



Supporting and promoting science education internationally

The ICASE Newsletter

April 2009

Newsletter of the International Council of Associations for Science Education.

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1. ICASE News

ICASE is a Non-Governmental Organisation, set up by its member National STAs, Science Societies, Science Centres, etc to form an International Science Education Communication Network.

In February, ICASE linked with SEAMEO RECSAM (regional education centre for science and mathematics for S.E Asian countries) to run a seminar for policy makers on Issues in Science Education. The seminar is based on the outcomes of an ICASE-UNESCO workshop held in conjunction with the World Conference in Perth, Australia. More information will appear on the ICASE website.



The opening ceremony for the RECSAM-ICASE seminar



Members of the ICASE Executive Committee
(Left to Right front – Miiia Rannikmae, Azian Abdullah,
Ben Akpan, Robin Groves
Back Jack Holbrook, Bev Cooper)

Following this successful event, ICASE will look for further opportunities to promote science education messages to policy makers. The major difficulty is in financing such an event, especially travel costs.

The ICASE Executive Committee met in RECSAM following the ICASE-RECSAM seminar. Major outcomes decided were - the ICASE journal is going online; the ICASE website is being revamped; a revue of the ICASE mission statement, the next World Conference is 2010, and calls will be send out for proposals for the next conference in 2013 (coinciding with the 40th anniversary of ICASE). All member organisations will receive full minutes. These are now being finalised and seeking Executive Committee approval.

A successful final conference for the **PARSEL project (Popularity and Relevance in science education for scientific literacy)** was held 1-4th March 2009 in Berlin, Germany with posters and comments from science teachers from a number of European countries. Besides the ICASE President giving an introduction to PARSEL, the ICASE European representative, Dr Declan Kennedy, gave a short presentation. This project, developing a unique approach to science teaching at secondary level, is a flagship development and ICASE will be seeking interest from science teacher worldwide in the coming months. The September 2008 ICASE journal was devoted to this project.

One of the many conference posters on display

The ICASE President introducing the PARSEL project philosophy on popularity and relevance for enhancing scientific



In the message accompanying the March newsletter, readers were asked about the style of the newsletter. From the replies received (*many thanks for these*), there was an overwhelming 'Yes' to linking the newsletter to the website; making greater reference to new items on the website and make greater reference to other STE newsletters (*ICASE will endeavour to do these*).

There was far less unanimity regarding whether the newsletter should be made shorter by omitting non-news features. It seems there are mixed opinions in this area.

Please note that there is no need to scroll through the newsletter. Each item can be selected by clicking using the left mouse button on the content items on the front page.

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.

ICASE would be delighted to publish your favourite activities. Please send to jack@ut.ee

A) STEP ACTIVITY

Secret sound box

Contributed to STEPS by SLASME, Sri Lanka

Challenge: How can you hear sounds inside a **box**?

What you need

- shoe box or cardboard box with lid
- ticking clock
- cardboard tube

What to do

Before you put the clock into a box, listen to it.

What can you hear?

Will you be able to hear the clock if you put it inside a closed box?

Let's try it! Put the clock inside a box and put on the lid.

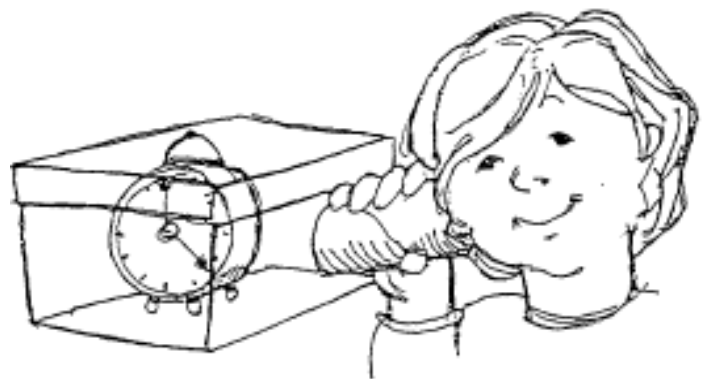
How can you tell if the clock is still ticking?

Here is one way.

Use a cardboard tube (or make one by rolling up some paper).

Put one end of the tube on the box and the other end against your ear.

What do you hear?



More to do

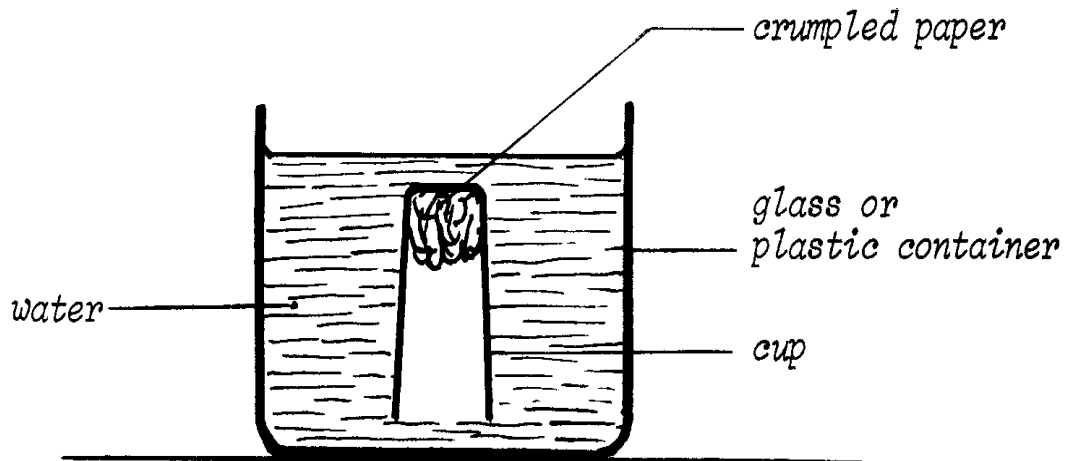
How does the length of the cardboard tube affect how well you can hear the ticking clock inside the closed box?

What else can you listen to using the cardboard tube?

What other things can you use so that you can hear faint noises?

B) ADDITIONAL SCIENCE ACTIVITY

KEEPING PAPER DRY UNDER WATER



- Materials:**
1. A dry glass or transparent plastic cup
 2. A large beaker or transparent plastic container (large enough to fit a person's hand)

Procedure:

1. Fill the large container about 2/3 full with water.
2. Crumple a piece of dry paper and squeeze it to the bottom of the glass or plastic cup.
3. Invert the glass (making sure that the crumpled paper stays up in the cup) and immerse it completely under water, holding it as vertically as possible.
4. Take the cup back out of the water and let the water drip off (do not shake off!).
5. Take the crumpled paper out of the cup with a dry hand and let the students feel and check whether it is dry or not.

Questions:

1. Before inserting the crumpled paper, ask: "What is in the cup?" (anticipated answer: 'nothing').
2. Before immersing the glass under water, ask: "What else beside the paper is in the cup?"
3. While immersing the cup: "Why doesn't the water enter the cup?"
4. Why does the paper have to be crumpled?

Explanation:

Air is *space occupying*. The glass is therefore filled with air, no matter whether it is right side up or upside down. Besides the crumpled paper there was air in the cup. This is why the water could not enter the cup during the immersion process. The paper stayed therefore completely dry.

Applications of this characteristic of air can be found when people have to work under water. Air is then pumped in and around the area where the people are working, enclosed by a water-tight wall.

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 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 be a pity if the teacher is the person who answers these 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 appropriate for younger students.

So what would be the investigatory questions for these experiments ?

This is a challenge left for you to consider.

***Have you seen the Call for Papers for the World Conference 28 June-2 July, 2010.
Please go to the conference website – www.worldSTE2010.ut.ee***

3. Teaching Goals from US National Science Education Standards

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

The Uniqueness of the National Standards from an STS Perspective

For many of us the National Science Education Standards (NSES) provide a recent document indicating needed educational reforms. Too many active scholars were not part of the thousands who influenced the make-up and final recommendations that led to the NSES. So it may be time now to indicate **that most of the recommendations for change** cannot be seen in many classrooms across the entire U.S. The NSES were published in 1996 after four years of debate and with an expenditure of \$7 million. It is probably an understatement to say that it is unfortunate that there is *so little indication of impact at the school level.*

Important major visions and ideas in the NSES yet to be realized include:

- 1) defining eight facets of content that should be considered in all science classes;
- 2) focusing on the unification of science concepts and process skills;
- 3) recognition of the world view of science (the importance and value of the Social Sciences of Science);
- 4) the collapse of physics and chemistry into “Physical Science”;
- 5) focusing on the use of science study for resolving personal and societal problems;
- 6) focusing on both Science and Technology (i.e., the design world) as a major consideration in place of the typical and exclusive focus on understanding the natural world.

All of these “yet to be” features can be “grouped” as STS initiatives. Each chapter of the NSES ends with a contrasting list of **Less Emphasis and More Emphasis** conditions (see earlier newsletters). These summaries are too often merely overlooked by persons who have and attempt to use the 262 page booklet! For most it seems there is more interest in the traditional listing of *science concepts and process skills* that are suggested for including in course outlines across grade levels.

Do the NSES “Standards” apply equally well for collegiate science teaching? They should! This may be critical as science educators consider the importance of developing scientific literacy for all K-12 students as **the major goal** for school science. This may be appropriate but it should be noted that as much as 80% of the collegiate work for preparing secondary teachers is basic science from discipline-bound science in colleges which is taught by instructors with no experience or course work in science/education per se. And, for even teachers “to be”, this experience is provided in but one Methods course in the whole B.S. or MAT program. Surely **exemplary teaching** by teachers deserve more attention and study !!

We need more unity of purpose, more people collaborating, more active research undertaken by all professionals. We need “above all” to publicize our successes, our moves to the visions we paid/worked to define in the NSES.

Editor’s note: So science teacher associations (in particular) and science teachers in general – here is the challenge. How do you react. ? Willingly I will publish comments in this newsletter. Send to jack@ut.ee.

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

HOW SECURE IS YOUR SCIENCE LABORATORY AND SCHOOL? (PART 1)

I. INTRODUCTION

September 11th 2001 was a tragedy not only in the U.S. cities of New York, Washington and Pennsylvania, but also worldwide. Over the past decade, similar acts in other countries have made the point that no one is truly safe from terrorism. Since these events have taken place, particular attention has been given to upgrading existing workplace security and creating workplace security procedures where they had not existed earlier.

Over the past few years, some school districts in the US fell victim to a form of terrorism of their own. Security has already been addressed in many school districts across the United States and in other countries as a result of the Columbine High School type of terrorist actions and workplace violence.

The purpose of this article is to provide some strategies on making science laboratories in schools not only safer, but also more secure. This is of special importance, given that hazardous materials and other dangerous artifacts found in science laboratories can be the focus of terrorists. Yet experimental work is still regarded as highly desirable in schools. And students strongly indicate that they prefer such type of teaching.

II. REGULATORY STANDARDS

National health and safety agencies in many countries have been established to help employers make the workplace safe for employees. The “prime directive” for employers is to develop and maintain a safe working environment for all employees. In the United States, regulatory standards created by the Occupational Safety and Health Administration (OSHA) such as the Hazard Communications Standard, the Laboratory Standard, the Bloodborne Pathogens Standard, Emergency Action Plans, Hazardous Materials, and others, provide direction toward meeting this “prime directive.”

Additional safety and security support can be found coming from such agencies as the Environmental Protection Agency (EPA), National Institutes of Health (NIH) and the Centers for Disease Control & Prevention (CDC). Again, many nations have counterparts with such safety standards.

All governmental standards and regulations determine the level of compliance in each of the items addressed. It is important that science teachers are aware of safety expectations from national, state and local health, building, and other agencies.

The science teachers, and supervisors as specialists, need to work in concert with administrators in attempting to provide a safe and secure working environment for students, faculty and administrators.

III. CREATING AND/OR UPGRADING SECURITY – THE LABORATORY

The following is a part list applicable to the school science facility – laboratories, preparation rooms and storerooms. Its purpose is solely to raise levels of awareness relative to safety and security. It is by no means designed to be a complete prescription.

(Part 2 of this article – to be published next month - lists further safety and security aspects).

- A. Entrances, Exits, Stairways and Hallways** – All means of access should be clear and unobstructed to allow for safe evacuation. Proper signage should be posted as appropriate.
- B. Laboratory Access** – All access doors to laboratories should be labelled as laboratories. All doors should remain closed and locked when unattended. Only certified science teachers should have access to laboratories when hazardous materials/equipment are present. Only certified science teachers and administrators/facilities maintainers/custodians should have keys to laboratories, storerooms and preparation rooms.
- C. Safety Equipment Operation** – All showers and eye wash equipment must be inspected and in operational order in areas housing or using hazardous materials. A minimum of monthly inspections should be required.
- D. Personal Protective Equipment** – Safety splash goggles, safety glasses, gloves, aprons, etc., should be easily accessed and be kept in good condition.
- E. Fire Suppression Equipment** – appropriately rated fire extinguishers should be available in the laboratories, storerooms and preparation rooms. The extinguishers should be appropriately inspected and located for easy access. All science employees should annually be trained in the use of the extinguishers.
- F. Pressurised Gas** – All pressurised gas cylinders must be placed in an upright position and properly secured. Appropriate signage and requirements for cylinders per square footage (or m²) must be adhered to.
- G. Electrical Energy** – All circuits in science laboratories, preparation and storerooms should have ground fault circuit interrupter protection (GFCI), in addition to easily accessible master shut-off switches with appropriate signage.
- H. Gas Energy** – All laboratories, preparation and storerooms should have master gas shut-off switches with appropriate signage.
- I. Water** – Master water shutoff valves should be easily accessible, each with with appropriate signage.
- J. Fume Hoods (cupboards)** – Fume or exhaust hoods should have periodic inspections for appropriate operation such as (inward) face velocity. The stage within the fume hood (cupboard) should not be used as a storage area for hazardous chemicals, laboratory ware or any other items.
- K. Hazardous Chemical Storage** – All hazardous chemicals should be properly labelled, dated and stored. The areas housing hazardous chemicals should have restricted access and be under a high level of security.

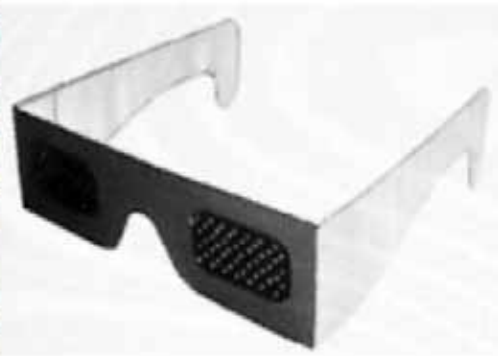
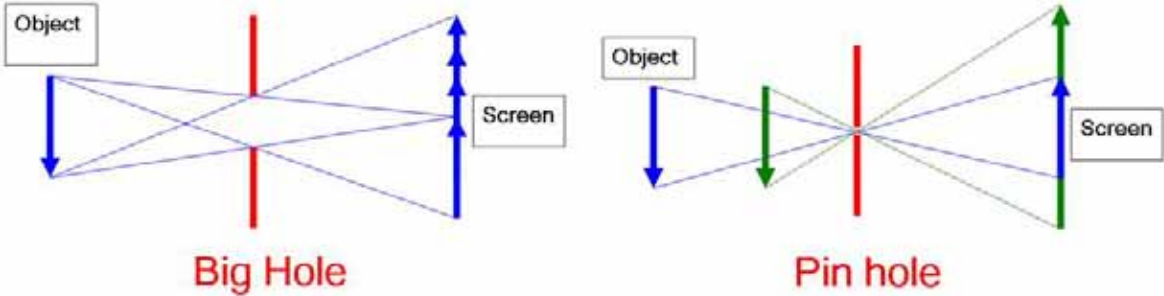
5. Janchai Corner

Pinhole Spectacles

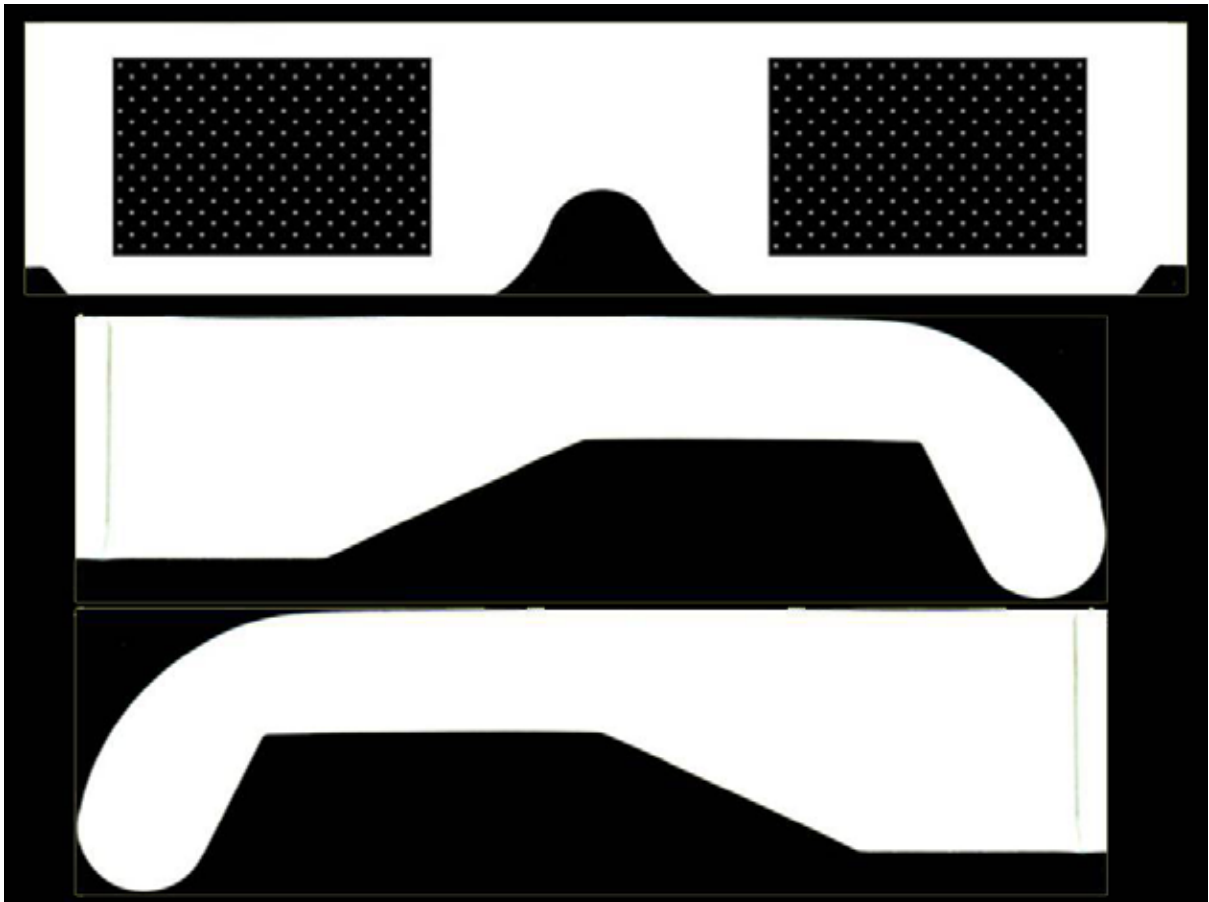
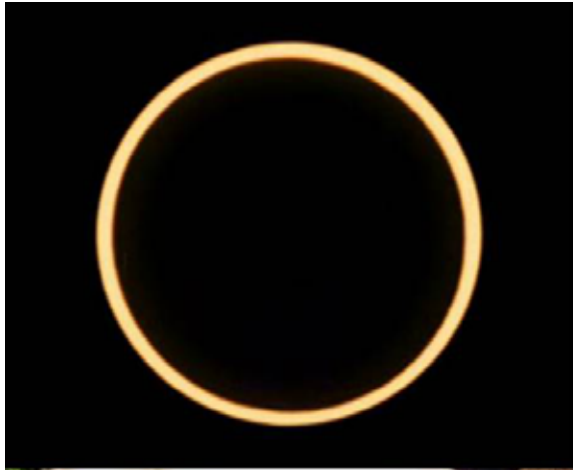
If we let light from an object pass through a big hole and form an image on the screen, we see a “blurred” image on the screen. We can understand this by using ray tracing (see below). But if we let the light from an object pass through a small pin hole, we see a “sharp” image no matter how far the object is from the pinhole.[During a solar eclipse, when sunlight passes through several holes between the tree (because of the leaves), we can see several images of the eclipse on the floor.]

To make pinhole spectacles, print the template of the pinhole spectacles on cardboard or stiff paper and cut and glue this to make spectacles Use a pin to punch a series of small holes to complete the “pinhole spectacle”. If you wear glasses, you can also use the pinhole spectacles instead of your glasses. Can you can read a book with the spectacles no matter how far away you place the book ?

Pinhole Effect



Janchai Yingprayoon is the Immediate Past President of ICASE. He is based in Thailand.



6. Calendar of Events

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 this major African regional conference is - Meeting the Challenges of Sustainable Development in Africa through Science and Technology Education.

The Venue is the Abuja Sheraton Hotel and Towers, Abuja, Nigeria.

What are the challenges for Sustainable Development in Africa ?

Well, first is - what is meant by sustainable development in such a continent? Is it really only about the environment ? What about poverty alleviation, food supply, peace and human rights ? Are these to be omitted ?

And if sustainable development has a wider need, then what does this mean for Education for Sustainable Development and especially Science and Technology Education for Sustainable Development in Africa ?

Come and join in the discussions and deliberations.

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

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

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

CONASTA 58 – The Conference of the Australian Science Teachers Association 4-7 July 2009 at the Hotel Grand Chancellor in Launceston, Tasmania, Australia

The theme for the conference - A Bridge to the Future. Within the theme will be highlighted

Science – future problem solver

Educational change and the national curriculum

Science in a rural context

Science and literacy

You are invited too submit an overview of a presentation for the CONASTA 58 conference. Presentation summaries are due by Friday 20 February 2009. Abstracts can be submitted through the website via the Speaker's Zone (www.cdesign.com.au/conasta58).

Registration fees Full registration before April 2009 (member A\$450; non member A\$650). After April (member A\$550, non member A\$750). More details on the website.

Contact details –

For all enquiries contact - Conference Design Pty Ltd, 228 Liverpool Street, Hobart, Tasmania 7000.

E-mail Info@cdesign.com. Tel (international) +61 3 6231 2999

International Congress of Science Education, 10 years of the Journal of Science Education (Cartagena, Colombia, 15 - 18 July 2009).

The main aim on this Congress is to discuss international experience in science education. The venue in Latin America presents a special opportunity for our community, and your participation would create a high interest and impact for this international event.

The Journal of Science Education, JSE, has an international character and publishes articles about the science education (Physics, Chemistry, Biology, Mathematics, etc.) for the university and secondary or high school levels. Authors from 53 countries have published more than 320 full peer evaluated articles in previous issues, various authors are from your country. Our authors are: from Europe (47%), America (45%), Asia (7%), Africa (1%). About 46% of published works have been about research in science education.

We invite you to take part in this International Congress. We are very interesting in if you can organize a symposium or workshop about one of the several topics to be talked about at the congress.

Two important dates were:

* Preliminary registration: 15 December 2008

* Sending the abstracts: 10 February 2009 but you can still participate !

Please see the website for more details <http://www.colciencias.gov.co/rec/cong>

ICASE Asian Symposium XI, 1-3 November 2009, Guangxi Normal University, Guilin, P.R.China.

The 11th ICASE Asian Symposium will be organised by the ICASE-GNU Guilin Teacher Training Center (GTTC) with the Research Institute of Science Education (RISE) at Guangxi Normal University, from the 1-3 November 2009. The theme of the symposium is Bridging the Gap between Formal and Informal Science Education and is a founding event for the newly established ICASE Guilin Teacher Train Center. The symposium will provide an opportunity for science teachers and education to meet in order to

- Learning from and interact with invited science education experts on how to create and wisely use high educationally valued teaching materials in order to make genuine improvements in science learning and teaching;
- Share ideas and experiences with each other related to science teaching practices
- Visit and discuss RISE and its partner schools on developing featured science teaching resources.

The symposium venue will be the Yuchai Campus of Guangxi Normal University and all academic activities will take place within the RISE facilities. The language of the symposium will be English

Registration fees – Overseas participants 2000¥ (students 1000 ¥)

Local participants (rate to be decided) 7.5 ¥ = 1 US\$

Updated details will appear on the RISE website www.risechina.org

For more information please contact the secretariat – Miss Handan Huang, Research Institute of Science Education, Guangxi Normal University, Guilin 541004, P.R. China

E-mail gxnuusc@sohu.com

ICASE World Conference, 28th June - 2nd July, 2010, Tartu, Estonia

The 3rd ICASE World Science and Technology Education Conference will be held at the University of Tartu. This 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.

Conference theme - **Innovation in science and technology education: research, policy, practice.** The Call for Papers is now announced for each of the sub-themes – *research; policy and practice.* [See attached call for papers]

Introducing the conference title

Innovation and Education are heavily interlinked. As countries move along the path of development (and really this is their destiny; unknown is the pace at which this takes place), education is a key factor in promoting meaningful progress. Whether this factor is identified with values such as equity, human rights, tolerance, or preparations for a knowledge-based society, education has been recognised as an essential component in a country's development.

But as movement within a country takes place along the development path, so education itself needs to develop; it needs to be in tune with the moving platform. For this, not only is innovation a hallmark of development, but it is a key ingredient in the required developments in education. Such innovation needs to have a **research underpinning**, guided by **policy makers** towards intentions and introduced at the **level of practice** by the implementation attributes within the country (unfortunately under a heavy threat of distortion by the assessment practices in many countries, unless these are also an essential part of the innovation).

Science and technology education has a crucial role in this innovation. Not only is it involved in preparing innovative citizens within society, but also as part of the education provision within countries, it is at the forefront of educational innovations, undertaking this from within a science frame.

The call for papers invites all science educators to submit their proposals.

Besides individual papers, symposium 'sets of papers' on an interrelated topic are encouraged.

SPECIAL NOTICE to Science Teacher Associations and Science Education Organisations

The conference organisers invite you to put forward conference 'threads' in which a series of presentations by members of your organisation are included across the conference programme. This is to provide an opportunity for organisations to disseminate innovations on the world scene in line with the thrusts of their organisations. For more details please contact Miia Rannikmae e-mail miia@ut.ee



ICASE ASIAN SYMPOSIUM 2009

On

**Bridging the Gap between
Formal and Informal
Science Education**



**1-3 November 2009
Guangxi Normal University
Guilin, China**

Organized by

**ICASE-GXNU Guilin Teacher Training Centre
Research Institute for Science Education (RISE)**



Guangxi Normal University
广西师范大学



International Council of
Associations for Science Education
国际科学教育协会理事会

**SOME INVITED KEYNOTE &
PLENARY SPEAKERS**

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Prof. Dr Jack Holbrook
University of Tartu ,President of ICASE

Prof. Dr Miia Rannikmäe,
Executive Secretary, ICASE, Estonia

Mrs Cheng Donghong
*Executive Secretary, China Association
for Science and Technology (CAST)*

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CALL FOR PAPERS

We encourage contribution of papers to share on listed symposium strands, general theme, research findings, case studies and initiatives carried out in respective countries on efforts put forth to connect/incorporate Community development/ society awareness into the design and implementation of Science, Mathematics and Technology Education.

The closing date for receipts of titles and abstracts (not exceeding 1000 words) is **August 31, 2009**. The format of the abstracts and full paper (or website) may be requested from the secretariat or downloaded from the website. *Please submit abstract and full papers in electronic format only (internet or e-mail)*. Please also attach a brief CV (not exceeding 200 words) along with your abstracts.

LANGUAGE

The language of the symposium will be in English

THEME

The symposium will address:

Bridging the Gap between Formal and Informal Science Education

The topics for discussion will surround the following sub-themes namely:

- (a) the role of science centres and/or science museums in bridging the gap between formal and informal science education
- (b) using informal and non formal approaches in science teaching
- (c) teaching science using locally produced equipment
- (d) can assessment approaches be used to bridge the gap between formal and informal science education ?
- (e) the role of the textbook/teaching materials in bridging the gap between formal and informal science education
- (f) promoting life skills through science education - linking formal and informal science education

OBJECTIVES

The symposium provides an opportunity for science teachers and educators to meet together in order to:

- Learn from and Interact with invited science education experts on how to bridge the gap between formal and informal science education in order to make efficient improvement on science leaning and teaching.
 - Share ideas and experiences with each other in science teaching practices.
 - Visit and discuss with RISE and it's partner schools on developing featured science teaching resources.
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REGISTRATION

Registration fees
Active participants **US\$200**

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The fee includes 1 copy of the book of abstracts with papers of keynote and plenary, 3 lunches (1-3 Nov)
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VENUE

The symposium will take place at the Yuchai Campus of Guangxi Normal University. Guilin 541004, P.R. China

DATE: 1 – 3 November 2009

ACCOMODATION

Accommodation will be reserved upon request. Special room rate will be arranged in nearby hotels, details of which are available from the secretariat.

SECRETARIAT

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Research Institute for Science Education
Guangxi Normal University
Guilin 541004, P.R. China
Website: <http://www.risechina.org>

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

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Past President

Dr Janchai Yingprayoon

E-mail janchai@loxinfor.co.th

Secretary

Prof Miia Rannikmae

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Treasurer

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Regional Representative for Africa

Dr Ben Akpan

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(Member Organisation – Science Teachers Association of Nigeria)

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E-mail: azian@recsam.edu.my

(Member Organisation – RECSAM)

Regional Representative for Australia/Pacific

Dr Beverley Cooper

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(Member Organisation – NZASE, New Zealand)

Regional Representative for Europe

Dr Declan Kennedy

E-mail: d.kennedy@ucc.ie

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Regional Representative for Latin America

Gabriela Inigo

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Regional Representative for North America

Prof Norman Lederman

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

Chairs of Standing Committees

Safety in Science Education

Dr Ken Roy

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World Conference

Dr Robin Groves

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Pre-secondary and Informal Science Education

Ian Milne

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