



International Newsletter on Physics Education



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ICPE Chair's Corner

At the *World Conference on Physics and Sustainable Development* held in Durban in the International Year of Physics 2005, there was general consensus that the quality of Physics Education would continue to play a central role in determining how societies benefit from the tremendous strides being made in science and technology. Departing from the usual format of most conferences, WCPSD devoted itself to identifying the common denominator of the needs of physics teachers and classrooms across the world, especially in regions which have not been able to establish vibrant curriculum innovation and reform movements. The deliberations led to formulation of a specific Action Plan with four components (see ICPE Newsletter April 2006). A Coordination Committee was set up and the IUPAP entrusted our commission to implement the mission.

In the last two years, the three organizing partners of WCPSD (IPCE-IUPAP, UNESCO and ICTP) have organized international workshops for *Active Learning of Optics and Photonics* in Marrakech (Morocco), Delhi (India), Tanzania, Sao Paulo (Brazil). The next is due in Mexico before the end of the year. These workshops have provided an opportunity for secondary school and undergraduate college teachers from several countries of the regions to meet and exchange ideas. This has catalyzed the formation of the Latin American Physics Education Network (LAPEN), and given a greater momentum to the activities of the Asian Physics Education Network (ASPEN). Predominantly European GIREP, the International Research Group on Physics Teaching, wants to establish a link with LAPEN and ASPEN. The networking of these regional clusters of Physics Education interest groups will ultimately strengthen international cooperation and amplify the outreach.

There is general consensus that active learning is what works. To cascade and sustain the benefits of training, there is a critical need to develop active learning workshops on a variety of physics themes. We are happy to announce the launch of a series of advanced workshops for developing PHYSWARE for Active Learning. These aim to improve introductory physics education, especially in developing countries, through the design of low-cost equipment and computer tools; and the development of curricular materials and strategies for using them effectively. The first workshop is to be held at the Abdus

Salam International Centre for Theoretical Physics (see page 12 of this newsletter). We invite innovators who have created educationally effective instructional equipment using low-cost locally available materials to contribute to this endeavour for development. We hope that the innovative participants, empowered by the collective work, will assume the role of regional leaders; networking with teachers and government agencies in their own region and beyond to conduct follow-up workshops that aim to introduce teaching strategies that will transform the classrooms across the world to Active Learning Studios. That is the ultimate challenge.

Pratibha Jolly

Pratibha Jolly, ICPE Chair, Delhi

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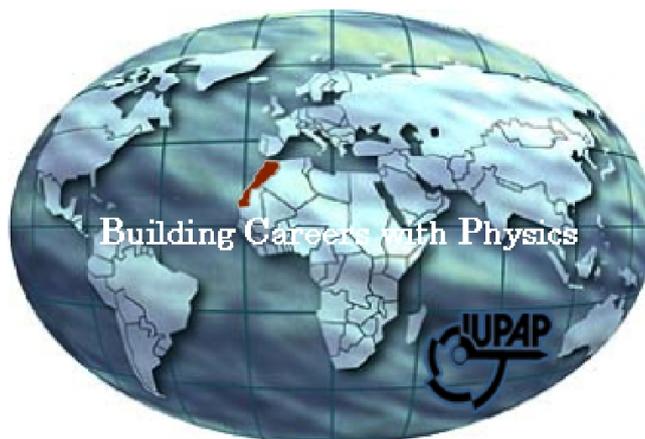
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ICPE2007: International Conference on Physics Education: Building Careers with Physics November 11–16, 2007, Marrakech, Morocco



Greeting from Marrakech which will host the next ICPE conference! As announced in previous Newsletters, the ICPE2007 conference will be held in Marrakech, Morocco from November 11 to November 16, 2007 under the theme '*Building Careers with Physics*'. A special session will be dedicated to women in physics.

More than 250 contributions are scheduled for the five days of the conference in 44 sessions. Participants from 45 countries distributed over the six continents are expected. Prominent companies will exhibit their state-of-the-art educational and scientific equipment. An optics and photonics forum will be held in parallel during the first two days of the conference

There will be a rich and diversified scientific program of plenary lectures, invited talks, oral presentations, workshops and posters, covering the six sub-themes of the conference:

- New Job Opportunities
- Effective Teaching Strategies
- Learning with Technology
- Physics for Sustainable Development
- Bridging the Gaps
- Women and Girls in Physics

There will also be socio-cultural activities (visits, cultural shows, excursions).

The ICPE medal will be awarded to a distinguished scientist during the inaugural session of this conference. In addition, an ICPE2007 competition to designate the

'Seven Wonders of Physics and Technology' is open and the results will also be announced at this event (see page 9 of this newsletter). A list of 21 items pre-selected by the International Commission on Physics Education committee members can be previewed in the conference website together with the e-voting procedure. The participants are invited to cast their votes either at the conference itself in Marrakech or via the website of the conference at www.icpe2007.org. The competition is also open to all scientists throughout the world.

Since the registration to the conference is still open, don't miss this unique opportunity to meet and discuss with distinguished scientists and experts in the field of physics education from all over the world and also to visit Marrakech. This majestic city will surely charm you with its unique beauty and the hospitality of its people.

The Local Organizing Committee will be highly pleased to welcome you at ICPE2007! For any questions regarding papers, posters and symposia please contact: Khalid Berrada (berrada@ucam.ac.ma) or Abdelkader Outzourhit (secretariat@icpe2007.org).

For information about registration, accommodation, and other details visit the conference website:

<http://www.icpe2007.org/>



Young learners' attitudes and interests: Results and perspectives from the project ROSE (The Relevance of Science Education)

*Svein Sjøberg and Camilla Schreiner,
University of Oslo, Norway*

Introduction

The position of science and technology (S&T) in a society changes through time and from one society to another. In developing countries, many young people would like to opt for a career in S&T, at the same time as many rich, highly developed countries notice declining recruitment of students to science and technology studies. 'Europe needs more scientists!' is the title of the final report from a large EU project addressing the condition of science and technology in EU, with special attention to the number of people entering S&T educations and careers (EU, 2004). The title of the report reveals the point. Falling recruitments to most S&T educations is seen as a large problem in most European countries. The same tendencies are noted in the US (NSB, 2006) and in most other OECD-countries.

There are large and interesting differences between the countries, both in respect of number of students, which subjects have the weakest recruitment, how large the recruitment problem is perceived to be, etc. In particular, the 'hard' S&T subjects – such as technology, engineering, physics and to some extent chemistry – are especially stricken. In addition, gender differences vary from one country to another. In most countries, although with large variations, the boys outnumber the girls in physics and engineering studies, while the gender balance is shifted towards the girls in studies like medicine, veterinary medicine, environmental science and biology.

The lack of relevance of the S&T curriculum is seen as one of the greatest barriers for good learning and as the reason for young peoples' low interest in the school subject and lack of motivation for pursuing the subject in their higher education. ROSE, The Relevance of Science Education, is an international comparative project meant to shed light on affective factors of importance to the learning of science and technology. The target population is students towards the end of secondary school (age 15). The research instrument is a questionnaire mostly consisting of closed questions with four-point Likert scales. The rationale behind the project, including the questionnaire development, theoretical background, procedures for data collection, etc. is described in Schreiner (2006). In this article, we will present the ROSE project, and include a few general results from

analysis of the data material. More detailed analysis is found in Schreiner and Sjøberg (2005, 2006). These and other publications are also posted on the ROSE home site

<http://www.ils.uio.no/english/rose/>

ROSE in brief

The key feature of ROSE is to gather and analyse information from the learners about several factors that have a bearing on their attitudes to S&T and their motivation to learn S&T. ROSE has, with support from The Research Council of Norway, through international deliberations, workshops and piloting among many research partners, developed an instrument that aims to map out attitudinal or affective perspectives on S&T in education and in society as seen by 15 year old learners. About 40 countries are taking part in ROSE. Although the data collection for the initial reporting is finalised, new research partners may still use the ROSE instrument for their own research purposes after agreeing with the project organisers.

In the following, we will use some diagrams to give a small glimpse into the results from analysis of the ROSE material. All diagrams show mean scores for 15 years old girls and boys from a number of countries in the ROSE sample. The countries are sorted partly geographically, with neighbouring countries together; and partly by level of development, with more modernised countries in the bottom.

The Likert scales have four response categories, and the response categories vary from one question to another. Some questions have a list of statements, and the students were asked to indicate in a 4-point Likert scale whether they Disagree (coded 1) or Agree (coded 4). This means that the value 2.5 lies in the middle of the scale.

Most young people appreciate and respect science and technology ...

A possible explanation for young people's lack of interest for studying S&T could be that they hold a negative view of the role that S&T play in society, and that they blame S&T for the unintended catastrophes and risks which

follow in the wake of the technological development – e.g., the Chernobyl disaster in 1986, BSE (Bovine Spongiform Encephalopathy or ‘mad cow disease’), the depletion of the ozone layer, global warming and overpopulation. Contrary to such expectations, the ROSE results indicate that youth express a positive view on S&T. Average scores for girls and boys in nearly all countries show strong agreement with statements like these:

- *Science and technology will find cures to diseases such as HIV/AIDS, cancer, etc,*
- *Science and technology are important for society,*
- *Thanks to science and technology, there will be greater opportunities for future generations,*
- *New technologies will make work more interesting,*
- *The benefits of science are greater than the harmful effects it could have, and*
- *Science and technology make our lives healthier, easier and more comfortable.*

Figure 1 illustrates this with one example. The diagram shows responses to the statement: *Science and technology are important for society*. In average, girls and boys in all countries agree that S&T are important for society, and the gender differences are negligible.

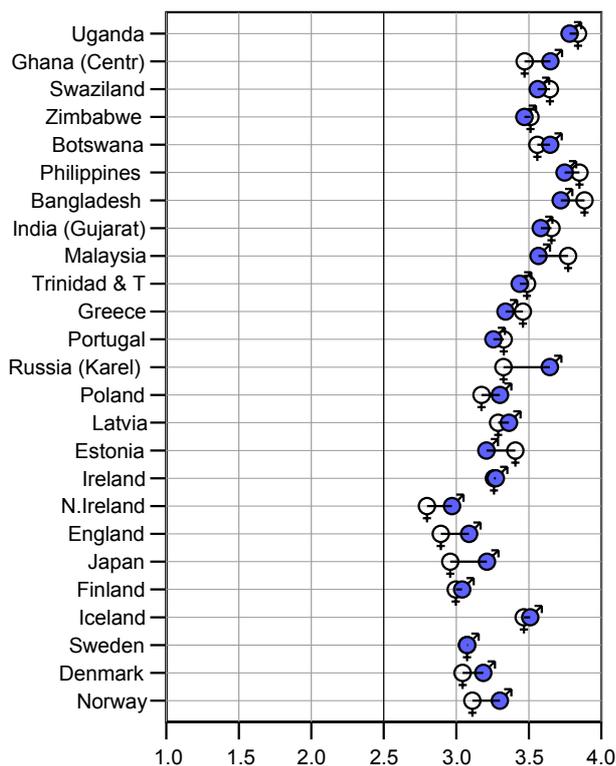


Figure 1. Reactions to the statement: ‘*Science and technology are important for society*’. Average scores are shown, filled circles for boys and open circles for girls. Note: Trinidad & T denotes Trinidad and Tobago.

... but they don’t want a job in S&T

We see from Figure 2 that there are large cross-national differences when it comes to students’ agreement with the

statement: *I would like to become a scientist*. The mean scores in the developed countries are extremely low, and the girls are even more negative than the boys. Japan has particularly large gender differences.

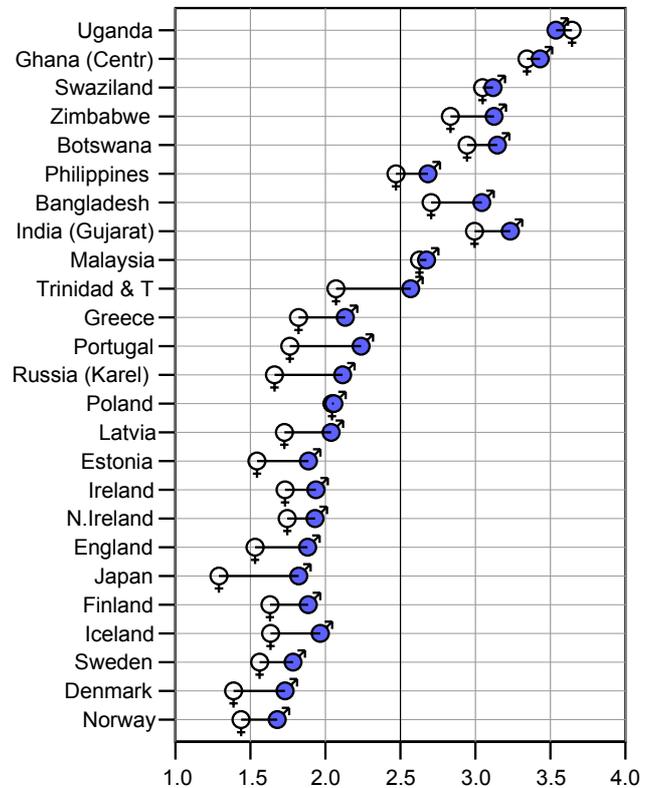


Figure 2. Reactions to the statement: ‘*I would like to become a scientist*’. Average scores are shown, filled circles for boys and open circles for girls.

Responses to the statement: *I would like to get a job in technology* are even more worrying for some countries. In developing countries, both girls and boys agree with the statement. But, while boys in more developed countries give average scores close to the neutral value, most girls in these countries do not want to work with technology.

Interest in physics topics

The majority of the ROSE items (in total 108 items) concern the patterns of interest among the learners in different science topics. Here, we have systematically varied the actual science content as well as the context in order to describe profiles of interest as well as to distinguish between different kinds of learners. An analysis of this aspect is the theme of Camilla Schreiner’s (2006) PhD thesis. The pattern of interest varies strongly between countries as well as between girls and boys. Not unexpectedly, young people in developing countries are, in general, more interested in most of the 108 topics that are listed in the questionnaire. For them, going to school is seen as a privilege and an opportunity, while learners in richer countries are likely to see schooling as just a given reality of life, possibly also as just a duty. Hence, they can also ‘afford’ to be more selective in their choice of interest.

An interesting result is that the rather ‘traditional’ topics of a science curriculum are very popular among children in developing countries, while they enjoy little popularity among most learners in richer countries. (Examples: Atoms and molecules, Chemicals, their properties and how they interact, Electricity, how it is produced and used in the home, Plants in my area, etc.)

A striking result is that also is that the gender differences in interests are largest in countries at the top end of the Human Development Index. Boys in these countries have high interests in items like explosives and spectacular and violent aspects of science as well as engines, machines and electrical and mechanical tools and applications. In contrast, girls in rich countries have much higher interest in all items related to biology, health, caring, the environment etc. Some aspects close to ‘New Age’ items also score very high among ‘modern’ girls.

Luckily, some science topics enjoy high interest among girls as well as boys, also in highly developed countries. Many of these items are about the philosophical and ethical aspects of science, but also about unsolved mysteries and phenomena that scientists still cannot explain.

Among the most popular items are the following: How it feels to be weightless in space, The possibility of life outside earth. Many of the popular items are related to space science. Examples include:

- the first landing on the moon and the history of space exploration;
- why the stars twinkle and the sky is blue;
- rockets, satellites and space travel;
- the use of satellites for communication and other purposes;
- stars, planets and the universe;
- black holes, supernovas and other spectacular objects in outer space; and
- how meteors, comets or asteroids may cause disasters on earth.

Conclusion

Of course, a science curriculum cannot and should not be made on the basis of a majority vote among the learners. On the other hand, it is of high importance to be aware of the interests, values and priorities of the young learners, and to consider how we may address youth culture also in the science lessons. Young people in rich countries have several more or less tempting choices for their future life

and careers. The wealthier a country is, the less likely it is that young people will follow the advice from adults and other authorities. Young people certainly do not choose their careers based on what is good for the national economy! They want to have a future that fits their own values and identities, and they want to work with something they find meaningful. Our challenge as science educators is to show young learners that they may be able to find meaning in life by choosing science and technology. We have to show them that scientists live interesting lives, and that scientists work with problems that are important for people’s lives and their concerns. If we are not able to give school science a more human image, we are doomed to loose many young people with high potential – scientists who might have been able to contribute to a better future for all.

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Upcoming Conference

3rd IUPAP International Conference on Women in Physics

8 – 10 October 2008, Seoul, Korea

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Physics Education in Thailand

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Introduction

In Thailand, physics is known as a very difficult subject for students. Perhaps this is the same as for students in many other countries around the world. An understanding of physics concepts can help us reveal the truth of nature, and a knowledge in Physics can be applied to create new inventions, innovations and new discoveries. These include, not only applications in science, but also in engineering, medical and other technologies. However, these facts do not interest most students, especially those in high-school. It seems that the main reason that students are interested in Physics is because the subject is one of the topics required in the university entrance examination. For students at undergraduate levels who have to take introductory physics courses, many of them study by memorization instead of by understanding. This way of learning affects their understanding in their own subject fields in higher years. Those who are involved in physics teaching have become aware of these problems and have begun to do research into physics teaching in order to discover better instruction methods appropriate for different learners' characters or levels. The new research areas in Thailand are teaching and learning and innovation in physics education. It is hoped that research results will help enhance the development of physics teaching since education reform has become a very important current issue of the country.

Physics Curriculum in Thailand

In 1972, the Institute for the Promotion of Teaching Science and Technology (IPST) in Thailand was established in order to develop a national science and mathematics curriculum at the secondary school level. Since then, the curriculum and knowledge contents of each branch in science have gradually improved. In 1999, the ministry's new curriculum structure for basic education was reformed as follows.

Level of school education

The school curriculum is assigned into four levels, corresponding to the student level of education:

- Level 1: Primary school of grades 1 – 3
- Level 2: Primary school of grades 4 – 6
- Level 3: Secondary school of grades 1 – 3
- Level 4: Secondary school of grades 4 – 6
(High-school level)

Knowledge content

The contents include a body of knowledge, learning skills and learning process as well as the learner's virtue and ethics. The contents are separated into eight groups: Thai language, mathematics, science, social studies, religion

and culture, hygiene and physical education, art, occupation and technology, and foreign languages.



Figure 1. Large classes are common in Thailand

Contents in science

The body of knowledge in the group of science is further divided into eight contents areas, comprising:

1. Living things and living process;
2. Life and environment;
3. Matter and its property;
4. Force and Motion;
5. Energy;
6. Earth changing process;
7. Astronomy and space; and
8. Nature of science and technology.

It can be seen that physics is involved in contents areas 3, 4 and 5. Knowledge standards have been set up for these contents areas. Here are some examples of the standard contents for Force and Motion.

Standard 4.1: Understand the nature of electromagnetic force, gravitational force and nuclear force. It is expected that students will have an inquiry process, can communicate what they have learned to other people and be able to apply their knowledge correctly and with virtue.

Standard 4.2: Understand various kinds of motion of objects in nature. It is expected that students will have an inquiry process and scientific mind and can transfer and apply their knowledge to the community.

Although improvement of curricula and knowledge contents has been hoped for, the results are yet still not satisfactory. This can be seen from the upper secondary school students' performance in the university entrance examination. The average scores of science subjects were all relatively low. Moreover, compared with the average scores of biology (30.8%), chemistry (26.2%), and mathematics (25.8%), the physics average score was the lowest (24.7%) (reported by the Commission on Higher Education, 2005). When these students enter the university, research results show that their background

knowledge obtained from school studies does not include understanding of basic physics concepts (Emarat et al., 2002 and Narjaikaew et al., 2006).

Physics Education Research and the Formation of a Research Group in Thailand

In the past, most of the education research in Thailand was conducted within faculties of education at universities, many of which were initially teacher-training institutes. For decades, many universities, such as Srinakharinwirot University, Mahasarakham University, Thaksin University, Naresuan University and Burapha University, have offered not only BSc and PhD programmes in physics but also BEd. and MEd. programmes in physics education. These universities specialize in the teaching of physics, developing curricula and making measurements and analysis. Science education research conducted within a Faculty of Science, however, has only begun in the past five years at, for example, Kasetsart University, Chulalongkorn University, and Mahidol University.

In April 2000, one of the authors (C. Soankwan) was a visiting fellow at UniServe Science and the School of Physics, The University of Sydney, under the Thailand Australia Science and Engineering Assistance Project (TASEAP). He worked with UniServe Science on teaching and learning issues, including the development of interactive lecture demonstrations and investigating the use of new teaching resources. Since then there have been several continuing programmes, one of which was the workshop on *Web-Based Teaching and Learning in Science* in November 2000. This workshop was a set up in collaboration between TASEAP and Faculty of Science, Mahidol University, Thailand.

These activities have strengthened interest in physics education research among the authors and other academic staff at the Physics Department at Mahidol University. With help and fruitful suggestions from Prof. Ian Johnston and Prof. Mary Peat (Directors, UniServe Science), we then decided to set up a group for physics education research called the Physics Education Network of Thailand (PENThai). In 2003, Mahidol University established the Institute for Innovation and Development of Learning Process. This institute offers Master of Science and Doctor of Philosophy programmes in Science and Technology Education. In its first year, the PENThai group had five graduate students under supervision in those programmes, focusing their thesis research on physics education. Since then, the group has accepted graduate students every academic year which has increased the number of personnel, activities, and research topics in the field of physics education.

In September 2004, the Faculty of Science and the Institute for Innovation and Development of Learning Process jointly organized workshops for professional development courses at Mahidol University. The PENThai group has then begun to report research findings both nationally and internationally (see the references). In

2006, graduate students at the group have the opportunity to advance their research study abroad for one year. Two of them went to work with the Sydney University Physics Education Research group (SUPER) at the University of Sydney, Australia. Others went to Swinburne University in Australia, the University of Waikato in New Zealand and the University of Minnesota in USA. These students have published the research in collaboration with their advisors at those institutes (Narjaikaew et al., 2006, Tanahoung et al., 2007 and Wuttiptom et al., 2007).

The major objectives of the PENThai group are:

- to develop graduates and personnel who have expertise in physics education, or science education in which physics is involved, and can transfer knowledge to others;
- to continue to generate research on physics education or science education in which physics is involved;
- to organize national and international workshops, meetings or conferences where ideas can be exchanged between physics educators;
- to provide physics teachers and personnel with alternative instruction methods, curricula, and assessment methodologies that are suitable for teaching physics as well as to enhance their understanding in the subject; and
- to promote teaching process and activities that are based on active learning to physics teachers, lecturers, and students at all levels.

To pursue these objectives, during the past four years the group has set up several learning activities and workshops and promoted them to students at various schools as well as to physics teachers. The followings show some effective activities we have provided.

Activity-based learning in school

We have been doing special science classes at secondary school level every two weeks for three academic years. They teach activity-based learning, emphasizing scientific method and skills. Each session is about two hours long, and is inquiry based. Examples are: making contour maps; constructing pinhole cameras using students' ideas without any recipe; finger print pattern classification and analysis; etc.



Figure 2. Students measuring the distances of blood spatters, an example of activity-based learning in school

We also do science activities with local high school students to show them the whole process of scientific method. Starting from letting students observe the environment, they can setup comparative open-ended questions by which small groups of children can perform a simple experiment and collect, analyze data, and present their data in the same day. We found that this gives students a better idea of what scientific method is all about. We also do this with the staff of the science museum so they can use this with their activities at the museum.



Figure 3. A local science activity: students learn all scientific processes in one-day activity

Science teacher training with inquiry

Twice a year, we have a chance to setup workshops for teachers, on such subjects as how to teach reflection, how to teach inquiry, etc.



Figure 4. Science teacher training with inquiry: teachers learn how to teach science by practicing the inquiry process through hands-on activities

Outreach programme within Thailand

Once a year, we travel to the countryside to setup a one-day science activity at secondary schools. The activities consist of a science show, a science quiz show, etc. We try to give students simple scientific explanation for most of the show that we do. We do this to promote science to students who have limited opportunity to visit science museums or other science events. It also give us the chance to show teachers alternative ways to teach some topics in science.



Figure 5. The outreach programme in the north-eastern part of Thailand to promote the science teaching and learning

The Future

Besides continuing to generate research and develop physics education, the PENThai group also has the target of building and expanding a network between institutes in Thailand. It is hoped that there will be more research generated in other universities and academic institutes around the country. The group will also try to initiate more collaboration between physics education groups of other countries. There are plans to invite specialists as visiting professors to help enhance the potential in conducting physics education research in Thailand.

Acknowledgements

The authors would like to acknowledge UniServe Science and the SUPER group at The University of Sydney for their wonderful collaboration and invaluable advice. Special thanks must go to Prof. Ian Johnston for his continuously encouragement and especially introducing us to the physics education.

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Seven Wonders of Physics and Technology

Many physics discoveries have truly changed the way we live and the way we view our world and the universe. Yet the Seven New Wonders of the World, announced in July this year, did not include modern technological developments. It is proposed to establish a new list of

seven physics-related technological wonders of the world.

The following preliminary list of 21 possible items was compiled with the help of members of the ICPE Commission.



- Aeroplanes
- Astronomical observatories
- Data visualization
- Electrical generators
- Heat engines
- Hubble space telescope
- Lasers
- Medical/industrial imaging
- Microscopes
- Nanotechnology
- Optical fibre technology
- Particle accelerators
- Remote sensing devices
- Satellite communications
- Space travel
- Spectroscopes
- Superconductors
- Telescopes
- Transistors
- Wireless communication
- World Wide Web



We would like all who are attending the ICPE2007 conference in November (see page 2 of this newsletter), and anyone else who is interested, to vote for **seven** items from this list which they would consider most suitable for being called a **wonder of physics and technology** – exactly seven, no more, no fewer.

Voting papers will be available at the conference, and should be filled out and handed in to the conference desk by the end of the second day of the conference (Tuesday, 13 November).

Conversely, if anyone prefers, voting can be done on-line. See the conference website for details.

<http://www.icpe2007.org>

The result of the voting will hopefully be announced at the conference dinner, on Thursday, 15th.

IV Ibero-American Workshop on University Physics Teaching Havana, Cuba, January 28-February 02, 2007

The Ibero-American Workshop on University Physics Teaching (TIBERO) is a traditional meeting promoted each three years by the Havana University (UH) from Cuba and the National University of Distance Education (UNED) from Spain. The 4th Workshop was held at Havana, Cuba, January 28–February 02, 2007.

The committee comprised members of ICPE, the Latin-American Physics Education (LAPEN), the Physics Faculty of Havana University, the Education Faculty of Sao Paulo University (Brazil), the Research Center of Applied Science and Advanced Technology (CICATA-Legaria) of National Polytechnic Institute (Mexico), and the Physics Departments of the Pedagogical University (Cuba), UNED, Cordoba University (Spain), Burgos University (Spain), Udine University (Italy), Florence University (Italy) and Karlsruhe University (Germany). About 120 delegates from 11 countries attended TIBERO2007.

The main objective of these Ibero-American Workshops is the training of Physics teachers and the improving of the Physics teaching/learning in the Latin-American area. This year the theme of the Workshop was the *Use of Information and Communication Technologies in the Physics teaching/learning process*.

Some 120 papers were proposed to the Workshop, organized in five themes:

- the use of the Learning Management System for producing Internet-based course websites;
- the development of pedagogical resources using Information and Communication Technologies;
- Interactive Physics;
- skills and technology in the laboratory; and
- Physics teaching for non physicists.

TIBERO2007 was sponsored by The Havana University, the Cuban Society of Physics, the National University of Distance Education (Spain), the University of Burgos (Spain), the Eduard Job Foundation (Germany), the Latin American Center of Physics, the International Center For Theoretical Physics (Italy), the Science, Technology and Environment Ministry (Cuba), the CICATA-Legaria of National Polytechnic Institute (Mexico), the Latin-American School of Medicine (Cuba) and the Latin-American Physics Education Network (LAPEN).

More details can be found at the website:

- <http://www.uh.cu/eventos/TiberoIV/index.htm>
- <http://moodle.uh.cu/login/index.php>



TIBERO2007 Group, Havana, Cuba, January 28-February 02, 2007



ASPEN General Assembly, 2007

and

Workshop on Sustaining the Gains in Promoting the Active Learning Method in Teaching Physics

Introduction

The Asian Physics Education Network (ASPEN) was created to

- promote the overall development of university physics education in the Asian region;
- establish a program of cooperation amongst members on university physics education and related areas;
- establish effective channels of communication in physics education and related areas; and
- disseminate information on physics education and other related areas.

Since its inception, ASPEN has

- organized conferences and workshops on innovative teaching methods and curriculum development;
- undertaken development of books, modules, and other teaching materials;
- initiated donation of laboratory apparatus; and
- held small-group workshops focused on training trainers on the active-learning method of teaching physics.

Each member country of ASPEN is represented by a National Point of Contact (NPC). As mandated in the ASPEN constitution, the NPCs hold a general assembly meeting every five years to receive report from the Coordinating Board of the activities carried out within their five-year term; elect the Chair, Vice-Chair, Executive Secretary, and Members of the Coordinating Board for the next five years; and discuss future plans and how they will be carried out.

The last general assembly was held at the University of Peradeniya, Sri Lanka, on 30 November–1 December 2002. It was hosted by Sri Lanka NPC and Chairman of the Board of Study in Science Education, University of Peradeniya, Prof. Lakshman Dissanayake.

During the *Active Learning Workshop in Optics and Photonics* held at Miranda House, Delhi, India, on 6–11 November 2006, it was decided by the NPCs present, that the 2007 General Assembly will be held either in Manila, Philippines or Bangkok, Thailand. The final venue was decided in a meeting between Mr. Ivan B. Culaba, NPC of the Philippines and Dr. Boonchoat Paosawatyanong,

NPC of Thailand, held in Bangkok, Thailand on August 2006. The general assembly meeting will be held at the Ateneo de Manila University, Quezon City, Philippines.

Project Description

There are two main components of this project. The first component is organizing the 5th ASPEN General Assembly at the Ateneo de Manila University, Loyola Heights, Quezon City, Philippines on 22–23 October 2007.

At the end of the meeting the NPCs present are expected to:

- elect the Chair, Vice-Chair, Executive Secretary, and Members of the Coordinating Board who will serve ASPEN from 2007–2012;
- discuss specific projects to be undertaken in the next five years;
- decide on finding means by which the specific projects can be attained; and
- commit to undertake and accomplish the planned projects.

The second part of this project is the focused-group workshop entitled '*Sustaining the Gains in Promoting the Active Learning Method in Teaching Introductory Physics Courses*' on 24–26 October 2007 at the Department of Physics, Ateneo de Manila University, Loyola Heights, Quezon City, Philippines. Expected to attend the workshop are the NPCs, ten selected physics instructors from outside the Philippines, and ten local physics instructors from teacher training institutions. The facilitators of the workshops will come from the roster of the NPCs and invited experts in physics education research.

At the end of the workshop the participants are expected to:

- implement the active learning method in physics teaching in large lecture classes through appropriate non-computer-based and computer based lecture demonstration experiments;
- develop sample pre/post test assessment questions;
- draw out student misconceptions of physics concepts from the pre-test assessment results;

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- calculate the students' gain in learning new concepts from pre/post test results;
- transform a recipe-type, traditional laboratory activity into an active learning one;
- design and implement sample non-computer and computer-based active learning laboratory activities; and
- gain enough skills and confidence to be able to implement the active learning method in their respective classes.

Participants (other than the NPCs) of the Active Learning Workshop

The active learning workshop is open to local and foreign participants. Ten places will be open to local participants while another ten places will be open to participants from the Philippines. The NPCs may recommend participants from their respective countries. Selection will be on first-come-first serve basis.

For foreign participants of the workshop: (a) the registration fee will be waived; and (b) free food and accommodation will be provided for the duration of the workshop. This offer is limited to only five participants however. There is no available subsidy for air fares.

The deadline of submission of names of participants for the workshop was on August 31, 2007.

For further information, please contact the General Assembly and workshop contact person:

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Upcoming Conference

PHYSWARE: A Collaborative Workshop on Low-Cost Equipment and Appropriate Technologies that Promote Undergraduate Level, Hands-on Physics Education throughout the Developing World, 27 October to 7 November 2008, The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy.

Contacts: Pratibha Jolly (University of Delhi, India); Priscilla Laws (Dickinson College, USA); Elena Sassi (University of Naples, Italy); Dean Zollman (Kansas State University, USA).
<http://mlab.ictp.it/research/training.html>

International Conference **GIREP 2008:** Physics Curriculum Design, Development and Validation, 18 to 22 August 2008, University of Cyprus, Nicosia, Cyprus. The 13th Workshop on Multimedia in Physics Teaching and Learning will also be held alongside.

Contact: Constantinos P. Constantinou, Chair and Local Organizer. Email: girep2008@ucy.ac.cy
Web: <http://www.ucy.ac.cy/girep2008>

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