International Council of Associations for Science Education

*Supporting and promoting science education internationally*
***The ICASE Newsletter***

***SEPTEMBER 2011***

## Welcome to the ICASE September 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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Read or Submit a Manuscript to the ICASE Journal:
Science Education International

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

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**Editorial;**
Jack Holbrook
ICASE Past President
jack@ut.ee

Bulent Cavas
Publications Committee Chair
bulentcavas@gmail.com

## ICASE News

***Jack Holbrook***, ICASE Past President

# ICASE News

## ICASE Latin America

The next ICASE regional conferences takes place in Londrina, Brazil, from the 18th - 21st September 2011, The main theme of 'Brazilian ICASE' is Science challenges amongst cultures (Desafios da ciência entremeando culturas) with identity processes, post structuralist ideas, language barriers and cultural differences being some of the topics under discussion. The intended audience is: Middle and High School Science Teachers (included Biology, Chemistry and Physics teachers); Undergraduate Science education students; graduate students in Science Education and Science Teacher Educators.
The venue is Londrina State University
More details are given on the website (in Portuguese): http://www.verebiolondrina.com.br/

## Laboratory Safety

Jim Kaufman, chair of the ICASE Committee on Safety in Science Education has been busy in July attended meetings and giving presentations in Australia and Thailand.

In Melbourne, Australia, Dr. Kaufman gave a safety presentation and planning session for a 2014 conference on safety in science, industry, and education. Meetings were also held in Perth to discuss the 2013 ICASE World Conference and the LSI 2nd International Conference on safety in science, industry, education in Kuching, Sarawak.

Courses on safety in science education are now being planned for December 2011 in Perth (8th and 9th), in Melbourne (12th and 13th) and in Kuala Lumpur (15th and 16th). For more information contact Scott Campbell, scampbell@industrygrowth.net.

Dr. Kaufman represented ICASE on behalf of the Executive Committee at a Conference on Teaching Science and Mathematics with Toys held in Pattaya, Thailand in July and hosted by an ICASE past-President, Dr. Janchai Yingprayoon, Jim introduced ICASE and especially, the ICASE 2013 World Conference and the need for safety in science education. Following the conference, the Princess Chulabhorn Graduate Institute hosted a two-day short course on safety in the laboratory in Bangkok during which ICASE and the 2013 World Conference were introduced to two hundred science teachers and researchers.

"Laboratory Safety Guidelines: 40 suggestions for a safer lab" are available on the Safety page of the ICASE website in English, French, Spanish and Arabic. If you would like to volunteer to help prepare a translation in another language, please contact Jim Kaufman, jim@labsafetyinstitute.org.

## ICASE Journal SEI

The September issues of the ICASE journal – Science Education International will shortly be published on the ICASE website http://www.icaseonline.net/seiweb/ The next issue, December 2011, is proposed to be a special issue in the general area of science careers. Submissions for future issues of the journal are invited via the journal website.

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

## Do you feel we live in the plastics age?
## Inquiry learning ideas linked to the study of plastics

Inquiry learning is associated with asking and answering questions. Here are a series of questions which the students can ask (or with a less a creative class, the teacher can ask) together with suggested activities which students can undertake. They have been divided into sub-sections to indicate the social-science interactions.

### Social Awareness

1. ***Inquiry question:*** How dependent are we on the use of plastics today?

   ***Inquiry activity for students:*** Look around your home and school. Note down the variety of uses of plastics. Discuss them with your classmates and prepare a detailed list of uses to which plastics are put.

2. ***Inquiry question:*** How much are plastics responsible for much of the waste discarded at home?

   ***Inquiry activity for students:*** Prepare a list of all plastic materials discarded from your home in a week. Divide the list into categories such as plastic bags, containers, wrappers, clothing, etc. Estimate the percentage of plastics in the total waste. Hence estimate the waste being generated by 100 households, and how much of it would be plastics.

### Scientific Learning

3. ***Inquiry question:*** How can plastics be grouped? Is there a scientific way to do this?

   ***Inquiry activity for students:*** Classify the collected (discarded) plastic materials based on criteria you specify.

4. ***Inquiry question:*** How do plastics differ in their behaviour in tests we can carry out? In what ways are different plastics important?

   ***Inquiry activity for students:*** Undertake tests to distinguish between different plastics. Find out more about them based on their strength, behaviour when heated, solubility, etc. Reclassify the collected plastic materials based on the results of the tests.

   ***(Note: these tests can be student devised and carried out – subject to teacher approval – or they can be divided by teacher-student interactions, or they can be indicated to students by means of a worksheet).***

5. ***Inquiry question:*** Do the differences in plastics occur because of different chemical structures, or is it just physical features? If it is chemical, why should we wish this to be the case?
   ***Note:*** In English we refer to plastics rather than plastic – would you agree with this usage?

   ***Inquiry activity for students:*** From an encyclopaedia or any other source, try to find out the reasons why different plastics have different properties.

## Socio-scientific aspects

6. ***Inquiry question:*** Is it is assumed biodegradability is a good thing? Do you think this is the case? What are you reasons?

   ***Inquiry activity for students:*** Set up an experiment for finding out about the biodegradability of plastics.

7. ***Inquiry question:*** What is meant by additives? What are plasticisers? Why is colour suggested to be an additive? What other additives (and why) are often added to plastics.

   ***Inquiry activity for students:*** Visit a plastic processing unit. Find out the common name, chemical name and structure of the plastics being processed. Try to find out what additives (colours, plasticiser, etc.) are being used and why, and also the complete chain in the recycling of plastics.

8. ***Inquiry question:*** Why substances are likely to be cancer causing?

   ***Inquiry activity for students:*** Find out, from any available source, whether the additives being used are carcinogenic (i.e., cancer causing).

9. ***Inquiry question:*** How are plastics actually processed to make the fiished product? And how are plastics recycled?

   ***Inquiry activity for students:*** Write a brief report based on your visit detailing the processing of plastics. Also write a brief note about how the plastic recycling chain functions.

   **Note: In case you are unable to visit a processing unit, collect the above information from various sources like petrochemical companies, reference books, etc.**

## Socio-scientific decision making

10. ***Inquiry question:*** Do you feel we are overusing plastics?

    ***Inquiry activity for students:*** Based on the various facts and details collected during the above activities, debate in the class regarding various potential dangers to the environment and human life by excessive plastics usage and the social responsibility of the public towards the discarding and disposal of plastic waste.

## Fundamental or Basic Science: What is this?

The terms fundamental science or basic science frequently occur when referring to the content to be taught in school science curricula. This refers to the science in a general course, or the biology, chemistry or physics in a more subject specific sense. But what exactly do they mean?

Let me take the sub-component of science, labelled chemistry as my focus. What is fundamental chemistry? What is basic chemistry? If I use the word 'know' or 'know about' to cover a wide range of cognitive learning attributes, would it be appropriate to suggest that knowing plastic containers may disfigure (go out of shape or even generate holes) when boiling water is put into the container is an example of fundamental or basic school chemistry? Or that fundamental or basic chemistry is knowing that the same will happen to many plastic containers when put into the microwave oven? Surely this is fundamental in most households around the world today. It is basic knowledge expected of today's members of society.

On the other hand, why should the idea that fundamental or basic chemistry knowledge be that chemistry is about substances undergoing a permanent change? It is not even true as a study of reversible reactions would testify, unless, of course, this is not an aspect of chemistry.

And what about studying atoms and molecules as examples of fundamental or basic chemistry, so much so that it is necessary to teach this at the very beginning of any chemistry course? Atoms and molecules are fundament or basic to what? Are they fundamental or basic to the way we conduct our everyday lives? Are they fundamental or basic for developing students' interest and enjoyment of chemistry? Or are they fundamental and basic to the learning of irrelevant concepts, putting pressure on students to be aware of the so-called building blocks rather than the way to handle materials, or being aware of the advantages, limitations or concerns of modern materials. We are very familiar today with utilising the 'black box,' using technology without understanding the way it operates. Why should chemistry be any different?

It is time to rethink about what is fundamental or basic. Or perhaps, recognising that there is so much that could easily be seen as within these parameters, we stop using such terms. Atoms and molecules are no more fundamental or basic than the handling of materials in everyday life from a utilitarian, safety, or health perspective. Macro is just as important (and maybe more so) than micro and 'our materials,' or learning about the 'materials we use,' is just as fundamental or basic as anything offered in the initial stages of a standard chemistry course.

I suggest the terms 'fundamental' and 'basic' are out-of-date and unnecessary. They promote a scientist's viewpoint in which conceptual, often abstract, patterns of thinking are placed ahead of motivational approaches to the science around us and an exploration of the phenomena around us in a constructivist manner. *Sure if anything is fundamental or basic, it is knowinga bout and the use of plastics.*

**SAFE SCI: Be Protected!**

Dr. Ken Roy, Director of Environmental Health & Safety, Glastonbury Public Schools Glastonbury, CT

Authorized OSHA Instructor and Committee member, ICASE safety committee in Science Education
Royk@glastonburyus.org

## *PELLETS LEADING TO PROBLEMS AND LOOKING FISHY?*

### I. Hands-0n Science Goes Bad!

In 2006, *Communicable Disease Update*, a newsletter published by the Communicable Disease Control, Massachusetts Department of Public Health, Massachusetts, U.S.A. (Vol. 14, No. 3, Summer 2006) reported an investigation into an outbreak of gastrointestinal illness at a Massachusetts elementary school in June, 2006 involving 46 out of 98 fifth-graders. Secondary cases were also seen in 12 additional students, from other grades levels, where they were in close contact with the fifth grade students. The source was identified as a science activity during which students dissected owl pellets. Salmonella Typhimurium tyvar Copenhagen was found from stool specimens from the ill students, in addition to dissected and unopened owl pellets.

Because the owl pellet suppliers are unregulated, there are no standardized or proven methods for eliminating infectious organisms. The company in this case claimed the pellets were sterile, which lowered the guard of teachers relative to hygienic practices.

So what protocols can be followed to prevent a potentially very serious situation, especially if there are immune suppressed students involved? The following best practices are suggested for consideration:

- Conduct owl pellet dissection in one day, in as few classrooms as possible, and separate this from all eating areas.

- Make sure there is adequate adult supervision during the activity.
- Have students wear disposable gloves during both dissection and subsequent clean up. (Note – gloves should be vinyl, not latex!)
- Supply students with disposable trays, plates and dissection tools.
- Assist students in thoroughly cleaning and sanitizing work surfaces after the activity, using disposable paper towels and appropriate cleaning agents, and sanitizers.
- Keep hand-washing sink areas well stocked with liquid soap, paper towels and hand washing posters.
- Makes sure students thoroughly wash their hands after removing gloves.

## II. Some Science Sounds Fishy!

Another exciting area for students in science is the study of aquatic environments – enter the classroom aquarium! Unfortunately again in this situation, students can be subjected to infectious bacteria called Mycobacterium marinum. These bacteria are widespread in water environments, including science classroom/ laboratory aquariums. Students can get infected through direct contact with the aquarium water. The bacteria enter the body via breaks in the skin, e.g. cuts, hang nails (breaks in the skin beneath the nail), etc. Skin lesions can be produced and can cause joint and bone infections in students with immune compromised systems. As with owl pellets, simple health and safety protocols can make a big difference. Always have students wear vinyl gloves when working with aquarium water and wash their hands with soap and water.

## III. In the End!

Science can and should be fun. It is a means of connecting and understanding nature. However, common sense and safety protocols should be addressed prior to involving students in hands-on types of activities!

## References:

King County Health Department:
http://www.kingcounty.gov/healthservices/health/ehs/zoonotics/fish.aspx

**“Live Long and Prosper, Using Safety!”**

## *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.

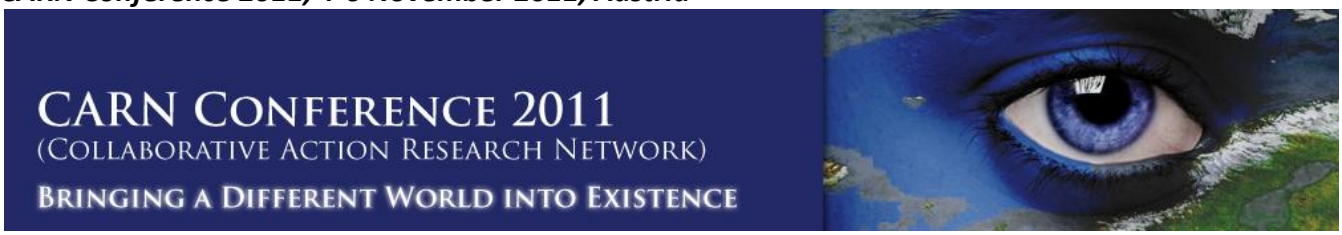
The symposium is based on plenary lectures, hands on activities, poster and discussion sessions.
Keynote speakers: Prof. Brian Hand, USA; Prof. Arlyne Sarquis, USA; Director Lynn Hogue, USA and Prof. Murat Gunel, Turkey.
e.g. Professor Brian Hand's research focuses on two major areas: " The first is 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.

# ICASE Executive Committee 2011-2013

The ICASE Executive Committee is persons who make decisions on behalf of the ICASE Governing Body. The ICASE Governing Body is the **ICASE member organisations**.

**President**
Dr. Ben Akpan
Executive Director of STAN, Nigeria
E-mail: ben.akpan@stanonline.org

**Secretary**
Dr. Beverley Cooper
E-mail: bcooper@waikato.ac.nz

**Past President**
Dr. Jack Holbrook
Professor, Centre for Science Education
University of Tartu, Estonia
E-mail: jack@ut.ee

**Treasurer**
(to be determined)

**President Elect**
Dr. Teresa J. Kennedy
Professor, University of Texas at Tyler
E-mail: tkennedy@uttyler.edu

## *Regional Representatives*

**Regional Representative for Africa**
Mamman Wasugu
E-mail: mammanwasagu@yahoo.ca

**Regional Representative for Europe**
Dr Declan Kennedy
E-mail: d.kennedy@ucc.ie

**Regional Representative for Asia**
Azian Abdullah
E-mail: azian@recsam.edu.my

**Regional Representative for Latin America**
Christiane Gioppo
E-mail: cgioppo@yahoo.com

**Regional Representative for Australia/Pacific**
**(to be determined)**

**Regional Representative for North America**
Michael Padilla
E-mail: padilla@clemson.edu

# ICASE Executive Committee 2011-2013

***Chairs of Standing Committees***

**Safety in Science Education**
James Kaufman
E-mail: jim@labsafetyinstitute.org

**World Conferences & Environmental Education/Sustainable Development**
Elaine Horne
E-mail grovesr@ozemail.com.au

**Pre-secondary and Informal Science Education**
**(to be determined)**

**Publications & Website**
Bulent Cavas
E-mail: bulentcavas@gmail.com

For more information about ICASE Executive Committee, you can visit ICASE Web www.icaseonline.net