Supporting and promoting science education internationally

The ICASE Newsletter December 2010

Newsletter of the International Council of Associations for Science Education.

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1. ICASE News

Change of ICASE Executive Committee

By the end of December 2010, the ICASE Executive Committee will have continued in office for 6 months after the last ICASE General Assembly. This a new committee takes over from the beginning of January 2011.

The new ICASE President will be Dr Ben Akpan, Executive Director of STAN, the Science Teacher Association of Nigeria
He is very interested to here from other Science Teacher Association, especially those in Africa. He can be contacted on Ben.Akpan:stanonline.org

Other changes to the Executive Committee cover
Immediate Past President, President-elect, Secretary, Regional Representatives for Australia-Pacific, Africa, Latin America and North America and Chairs of Standing Committees

Full details of the new committee will be included in the next newsletter.

Newsletter Changes

This is the last ICASE newsletter for 2010. And to celebrate moving n to 2011, the ICASE newsletter will take on a new design. I hope you like it.

Other changes anticipated (subject to member organisation guidance and interest) are –

- More news on events held by member organisations (see the following from the Brazilian Association for Biology Education as possible examples)

- More news on ICASE involvements with Science Teacher Associations (of whatever nature seen as important by member organisations)

- More support for small member organisations (many without their own location, paid staff and extremely limited finances), particularly in encouraging activities which they wish to develop.

- Encouraging internationalisation of science teachers through the sharing of ideas, approaches, inter-linking and successes.

National Meeting of the Brazilian Association for Biology Education

The III National Meeting for Biology Education, sponsored by the Brazilian Association for Biology Education, was held in Fortaleza, in the Northeast of Brazil, in October 10th to 13th 2010. The third edition of the event joined both the IV Northeast Regional Meeting and the V Congreso Iberoamericano de Educación en Ciencias Experimentales, and had UNESCO as a partner. More than 800 delegates participated in the congress for which central theme was "Polemics issues in Biology Education". Please contact Christiane Gioppo, the incoming ICASE Latin American representative, for more details (cgioppo@yahoo.com).

The IV National Meeting of Biology Education will be held in 2012 in Goias, Northwest of Brazil.

A Regional Biology meeting, under the Association for Biology Education, was held in the Sate of Espirito Santo, Brazil.

400 delegates met from 10-12 August 2010 in the city of Vitória, capital of the State of Espirito Santo, in Brazil to discuss “Different contexts, different subjects: knowledge and practices in Science and Biology Education”. The Biology Education meeting, sponsored by the Regional 2 of the Brazilian Association for Biology Education, stimulated debates on challenges related to science education which included, among others, native knowledge, young and adult education addressed to poor metropolitan communities. Please contact Christiane Gioppo, the incoming ICASE Latin American representative, for more details (cgioppo@yahoo.com).

The South Region Symposium on Biology Education will be held in 2011 in Londrina, Paraná State.

Discussions are taking place with the State University of Londrina to include a Latin American ICASE component with this regional Symposium. Further information included at a later stage.

Kick Off meeting for PROFILES

A new project – PROFILES – involving ICASE and 21 other institutions in Europe will hold its first meeting 9-12 December 2010. This is a 4 year project boosting teacher professional development ideas and follows on from the PARSEL project which created science teaching materials designed to enhance science teaching relevance and popularity among secondary (especially junior secondary) students.

The project is destined to function within Europe and all European Science Teacher Associations are welcome to form links and become directly involved. However ICASE is also keen to link to Science Teacher Associations and other groups around the world. Please read section 3 of this newsletter to follow up.

2. Science Activities

These following activities are from a collection built up by ICASE through its former primary science newsletter (STEP) and other sources. They are put forward to bring attention to small activities which can be carried out in the science classroom with minimal equipment.

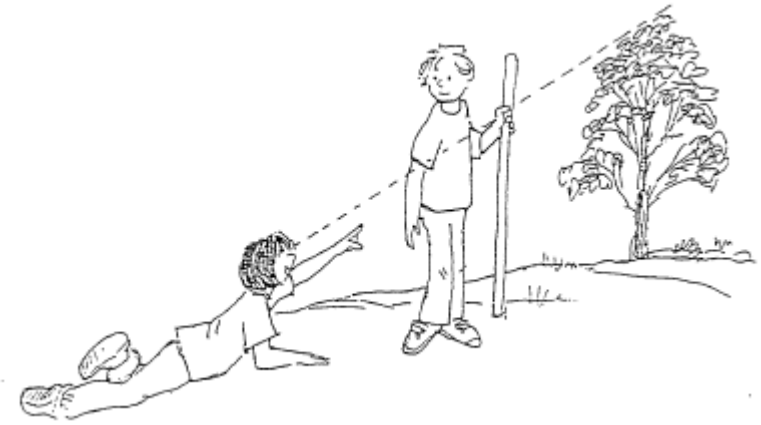
A STEP ACTIVITY

Measuring trees

Challenge: How can you measure a very tall tree?

What you need
• tree
• string
• ruler
• two metre stick with cm markings

What to do
Choose a tree. Start next to the tree trunk and walk 18 metres away! Ask someone to hold the measuring stick at this spot. Walk away another 2 metres. Lie down on the ground with your head at this spot. Look towards the top of the tree. Ask the person holding the stick to move a hand along the stick until the thumb is exactly in line with the top of the tree, as the diagram shows.



The person holding the stick then records the reading where the thumb is. Calculate how high the tree is in this way - the tree is 10 times higher than the reading on the stick. For example, if the stick reading is 1.5 metres, then the tree is 15 metres high.

More to do

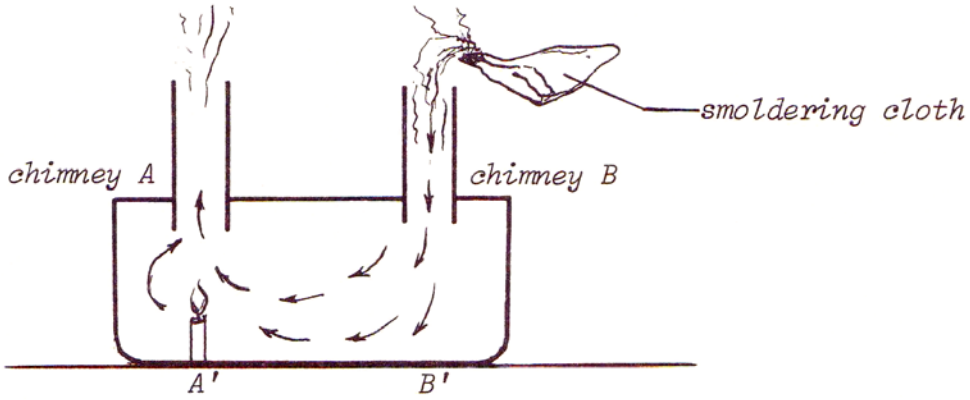
- Measure the circumference of the tree trunk - a good way to do this is to use some string. Do tall trees have a larger circumference? Measure the circumferences and heights of a number of trees to find out.
- Can you design other ways to measure the height of trees. Could you use these' methods to measure the heights of tall buildings ?·
- Find out what factors affect the growth of trees

B) ADDITIONAL SCIENCE ACTIVITY

CREATE WIND CURRENTS

Materials:

1. An empty aquarium or any large transparent container.
2. Thin cardboard (bristol board or manila folders).
3. Black bristol board or black carbon paper.
4. A small candle, an old rag, matches, masking tape.



Procedure:

1. Make a cover for the aquarium with two holes, and also two fitting pipes, that will act as chimneys, from the thin cardboard.
2. Cover the backside of the container with black paper, so that the smoke currents can be more easily seen (use a spotlight if available).
3. Fix the candle under one of the holes in the bottom of the aquarium and light the candle.
4. Place the cover over the container and tape the edges airtight to it.
5. Make a smoke source from the rag (by burning it and letting it smolder) or light a cigarette, and hold the smoke close to chimney B (see Sketch).
6. Let the smoke fall into chimney B (do not hold the smoke source directly above the opening, but blow the smoke over the opening) and let the students observe the smoke currents.

Questions:

1. What makes the smoke fall in chimney B ?
2. Why does the air rise through chimney A?
3. What is the purpose of the burning candle ?
4. How can we create wind currents without the burning candle ?
5. What places on earth can spot A and B be compared with ?

Explanation

The burning candle is a source of heat. It heats the air above and around the flame, and heated air rises. This makes the air rise through chimney A, and because air goes out of the container, air must replace it, and this comes in through chimney B, taking the smoke with it. Spot A' can be compared with a hot place on earth (f.i. the tropics) and B' with a cold place (the poles). The air currents or winds are created this way between such places on earth. Instead of the candle we can also use an ice cube above chimney B. Cold air will move down and create the same currents.

C) USING EXPERIMENTAL IDEAS IN SCIENCE TEACHING

This newsletter contains two experimental ideas. It is hoped that these are 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 to 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 sections *'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 questions have been added to the first experiment to encourage moves away from a 'cookbook' or 'do-and-forget' approach and towards a more exploratory approach. In the second experiment the questions seek understanding which can lead to modifications of the experiments for more novel effects. It will a pity if the teacher is the person who answers these questions. In fact it would be interesting to learn of situations where the students, themselves, are both asking and then answering the questions.

3. Inquiry learning

Can the experiments be used in an inquiry approach, whereby the students ***raise questions*** and **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, although perhaps this is appropriate for the younger students.

So what would be the investigatory questions for these experiments ?

This is a challenge left for you to consider.

3. Supporting the ICASE Declaration – a new project

Jack Holbrook, ICASE President

Do you support the Tartu Declaration ?

In the last newsletter, the issue of students being innovative was raised. This is mentioned in the Tartu declaration which states -

We resolve that:

- **innovative STE is of fundamental importance throughout life commencing at the earliest years;**

The comments made in the last newsletter pointed out that in order to promote innovation, students need to be actively involved and that this did *not mean* - read the textbooks, listening to the teacher, undertaking group work where the student does not have to participate intellectually, or practicing by students to pass a memory-based examination.

But as teachers WE KNOW THIS ! So the question is – why are teachers continuing to undertake such activities? Why, as indicated in the last newsletter, are teachers not emphasising:

- Students' involvement in an inquiry approach, where students are guided (by the teacher) to learn to formulate scientific and technological questions, learn how they can be the planner and determiner of how to investigate those questions and then learn to be able to build and apply conceptual understanding;
- Students' involvement in making decisions about their own STE learning;
- Students' involvement in developing and applying scientific conceptual understanding to make sense of contexts in their evolving world.
- Students' involvement in inter-disciplinary learning in relevant contexts, to reflect on the nature of science and to allow teaching to build on students' interests and questions;

A New Project

Could it be that teachers require more guidance and a sense of being part of a 'community of practice'? If so, ICASE feels it has the expertise to play a role in interacting, guiding, offering supporting and providing outreach internationally. For this, ICASE has joined a European consortium on a project, starting now, which sets out to enhance teachers' professionalism in innovative ways and putting forward innovative, evidence-based teaching approaches. If you (as a member of a teacher group, in an institution involved in science education, or an organisations interested in playing a role, then please read on.

The major ICASE role in the project is guidance and dissemination. As ICASE does not have direct access to teachers, or teacher educator, ICASE tries to operates in liaison with **Science Teacher Associations (or other organisations)** and through them with science teachers and teacher educators. And as one innovation is *'collective reflection'* related to a teaching scene, a series of lessons, or a module, it does need to interact with groups of teachers/teacher educators, as is the case in Science Teacher Associations.

So what are the innovations? These are seen as:

1. **An 'Education through Science' philosophy** (*explained in an earlier newsletter, but see Holbrook,J. & Rannikmae, M. (2007). Nature of Science Education for Enhancing Scientific Literacy, International Journal of Science Education, 29(110 1347-1362*)

2. **Enhancing students' STL** (a*gain explained in an earlier newsletter, but also see Holbrook, J. (1998). Operationalising Scientific and Technological Literacy – a new approach to science teaching. Science Education International. 9(2).13-19; and earlier initiatives involving ICASE in UNESCO. (1994). The Way Forward – STL for all. (Paris: Author) and UNESCO. (1993). International Forum on Scientific and Technological Literacy for All. Final Report. (Paris: Author).*

3. **IBSE teaching, based on a 3-stage model** (*see Holbrook J. & Rannikmae, M. (2010). Contextualisation, De-contextualisation, Re-contextualisation – a science teaching approach to enhance meaningful learning for scientific literacy. In: I. Eilks & B. Ralle (eds.). Contemporary Science Education (pp. 69-82). Aachen, Germany: Shaker).*

4. **Relevant and motivational teaching, based on the 3-stage model** *(amplified later)*

5. **A 2-step teacher professional development approach** *(amplified later)*

6. **A 4 component vision of teacher professional development support** *(amplified later)*

7. **Teaching modules, based on developing subject & generic competencies** *(www.parsel.eu)*

where STL means scientific and technological literacy and IBSE stands for inquiry-based science education.

In short, the project is – **Teacher continuous professional support to perceive and enact science teaching which meets student needs in terms of relevance, motivation plus usefulness beyond their time in school (responsible citizen, career enhancement, life-long learning).**

This is a very grand and admiral target – one that does not seem to have been achieved by other projects. Thus, to seek more support, the project has also considered other attributes which need to be introduced to try for greater effectiveness i.e.

1. **Involvement of stakeholders (a wide variety) and their views**
2. **Identification of teacher needs**
3. **Teacher self and collective reflection**
4. **Teacher networking**
5. **Promoting 'lead' teachers to enhance peer-peer interactions**

Is such a development useful, in your opinion? Is it an approach within which Science Teacher Associations, or groups of teachers/teacher educators and other stakeholders, can interlink with ICASE and raise the professionalism of teachers? If so, then ICASE can provide the link and the professional support. In such a link, the association, or group maintains full ownership and controls the sense of direction of their involvement – ICASE only forms a bridge and offers support. ICASE does not tell any group what they must do !!

If you have interest, how is it possible to learn more? As the role of ICASE is to support and to disseminate, the ICASE contact person will be happy to oblige. Contact Jack Holbrook (jack@ut.ee)

Does this approach to science teaching mean having new teaching materials – YES.
Does ICASE have such materials – YES.
Can we use these materials, as they are – NO (the material need adaptation to the culture and classroom conditions of the country).
Will ICASE assist in guide/evaluating the adaptation, where or if this is needed - OF COURSE.

More will be included in future newsletters.
Are you interested ? Consult the ICASE website http://www.icaseonline.net/projects.html

4. SAFE SCI: Be Protected!!

By Dr. Ken Roy
Director of Environmental Health & Safety
Glastonbury Public Schools
Glastonbury, CT & Authorized OSHA Instructor
Royk@glastonburyus.org

GETTING THE WORD OUT ON HAZARDOUS SUBSTANCES!

I. Communicating Information & More!

When working in an academic laboratory environment, there are usually a number of hazards which occupants come in contact with during the work day. In order to raise levels of awareness for improved protection and help make it safer, employers should communicate with employees (science teachers) and students about the hazards. Unfortunately the problem arises that many administrators don't have the background in the chemical sciences, or the knowledge regarding how to deal with chemicals hazards. So what can science teachers as employees do to help protect themselves and their students? One strategy is to work with employers by helping to educate them on ways to communicate information about hazardous substances.

II. Strategies for Hazardous Substances Communication!

The following is as brief list of action items which should be shared with employers in efforts to protect teachers and students in the academic science laboratory. The list is based on both legal standards and professional best practices. It serves as a starting point for improved hazardous substances or materials notification, understanding, action and protection. The list includes:

1. Require an active inventory of all hazardous substances used in the lab. and directly accessible MSDS (*material safety data sheets*) for each one.
2. Require a hazard communication program addressing use of MSDSs, proper labeling, storage, use, disposal and employee training.
3. Require labeling on all containers for hazardous substances with product identity and hazard warning – both specific health and physical hazards.
4. Require employee training on hazardous substances including
    a. Explanation of MSDS – what it is and how to use it.
    b. Employee's "right to know!"
    c. Location of biological, chemical and physical health hazards in specific work areas and protective measures to be used.
    d. Details of communication program, including use of labeling system, inventory system and MSDSs.
    e. Access and review of communication program for hazardous substances.
5. Require a written exposure control plan for occupational exposure to bloodborne pathogens and *other potentially infectious materials* (OPIMs).

6. Require employee training for bloodborne pathogens including:
    a. Access and review of plan.
    b. Explanation of epidemiology and symptoms of bloodborne diseases.
    c. Explanation of the modes of transmission of bloodborne pathogens.
    d. Explanation of appropriate methods for recognizing tasks and the other activities that may involve exposure to blood and OPIMs.
    e. Explanation of use and limitations of methods that will prevent or reduce exposure, including engineering controls, standard operating procedures and *Personal Protective Equipment* (PPE).
    f. Information on types, proper use, location, removal, handling, decontamination and disposal of PPE.
    g. How to select appropriate PPE.
    h. Specific information on hepatitis B and vaccines available.
    i. Information and protocol to follow in case of an emergency involving blood or OPIMs(other potentially infectious materials)
    j. Protocol to follow for an exposure incident.
    k. Explanation of signs, labels and color coding.
    l. How to obtain information on types, selection, proper use, location, removal handling, decontamination and disposal of PPE.
    m. Who to contact during an emergency.

III. In the End!

The noted suggestion list is a start to help raise the level of awareness on the part of both the employer and the employee relative to working with biological, physical and chemical hazards in the academic laboratory. Science is to be fun – but also safer by a well informed school administrators, science faculty and student body.

References:

Health Canada: http://www.hc-sc.gc.ca/ewh-semt/occup-travail/whmis-simdut/substance-eng.php

Occupational Health and Safety Administration ((OSHA) Hazard Communication Standard) http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10099

Safe Work Australia: http://www.safeworkaustralia.gov.au/SafetyInYourWorkplace/HazardousSubstancesAndDangerousGoods/Pages/HazardousSubstancesAndDangerousGoods.aspx

"Live Long and Prosper, Using Safety!"

5. Teaching Scientific Thinking

By Colin Smith, retired Biology Teacher, currently working as a Research Associate on Work Package 5 of the S-TEAM Project and based at the University of Strathclyde.
(colin.a.smith@btinternet.com)

Objective

To explain a model of scientific thinking
and
its application to analysing what one has done.

Introduction

We want to help our pupils to think scientifically and to help with this we have developed a model of scientific thinking[1]. This model allows us to ask – *what aspects of scientific thinking are supported by the different sorts of teaching activities that we use in our classrooms?*

The model is based around the mental activities that a review of psychological literature (Feist, 2006) suggests are involved (not necessarily all at the same time) in the way that scientists think. We call these mental activities *aspects of scientific thinking* because they interact with each other. For example, as we develop scientific theories, we come to observe and categorise the world in different ways. Just think of the change of perspectives you are trying to encourage your pupils to take in, say, topics like importance of plants, laws of motion, molecular nature of matter, for example. We, therefore, think there is a danger in treating these aspects of scientific thinking as skills that can be practice individually and out of the context of doing meaningful science. However, we can use them to audit how well our teaching supports them.

The model

It is convenient to describe the model in two parts. Table 1 represents those aspects of thinking that occur in both everyday and scientific thinking. They can occur without much awareness. We think of them as the fundamental aspects of scientific thinking since Feist draws parallels between these and the early development of cognition. As they become more specialised as aspects of scientific thinking, we become more aware of them and take more control of how we direct them. This is further enhanced by those aspects in table 2 and the whole process is facilitated by language (Feist, 2006).

[1] The work reported here is part of the S-TEAM (Science Teacher Education Advanced methods) Project. https://www.ntnu.no/wiki/display/steam/SCIENCE-TEACHER+EDUCATION +ADVANCED +METHODS

[2] The model of scientific thinking is, in fact, one dimension of a model of investigations (Smith, 2010, Smith et al, 2010)

Table 1: Fundamental aspects of scientific thinking

Scientific Thinking (Adapted from Feist, 2006)	
Aspect	**What it involves**
I observe with any or all of my senses as required	Fairly self-explanatory – all senses (not just vision) may be used as appropriate to input information
I categorise what I observe as things and events	Classifying information from observations into meaningful concepts or systems of concepts
I recognise patterns in the categories of things and events	Seeing patterns of relationships between different things and events the classified information above refers to (E.g. Thing A is always found with Thing B. Event Y always follows Event X)
I form and test hypotheses	Arises initially from pattern recognition. Begin to expect world to behave in certain ways and test these expectations
I think about cause and effect	Arises initially out of pattern recognition and/or hypothesis verification (e.g. recognition of pattern that Y follows X or verification of this as a hypothesis leads one to think about causes). More sophisticated when one realises that co-variation is necessary, but not sufficient, for causality.

We emphasise that these aspects of scientific thinking may not all be involved in every professional scientific activity and nor should we expect them all in every school science activity. Also, we emphasise that the aspects interact with each other. For example, as we develop a knowledge and understanding of scientific theories, and the way that evidence supports these, this affects the way that we observe and categorise things and events in the world around us. This leads to hypotheses about the world that we might not otherwise have formed, and so on.

The model allows us to think about those aspects of scientific thinking that different classroom activities help our pupils to develop. In the following issues, we will present some examples. Meantime, you might like to try it for yourself against some activities in your own classrooms. A blank table is provided for this purpose. Others (that include the other dimensions of investigations[2]) can be obtained from the S-TEAM Wiki (see references for web address). You may be surprised, as we were, how even traditional lessons are potentially supportive of many aspects of scientific thinking – a potential that may be realised by making them more inquiry-based through relatively minor changes in the way we interact with our pupils. It is early days but it seems to us that even teacher-led demonstrations can seem more investigative to the pupils when conducted with a focus on scientific thinking and can become part of a programme towards them using that thinking in their own, more open, investigations.

[2] These other dimensions have interesting parallels with the questions asked in 'Using Experimental Ideas in Science Lessons', ICASE Newsletter, November, 2010, so some may find it useful.

Table 2: Further aspects of scientific thinking

Scientific Thinking/scientific mind (adapted from Feist, 2006)	
Attribute/skill	**What it involves**
I effectively support theory with evidence	This includes avoiding confirmation bias, not ignoring disconfirmatory evidence outright, avoiding distorted interpretations of evidence to fit preconceptions and distinguishing examples from principles.
I visualise	Visualisation in scientific thinking can take various forms including thought experiments, models and diagrams, graphs, charts and tables. These tables, for example, comprise an attempt in visualising scientific thinking.
I am aware of my thinking and control it	Although beginning in observations, scientific thinking is not sensory bound but can make use of abstract concepts and theories. Scientific thinking involves being aware of these concepts and theories so that they can be challenged and modified. Along with this awareness is also an awareness of the thought processes being used and directing them towards goals such as understanding.
I use metaphor and analogy	Analogy – seeing how something (target) is like something old (source). Metaphor – an 'as if' comparison. Think about X as if it was Y. Both of these are used in scientific thinking in the process of hypothesis and theory formation, thought experiments, creativity and problem solving. In thinking about experiments in one context, we also may use analogies based on experiments from other contexts to design the experiments or to fix problems we are having with it. Analogy and metaphor also provide useful constraints to solutions to problems by focussing strategies
I use the 'confirm early-disconfirm late' heuristic	In practice, this may be rarely used in school science but is included here for completeness. Apparently many successful scientists when formulating theory look for confirming evidence first ('make it a goer'), then seek to find evidence and arguments against it.
I collaborate in thinking	An important part of scientific thinking is both formal and informal collaboration with others in the sharing of reasoning and ideas. For professional scientists, this collaboration in discussing data and how to interpret it is important in conceptual change. There seems no reason to doubt that it also important for school students.

Feist, G.J. (2006) *The Psychology of Science and the Origins of the Scientific Mind*. New Haven: Yale University Press.

Smith, C.A. (2010) (With additional material supplied by Kelly, F and Mackenzie, S). Thinking pedagogically about scientific thinking: Towards a taxonomy of investigations**.** S-TEAM Conference, Nottingham. January, 2010. Available at https://www.ntnu.no/wiki/pages/viewpageattachments.action?pageId=8324914&highlight=Thinking+pedagogical3210.doc#What+is+Inquiry-based+science+teaching+%3F-attachment-Thinking+pedagogical3210.doc

Smith C., Kelly, F. and Mackenzie, S. (2010) Support for Scientific Thinking in School Science Investigations: A Teaching Tool. In S-TEAM deliverable, 6.1, *Developing Scientific Thinking in the Classroom Through Inquiry.* S-TEAM: https://www.ntnu.no/wiki/download/attachments/8325736/Deliverable+6a+April+2010.pdf?version=1

6. Calendar of Events

Introducing the Google Science Fair...

On the 11 January 2011, Google is launching the inaugural Google Science Fair. We have partnered with NASA, CERN, National Geographic, Scientific American and the LEGO Group to create a new STEM competition that is more open, accessible and global than ever before. We wanted to reach out to educators prior to launch to let you know "the Google Science Fair is coming" and to extend an invitation to schools and teachers to get involved early in what we hope will be a large global initiative.

The Google Science Fair is a global competition that any student aged 13 - 18 from around the world is eligible to enter.

Students can enter as individuals or as teams of up to three. There is no entry fee and registration and submission will happen online. The deadline for submissions will be the 4 April 2011. The Science Fair will culminate in a "once in a life time" celebratory event at Google headquarters in California in July 2011 where finalists will compete for internships, scholarships and prizes in front of a panel of celebrity scientist judges including Nobel Laureates, tech visionaries and household names.

We want to celebrate and champion great young scientific talent and give students from around the world the opportunity to compete for amazing experiences, prizes, scholarships and internships.

We hope you are as excited about this upcoming competition as we are are! To sign up for fun and free resource kits for your classroom or school (Google bookmarks, stickers, posters and more!) and a reminder notification when GSF registration opens, please visit the Google Science Fair at: google.com/sciencefair

Best,
The GSF Team

IOSTE
International Organization for Science and Technology Education

Mini-symposium, Reading, UK
20-21 June 2011 (welcome reception on 19th)
Contemporary Issues in Science and Technology Education

The symposium is open to all working in the field of science and technology education, including established researchers, Masters and Doctoral students, and practising teachers in schools.

We invite papers on completed empirical research and theoretical issues in science and technology education.

In the first instance, send a 1000 word abstract in Word format to the coordinator, John Oversby (j.p.oversby@reading.ac.uk) including the frame for the research, the research questions, methodology, outline data, analysis, interpretation, implications, and selected references, for empirical papers and parallel areas for theoretical papers by December 31st 2010. Abstracts will be blind reviewed and invitations for full papers up to 12 pages sent to successful authors by January 30th 2011, to be received by March 30th 2011. We intend to seek a publisher for presented papers.
Oral papers at the symposium will have 20 minutes followed by 10 minutes discussion. If there is sufficient response, we will also accept posters for a special session.

Reading is close to Heathrow and Gatwick airports by frequent public transport, and easily accessible from budget airline Stansted and Luton airports.
IOSTE home page: www.ioste.org. Symposium home page www.IOSTE-NWE
The registration fee and other details will be available by October 2010

Welcome to Science Singapore 2011

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/

Namkelekile e Afrika You are welcome in Africa

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

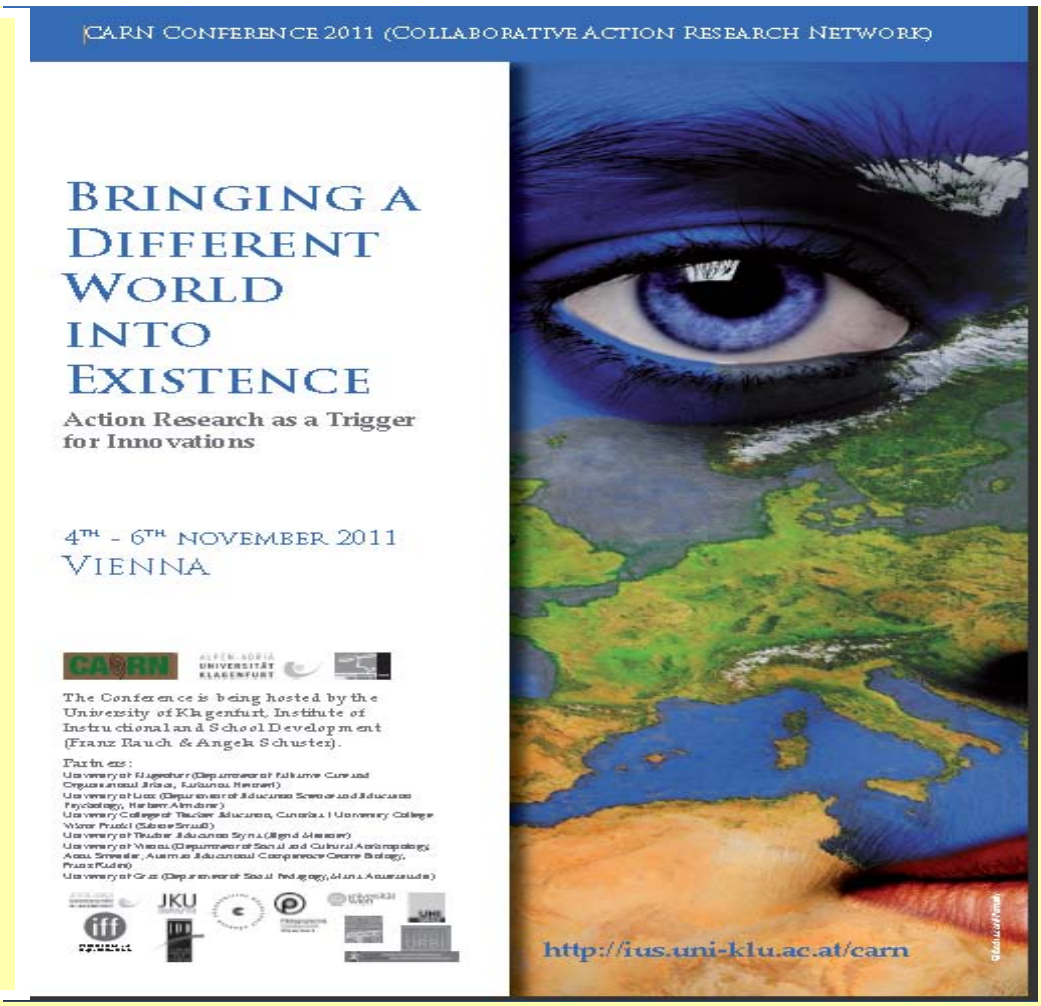
Registration – Early (until 3 June 2011)	ZAR 5,525.00
Registration – Standard (until 19 August 2011)	ZAR 6,525.00
Registration – Late	ZAR 7,525.00
*Registration - Discounted (until 3 June 2011)	ZAR 4,250.00

** 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



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.

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* - This committee will change from the 1st January 2011**

President
Prof Jack Holbrook
E-mail jack@ut.ee

Past President
Dr Janchai Yingprayoon
E-mail janchai@loxinfo.co.th

Secretary
Prof Miia Rannikmae
E-mail miia@ut.ee

Treasurer
Peter Russo
E-mail ceo@asta.edu.au

Regional Representative for Africa
Dr Ben Akpan
Executive Director of STAN, Nigeria
E-mail: ben.akpan@stanonline.org
(Member Organisation – Science Teachers Association of Nigeria)

Regional Representative for Asia
Dr Azian Abdullah
Director, RECSAM, Malaysia
E-mail: azian@recsam.edu.my
(Member Organisation – RECSAM)

Regional Representative for Australia/Pacific
Dr Beverley Cooper
E-mail: bcooper@waikato.ac.nz
(Member Organisation – NZASE, New Zealand)

Regional Representative for Europe
Dr Declan Kennedy
E-mail: d.kennedy@ucc.ie
(Member Organisation – Irish Science Teachers Association (ISTA)

Regional Representative for Latin America
Gabriela Inigo
E-mail: gabriela_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
(Member Organisation - Council of Elementary Science International - CESI)

Chairs of Standing Committees
Safety in Science Education
Dr James Kaufman
E-mail: jim@labsafetyinstitute.org

World Conferences
Dr Robin Groves
E-mail grovesr@ozemail.com.au

Pre-secondary and Informal Science Education
Ian Milne
E-mail I.Milne@auckland.ac.nz