their own role as teachers, what qualities they think a "good teacher" must possess and what they believe to be a successful education. More and more, teacher education focuses not only on performance but also on appreciation of individual accomplishments according to ones individual abilities and efforts. This talk focuses on examples of integrated science and education studies for teacher preparation at the University of Cologne, home of the largest teacher education institution in Germany (>10.000 educational science students). Highlights are the use of e-portfolio techniques, simulated physics lessons, learning-by-teaching, digital media usage and small "design based research" projects for school internships. That way, students are able to combine their theoretical knowledge with practical experience.

**Footnotes:**

**Conflicts:**

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**Title:**

Models and Perspectives of International Student Exchanges in Teacher Education

**Meeting:**

WM14

**Session:**

International Models of Physics Teacher Preparation

**Paper Type:**

Invited

**Date Created:**

09/16/2013

**Author:**

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Christiane M. Bongartz Department of English/ School of Arts and Humanities, University of Cologne

**Abstract:**

In Europe, e.g. Germany, teacher education has changed in the past years. By adapting the international Bachelor/Master degrees, the approach to a more practice-orientated teacher education has been focused on. Also, a more internationalised teacher education is emphasized. As it is necessary for students ? our future teachers ? to deal creatively with diversity in schools and work with bi-or multilingual children, gaining the experience of living in another country and working in a foreign school system is highly supported by the University of Cologne. Successful concepts of other countries are seen to be a motivating factor for students in order to implement new and innovative ideas back home. However, teachers in general are still more ?local activists? than ?global players? (Jaritz 2011). Therefore, the University of Cologne is about to develop different exchange programmes with schools all over the world, e.g. the USA, South Africa, Uganda, Europe and Finland.

**Footnotes:**

**Conflicts:**

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**Title:**

Standards and practice of teacher preparation in Germany and USA

**Meeting:**

WM14

**Session:**

International Models of Physics Teacher Preparation

**Paper Type:**

Invited

**Date Created:**

09/16/2013

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Nina Glutsch Institute of physics and physics education

**Abstract:**

A central advantage of education in Math, Science and Technology is that the core science and its essential rules and models stays the same when educators and students travel from one country to another. This predestines STEM Education for both exchange programmes for teacher training students, and cross-cultural studies in language and the social sciences. Currently, we want to design an US-German exchange programme for STEM teacher preparation courses that implements a network of Universities and their co-operating schools. Goals are to make STEM education a more attractive field of work, balance the supply and demand of qualified STEM teachers, and foster international research in the PER community. Students and teachers should be encouraged to study or work in the field of STEM education in both countries, thus opening paths to international careers in STEM teaching. The Keynote therefore compares National Science Education Standards of both countries.

**Footnotes:****Conflicts:****Title:**

The Undergraduate-Graduate Integrated Cultivation Mechanism of Government-Supported Teacher-Students Majored in Physics: Taking ECNU as an Example

**Meeting:**

WM14

**Session:**

International Models of Physics Teacher Preparation

**Paper Type:**

Invited

**Date Created:**

09/10/2013

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**Abstract:**

In order to attract more high-quality students to apply for normal universities, six national normal universities have enrolled tuition-free normal school students since 2007, and the students were mainly from the Central and Western China. After getting their bachelor degree, teacher-students came back hometown as high school physics teachers, then after a year, they returned to the original university to peruse the education master degree in their part-time. In ECNU, teacher-students majored in physics were cultivated based on the concept of integration between pre-service and in-service, their curriculum plan, cultivation methods and research skills training linked closely between

undergraduate and graduate, expecting this could effectively cultivate a group of outstanding middle school physics teachers. This lecture will cover the following topics: 1. A brief introduction of Chinese tuition-free teacher-students; 2. The stage of undergraduate; 3. The stage of graduate; 4. The characteristics of this cultivation mechanism.

**Footnotes:**

**Conflicts:**

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**Session Title:** Broader Perspectives: Active Learning Strategies | **Co-Sponsor:** Committee on Research in Physics Education | **Type:** Inv/Con | **Organizer:** Genaro Zavala

**Title:**

Phenomenon-Based Learning: Using Toys To Teach Physics

**Meeting:**

WM14

**Session:**

Broader Perspectives: Active Learning Strategies

**Paper Type:**

Contributed

**Date Created:**

09/17/2013

**Author:**

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**Abstract:**

In the spring, the first in a series of books on "Phenomenon-Based Learning" (PBL) will appear. Why PBL? PISA assessments showed that Finnish students were among the top in science proficiency levels. Of 74 countries, in 2009 Finland ranked #2 in science. (The U.S. ranked #23.) Finland is now seen as a major international leader in education, and U.S. educators and political leaders have been traveling to Finland to learn the secret of their success. The PBL teaching philosophy combines elements of what's done in Finland with what's known about effective science teaching based on science education research to present science in ways that are both fun and educational. The approach includes progressive inquiry, problem-based learning, project-based learning, and, hands-on experiments. The idea is to teach broader concepts and useful thinking and performance skills (as with NGSS) rather than asking students to simply memorize facts.

**Footnotes:**

**Conflicts:**

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