International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JULY 2011

Welcome to the ICASE July 2011 Newsletter !

The ICASE Newsletter is a regularly distributed publication containing current information about topics of interest in the field of science education. The table of contents for this issue is located in the right hand column.

The International Council of Associations for Science Education (ICASE) was established in 1973 to extend and improve science education for chldren and young people throughout the world. Today, ICASE is a huge network of science education associations, institutions, foundations and companies, facilitating communication and cooperation at the regional and international level.

International Council of Associations for Science Education

http://www.icaseonline.net

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Science Education International

For information please visit our Journal web page: http://www.icaseonline.net/seiweb

Contents of Newsletter

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ICASE News

Jack Holbrook, ICASE Past President

1. Introducing ENGINEER (BrEaking New Ground IN the SciencE Education Realm)

ICASE has joined a consortium, funded by the European Commission under its FP7 programme, to promote technology or more explicitly engineer at the primary level (grades 4-6).

The ENGINEER project is based on the - Engineering is Elementary (EiE) program - developed by Boston's Museum of Science (BMOS) and since 2003/4 widely used in primary schools throughout the U.S. Evaluations of EiE have found that incorporating engineering in science teaching, using inquiry-based pedagogic methods, results in highly desirable impacts on students and teachers, raising students' interest in science and engineering.

The ENGINEER project plans to develop 10 engineering design units suited to European environments using EiE's Design Plan model. Each unit will focus on one engineering field and will use inexpensive materials for student-led design problem-solving. ENGINEER will adapt and enhance EiE teacher training materials. Project materials will be tested in pilot applications and refined before use in outreach.

European science museums will lead the outreach effort involving target schools and teachers. Teachers trained in using ENGINEER's materials will incorporate the units into science teaching in their classes. The museums will go beyond interating with student groups and offer programes for the general public, thus promoting a formal-informal interface. ICASE will play a strong role in the dissemination activities of ENGINEER making teachers around the world aware of the developpments and seekig ways to promote teacher and student participation beyond Europe. In this ICASE will endeavour to adapt teacher professional programmes and guide teachers to develpo or adapt materials for thier own classroom use and also in seeking to establish a formal- informal link with science museums where they exist and other outreach programmes which interrelate to primary school students.

ICASE News (Cont.)

A key supposition of the ENGINEER project is that an early introduction to engineering offers a way of promoting widespread adoption of IBSE (inquiry-based science education) and bring about a radical change in young people's interest in science and mathematics.

While many studies have shown that science, or science and technology programmes have generated interest among primary students (typically grades 4-6), with little gender difference, this is far from being the case at the onset of adolescence at the middle school or junior secondary level. And unfortunately there is scant evidence that interest in science at the grade 4-6 level translates into an interest in science and technology as it enters into a more abstract conceptualisation of the evidence tobe studied and observations to be interpreted.

However there is evidence that inquiry-based approaches do enable students to undertake observations and develop investigations in a more meaningful way. And it is here ENGINEER, alongside other student-centred approaches, seek to guide students into self-thinking, self-confidence and eventually self-determination

For the teacher, the ENGINEER project can be expected to offer new approaches not only in ways to guide students to seek evidence, but to guide stundets to apply their ideas in the development of a new technological, engineered products.

The Objectives of the ENGINEER project are expressed as

- Adapt usage of the enginnering design plan from the Boston project, which has been shown to increase children's technology literacy and raise their interest in science.
- Develop new engineering design challenges suited to European contexts.
- Adapt teacher training materials to increase primary school educators' ability to teach engineering and technology to their students using inquiry-based pedagogic methods
- Undertake an extensive outreach programme that will target science teachers, teacher trainers and schools in at least 10 EU member states and associated countries.
- Strengthen the cooperation between schools and informal science learning institutions and enrich formal science education with informal experiences in the science museums.
- Undertake advocacy activities for promoting the long term goal of integrating engineering into science teaching in primary schools throughout Europe.

For more information please contact the editor on jack@ut.ee

2. Special issue of SEI in the area of Science Careers

You are invited to submit an article to a Special Issue of SEI

Guest editor:
Susan Rodrigues,(susan.rodrigues@northumbria.ac.uk)
Professor of Science Education, University of Northumbria, UK

General Introduction to prospective authors
Exploring the impact of social capital (factors including the home, friends, other students, the community, society as a whole) on student career aspirations, with particular regard to science careers is a priority in many countries across the world.

Descriptions of reasons for why students opt out of science, and the various initiatives to encourage science uptake have been researched and documented.

However, there is a limited body of research offering theoretically informed critical accounts of the influence of social capital factors on student aspiration and on student choice with regard to careers based on science education. What are the problems/issues/factors that exist given the large number of initiatives, policy changes and activities that have been introduced over the last 6/7 years?

Possible topics, but not limited, are:
- Policy issues on science careers
- Impact of social capital on students' career choices
- Gender and ethnicity influences on student career choices
- International comparative studies reporting on students' Science career choices

Deadline for submissions	: now (at the end of June)
Review process	: July – September
Notification of Review	: September 30, 2011
Revision of articles	: October
Publication of articles	: November/December

All articles should meet the general guidelines for SEI and be submitted online. The guidelines for the articles can be found on the journal web site: www.icaseonline.net/seiweb.

All submissions should be made online at the Journal Web site.

AN EXAMPLE OF A SCIENCE TEACHING MODULE

WHICH SOIL SHOULD WE CHOOSE?

(Suggested for students from 14 to 16 years old)

The soil is an excellent means to introduce students to fertility problems. We can use simple techniques of analysis, which require careful and detailed work.

Educational Learning Outcomes

Students are expected to:

1. Decide, with reasons, which field Mr. Ground should buy.
2. Design and carry out experimental determinations, in situ, and in the laboratory.
3. Seek out and extract information related to the study of soil, from books, computer networks and web pages.
4. Cooperate with partners in the group in undertaking an experimental investigation.
5. Explain the advantages and disadvantages of different types of soil.
6. Explain density and how the density of soil can be determined.

Students' Guide

A Scenario (to initiate the teaching)

Mr Manuel Ground, wants to buy a little field on the outskirts of the city to exploit as a vegetable producing farm. He has had several offers, but he does not know which one to choose because he has little knowledge of the soil characteristics of each place.

As he lives next to the school and knows the students well, he seeks help from students to carry out a study of the soils so that he can decide which land to purchase.

Your Tasks (activities for the students)

1. Seek from different sources (books, computers networks, web pages or by contacting edaphological institutions (study of soil) or specialists through the Internet, information about the properties, classification and analysis of soil.
2. Analyse the information obtained to plan techniques and methodologies for sampling soils .
1. Organise and collect materials for the field visit.
2. Undertake a field visit so as to:

   (i) analyse in situ:

   *Soil Ph; *Temperature of the soil and the environment; *Climatic observation.

   (ii) collect samples (in foil or in cylindrical tubes)

   Description the place where the samples are taken.

   In groups, analyse the soil samples in the laboratory for

   *Texture. *Permeability *Content of water.
   *Porousness. *Apparent density. *Interaction water-soil.
   *Water available for the plants.
3. Draw tables and comparative graphs and write a report classifying the soils analysed.
4. Discuss the results with other groups and arrive at a general conclusion.
5. Determine how best to communicate the results to Mr Ground.

Teacher's Guide

It is very common to see soil but not to realise all the possibilities that it provides for us to work with the students in science and technology. It is a very useful "medium" to introduce concepts difficult to understand. In this module the concepts of different types of soils with different properties and especially soil fertility is studied.

Suggested Teaching Strategy

1. The teacher poses the problem given in the scenario to the students. (The possibility to carry out work for a person not belonging to the school generates in the students a feeling of labour responsibility, activity for which we also have to prepare them).
2. The teacher proposes to students the working groups considering the personal inclinations of each student. Tasks will be distributed, which each group will undertake them.
3. Students are oriented about the bibliography in which they have to base the investigation, so that they can create a critical attitude as regards the texts to be used, valuing them from the scientific point of view. Students are expected to learn to take the same kind of attitude towards the material obtained through Internet and the institutions they accede by this means.
4. Teacher helps students interpreting the bibliography consulted as well as the interchange of ideas among members of the same group and others groups.
5. The teacher guides students and collaborates, when necessary, getting and preparing the work material for the field visit and for the lab analysis.
6. Students are co-ordinated by the teacher during the field visit, with a recreational moment at the end of it shared by students and teachers with the aim of encouraging the affective relations and the communication among the participants of this project.
7. Students are guided by the teacher in the experimental work in the laboratory; and also guide students making the comparatives tables and charts.
8. The teacher co-ordinate a whole class debate, encouraging the questions and analysis of findings, which each groups got, with the aim to get a general conclusion.
9. Students are induced, by the teacher, to suggest the criteria to taking account to elaborate the final report to be given to Mr. Manuel Ground.

Assessment (suggested formative approaches)

1. Able to decide, with reasons, which field Mr. Ground should buy.

The teacher reads the final report presented to Mr. Ground.

x Not able to inform what field would be appropriate for Mr Ground to buy.

√ The student indicates what field Mr. Ground should buy, but does not justify the reasons for this selection.

√√ The student decides what field Mr. Ground should buy, and justifies it, basing the selection on the experimental data

2. Able to design and carry out experimental determinations, in situ, and at the laboratory.

The teacher observes the students carrying out the work, in the field trip and lab too.

x Not able to devise an experimental determination to do during the field trip, and the lab session.

√ The student devises the experimental determinations, but is not able to do it in the field trip and lab either without the support of the teacher.

√√ The student devises the experimental work, and carries it outy, obtaining appropriate experimental results.

1. Able to seek and extract information related to the study of soil, from the books, computers networks and web pages.

The teacher observes the materials presented by the students, and the analysis made about them.

x Not able to locate and extract useful material.

√ Able to collect material, but not able to select relevant information without the aid of the teacher

√√ Able to collect material and able to select the relevant information.

2. Able to cooperate with partners in the group in undertaking an experimental investigation.

The teacher observes the development of the group work, during the investigation, the field trip and the elaboration of findings for the final report.

x The student is integrated into the group, but does not pay a constructive role in the work of the group.

√ The student in integrated to the group, and work co-operatively with their partners, developing the tasks of investigation and elaborating conclusions.

√√ The student plays a strong leadership role in guiding the work of the group

3. Able to explain the advantages and disadvantages of different types of soil.

The teacher listens to the students´ opinion and analyses the tables and charts.

x Not able to explain the advantages and disadvantages of different types of soil.

√ Able to explain the advantages and disadvantages, but is not able to present it clearly in tables and charts.

√√ Able to explain correctly and make comparatives charts and tables explaining the advantages and disadvantages of different kind of soil.

4. Able to explain density and how the density of soil can be determined.

The teacher asks questions about the concept of density and listens to the students´ ideas for the determination of the density of soil.

x The student is not able to comprehend the concept of density.

√ The student explains correctly the concept of density, but is not able to devise a way to determinate density experimentally of soil.

√√ The student explains correctly the concept of density, and is able to devise a simply and practical way to determine density of soil.

Notes for the Teacher

The choice of the place for fieldwork is very important. It is suggested, if possible, an area where a lagoon and a forest come together since the characteristics of the soil near the lagoon will not be the same than the one extracted under a pine grave or in a low pasture area. Different soils of the zone can also be selected so that each group gets distinct results. Once the place is chosen, make a previous visit to the area that will be used so that the display points have different physical characteristics in order to stimulate discussion and interchange of ideas in the plenary meetings.

By Internet it is easy to access the Edaphology Institute of Barcelona that has very interesting scientific material. http://edafología.ugr.es and http://www.aidisar.org

Suggested worksheets for the students are not included, but can be obtained on request to the newsletter editor (jack@ut.ee)

ICAS^{2}E: I CARE ABOUT SAFETY IN SCIENCE EDUCATION

Jim Kaufman,
Chair, ICASE Committee on Safety in Science Education.
Also President of the Laboratory Safety Institute.
For more information please visit www.icaseonline.net and www.labsafetyinstitute.org

A Modest Proposal

A member of the Board of Directors for the Laboratoy Safety Institute in the US was recently interviewed for an article to be included in a laboratory magazine. In preparation for the interview, he sent me a dozen questions that the interviewer had posed. Being new to the Board, he wanted to know what I thought.

One of the questions was my favourite: "What is the biggest challenge that you face in lab safety?"
My answer for many years has been the need to convince people that they are serious about safety and that it's important. But on reflection, it occurred to me that we might want to try the following:

1. Let's require everyone who is embarking on their science teaching career to take a course on classroom and laboratory teaching.
2. We can require them to take both a written and practical examination.
3. Then we can provide a permit certifying the individual is competent to enter the laboratory and proceed with undertaking and guiding others to undertake experimental work.
4. As a reminder, we post warning signs.
5. Every few years we require the permit to be renewed.
6. Just in case there are some who don't want to follow the rules, we probably should have someone to be responsible for enforcement and discipline.

So what do you think? Is this a good plan? I'm not so sure!

This is pretty much what we do with automobiles. "How's it working?" Not so hot in my opinion ! And, regrettably, society has come to accept, at least in US, 35,000 to 45,000 deaths a year as "normal".
So, is it really reasonable to expect that people will behave significantly differently in the laboratory than on the highway. Probably not !

The Laboratory Safety Institute, partly in response to the tragic death of Yale student - Michelle Dufault, created 'The Lab Safety Memorial Wall.' The wall is inscribed with the names of those who have lost their lives due to laboratory accidents. At this time there are over 300 names !! The Laboratory Safety Memorial Wall can be viewed on the LSI website resources page http://www.labsafetyinstitute.org/MemorialWall.html
We hope that this graphic reminder, like the white crosses and flowers along the highway, will serve to heighten our awareness about health and safety in the laboratory. Ultimately however, it is the actions or inactions of administrators and management that will make the biggest difference. The dogsled can't go any faster than the lead dog. First line supervisors, teachers, faculty, principal investigators, etc., must assume the responsibility for the health and safety of those who report to them. They need to make the importance clear in their new employee orientation and everyday thereafter. If the rules are not going to be followed, it is the supervisor who needs to provide the discipline (up to and including termination). Now there's a modest proposal.

SPECIFIC AIMS FOR SECONDARY SCIENCE PROGRAMMES

Jack Holbrook,
ICASE Immediate Past President

Much has been written in previous newsletters about the changes in direction for the teaching taking place within secondary level science lessons. These changes are perceived as important in terms of updated knowledge, have a relationship with the needs of the society and hence elements of interdisciplinarity, development of the individual, capable of interactions with others and appreciating the need for aesthetics, as well as morale and ethical values.

In short, as expressed by UNESCO in the Delors report (Delors, J., et al. 1996. Learning: the treasure within: report to UNESCO of the international commission on education for the twenty-first century. Paris: UNESCO. Highlights: http://www.unesco.org/delors/delors_e.pdf.) - learning to learn and this covering:

- learning to know,
- learning to do,
- learning to be and
- learning to interact with others.

How might this be expressed in the development of a secondary level science course ? Let is consider a course put forward for a developing country. It overall goal is designed to:

Further develop the potential of the future citizens in a holistic, balanced and integrated manner to create a scientific society with high moral standards, so that students:

- have knowledge and a coherent understanding of different areas of science and technology.
- are equipped with an inquiring mind and a range of skills in science and technology to solve problems and to make decisions rationally which form the basis to pursue further education, enter the workforce and live successfully.
- have the ability to develop a concerned, dynamic, progressive and environmental friendly society, based on scientific attitudes and noble values.

So far so good. Who would argue with these attributes? But how might they be expressed more specifically.

The specific objectsives are expressed in five sections as indicated on the following page:

Intellectual

- consolidate and build upon the knowledge, skills, scientific attitudes and values gained in the previous stages of education.
- know, understand and interpret the different facts, concepts, theories principles, laws, models and terminology of science.
- acquire scientific and thinking skills to solve problems and to make decisions rationally in various situations in context of science and technology
- analyze, synthesize, evaluate and deal with information and ideas logically and critically.
- analyze and manipulate units associated with physical quantities.
- equip students with an appreciation of the potential of information communication technology and where possible to develop practical skills in the use of such technology.
- understand the importance of interrelationships and inter-dependence factors within the environment and the problems occurring in the environment from human activities and to promote sustainable living.

Moral and spiritual

- practise and internalize scientific attitudes and values such as flexible and open minds, tolerance for others' opinions, a systematic approach, fairness and justice.

Communicative

- develop, within a context of science and technology ability in the use of the national language (Reading and Writing) as a prerequisite for higher learning or in the workforce.
- ensure learners have the ability to communicate with and interpret science and technology related information by other means of communication, such as graphical, tabular, symbolic and diagrammatic

Aesthetics

- create aesthetic awareness of the contribution of Science and Technology in our daily life.
- understand how cultural beliefs, values, ethical positions and socio-economic developments are interconnected in the development and use of science and technology.
- develop willingness to work together to apply scientific knowledge, skills and understanding across a range of contexts in daily life.
- develop an understanding of the interconnected nature of the environment and the impact of human activities upon it.

Physical

- promote, in students a healthy and productive lifestyle.

While the intellectual component is extensive, it is interesting that science education is also being promoted as developing moral and spiritual objectives, communicative objectives, aesthetic objectives and physics objectives, all within a science course. This must be viewed as a far cry from a content oriented approach in which conceptual science forms the curriculum (or rather the syllabus) and the assessment of student achievement is measured solely in terms of factual gains.

ChemEd conference New Zealand, Palmerston North, 17-20 July 2011

2011 is the International Year of Chemistry and what better way to celebrate it than to join with chemistry educators and researchers from across New Zealand and abroad. ChemEd 2011 *Celebrating the International Year of Chemistry* seeks to do exactly this, bring together chemistry educators and researchers from across sectors to share together, learn from each other and celebrate the wonders of chemistry.

The 2011 conference will be held in Palmerston North, a hub of scientific endeavour and research. Alongside important tertiary institutes such as Massey University and UCoL Palmerston North is home to a wide variety of research institutes and scientific companies, providing a perfect atmosphere of discovery and enterprise. The venue for the conference will be the modern and architecturally inspiring Universal College of Learning (UCoL) located in the heart of city centre. The facilities here will provide a perfect environment for a conference such as ChemEd2011 and allow for easy walking access to town, local accommodation, restaurants and bars.

Confirmed key notes speakers so far include Jonathan Hare (UK) and Dr. Tony Wright (Aus). Jonathan carried out his PhD working on buckminsterfullerene with Prof. Sir Harry Kroto and he is well known for his television work in series such as *Rough Science* as well as his involvement in the development of the Creative Science Centre. Tony has strong connections with Palmerston North, having worked at Massey University prior to working at the University of Queensland. Tony has had a long and passionate interest in Chemistry education and the use of information and communication technologies to support learning.

The value of chemistry educators coming together in times of continual change cannot be overstated. As changes to Level 1 NCEA take place in 2011 and further changes to Levels 2 and 3 in subsequent years it is important we join together, share our knowledge, hear from experts and provide a voice to contribute positively to the changes taking place. Not only that, it also allows to continue building links to both.

http://www.chemed2011.co.nz

Early bird registration is now open. The process is very easy and there is an option to generate a GST invoice for your school so that you don't have to front up with the money – assuming your school has agreed to fund it of course.

The Future of Science Education, 22-24 July 2011, Singapore

The Future of Science Education

22-24 July 2011

Blending traditional conference formats with 21st century technology, Science Singapore 2011 will be a unique meeting where the latest research and best practice in science education come together, presented by educators from around the world. There will also be multiple opportunities for social gatherings and sightseeing in this fascinating city and surrounding countries!

Features of Science Singapore 2011:
Three parallel presentation strands consisting of
Keynote speakers in science education, web-based technology, and inspiring lives;
Continuous short (20 minute) talks—two per hour with breaks,
45 minute presentations and 90 minute double sessions for interactive, practical workshops.
Session strands scheduled as one block and repeated during the conference for more attendance opportunities;
• Internet networking to promote the conference via Twitter, Facebook. Google, and Email;
• Long distance interaction with breakout groups via internet chats;
• Forums via Skype;
• Live online streaming of sessions;
• Technology mentors for participants;
• Download session videos;
• One half day devoted to "un-conference" format of posted topics, participant voting and flexible scheduling of most popular choices;
• Electronic and traditional message boards;
• "Viewing party" prospects for distance discussions in small local groups;
• Live and eight-hour delay broadcasts of sessions.
Coordinators: John Stiles, Bangkok, Science Educator and Consultant; and Rob Newberry, Singapore, Educational Technology Consultant who organized the first TEDx conference in Bangkok. Conference information: http://sites.google.com/site/scisg2011/

6th Science Centre World Congress, 4-8 September 2011, South Africa

6th SCIENCE CENTRE WORLD CONGRESS
4 - 8 SEPTEMBER 2011
CAPE TOWN, SOUTH AFRICA
Science Across Cultures

Science Across Cultures

The 6th Science Centre World Congress will be held in Cape Town, South Africa, 4-8 September 2011. Enjoy stimulating congress sessions, challenging workshops and lively debates. And enjoy all that Cape Town and South Africa have to offer - whale watching, wine tasting, a unique floral kingdom, big game safaris, beautiful beaches, unparalleled scenic beauty, and a friendly and diverse culture. With the theme "Science Across Cultures", the 6th Science Centre World Congress will encourage reconciliation between different cultures and a greater appreciation of the role that science centres can play in highlighting each culture's unique contributions to science, technology and science education.

Registration Fees and Information

Registration for 6SCWC will be opening in September 2010.
Congress Registration Fees
Registration – Early (until 3 June 2011) ZAR 5,525.00
Registration – Standard (until 19 August 2011) ZAR 6,525.00
Registration – Late ZAR 7,525.00
*Registration - Discounted (until 3 June 2011) ZAR 4,250.00
* Residents of low-GNI (gross national income) countries are eligible for a discounted registration fee.
If you would like to make your own accommodation arrangements at a B&B, hostel or guesthouse, the 6SCWC

Congress Secretariat recommends www.capestay.co.za. Please note that the Congress Secretariat can only make bookings at the designated congress hotels and cannot be responsible for accommodation booked independently by delegates.

Rates quoted are per room, per night, including breakfast, including 14% VAT, excluding a compulsory 1% Government Tourism Levy.

More details from the website www.6scwc.org

International Symposium on Science Education (ISSE):

Strategies to engage students for learning

Dear Colleague,

It is our pleasure to welcome you to the forthcoming international ISSE symposium to be held in Porvoo, FINLAND (close to Helsinki) from **10th to 13th September 2011** organized by Finland's Science Education Centre, LUMA.

We welcome Science Teachers from Elementary to Senior High School Level, Future Teachers, Teacher Educators and Researchers in Science Education to gather in this symposium and share your ideas and research.

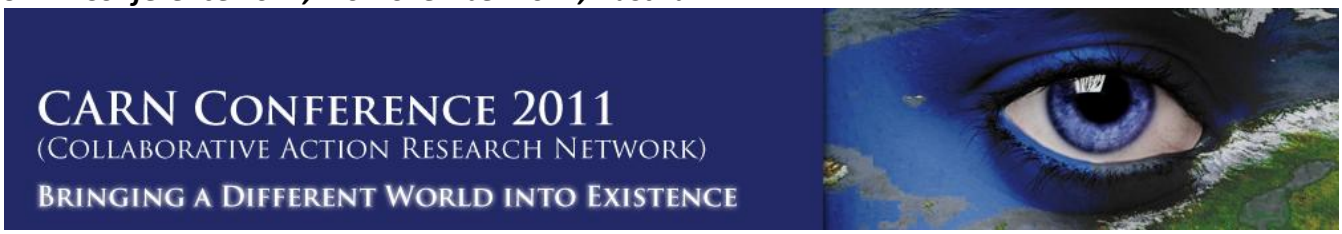
The symposium is based on plenary lectures, hands on activities, poster and discussion sessions.
Keynote speakers: Prof. Brian Hand, USA; Prof. Arlyne Sarquis, USA; Director Lynn Hogue, USA and Prof. Murat Gunel, Turkey.
e.g. Professor Brian Hand's research focuses on two major areas: " The first is on how we can use language as a learning tool to improve students' understanding of science. The second area of research is the development of scientific argument through the use of the Science Writing Heuristic (SWH)."
(see more: http://www.education.uiowa.edu/people/facstaffs/bhand.htm)

To see the program and registration details, please go to: http://www.helsinki.fi/kemma/english/isse.html
Registration fees: none. You'll pay yourself for travel, accomodation, lunches and dinner (see pages: Venue and accomodation).

For any other questions, please contact the coordinator - Marja Happonen (marja.happonen@helsinki.fi).

Maija Aksela
Chair of the ISSE Symposium, Head of the LUMA Centre, University of Helsinki, Finland

CARN Conference 2011, 4-6 November 2011, Austria



Bringing a Different World into Existence

The Collaborative Action Research Network (CARN) was founded in 1976. Since that time it has grown to become an international network drawing its members from educational, health, social care, commercial, and public services settings. CARN aims to encourage and support action research projects (personal, local, national and international), accessible accounts of action research projects, and contributions to the theory and methodology of action research. In line with the tradition, we would like to invite academics and practitioners by welcoming a diverse range of contributions, no matter what stage the research is at (from initial ideas through to completed reports and papers). There will also be opportunities to consider methodological issues.

Keynote Speakers
Peter Posch Herbert Altrichter Ingo Eilks Katherine Froggatt

Indicative Themes
- AR for unity and diversity
- AR for coping with the challenges of a knowledge society
- AR and workplace cultures
- AR in teacher education and professional development
- AR in palliative care and in nursing homes
- AR in health promotion
- AR and community development
- AR methodology and methods
- AR and Participatory Research in fields of social work
- AR in science education, environmental education/education for sustainable development
- AR in curriculum development, school development, networking and system intervention

Indicative Dates
30th April 2011 deadline to send a proposal
20th June 2011 answer for the approval of a proposal
1st July 2011 deadline for early bird registration
Call for papers and posters end of January 2011. Participative workshops are particularly welcome.

For more information please visit: http://ius.uni-klu.ac.at/carn

CoSMEd 2011

4th International Conference on Science and Mathemathics Education

Transforming School Science and Mathematics Education in the 21st Century

15-17 November 2011
SEAMEO RECSAM, Penang, Malaysia.

Organised by:
Southeast Asian Ministers of Education Organisation
Regional Centre for Education in Science and Mathematics
(SEAMEO RECSAM)

In collaboration with:

The Ministry of Education, Malaysia

Penang State Education Department, Malaysia

Universiti Sains Malaysia

Universiti Pendidikan Sultan Idris, Malaysia

important dates

Deadline for Submission of Abstracts	1 June 2011
Notification of Acceptance of Abstracts	15 June 2011
Deadline for Submission of Full Papers	1 July 2011
Notification of Acceptance of Papers	31 August 2011

The Association for Science Education
Promoting Excellence in Science Teaching and Learning

Science Education Research

ASE Annual Conference 2012 @ University of Liverpool

Wednesday 4th - Saturday 7th January 2012

Research Seminar Series Promoted by the ASE Research Committee

Papers or poster presentations will cover science education research topics.

The contributions can include:

- teacher education
- early years education,
- primary education
- secondary education
- curriculum development and evaluation
- pedagogy
- learning and assessment in science

Contributions come from teacher educators, teachers, higher education degree students and from colleagues involved with curriculum development and evaluation.

Contact the ASE website for more details

21st Symposium on Chemistry and Science Education to be held at the TU Dortmund University, 17-19 May 2012

Issues of Heterogeneity and Cultural Diversity in Science Education and Science Education Research

The 21st Symposium on Chemistry and Science Education will continue the long tradition begun in 1981 with the first symposium on chemical education organized by Hans-Jürgen Schmidt. The 2012 symposium is titled **"Issues of Heterogeneity and Cultural Diversity in Science Education and Science Education Research"**. Heterogeneity and cultural diversity are becoming increasingly important challenges for educational systems worldwide. Growing rates of migration and higher numbers of multi-cultural societies mean that educators must achieve a broader spectrum of competencies among their young people. Science and chemistry teaching are not untouched by these developments, challenging the practices and methodologies in these areas. Answers are demanded from science education research in the areas of understanding potential problems and providing impulses towards more effective practices.

The symposium's main questions will address:

- Which science teaching problems are connected to different areas of heterogeneity in science classrooms? How can they be overcome?
- Which influences do learners' multi-cultural backgrounds have concerning the learning of science?
- What types of problems arise due to different linguistic abilities or a background including a different native language? How can we best deal with linguistic heterogeneity in science classrooms?
- How can we teach the domain-specific language of science in classes containing students with different native languages?
- How do we cope with students with special needs in science, e.g. in lab environments?
- What are the challenges in and potential innovations involved with teaching gifted children in science classes?

Which changes can examples of good teaching practices in different countries suggest for bettering science teaching with respect to issues of heterogeneity and cultural diversity?

All contributions will be presented by invited lecturers. There will be key-note lectures and short presentations. Suggestions for appropriate lectures are welcome by May 2, 2011. Please contact Dr. Silvija Markic, University of Bremen: *smarkic@uni-bremen.de*.

Conference chairs: Prof. Dr. Bernd Ralle, TU Dortmund University, *bernd.ralle@tu-dortmund.de*; Prof. Dr. Ingo Eilks, University of Bremen, *ingo.eilks@uni-bremen.de*; Dr. Silvija Markic, University of Bremen, *smarkic@uni-bremen.de*; Prof. Dr. David Di Fuccia, University of Kassel, *difuccia@uni-kassel.de*

Further information: *http://www.chemiedidaktik.uni-bremen.de/symp2012/index.html*.
A second announcement will follow in Autumn 2011.
Conference fees: None. Travel costs, accommodation and social events are the responsibility of the participants.

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