

REPORT on the PANS WORKSHOP 10/11 2000 in Wiesbaden

General Announcements:

1. Administrative Structure

According to the proposal recently accepted by the two mother-organisations NuPECC and NPB/EPS the PANS steering group consists of five persons:

The scientific secretary of NuPECC, two members appointed by NuPECC and two members appointed by NPB/EPS. The present members and their specific tasks are given below:

- Sissy Koerner: Scientific secretary NuPECC, Coordinator PANS project, Finances, contact EU, contact working group WEB proposal
- Alan Shotter: NuPECC
- Christoph Bargholz: NuPECC, Contact BOOK project, contact EXPOSITION group
- Christiane Leclercq-Willain: NPB/EPS, Teachers network, contact EU
- Adriaan van der Woude; NPB/EPS, Chairman, workshops, contact EPS and NPB/EPS, contact USA

Jules Deutsch is the coordinator of the PANS project till March 1, 2001 and also the contact person for the present WEB project (driver Wolfram von Oertzen) which is financed as part of the EU PANS project. Since both, his formal connection with his university and his membership of the NPB/EPS board has been or soon will be terminated, he decided to give up his official membership of the steering group. We are very pleased that he agreed to continue to contribute to our activities as a consultant.

2. Next Workshop

The next workshop will be held on June 15/16, 2001 in the area of Brussels/Louvain la Neuve. Local organisers are Christiane Leclercq-Willain and Jules Deutsch.

WORKSHOP Participants

"EXPERTS"

John Lewis, Organiser Malvern Seminar, Board of "Physics on Stage"

Andreas Kratzer, T-U Munchen, expert in highschool contacts

Jos van den Broek, Amsterdam, chief-editor of magazine "Natuur en Techniek"

Robin Rees, Canopus Publishing Limited/UK

Andrej Kugler, Prague, president-elect of NPB/EPS

Sandor Ujvari, president-elect teacher section of Hungarian Nuclear Society

Istvan Uray, Institute of Nuclear Research, Debrecen, Hungary

Steven Parker, EC, Brussels, officer in charge of PANS matters

Jana Solcova, Tschech, highschool teacher

Ellen Henriksen, Oslo,

Made an analysis highschool pupils attitude towards physics

Jurek Grebosz, Krakow, producer movie "Mysterious world of atomic nuclei"

BOARD:

Christoph Bargholtz, Stockholm NuPECC

Jules Deutsch, Louvain-la-Neuve, Belgium, NPB/EPS

Sissy Koerner, T-U Munchen, scientific secretary NuPECC
Christiane Leclercq-Willain , Brussels, NPB/EPS
Adriaan van der Woude, Groningen, the Netherlands, NPB/EPS

MEMBERS:

Ludwig Dobryzinsky, Warszawa, Poland
Klaus Dieter Gross, Darmstadt, GSI, EXPOSITION
Genevieve Edelheit, IN2P3, Paris, EXPOSITION
Finn Ingebretsen, Oslo, co-author of book "STRALING og HELSE"
Stevan Jokic, Belgrade
Hans Koerner, T_U Munchen
Helmut Leeb, Technische Universitat Wien, WEB
Matti Leino, Jyvasklya Finland
Ray Mackintosh, Open University UK, Driver for BOOK
Dorothy McMurrich, Edinburgh, Director "SCI-FUN"
Heinz Oberhummer, T-U Wien, coordinator next WEB proposal
Wolfram von Oertzen, HMI, Berlin, President of NPB/EPS, driver WEB
Alessandro Pascolini, Padua, driver EXPOSITION
Jan Vaagen. Bergen (Norway) EXPOSITION

E-mail addresses:

pansboard

Sissy Koerner (sissy.koerner@physik.tu-muenchen.de)

Jules Deutsch (deutsch@fyfu.ucl.ac.be)

Christoph Bargholtz (bargholtz@physto.se)

Alan Shotter (acs@ph.ed.ac.uk)

Christiane Leclercq-Willain (cwillain@ulb.ac.be)

Adriaan van der Woude (vdwoude@bart.nl)

Ray Mackintosh (r.mackintosh@open.ac.uk)

Heinz Oberhummer (ohu@kph.tuwien.ac.at)

Wolfram von Oertzen (oertzen@hmi.de)

Alessandro Pascolini (alessandro.pascolini@padova.infn.it)

Klaus Dieter Gross (gross@clri6a.gsi.de)

Genevieve Edelheit (edelheit@admin.in2p3.fr)

matti leino (matti.leino@phys.jyu.fi)

ludwik dobrzynski (ludwik.dobrzynski@fuw.edu.pl)

helmut leeb (leeb@kph.tuwien.ac.at)

Finn Ingebretsen (finni@fyspc-kjerne27.uio.no)

jan vaagen (jv@sentef1.fi.uib.no)

stephen.parker@cec.eu.int

robinrees@compuserve.com

kugler@ujf.cas.cz

andreas_kratzer@physik.tu-muenchen.de

grebosz@ifj.edu.pl

jvandenbroek@natutech.nl
stevan jokic (sjokic@rt270.vin.bg.ac.yu)
solcova (jana.solcova@terminus.cz)
henriksen (ekarolin@fys.uio.no)
mcmurich (d.mcmurich@ed.ac.uk)
ujvari@mail.datatrans.hu
i.uray@atomki.hu

3. **BOOK PROJECT**

(Ray Mackintosh., Robin Rees.)

The main news was that the John Hopkins University Press (Baltimore) decided after a peer review to publish the book for the English- speaking market. Details of the contract have still to be worked out (Robin Rees). The book has to be of high quality. It will sell for about 30\$ in the USA, the break-even point is about 5000 copies. In the UK the price will be about _ 15.

It has about 160 pages subdivided in sub-units of 2 pages. Each sub-unit has a text of about 300 words and an average of 2 high quality colour figures. Boxes with a specific subject will be included. The text will be finished by the end of April 2001. Demonstration material will be available by January 15, 2001. (Ray Mackintosh and colleagues) . The graphic work will start around April 2001 and will be completed in about 3 months. It will take about 20.000 Euro of which 10.000 is available as PANS money. This material is property of PANS.

The book has been set-up in such a way that it can be relatively easily translated into other European languages. A teacher should be involved in the translation process so that the text can be adopted to the historical aspects and other specific circumstances of that country. For every country a publisher has to be found who will work with Robin Rees to publish the book. It will sell for about 20 Euro. There are no copy-right problems.

For publishing in East-European countries it might be possible to produce a (cheaper) book with black and white figures by making the printing film available to the publisher. It was noted that Hungarian, Polish and Czech publishers would be able to print in colour if they get the colour films and make a very tide profit.

It was pointed out that it should be relatively simple to use this material for producing a CD-Rom which can then be distributed for a low price to schools etc.

4. **EXHIBITION**

(Alessandro Pascolini, Klaus-Dieter Gross, Genevieve Edelheit)

As part of the programme the participants visited the exhibition "Radioactivity: a facet of nature", set-up in the frame work of the European Science Week by K.D.Gross and GSI and which is shown in the Hessian Ministry of Culture and Science. Similar exhibitions are shown in Paris and Milan under the responsibility of Genevieve Edelheit and Alessandro Pascolini respectively.

The participants were much impressed by the quality of the exhibition which is built around three major themes: the occurrence of radioactivity in nature, the effect of radiation and its applications. Each theme is elucidated by a well-chosen mix of text and illustrations, "live" equipment (spark and cloud chambers) and hands-on experiments.

Each of the three exhibitions will be travelling to other cities. It is estimated that about 40.000 Euro is needed to set it up in another city. This includes transport, advertisement and promotion, renting or buying specific equipment, hiring personnel, etc. About 3000 Euro will be needed for translating the text , presently available in German, French and Italian into another language. It was

emphasised that such an exhibition should be set up under the auspices of a nuclear research centre for expertise and for providing demonstration material.

There was a short discussion on future projects: for instance to produce a CD-rom based on the material used for the exhibition. About 8000 Euro is still available.

5. **WEB PROJECTS**

(Wolfram von Oertzen, Heinz Oberhummer)

Report on ongoing and past WEB activities (Wolfram von Oertzen)

What went wrong with the WEB proposals to the EU.

Twice a proposal submitted to the EU for funds to support the set-up of a WEB site for information on nuclear physics targeted to high school teachers and pupils did not succeed. Although the panel which evaluated the proposal was in principle favourable to the idea it found that the proposed set up lacked professionalism. For example there was only little involvement of teachers or other experienced persons.

As a result the driver of the group, von Oertzen, decided to give up his efforts.

Lecture material for general use.

In the proposal for PANS activities which was funded by the EU an amount of 12.000 Euro was dedicated to set up a WEB site for general use.

It consists of two parts.

The first one is a general PANS page (www.hmi.de/people/thummerer/eps). It opens by showing a map of Europe indicating nuclear physics institutes with links to their WEB pages. Under construction is a shelf with hot items in nuclear physics and another one on which one can find already existing general lecture material properly ordered by subject.

The other one is the construction of specific packages (www.hmi.de/people/wilpert-t/pans): studying matter with particle waves, neutron applications (completed), matter wave duality (completed), proton therapy, missing and new elements.

This project should be finished in 2001.

6. **New WEB proposal**

(Heinz Oberhummer)

Heinz Oberhummer has agreed to act as the coordinator/driver for a new WEB proposal. He has the necessary experience as coordinator of the ESPACE project (European System for Particle and Astrophysics Cyber Education) (<http://www.espace-cd.net>).

He discussed his view on a WEB based learning system on Nuclear Science. His proposed scheme was generally found to be very attractive. It foresees in the formation of six to eight teams consisting of an author (scientist with proven ability for writing) and 1 to 2 high school teachers. Each team will be responsible for producing material covering a specific theme and to improve and/or update it if new material or information becomes available. There will be ample feedback from the "clients".

The first step will be to find suitable authors and teachers. The authors pool will be co-ordinated by Christoph Bargholtz (bargholtz@physto.se) and the teachers network by Christiane Leclercq-

Willain (cwillain@ulb.ac.be). ALL PARTICIPANTS ARE REQUESTED TO SEND SUGGESTIONS FOR AUTHORS AND/OR TEACHERS AS SOON AS POSSIBLE TO THE RESPECTIVE CO-ORDINATORS.

The planned time schedule is as follows:

- Middle of December 2000: Set up of work distribution and consortium
- 15. 1. 2001: EU-Call IHP (Improving Human Potential)
- End of January 2001: Preliminary set up of authors pool and teachers network
- 9. & 10. 2. 2001: Preparatory meeting in Vienna
- 15. 4. 2001: Deadline for proposal

The following issues with respect to the planned new WEB proposal were addressed and discussed:

- Jan Vaagen: Consideration of cultural diversities in Europe
- Ludwig Dobrzynski: Depth of learning elements
- Jules Deutsch: Mass media as target groups
- Christian Bargholtz, Matti Leino: Adequate treatment of controversial issues
- Klaus-Dieter Gross: Advantages of new concept
- Jos van den Broek, Allesandro Pascolini: Importance of graphics
- Andreas Kratzer: Use of web-based information and systems in school,

An extended outline of the new WEB proposal is included at the end of this report in the form of copies of the sheets presented at the workshop.

The coordinates of Heinz Oberhummer are:

Institute of Nuclear Physics, Technische Univ. Wien
Wiedner Hauptstrasse 8-10 ,A-1040 WIEN, Austria

E-mail: ohu@kph.tuwien.ac.at

Tel: +43/1/58801-14251 office, +43/1/58801-14256 secretary, +43/676/4123409 handy

Fax: +43/1/58801-14299

Contributions from experts

Jos van den Broek (chief editor "Natuur en Techniek")

Emphasised the need for public awareness of science in general in the Netherlands.

Suggested the possibility to have WEB links

Andreas Kratzer (T-U Munchen)

Discussed the project HOU "Hands on Universe" for students and teachers (<http://hou.ph.tum.de>).

Stevan Jokic(Belgrade)

There are several activities in his country:

Books on Radioactivity, chemical elements subatomic physics.

A magazine for young people

A summer-school for high school teachers on nuclear physics and applications

Stressed the need for contacts with other European science institutes.

Following the success in France with "Cafe des Sciences" they will develop a similar activity.

Ellen Henriksen (Oslo)

Discussed the effect a exhibition on radiation has on the attitude of the visitors. A survey showed that 74% of the visitors had a misconception on radiation before and 24 % after having visited the exhibition.

Lewis(EPS, Physics on stage)

Emphasised the need for “ experiments” , for physics in the world we live in and for risk assesment. Public awareness has been recognised by the EPS to be important: a new division on Physics Education has been set up.

Sandor Ujvari (Hungary, teachers association)

Discussed the Hungarian project of getting high school pupils involved in measuring radon concentrations in houses, which was very succesfull.

Jurek Grebosz (Krakow)

He showed the very interesting computer film “Mysterious World of Atomic Nuclei” which he has produced at his home institute. It would be nice if PANS could use his talents to produce similar kinds of films on various other subjects.

Steve Parker (EU)

Teachers have to deliver, namely a curriculum: important to know what teachers need to teach (nuclear) physics. In the next WEB proposal special attention should be given to showing that there is a demand for it and how this demand is satisfied.

Stress the European aspect.

Competition will be fierce: in first instance only 2 10⁶ Euro available instead of 4 10⁶ in previous ones, while the number of applications has been steadily increasing.

Concerning the exhibition he observed that there was no mention of the European Science Week and the (financial) role of the EU “ never bite the hand that feeds you”.

7. Nuclear Energy

At the closing session the desirability of starting another project on nuclear energy was discussed. The general opinion was that such a project presenting facts on energy needs and energy production (also wind, solar and others) would be a useful. This will be discussed in more detail on the next workshop.

8. ADDENDUM

The following is a copy of the sheets presented by Heinz Oberhummer at the workshop.

PANSWEB

New

Draft version 1.1 (14. 11. 2000)

Objectives

- Web-based learning (and outreach) system for Public Awareness on Nuclear Science
- Target groups: Schools & Public

- Combination of expert knowledge, didactics & IT-technology
- Innovative features
- Communication and integration of the involved groups: Authors, teachers, pupils, public

Work packages & deliveries

A. PANS Website (see figure):

- Portal: Conventional website including communication tool
- Repository: Collection of organised and commented hyperlinks of learning material including automatic browser-based upload and outdated link check
- Authoring/Learning/Teaching/Organising (ALTO):
Web-based system with authoring, learning, teaching, and administrative front-ends
- Technical features: Use of free and open software (Linux as operating system, sendmail as mail server, mysql as data base, apache as web server, ...)

B. Content:

- Learning materials & modules on basic and applied nuclear science

Workplan (see figure):

- Recruitment of authors and teachers
- Construction and programming of portal, repository & ALTO-System
- Collection of learning material from the web for repository
- Authoring modules with the ALTO-system (English)
- Feedback by teachers to authors
- Web-publication of learning material & modules (English)
- Translation of modules through the teachers into their native languages
- Implementation of strategies for dissemination and sustainability

Content

- 5-10 modules on nuclear physics & applications: Hot topics, basics, radiation therapy, astrophysics, transmutation, nuclear energy, materials, ...
- Diversification of different cultures and attitudes should be considered through translations of teachers into their native languages
- Controversial items, e.g. nuclear power, should be included on a scientific level. An official nuclear-physics body (PANS, NuPPEC, ...) should approve such modules containing controversial items before e-publishing.
- Contents for schools and the general public are somewhat diversified. The same system can be used, only the user web-front will be different in content and style.

Authors & teachers

- Authors as well as teachers can come from any country eligible for the EU-programme, i.e., they must not be from one of the partner countries of PANSWEB.
- Each author is responsible for writing one module.
- Teachers should give a feedback to the authors concerning the applicability of the module to school (1-2 teachers per module). Teachers translate modules into their native languages.
- Authors and teachers should have some expertise in multimedia & the web.

Innovations and features of ALTO

- Web-based learning, teaching and writing aid trying to combine expert knowledge, didactics and IT-technology
- Integration of the main function of the education process: Authoring, Learning, Teaching
- New e-didactics: Clear statement of used didactic model, consistency and correctness by sticking to didactic rules
- Usability: For authors, teachers and pupils without help of IT-professionals: ->"Content is king"
- Reusability: Modular structure
- Homogeneity: Same design for learning elements and modules
- Actuality: Instant change of web content
- Interoperability: Standard browser
- Transferability: Open and free source
- Sustainability: Webmasters work minimised
- Affordability: Free software, no costly updating of content

Work distribution and partners

- Co-ordinator: Atomic Institute of Austrian Universities, Heinz Oberhummer
- Authors co-ordinator: Univ. Stockholm; Christoph Bargholtz
- Teachers co-ordinator: Universite Libre de Bruxelles; Christiane Leclercq
- Portal: N.N.
- Repository: N.N.
- ALTO-System: Atomic Institute of Austrian Universities; Heinz Oberhummer
- Consultation partners for didactics and outreach: N.N.

Time Schedule

- Middle of December 2000: Final set-up of work distribution and partners
- 15. 1. 2001: EU-Call IHP (Improving Human Potential)
- End of January 2001: Preliminary set up of authors pool and teachers network
- 9. & 10. 2. 2001: Preparatory meeting for proposal in Vienna
- 15.4.2001: Deadline of proposal
- 1.9.2001: Begin of project