



*Supporting and promoting science education internationally*

## The ICASE Newsletter

November 2008

Newsletter of the International Council of Associations for Science Education.

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## 1. The Role of ICASE

**ICASE is a Non-Governmental Organisation, set up by its members [National STAs, Science societies, Science centres, etc] forming an international science education communication network.**

The ICASE Role is to:

1. *extend and enhance the quality of formal and non-formal science and technology education for all, with particular reference to the children and youth of the world.*
2. *provide and support activities and opportunities that will enhance formal and non-formal science and technology education throughout the world.*
3. *assist and support all members and other organisations throughout the world which are involved in formal and non-formal science and technology education.*
4. *establish and maintain an international communication network for member organisations and their members involved in formal and non-formal science and technology education.*
5. *encourage and support the establishment and development of professional science and technology organisations, especially teacher organisations in all countries.*

Is your national STA, or ICASE member organisation receiving this newsletter? Please help ICASE to ensure e-mail contacts are in order so that this newsletter reaches those who have an interest in promoting science and technology education within the country. If you know of someone who should be receiving this newsletter, but is not, please contact the editor (jack@ut.ee).

For more information and knowledge of past issues of this newsletter see [www.icasonline.net](http://www.icasonline.net)

## 2. Science Activities

For a number of years ICASE produced a pre-secondary newsletter which often contained one page of science activities (STEP activities which were designed to allow young children (roughly grades 1-4) to take a *step into science* by direct experience). The newsletter has been disbanded as a publication, but the ideas, strongly supporting inquiry teaching, are still valid.

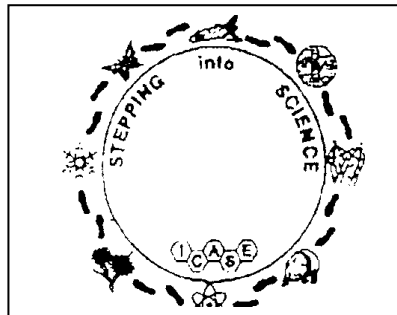
In this section each month ICASE includes a **STEP activity**, plus an activity for lower secondary level (approximately grades 7-9). Take a look !

### A) STEP ACTIVITY

**Challenge: Can you make a straw float?**

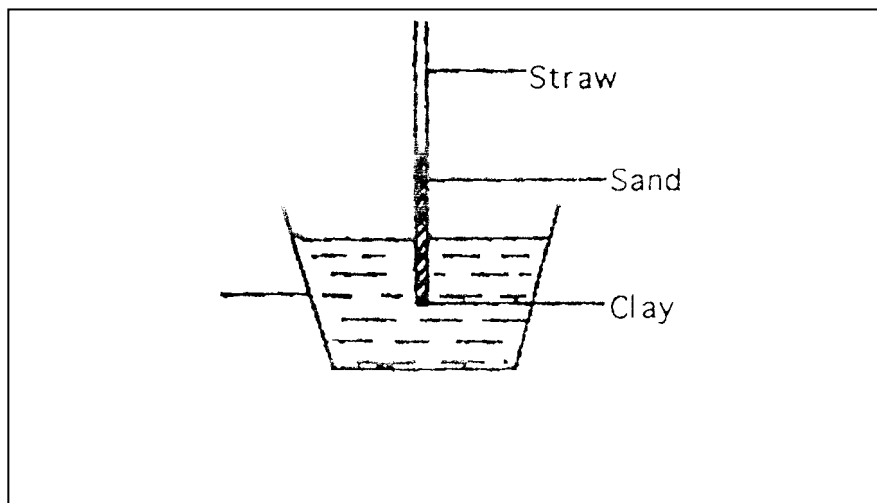
**What you need:**

- a small funnel
- hot water
- silver sand
- crayon or marker pen
- see through beaker
- clay plasticine



**What to do:**

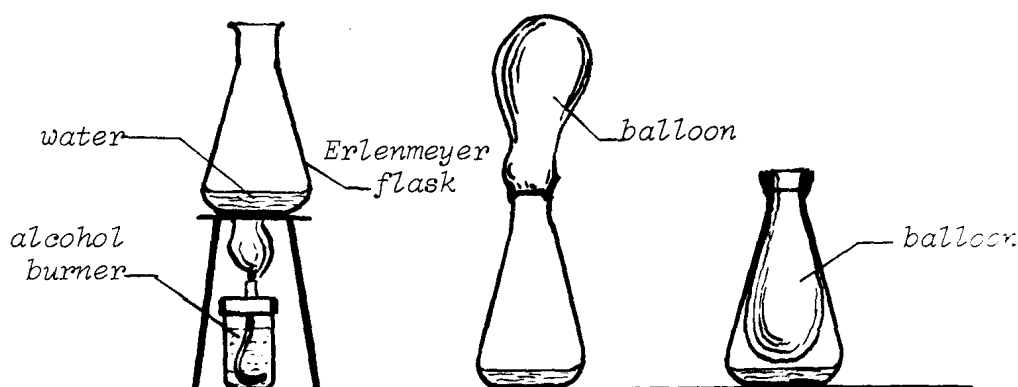
1. Half fill tile beaker with water.
2. Seal one end of the straw with plasticine or clay.
3. Fill the straw with a little sand and test the straw. Keep filling it with sand until the straw
4. Take out the straw. Pour away half the water and replace it with hot water.
5. Place the straw in the water. What happens? Mark the water level on the straw.
6. Pour out the water and replace with iced water.
7. Float the raw again. What happens?



## B) LOWER SECONDARY ACTIVITY

### THE BALLOON IN A FLASK

- Materials:
1. An Erlenmeyer flask (150-200 ml)
  2. A round balloon with a large mouth (uninflated)
  3. A hot plate or burner



#### Procedure

1. Put a little water (about 20 ml) in the flask and heat it to boiling (use a few boiling chips)
2. Let the water boil vigorously for at least one full minute.
3. Take the flask off the fire and immediately place the balloon over the flask's mouth
4. Let the flask cool to room temperature (the balloon will be sucked inside out into the flask)

#### Questions

1. What is in the flask besides the water?
2. What is water doing if we boil it?
3. What is the steam doing to the air in the flask?
4. Why did the balloon go inside the flask?
5. Why did the balloon continue to expand inside the flask?

#### Explanation

By boiling the water in the flask, it was changed from the liquid state into the vapour state. Water vapour or steam is formed and this pushes the air that was originally present in the flask, out of the flask. The longer we let the water boil, the less air will be left in the flask. After the flask is closed off with the balloon, the air cannot get back into the flask. The cooling of the flask will slowly *condense* the water vapour and thus create a *partial vacuum* in the flask. This will cause the sucking in of the balloon and the *atmospheric air pressure* will further blow up the balloon inside the flask.

During the cooling of the flask and the sucking in of the balloon, care has to be taken that the balloon's mouth is not pinched closed (this will prevent the whole balloon from getting into the flask; it won't go in and will probably burst).

## C) USING EXPERIMENTAL IDEAS IN SCIENCE TEACHING

This newsletter contains two experimental ideas. It is hoped that these will be of interest. But how to use these experiments in teaching ? Teachers need to be free to include experimentation as they feel best, but given below is ICASE thinking in putting forward the experiments in this newsletter. Teachers and science educators are welcome comment.

### 1. Who does the experiment ?

Clearly these experiments can be undertaken as a teacher demonstration. However, the intention is that the students are involved, either working individually, or more likely, in small groups. The apparatus is kept as simple as possible and can often be brought from home, or made by the students themselves.

Why is student involvement preferred ? We note the old Confucius saying – I hear and I forget; I see and I remember; I do and I understand. The belief is that the more students are engaged, the more they learn. Teacher demonstrations, or large group experiments, limit student involvement and are thus not preferred.

### 2. Should instructions be given to students ?

The section '*What to do*' and/or '*Procedure*' clearly spell out how to undertake the experiment. But it is not intended that the experiment must be used in this way. By following instructions, a '*cookbook*,' or '*follow a recipe*' situation is created. This highlights the **doing**, but **probably not** the understanding. Where instructions are provided, the student learning can be expected to be the explanation that follows. And the teacher is then focusing on students' explanatory skills. The first experiment is about making a parachute. The explanation about the working of a parachute needs to be kept simple. In the second experiment, the questions have been added to ensure that a '*cookbook*' or '*do-and-forget*' approach is **not intended**. The experiment leads to explaining why the balloon goes into the flask and when in the flask expands.

### 3. Inquiry learning

Can the experiments be used in an inquiry approach, whereby the students **suggest the purpose and procedure themselves** ? This is very much an ICASE recommended approach. It means students put forward the investigatory question, plus the procedure to follow. It promotes science as the seeking of explanations to questions put forward rather than to a '*wondering why*' approach more appropriate for younger students.

So what would be the investigatory question for the second experiment ? This could be '*Can air be displaced by boiling water*'? Or '*does steam occupy space* ?' The list here is not intended to be exhaustive and it could be interesting to guide students to create their own investigatory question once the experiment has been carried out a single time.

### 3. Teaching Goals from US National Science Education Standards

Needed Changes in Professional Development for Science Teachers Envisioned in the U.S. National Science Education Standards (NSES)

*A series of short articles, written by Robert E. Yager, Professor of Science Education, University of Iowa, USA, summarizing each of the Less/More contrasts in the six NSES chapters.*

There was little or no debate about the Professional Development Standards for the continued education of teachers. These standards were not even involved in the four year debate nor the attempts to reach consensus concerning the validity of the fourteen Less/More emphasis conditions. In fact, they were conceived after the initial draft was presented to the National Research Council leadership. Discussion at the end of the lengthy process ended in agreement that “teaching” should not stand alone and needed the reinforcement of continuous learning and a research base for teaching throughout the lifetime of every teacher.

The fourteen changes needed and the contrasts between the “Less Emphasis” features and the “More Emphasis” features follow:

#### **Less Emphasis On**

1. Transmission of teaching knowledge and skills by lectures
2. Learning science by lecture and reading
3. Separation of science and teaching knowledge
4. Separation of theory and practice
5. Individual learning
6. Fragmented, one-shot sessions
7. Courses and workshops
8. Reliance on external expertise
9. Staff developers as educators
10. Teacher as technician
11. Teacher as consumer of knowledge about teaching
12. Teacher as follower
13. Teacher as an individual based in a classroom
14. Teacher as target of change

#### **More Emphasis On**

1. Inquiry into teaching and learning
2. Learning science through investigation and inquiry
3. Integration of science and teaching knowledge
4. Integration of theory and practice in school settings
5. Collegial and collaborative learning
6. Long-term coherent plans
7. A variety of continuing professional development activities
8. Mix of internal and external expertise
9. Staff developers as facilitators, consultants, and planners
10. Teacher as intellectual, reflective practitioner
11. Teacher as producer of knowledge about teaching
12. Teacher as leader
13. Teacher as a member of a collegial professional community
14. Teacher as source and facilitator of change  
(NRC, 1996, p. 72)

## 4. SAFE SCI Be Protected

Article provided by Dr. Ken Roy – Chairman of the ICASE Standing Committee on Safety in Science Education. He is also Director of Environmental Health & Safety, Glastonbury (CT), an authorized OSHA instructor and science safety consultant. Email: [Royk@glastonburyus.org](mailto:Royk@glastonburyus.org)

### **SAFE SCIENCE: Be Protected!**

By Dr. Kenneth Russell Roy

#### **EMERGENCY EYEWASH AND SHOWERS: ARE THEY NEEDED?**

Often inquiries are made relative to the requirements for emergency eyewash and/or showers in school science laboratories. The regulatory agency for employees in the states (Occupational Safety and Health Administration or OSHA) addresses this issue in their Code of Federal Regulations # 1910.151 Subpart K –Medical and First Aid. Under part (c) – “Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.” Given that this statement is relatively generic, OSHA has provided several letters of interpretation. The bottom line is emergency eyewash and shower safety equipment are required and must meet the specifications of ANSI 358.1 (American National Standard for Emergency Eyewash and Shower Equipment, 1998 revision).

#### **WHO NEEDS THEM?**

Most secondary level (grades 6-12) schools with formal science laboratories require engineering controls such as eyewash and showers. This is dictated by direct contact or exposure to hazardous chemical products, which can harm eyes or other body surface areas. Whether it is exposure to sodium hydroxide in Chemistry, sulphuric battery acid in Physics or hydrochloric acid in Biology, all will require safety equipment to minimize injuries to the eyes.

The standard addresses engineering controls protect the employee’s eyes or other body parts from chemical exposure implications. This category includes emergency showers and eyewash equipment, hand-held drench hoses or combination shower and eyewash equipment.

#### **WHERE SHOULD THEY BE PLACED?**

Location, location, location is everything with eyewash and shower equipment. Government regulatory agencies will vary some what from region to region. For example, ANSI in the states requires that the stations must be no longer than a maximum of 10 seconds to be reached by the injured employee. A clear path to the eyewash or shower station is a requirement. Desks, chairs and other obstacles need to be clear of the path. Signage is also required. Highly visible signs from all area of the laboratory to be serviced by the safety equipment need to be installed.

#### **HOW LONG SHOULD THE FLUSHING TAKE PLACE?**

The water provided by the eyewash or shower station should be clean and tepid (60-100 degrees F or 16-38 degrees C) in temperature. Eyes should be placed in the stream of water in such a way as to provide the greatest area of exposure. The fingers may be needed to spread open the eyelids. In the case of the shower, contaminated clothing often exacerbates skin complications and therefore needs to be removed. The flushing must take place for a period of at least 15 minutes. Towels or sheets should be kept nearby for the purpose of covering up the person after clothing is removed.

# New Zealand Association for Science Education Conference

## NZASE Primary Science Conference 2009

### PROFESSIONAL DEVELOPMENT IN PRIMARY SCIENCE



**“Active learning:  
Science talk from the  
classroom to the  
dinner table”**

#### For teachers who are motivated and interested in:

- developing active learning strategies to enhance children's learning
- the importance of providing contextual science experiences: science in a learner's world
- reflecting on current trends in science teaching and relating it to their own practice
- taking part in practical workshops that explore the theme of the conference
- identifying explicit links between teaching and learning in science education and the key competencies and values

#### 2009 Dates

##### Dunedin

14th & 15th April

##### Christchurch

16th & 17th April

##### Wellington

20th & 21st April

##### Auckland

23rd & 24th April



**Ian Milne:**

[i.milne@auckland.ac.nz](mailto:i.milne@auckland.ac.nz)

Phone 09 623 8899 Ext 48637



TRCC assists most teachers with travel costs. Please register early to ensure travel assistance. TRCC is supported by the teachers' unions: ASTE, NZEI (primary and early childhood), PPTA.



#### **COSTS:**

**Early Bird Fee: \$250 (by 06/03/09)**

**Full Fee: \$300 (after 06/03/09)**

**For enquiries and registration forms contact:**

**TRCC, PO Box 12-381, Wellington, Phone 04 495-2300, or 0800 872 211,**

**Fax 04 495-2299, Email: [info@trcc.org.nz](mailto:info@trcc.org.nz)**

**Register online at [www.trcc.org.nz](http://www.trcc.org.nz)**

**Registrations close on 20th March, 2009**

## 5. Memorial for Dennis Chisman



**Our condolences to his family**

The memorial service for Dennis Chisman, one of the founders of ICASE and also a founder member of CASTME (Commonwealth Associations for Science, Technology and Mathematics Educators) and well known around the English speaking world as a science consultant after retired from a similar; post in the British Council, was held on 10h October at the parish church in South Harting where he and Sheila had live for a number of years.

Three friends gave moving tributes to Dennis and his work. Bryan Wilson, his maths colleague at The British Council and then fellow director of CASTME, spoke of Dennis and mentioned his ICASE work.

Amongst the many mourners were Professor David Waddington, Professor Derek Bell Chief Executive of the ASE, UK, Dr David Moore and his wife Julie, Dr Moore was Chief Executive of ASE and is now CASTME treasurer. Mr and Mrs Bryan Wilson. Patrick Whittle (formerly ICASE treasurer) and his wife, Richard and Sue Fisher, CASTME, Alan Walsh, Lab Aid, Dr Sue Dale Tunnicliffe (formerly ICASE pre primary officer) and Lord Tunnicliffe, Carolyn McGrath, formerly ASE,

Dennis Chisman is probably best remembered for his involvement with ICASE. He was the very first secretary/treasurer and saw ICASE through its early years. During this time he forged strong links with UNESCO and was very much instrumental in ensuring an ICASE involvement in the International Integrated Science Conference held in Nijmegen, the Netherlands, in 1978. With his help ICASE played a strong role in a subsequent UNESCO international science education



conference on science and technology education, held at UNESCO headquarters. This pioneered the ICASE interest in science education with a technological perspective and initiated the thrust toward scientific and technological literacy which was the theme of a further ICASE/UNESCO conference in 1993.

During these early years Dennis was also secretary of the ICSU committee for the teaching of science (CTS) and it was to this body that ICASE was affiliated until 1994 (when the Committee for the Teaching of Science was disbanded). This led ICASE to be involved in CTS activities, most notably a world conference held in Bangalore, India in 1985 whereby science education was viewed very uniquely in terms of health, food and agriculture, energy, air, land, water and mineral resources, the environment, industry and technology, information technology and very pioneering at that time, ethics and moral responsibility. Books were produced on all these themes, but they proved too expensive for an organisation like ICASE to obtain and to develop the ideas further. ICASE also played a role in the development of a CTS book on global change.

Dennis helped to develop a series of ICASE yearbooks until ICASE funding could no longer support this initiative. And in 1993 Dennis produced the yearbook on the first 20 years of ICASE, an account of how ICASE came into being and developed during that time.

### **DENNIS CHISMAN - A PERSONAL REMEMBRANCE**

I first met Dennis in the mid 1970s when we were both working for the British Council in London. It was the time of the Oxford meeting of ICASE and my introduction to an organisation which Dennis felt so strongly about and to which he gave so much of his time and effort. He persuaded me to help with the administration and I was soon swept up into the ICASE family; we believed we could change the world, at least as far as science education was concerned! Family and friends were persuaded to join the cause and I remember one day when both our elderly parents were sitting at my dining room table helping with a mail shot.

I was very involved in the Conference in Nijmegen, on the administrative side, and for some 18 months the Holiday Inn in Utrecht, where we held our meetings, seemed like a second home.

The Monte Carlo Conference followed in 1981 - again elderly parents joined us. The hotel where the conference was held had organised connecting rooms for us with which all led to the 'office'. This led to some amusing misunderstandings. As far as the Conference was concerned who will ever forget the brilliant presentation given by Jacques Cousteau!

In the interim there were the smaller meetings often coinciding with the ASE annual meeting in the UK and others in Europe and around the world. For each one Dennis gave 100%.

Away from ICASE, Dennis was a wonderful travelling companion whether it was visiting the Berlin Wall and the horrors of Auschwitz or seeing the sun rise on Uluru in Australia he made the most of every occasion. Including a shattered windscreen on the way to Petra and almost getting stranded in a snowy canyon in Colorado. In many ways a very 'conservative' man he could be persuaded to do something way out of his comfort zone such as going to watch American football, although the game was a complete mystery to him.

He will be sorely missed, but I am sure there are many around the world who will long remember how he changed the perception and enactment of science education for them.

Sheila Hopkinson

## 6. Calendar of Events

### **The 22nd Biennial Conference of the Asian Association for Biology Education**

**November 21-24, 2008 Osaka, Japan**

This will be held at the **ANA Gate Tower Hotel, Osaka, Japan**, under the joint sponsorship of AABE and SBSEJ, the Society of Biological Sciences Education of Japan. The theme for this biennial conference is “The Role of Biology Education in Society Today.” And sub-themes - Sub-theme 1. Biology Education for Realizing the Preciousness of Life; Sub-theme 2. Biology Education in “The UN Decade of Education for Sustainable Development (UNDESD)”

Country reports will be included as usual. General papers on biology education are also accepted. The Organizing Committee of the AABE 22 strongly encourages participants to send in their Registration Form by **July 31, 2008**.

Contact person:

Dr. Nobuyasu Katayama, The Director of the AABE 22, Department of Environmental Sciences, Tokyo Gakugei University, Koganei, Tokyo 184-8501, Japan. E-mail: katayama@u-gakugei.ac.jp, Facsimile: +81-334710354

### **2nd ASCC Conference**

On **18-21 February 2009**, the 2nd African Science Communications Conference (ASCC) will convene in Gauteng, South Africa. The theme of the 2nd ASCC will be “Shaping Africa's Future: Science Communication's contribution to Science, Technology and Innovation, and the development of democracy in Africa”. With an emphasis on integrating academic research with policy-decision making and industry, the meeting will address important issues in the development and advancement of Science Communication.

Anchored by a highly successful 1st ASCC in 2006, thematic sessions will address:

- The translation of research for:
  - policy,
  - economically viable products or initiatives,
  - the facilitation of trans- and inter-disciplinary research; and
  - an informed society through the mass media.
- Science, engineering and technology human skills development, education and learning;
- Science and the media
- International benchmark activities in Science Communication;
- Research and development in Science Communication.

You are invited to submit abstracts for consideration at the conference. Please use the enclosed abstract form as your guide. **The deadline for abstract submission is October 16 2008.**

### **NSTA Annual Conference**

**March 19–22, 2009 New Orleans**

Celebrate science in magical New Orleans, one of our most beloved cities. Conference registration and exhibits will be at the Ernest N. Morial Convention Center. Most sessions and events have been scheduled at the Convention Center and the conference headquarters hotels—Hilton New Orleans Riverside, New Orleans Marriott, and Sheraton New Orleans Hotel.

[Register now](#) for the New Orleans conference and take advantage of special earlybird rates.

Instructions on making housing reservations will be available by September 15. Please check back for updated information. Starting in September, information on conference sessions and other events will be added to the website as events are confirmed.

**Theme** Celebrating the Year of Science ... Laissez les Bons Temps Rouler!

### **Program Strands**

- Science and the Human Spirit
- Research to Practice: The Science Teacher Professional Continuum
- Energy and the Environment: The Natural and Human-designed World
- ISTE: Meeting the Needs of the Digital Student

**For more details see <http://www.nsta.org/conferences/2009new/>**

### **FISER'09 May 22-24 2009, Famagusta, Northern Cyprus**

A forthcoming international conference on Science and Mathematics education research; *Frontiers in Science Education Research 2009* (FISER'09) will be held May 22-24 2009. The official website of FISER'09 could be accessed via <http://fiser.emu.edu.tr>.

The conference is organised by the Eastern Mediterranean University, Faculty of Arts and Sciences. Further information can be obtained from Mehmet Garip, Ph.D. Chair, Organising Committee ([fiser@emu.edu.tr](mailto:fiser@emu.edu.tr))

### **ICASE African Regional Symposium**

**24-28 May 2009, Abuja, Nigeria**

This African regional symposium is being organised under the auspices of STAN (Science Teacher Association of Nigeria)

The theme of the conference is - Meeting the Challenges of Sustainable Development in Africa through Science and Technology Education.

The Venue is the Abuja Sheraton Hotel and Towers

The Conference Conveners are Dr. Ben B. Akpan, ICASE African Representative and Executive Director, Science Teachers Association of Nigeria

Email: [ben.akpan@stan.org.ng](mailto:ben.akpan@stan.org.ng) and Professor Peter Okebukola, Faculty of Education, Lagos State University, Ojo, Lagos, Nigeria. Email: [peter@okebukola.com](mailto:peter@okebukola.com)

For more details please visit the website <http://www.stan.org.ng/ICASE-2009>

### **ICASE World Conference 28 June - 2 July, 2010 Tartu, Estonia**

The 3<sup>rd</sup> World Science and Technology Education Conference on Innovations in Science and Technology Education: Research, Policy Practice. The venue will be the University of Tartu, the oldest University in Estonia dating back to 1632.

The 3<sup>rd</sup> World Conference will follow on from the previous World Conferences held in Malaysia, 2003 and Australia, 2007 by bringing together policy makers, curriculum developers, scientists, science teacher educators, science teacher association personnel and of course science teachers to consider research developments, policy implications and innovative practices in the field of science and technology education. Estonia has a strong tradition in science, stemming from its former USSR days and today is a widely recognised centre for gene technology.

The Perth, Australia conference (2007) led to the Perth declaration showing concern for the current state of Science Education, especially related to its popularity among students.

*Further information on the declarations can be seen on the ICASE website - [www.icaseonline.com](http://www.icaseonline.com).*

## 7. ICASE Executive Committee 2008-2011

Based on the ICASE constitution, the ICASE Management committee as well as Regional Representatives are elected by member organisations. These elected members, in turn, nominate chairs of relevant standing committees. Together these persons form the ICASE Executive Committee and are the persons who make decisions on behalf of the ICASE Governing Body. The ICASE Governing Body is the **ICASE member organisations**.

*The Executive Committee (the decision making body working for the Governing Body)*

### **President**

Prof Jack Holbrook

E-mail [jack@ut.ee](mailto:jack@ut.ee)

### **Past President**

Dr Janchai Yingprayoon

E-mail [janchai@loxinfor.co.th](mailto:janchai@loxinfor.co.th)

### **Secretary**

Prof Miia Rannikmae

E-mail [miia@ut.ee](mailto:miia@ut.ee)

### **Treasurer**

Adrian Fenton

E-mail [Adrianfenticase@yahoo.co.uk](mailto:Adrianfenticase@yahoo.co.uk)

### **Regional Representative for Africa**

Dr Ben Akpan

Executive Director of STAN, Nigeria

E-mail: [ben.akpan@stan.org.ng](mailto:ben.akpan@stan.org.ng)

(Member Organisation – Science Teachers Association of Nigeria)

### **Regional Representative for Asia**

Dr Azian Abdullah

Director, RECSAM, Malaysia

E-mail: [azian@recsam.edu.my](mailto:azian@recsam.edu.my)

(Member Organisation – RECSAM)

### **Regional Representative for Australia/Pacific**

Dr Beverley Cooper

E-mail: [bcooper@waikato.ac.nz](mailto:bcooper@waikato.ac.nz)

(Member Organisation – NZASE, New Zealand)

### **Regional Representative for Europe**

Dr Declan Kennedy

E-mail: [d.kennedy@ucc.ie](mailto:d.kennedy@ucc.ie)

(Member Organisation – Irish Science Teachers Association (ISTA))

### **Regional Representative for Latin America**

Gabriela Inigo

E-mail: [gabrela\\_inigo@hotmail.com](mailto:gabrela_inigo@hotmail.com)

(Member Organisation – Albert Einstein Club, Mar del Plata, Argentina)

### **Regional Representative for North America**

Prof Norman Lederman

E-mail: [ledermann@iit.edu](mailto:ledermann@iit.edu)

(Member Organisation - Council of Elementary Science International (CESI))

### *Chairs of Standing Committees*

#### **Pre-secondary and informal education**

Prof Lynda Paznokas

E-mail [lpaznokas@pullman.com](mailto:lpaznokas@pullman.com)

#### **Safety in Science Education**

Dr Ken Roy

E-mail: [Royk@glastonburyus.org](mailto:Royk@glastonburyus.org)

#### **World Conference**

Dr Robin Groves

E-mail [grovesr@ozemail.com.au](mailto:grovesr@ozemail.com.au)