*Supporting and promoting science education internationally*

# The ICASE Newsletter February 2009

Newsletter of the International Council of Associations for Science Education.

**Contents of this issue**



## 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.icaseonline.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

# Secret sound box

*Contributed by SLASME, Sri Lanka*

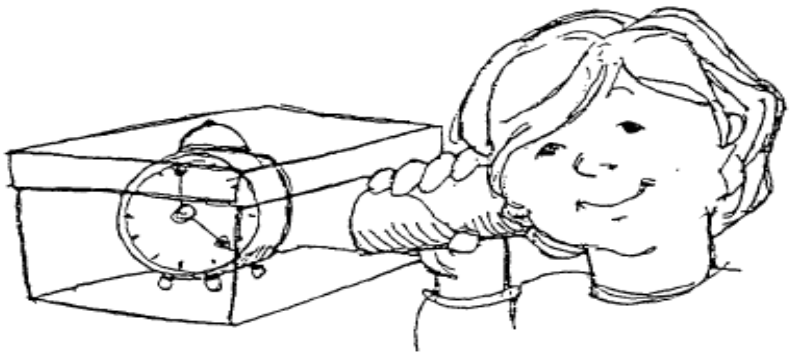
### Challenge: How can you hear sounds inside a box?

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

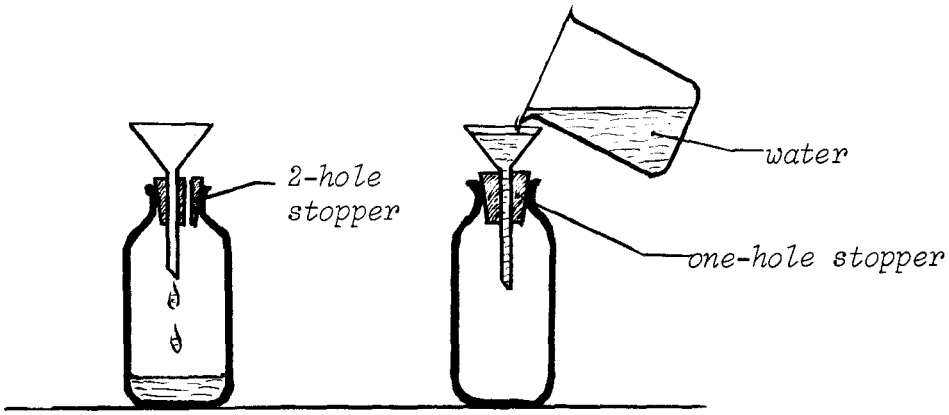
- How does the length of the cardboard tube affect how well you can hear the ticking clock inside the closed box?
- What else can you listen to using the cardboard tube?
- What other things can you use so that you can hear faint noises?

## B) ADDITIONAL SCIENCE ACTIVITY

AIR OCCUPYING SPACE

### THE REFUSING FUNNEL

**Materials:** 1. Two identical glass or plastic funnels with narrow stem
2. One two-hole stopper & one one-hole stopper
3. Two identical empty jars or bottles




**Procedure:**

1. Set up the funnels with the stoppers on the bottles as shown in the sketch above (do not tell that one of the stoppers has two holes).
2. Fill the funnels with water: in one the water will run through(2-hole stopper) and in the other the water will stay in the funnel.
3. Take the bottle with the 2-hole stopper by the neck and put casually the forefinger on the open hole, and pour water in the funnel.
4. Take the bottle with the 1-hole stopper, squeeze the stopper open and the water will run through.

**Questions:**

1. Before pouring the water: "What is in the bottle?"
2. Why is the water only running through in one bottle?
3. After step 3 of procedure: Why is this funnel now also refusing?
4. What is holding back the flow of the water?
5. Before doing step 4 of procedure, ask: "How can we let the water run through this funnel?"

**Explanation**

The bottles were filled with air in the first place. In the bottle with the two-hole stopper the air can escape through the second hole and the water will run through. But in the bottle with the 1-hole stopper, there is no way for the air to escape and this will hold back the water.

An example of this phenomenon we find when trying to fill a perfume bottle with water or other liquid, or any narrow mouthed bottle with water by holding it under a large stream of water from the tap. There is only one passage way for the water to come in and for the air to go out, in other words, the air is blocking the way for the liquid to come in.

## 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 is a challenge left for you to consider.

# 3. Teaching Goals from US National Science Education Standards

Needed Changes in the System to Support Science Teaching 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.*

The NSES leaders were aware that good science and good science programs are affected by policies and funding. Therefore, they included a set of contrasts between 'Less and More' Emphasis situations for each of these levels. Again, teachers, administrators, school boards, and others too often feel that they have little control over such conditions. In a sense, pointing out problems and needs seemed an important consideration in developing standards. The inclusion of visions for changes in political systems suggested that officials – perhaps many leaders with no knowledge nor interest in science - have major influence over the kind of programs, teaching, and assessments that exist in schools and science classrooms.

The contrasts between 'Less and More' conditions, with respect to the 20 conditions from the Federal, State, and Local levels, follow:

## Federal (Country) System

| Less Emphasis On | More Emphasis On |
|---|---|
| 1. Financial support for developing new curriculum materials not aligned with the Standards | Financial support for developing new curriculum materials aligned with the Standards |
| 2. Support by federal agencies for professional development activities that affect only a few teachers | Support for professional development activities that are aligned with the Standards and promote system-wide changes |
| 3. Agencies working independently on various components of science education | Coordination among agencies responsible for science education |
| 4. Support for activities and programs that are unrelated to Standards-based reform | Support for activities and programs that successfully implement the Standards at state and district levels |
| 5. Federal efforts that are independent of state and local levels | Coordination of reform efforts at federal, state, and local levels |
| 6. Short-term projects | Long-term commitment of resources to improving science education |

## State (Regional) System

| Less Emphasis On | More Emphasis On |
|---|---|
| 1. Independent initiatives to reform components of science education | Partnerships and coordination of reform efforts |
| 2. Funds for workshops and programs having little connection to the Standards | Funds to improve curriculum and instruction based on the Standards |
| 3. Frameworks, textbooks, and materials based on activities only marginally related to the Standards | Frameworks, textbooks, and materials adoption criteria aligned with national and state standards |

| | |
|---|---|
| 4. Assessments aligned with the traditional content of science | Assessments aligned with the Standards and the expanded education view of science content |
| 5. Current approaches to teacher education | University/college reform of teacher education to include science-specific pedagogy aligned with the Standards |
| 6. Teacher certification based on formal, historically based requirements | Teacher certification that is based on understanding and abilities in science and science teaching |

## District (Local) System

| **Less Emphasis On** | **More Emphasis On** |
|---|---|
| 1. Technical, short-term, in-service workshops | Ongoing professional development to support teachers |
| 2. Policies unrelated to Standards-based reform | Policies designed to support changes called for in the Standards |
| 3. Purchase of textbooks based on traditional topics | Purchase or adoption of curriculum aligned with the Standards and on a conceptual approach to science teaching, including support for hands-on science materials |
| 4. Standardized tests and assessments unrelated to Standards-based program and practices | Assessments aligned with the Standards |
| 5. Administration determining what will be involved in improving science education | Teacher leadership in improvement of science education |
| 6. Authority at upper levels of educational system | Authority for decisions at level of implementation |
| 7. School board ignorance of science education program | School board support of improvements aligned with the Standards |
| 8. Local union contracts that ignore changes in curriculum, instruction, and assessment | Local union contracts that support improvements indicated by the Standards |

(NRC, 1996, p. 239)

Argument is offered that all too few science education leaders, consultants, and NSTA members, officers, and staff are really aware of the **More Emphasis** visions; nor are they using them in their day-to-day efforts.

Too few condemn the textbook companies, kit developers, school personnel for defining the needed changes in the seven areas, and in specific ways indicated by the 82 “More Emphasis” summary statements quoted directly from the NSES. The four years of debate and $7 million expended deserve more attention and use. More should challenge the claims for the “standards-based” materials and practices in terms of their being considered and really focused on the actual NSES vision for changes!

# 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*

## TARGETING BIOSAFETY FOR HIGH SCHOOL/ACADEMY LEVEL! PART 1 (part 2 next month)

### I. NEW BLIP ON THE RADAR SCREEN!

Over the past twenty years, the major concern in laboratory safety was how to deal with chemical hazards. With the advent of government hazardous chemical standards in most countries, appropriate protocols for hazardous chemicals were put into place to address information access, protection and employee training. Enter stage left – molecular biology/biotechnology along with biological hazards. Today, in addition to undergraduate laboratories, many high schools or academies are beginning to embrace biotechnology in their programs of study. Although this movement is essential in the evolution of the biological sciences, appropriate safeguards or biosafety must be put into place for the operation of these laboratories.

### II. WHAT IS THE PROFILE OF THE BOGEY?

Biohazards are infectious agents or biologically derived infectious materials, which present or may present a risk to other living things, including humans. Biohazards invade the body through similar portals of entry as chemical hazards; e.g., eyes, mouth, lungs, etc. However, unlike hazardous chemicals, biological hazards can reproduce and spread the infection in a relatively short amount of time.

Categories of biohazards or potentially infectious materials include the following:

1. Human, animal and plant pathogens: bacteria, fungi, viruses, parasites, rickettsiae, chlamydiae, toxins;
2. All human and animal blood , blood products, tissues and body fluids;
3. Cultured cells and potentially infectious agents these cells may contain;
4. Allergens
5. Recombinant DNA products
6. Clinical, necropsy and surgical specimens (tissues, fluids, etc.)

### III. COUNTERAFFENSIVE TO CONTAIN THE BOGEY!

As in other countries, the United States' Center for Disease Control (CDC) has developed biosafety protocols to safely handle biohazards. The safety methods have been characterized as "containment." The focus of containment is to reduce or eliminate exposure of laboratory workers and the outside environment/community to potentially hazardous agents. Containment is achieved in three ways: 1) laboratory practice and techniques, 2) safety equipment and 3) facility design.

### IV. DRILLS FOR SKILLS!

The first line of defense relative to containment is adherence to microbiological practices and techniques. Employees working with infectious agents or potentially infectious materials must be aware of possible hazards. In addition, they must be trained and skilled to safely handle biohazard materials.

In the case of high school or academy level science labs, the emphasis should be on "possible hazards." No high school level laboratory course should be dealing with infectious agents or potentially infectious materials! High school science departments need to develop operations manuals that identify possible biohazards and adopt practices and procedures for biosafety.

## V. ESTABLISHING THE PRIMARY DEFENSE PERIMETERS!

Depending on the type of biohazard, personal protective equipment (PPE) such as gloves, laboratory coats, safety goggles, etc. should be required. Additional safety equipment might include biosafety cabinets, enclosed containers and other engineering controls (eyewash/shower, master utility shutoffs, etc.). Cabinets are used to contain infectious splashes or aerosols generated by many microbiological procedures. Again, at the high school level, only the noted PPE and "other" engineering controls are necessary and appropriate.

## VI. ESTABLISHING THE SECONDARY DEFENSE PERIMETERS!

The facility contributes to laboratory protection, provides a barrier to protect people outside the laboratory and protects people/animals in the community. Depending on the biosafety level of a facility, design features need to include specialized ventilation systems, air treatment systems, controlled access, airlocks, etc. In the case of high schools, primary focus is on non-recycling ventilation systems in science laboratories. The forced air supply side provides fresh out-of-doors air and this air is then directly returned to its source, without traveling through other parts of the facility.

## VII. DETERMINING THE LEVEL OF DEFENSE!

The CDC has established four biosafety levels (BSLs) consisting of combinations of laboratory practices and techniques, safety equipment and laboratory facilities. The BSLs are specific to operations performed, transmission of infectious agents and laboratory functions. The CDC biosafety levels include the following descriptors:

**BSL1**: No known or minimal potential hazard of exposure to infectious agents;
**BSL2**: Moderate potential hazard/low risk of exposure to infectious agents;
**BSL3:** Moderate risk of exposure to agents that can cause serious or potentially lethal disease;
**BSL4:** High individual risk of exposure to dangerous or exotic agents which cause life-threatening disease.

BSL1 is the only appropriate level for high school laboratories offering courses in microbiology and/or biotechnology. This designation is based on safety equipment, practices, facility design and construction. BSL1 is for laboratories where work is done with defined, characterized strains and viable microorganisms not known to cause disease in healthy humans; e.g. Bacillus subtilus, Naegleria gruberi; and exempt organisms under NIH Recombinant DNA guidelines. BSL1 is a basic level of containment. No special primary or secondary barriers is recommended, other than a sink for hand washing. The level 1 laboratory is not necessarily separated from general facilities. Work is generally conducted on open bench tops utilizing standard microbiological protocol. Special containment equipment or facility design is not required. Lab personnel have special training and are supervised by a qualified science supervisor.

It must be noted that many agents, not ordinarily associated with disease processes in humans, can be opportunist pathogens. They can cause infection in the young, the aged and the immuno-deficient or immuno-surpressed individuals.

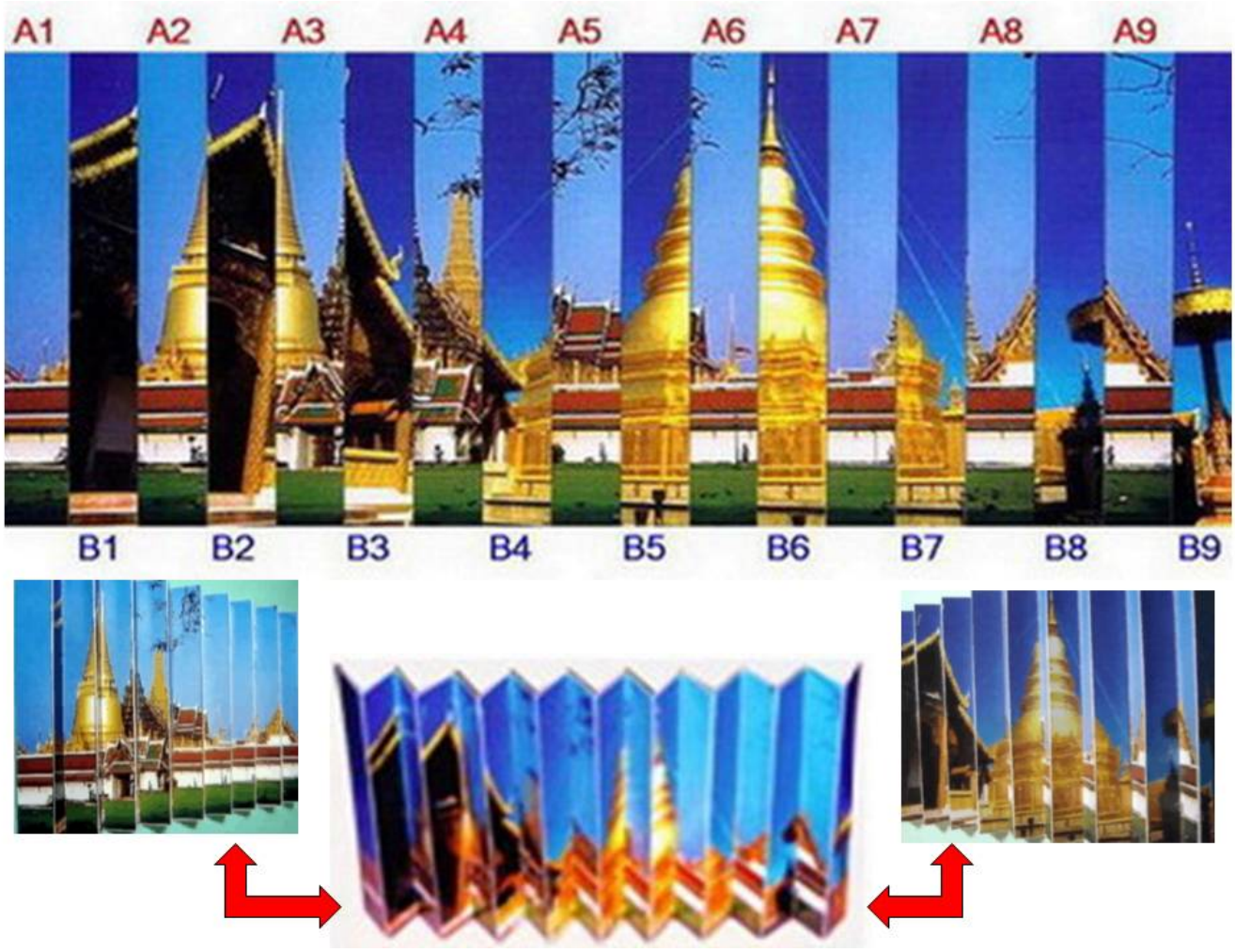
The BSLs 2-4 range from moderate-risk to work with dangerous/exotic agents – life threatening disease. These levels are inappropriate for secondary schools!

## 5. Janchai Corner

# Two photos in one frame

How would you like to make an interesting picture for decoration in the classroom ? For this, select 2 photos A and B which you would like to use as decoration in the classroom and cut them into strips A1, A2, A3,…. and B1, B2, B3,…Stick the strips of each photo alternatively in sequence as shown in the picture. Fold this new photo, fix in the frame and hang on the wall.

From one side you can see the first photo and from the other side (perpendicular to each other) you can see the other one.



## 6. Calendar of Events


***Celebrate the Year of Science in New Orleans***

Join more than 10,000 science educators in New Orleans for the most prominent and comprehensive NSTA National Conference on Science Education, March 19-22, 2009. This event kicks off with two exceptional speakers from The Planetary Society. Neil deGrasse Tyson, is an astrophysicist, author, and PBS host, and Bill Nye the Science Guy, a comedian, television host, science educator and mechanical engineer. And that is just the beginning of a full roster of experts in professional development leading workshops, seminars, institutes and sessions to stimulate your imagination, build your skills, enhance your teaching strategies and nurture your passion.

Check out some of our program titles:

- Observe, Question, and Explore Our Solar System
- Exemplary Science Programs-Best Practices
- What We Know About Learning Science in Informal Environments
- A Sustainable Collaboration to Improve Content, Assessment, Reflection, and Efficacy of Science Teachers
- The Murder of Kirsten Knight-Jensen: Using Chemistry to Solve the Crime
- Teaching Core Physics Concepts Through the Lens of Seismology
- A Demo a Week Makes Science Class the Peak

Don't forget day long programs, the Exhibit Hall, graduate credit for program attendance and networking. It's all there in New Orleans with field trips that tap into this city's history and local charm.

Register for the NSTA Annual Conference by January 9, 2009 to save the most.
Visit http://www.nsta.org/ for more information.

**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)

**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 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
**See also pages 9-11 this newsletter**

**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)**. http://www.colciencias.gov.co/rec/cong

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.
The two important dates:
*Preliminary registration: 15 December 2008
*Sending the abstracts: 10 February 2009

**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 top create ad 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 gxnucsc@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, the oldest University in Estonia dating back to 1632. 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 will be announced from March 2009 for each of the sub-themes – *research; policy and practice.*

**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.

Clearly innovation within science and technology education has a role to play in ***changing society values***, embedded within concepts such as *sustainable development, self-reliance, technological progress and improving the quality of life*. It has a role in utilising its conceptual science base for the *betterment of society* and in helping to drive the innovations needs for a society's development, whether this is in the workplace, the home or in the interactions between members of the society. **Such innovation is a huge challenge for science and technology education**, as it heavily focuses on the breadth of educational innovation and not simply on information dissemination, of innovation in the sciences ideas themselves. Science and technology education is preparing individuals for innovation and to do this ***an innovative science and technology education*** is needed. But what are these innovations for science and technology education – whether these are in the area of research, policy or practice. **These are the challenges addressed by this conference!**

The first and perhaps foremost challenge comes with the *exponential growth in information*. Science education cannot keep up. It must not attempt to. Science education needs innovative ways for students (and adults) to *utilise information,* together with its explanations and applications. ***Science education must move away from information transmission***. A further challenge comes in gaining insights into the *nature of science* (and for this conference, the word science is confined to phenomena in the natural world). What is it that students should understand by the term 'science'? How do we *prepare policy makers* to recognise that science is tentative and not the truth, it is subjective in its interpretations and culturally embedded in its values?

For further information please contact Professor Miia Rannikmae (ICASE secretary) 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 Estonia*

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

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

## 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, 2006.** 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.

……
……..

## REGISTRATION

Registration fees

Active participants US$200

……

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

……..……

## 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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Ms. Handan HUANG
E-mail: gxnucsc@sohu.com
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
E-mail jack@ut.ee

**Past President**
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