

ICPE Minutes

ICPE 2003, Noordwijkerhout August 23-24

Revised: December 19, 2003

Attending: Alarcon, Jolly, McFarland (Secretary), Ogborn, Pietrocola, Talisayon, Tibell (Chair), Treiner, Vicentini, Zollman

Regrets: Grayson, Hyodo, Luo, Pak, Schlichting

Guests: Ryu, Yoo

1. Introduction

1.1 Welcome (Tibell)

Tibell opened the meeting by welcoming the attendees, who each gave a brief summary of his/her background. Hyodo was unable to attend but Ryu attended as an alternate; similarly, Yoo attended as an alternate for Pak. Len Jossem, frequent guest and former chair, was unable to attend and sent regrets. Tibell stated the general principle that if someone cannot attend, then an alternate could be sought, although the Chair should be consulted in advance.

1.2 Minutes of the 2002 Meeting in Lund

McFarland presented the 2002 minutes prepared by our previous secretary Redish. Some changes were suggested and noted. The minutes were then approved. McFarland will distribute the revised minutes to members.

1.3 Agenda 2003

The agenda was presented and approved after a few items were added and some others moved.

2. Reports on Conferences and Other Events

2.1 Varenna Summer School, July 2003

Vicentini provided a two-page written report on the very successful Summer Course on Research in Physics Education that was held on July 15-25, 2003, in Villa Monastero in Varenna, Italy. The course was organized by the Italian Physical Society in the frame of the well-known "Enrico Fermi" Summer Schools. The participants comprised 42 students and 25 observers. (The definition of student status was age < 35 years.) Participants came mainly from the USA and some European countries (Italy, Spain, Portugal, Poland, Romania, Sweden, Slovakia, Albania), with one person from Mexico.

The conference had lectures, seminars, a poster session, lively informal discussions, and a final round-table discussion. The lectures looked at the interplay among the development of cognitive models for learning physics, problems related to the physics content for

contemporary and future society, teaching strategies, and cultural aspects. In the seminars, information was also provided about the organizations involved in connecting various aspects of physics education (ICPE, EPS, and EUPEN).

Vicentini suggested that perhaps a similar summer school could be run in 3-4 years. Ogborn indicated that it would be nice to have other Physical Societies support a similar international project in another country. In reply to a question from Talisayon, Vicentini stated that two weeks was an appropriate duration for the school. Treiner suggested that perhaps a similar school could be held in Les Houches in 2005.

2.2 Eighth Interamerican Conference on Physics Education, Havana, Cuba, July 7-11, 2003.

This conference was organized by Eduardo Molto Gil (Cuba) on the theme: Teaching Physics for the Future. ICPE support for this conference had been approved unanimously at the 2002 ICPE meeting. Tibell will request a conference report from Molto for ICPE, IUPAP, and the ICPE Newsletter. A greeting from Tibell on behalf of the ICPE was read at the conference. (The greeting was emailed to ICPE members prior to the ICPE meeting.)

2.3 International Young Physicists' Tournament 2003

Tibell reported that 23 teams of students from upper secondary schools participated in the 16th International Young Physicists' Tournament (IYPT), which was held in Uppsala, Sweden on July 1-8, 2003. The teams represented 22 countries; new this year were teams from the United Kingdom, Indonesia, and New Zealand. In the competition the five-student teams present their solutions to problems published six months in advance. The problems are "open" with no unique solutions; an example is "Why do flags flap in the wind?" The winner was the German team, followed very closely by teams from South Korea and Poland. The Tournament will be held in Australia in 2004, and in Switzerland in 2005.

2.4 Collation of Information about Past Conferences

Jolly has gathered information about past conferences that have been sponsored by ICPE. Her collation includes dates, how the conferences were organized, etc. She will send what she has gathered to Zollman for the ICPE website. There are many gaps in the records, and it would be useful to archive as much information as possible on the website. Len Jossem would be a potential source of missing information. On the website there are two very useful articles concerning the history of ICPE, one by Tony French and one by Bill Kelly.

2.5 ESERA Conference 2003

The European Science Education Research Association (ESERA) held a conference in Noordwijkerhout, the Netherlands, just prior to the ICPE meeting. Ogborn, Ryu, Jolly, and Yoo were among the 385 participants. They reported that the conference was very successful. However, since there were a large number of parallel sessions, there were not many attendees at any one session. Nonetheless, the presentations and discussions were interesting, and there were many opportunities for people (experienced and inexperienced) to meet and talk.

2.6 ASPEN 4th General Assembly and Regional Workshop 2002

Alarcon presented a report on the 4th General Assembly (GA) of the Asian Physics Education Network (ASPEN) and a regional workshop on Active Learning in Physics, organized by the Postgraduate Institute of Science (PGIS) and the Department of Physics, University of Peradeniya. These events, which were supported by UNESCO, were held November 29 - December 5, 2002, at Peradeniya, Sri Lanka. At the ASPEN General Assembly, Lakshman Dissanayake, Chairman of the PGIS Board of Study in Science Education and the National Point of Contact for Sri Lanka at ASPEN, was elected unanimously as the new Chairman of the ASPEN for the next five year period. Alex Mazzolini (NPC, Australia) was elected as the Executive Secretary.

Resource persons from USA, France, South Africa, India, Sri Lanka and other Asian countries conducted the 3-day workshop. Attending the workshop were seventeen foreign participants representing India, Pakistan, Sri Lanka, Malaysia, Thailand, S. Korea, Philippines, Japan and China, 27 local participants from universities, and 13 GCE A.L. Physics teachers from schools. The aim of the workshop was to train Physics lecturers and senior school teachers in interactive methods on teaching Physics using computer-based as well as computer-independent techniques. The workshop sessions consisting of Interactive Lecture Demonstrations (ILDs) and hands-on laboratory activities were conducted by eminent physics educators including David Sokoloff (USA), Richard Hake (USA), Diane Grayson (S. Africa), Pratibha Jolly (India) and Rahman Omar (Malaysia). Alarcon represented UNESCO, Paris at the GA and the workshop.

Helping Cambodia to develop its physics education was among some of the follow-up activities identified at the above workshop. A three-member ASPEN team comprising Lakshman Dissanayake, Alex Mazzolini, and ASPEN Vice-Chairman Aziz Tajuddin (Malaysia) made a fact-finding visit to Cambodia in April 2003 to assess the status of Physics education at the Royal University of Phnom Penh (RUPP). A comprehensive report was prepared with an action plan to help RUPP to develop its physics education. The report is to be implemented during the next few years with support from UNESCO and other agencies.

3. Future Conferences

3.1 “What Physics Should We Teach?”, Durban, South Africa, July 5-8, 2004

An application for ICPE approval for a conference in Durban in 2004 was received from Diane Grayson. Members were reminded that ICPE approval of a conference is necessary for the final approval and possible financial support of the same conference by the IUPAP Council. After discussion, the members voted to approve the conference. McFarland will inform Grayson and IUPAP of this decision.

3.2 Other Conferences

3.2.1 Second International Conference on Multimedia and ICTs in Education

Tibell has received information about this conference, to be held December 3-6, 2003, in Badajoz, Spain. The deadline for abstracts was June 30. Complete information can be found at the conference website: www.formatex.org/micte2003.htm

3.2.2 World View on Physics Education in 2005: Focusing on Change

Jolly is organizing a conference in New Delhi, India, in 2005 to focus on innovative ways of teaching and learning physics. Ogborn and Zollman read the draft proposal and reported on it. The Commission members voted to approve and support the conference. Jolly will submit the final proposal to the IUPAP Office and to McFarland.

4. ICPE Finances

4.1 Past, Present, and Future Situations

Tibell reported that IUPAP has no funds to support our annual meeting, since most of the possible funding was used during the last three years. Some of the Newsletter funds have been used this year to provide a small amount of money for a few meals and one night's accommodation for Commission members in Noordwijkerhout. Alarcon, Talisayon, and Tibell are working together on a contract with UNESCO for funds to support the recent issues of the ICPE Newsletter. As well, Tibell will continue to approach IUPAP for funding.

5. Publications

5.1 ICPE Newsletter

Talisayon, who is the editor of the Newsletter, thanked the Commission members (Ogborn, Treiner, and McFarland) who contributed articles to the Newsletter. 200 copies of the most recent Newsletter were printed for distribution at conferences; there are approximately 1000 people on the email list to receive the Newsletter electronically. In addition to the printing costs, the support staff who assemble the Newsletter are paid. McFarland wondered whether it would be appropriate to seek financial support from companies, and Zollman suggested advertisements (perhaps for conference proceedings) as a potential source of revenue, although there might be tax implications.

An editorial policy, written by Tibell, has been established for the Newsletter: "The editorial policy of the ICPE Newsletter is to publish articles relevant for an international audience on issues in physics education at all levels, and to report on ICPE activities, including details on the outcomes of its annual meetings."

5.2 ICPE Book

5.2.1 Update

Ogborn summarized the history of the book "Physics 2000" as follows: Paul Black, while Chair of ICPE (two Chairs ago), asked each Chair of a IUPAP Commission to write a short chapter (5-6 pages) on the state of physics in the year 2000. The book was intended as a resource for all physicists, but especially high-school teachers and young university teachers. The chapters were written and the book was published, although less than one-half of the chapters were truly appropriate for the intended audience.

Last year it was decided that the book should be updated; Ogborn and Tibell approached the Commission Chairs for revised chapters. As of August 23, 2003, 8 chapters had been received, 7 were promised by the end of August, and there were 6 "no responses." For each no-response chapter, Ogborn will edit the old chapter and send it to the Commission Chair for comments. Ogborn expects to have a single Word document by the end of

October, and will send it to Zollman so that it can be posted on the ICPE website in November or December.

Len Jossem, former ICPE Chair, provided an email report on another ICPE book, “Connecting Research in Physics Education with Teacher Education,” which is available on the ICPE website. The number of “hits” on this book has “remained remarkably stable over the past several years.” In the past 8 months, there has been a total of about 40000 “hits” from 74 countries. Jossem concludes that “the continuing world-wide level of interest in the ICPE book indicates a continuing interest in what Physics Education Research can bring to Teacher Education, and the ICPE book will, of course, continue to be available on line.”

5.2.2 Content of Chapter 14

Ogborn provided copies of Chapter 14 of the book “Physics 2000,” i.e., the chapter written by Paul Black concerning the future of physics education. Commission members read the chapter overnight and provided a great deal of feedback to Ogborn the next morning for his rewriting of the chapter. Ogborn will provide a draft of the revised Chapter 14 by email for comments by the Commission.

5.3 ICPE Website

Zollman has kindly agreed to host the ICPE website at Kansas State University (URL: <http://web.phys.ksu.edu/icpe>). McFarland will inform IUPAP of the new URL. Zollman used overhead transparencies to show the basic structure of the site. Commission members felt that the site should be as fully archival as possible, as well as providing links to useful items such as the application form for IUPAP conference support and the sites of the educational divisions of various physical societies. It would also be helpful for these educational divisions to provide a link to the ICPE site.

5.4 Miscellaneous Publications

Jolly commented that in developing countries it is difficult to obtain access to articles on physics education research (PER). Ogborn hopes that ICPE can do something to help these countries to have easier access to PER articles. Talisayon suggested that a Working Group should be formed to investigate this issue (see details under Agenda item 6.2).

6. Working Groups

6.1 Working Group re: World Year of Physics in Latin America

Discussion on this issue was deferred to Agenda item 7.2.

6.2 Other Working Groups

As a result of discussion generated under Agenda item 5.4 (Miscellaneous Publications) concerning the difficulty that teachers in developing countries have in accessing publications on physics education research, a working group was established with Alarcon, Jolly, Pietrocola, Talisayon, and Zollman as members. Jolly will chair this group. Talisayon commented that more materials should be made available on the web, and Jolly will explore inexpensive printing in India, possibly subsidized by the Indian Teachers’ Association.

The idea of a “Shipping Group” was revisited. At the Lund meeting in 2002 it was suggested that this group be formed to explore the possibility of shipping not-too-old computers to developing countries. There was discussion about the large expense involved in shipping computers and the possible mismatch between the needs of a user in a developing country and the hardware and software on the actual computer that might be shipped. It was decided not to pursue this activity.

There are other inactive working groups that were established by previous ICPE memberships: interdisciplinarity of physics, helping elementary school teachers, etc. The current Commission decided to keep these groups inactive. As a general principle, Tibell and McFarland cautioned against having too many working groups and also against having too many people in a group. Ogborn suggested that it is best to have only one active project per year: publication of the book “Physics Now” (revision of “Physics 2000”) in 2003, the project to improved accessibility to PER publications in developing countries in 2004, etc.

7. Future Activities

7.1 World Year of Physics (2005)

Alarcon reported that attempts are being made through the United Nations (via UNESCO) to make 2005 an International Year of Physics. In July 2003 the first preparatory conference was held in Austria, with representatives from various physical societies. Discussion ensued regarding possible activities for ICPE in 2005. Alarcon suggested the possibility of a conference in 2005 on physics and sustainable development. Tibell commented that sustainable development was perhaps more appropriate for the International Council of Scientific Unions (ICSU) than for physics. Ogborn suggested that some aspect of physics education should be showcased. The possibility of updating the web-based book “Connecting Research in Physics Education with Teacher Education” was suggested by Talisayon. No final decision was made about a possible activity, but Tibell will report back to the Commission after the IUPAP meeting in Vancouver in October.

7.2 Other Projects and Activities

Talisayon presented a two-page description of a proposal for an ICPE project to compile information about physics teacher education degree programs at various universities around the world. The resulting database containing an inventory of information would be posted on the web. Tibell suggested that a “pilot project” could be pursued, the results of which could be brought to next year’s ICPE meeting for discussion. Pietrocola expressed interest in providing information about the degree program at his university, and he will send this information to Talisayon. Vicentini recalled that several years ago there was a meeting concerning teacher training. She will try to find information about this meeting and forward it to Talisayon. Treiner has a questionnaire that he is planning to send to all Physical Societies to ask about high-school curricula, but he has not sent it yet.

A two-person working group was established to pursue this project: Talisayon (Chair), and Pietrocola.

Pietrocola reported on a Latin American project (LAPEN – Latin American Physics Education Network) to improve the teaching of physics in middle-grade education and to prepare teachers at this level. This project will have a network group that involves various countries in Latin America and will be coordinated by a management group from a smaller group of countries. Pietrocola distributed a two-page document summarizing the project and giving data about the number of teachers in various disciplines in Brazil. The data show that there is a serious shortage of qualified physics teachers in Brazil. The first activity of this project is to prepare activities in Latin America to commemorate the World Year of Physics. Pietrocola would like Tibell to write a letter indicating ICPE encouragement and moral support for this project. The Commission gave approval for this letter to be written.

8. Links to Scientific Bodies

It was generally agreed that through the members of ICPE, there is considerable contact with a large number of scientific bodies, many of which are mentioned at various places in the minutes. Discussion focussed on UNESCO, represented by Alarcon. She shares information from the ICPE at UNESCO meetings.

Alarcon reported that under the UNESCO Programme in Physics, a major initiative in Physics Education was started in 2002. This initiative organizes and supports workshops on topics in introductory university physics aiming to introduce active learning and improve conceptual understanding using demonstrations, hands-on activities with traditional equipment (non-computer-based), inexpensive materials, as well as computer-based activities. The present focus is on training trainers and resource persons.

The workshops are organized for physics teachers in developing countries and are held in developing countries. The context of the country is taken seriously in workshops: the workshop is usually preceded by a fact-finding mission, and is planned with close coordination among UNESCO, hosts, and resource persons. Cooperation is encouraged with local experimental physics research groups, if any. The workshops feature practice sessions and presentations by participants; open discussions on adaptation and adoption of method. Issues discussed include demand for resources, topics to be taught, with a recognition that not all topics can be covered with equal rigor and depth.

The resource persons (in partnership with ASPEN) are preferably from developing countries, and should be able to identify with the workshop beneficiaries. The resource persons must be able to encourage ownership and self-confidence, and required some experience in use of active-learning in teaching. They also need to run hands-on workshops or interactive demonstrations in difficult situations (no equipment!)

Recent and future UNESCO activities include:

- Sri Lanka (4th ASPEN General Assembly and Regional Workshop on Active Learning) – December 2002
- Fact-finding mission to Cambodia by ASPEN, April 2003
- Active-learning workshop in Ghana, September 2003
 - o On Mechanics, Basic Electronics
- International Project recently launched: Active Learning in Optics and Photonics

- Development of teaching and learning activity modules

Pietrocola indicated that he and/or others might well be able to collaborate with UNESCO on workshops in Portuguese-speaking countries (such as Mozambique) in Africa. Treiner said that he knows colleagues who might be able to help in French-speaking countries.

Alarcon mentioned that UNESCO wonders whether it is useful for her to be a part of ICPE. This question was greeted by a unanimous and vociferous “Yes!” from the Commission members. Tibell commented that “when we talk about countries, she talks about continents.”

Tibell suggested that once the minutes of the ICPE meeting are distributed, each member should try to report to his/her own Physical Society publications about ICPE activities.

9. ICPE Medal

9.1 Presentations to Lillian McDermott and Tae Ryu

Tibell extended congratulations to Tae Ryu on her being award the ICPE Medal. The congratulations were echoed by all Commission members.

One week after the ICPE meeting, Tibell will present Lillian McDermott’s ICPE medal to her.

9.2 Future Medal Recipients

Two suggestions for possible medal recipients were put forward. It was decided that Ogborn will obtain a CV for one of the individuals for circulation via email to the Commission for possible approval of an ICPE medal to this person.

It was agreed that in future the chair should invite suggestions for ICPE Medal recipients prior to the ICPE meeting, and that the names and supporting material for any candidate should be available at the meeting for discussion.

It was also agreed that names of suggested recipients will not appear in the minutes of ICPE meetings.

10. ICPE Associate Members

10.1 Discussion of Possible Associate Members

There was immediate agreement that Alarcon and Talisayon should continue as Associate Members, given their valuable contributions to the Commission.

It was suggested that Lakshman Dissanayake of Sri Lanka and Eduardo Molto Gil of Cuba become Associate Members. Dissanayake is Chair of the Asian Physics Education Network (ASPEN), and Molto Gil is a leader in physics education in Latin America. Tibell will contact Molto Gil to ask whether he would be interested in being an Associate Member, and Alarcon will contact Dissanayake. In each case, we will need to obtain a CV, and IUPAP Council approval of the nomination will be requested at the October meeting in Vancouver.

11. Other Business

There were no additional agenda items put forward.

12. Next ICPE Meeting

It was agreed that the next ICPE meeting will be held in Durban, South Africa, on July 9-10, 2004, after the conference “What Physics Should We Teach?”

13. Adjournment

The meeting adjourned.