International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE 2012

Welcome to the ICASE June 2012 Newsletter !

The ICASE Newsletter is a regularly distributed publication containing current information about topics of interest in the field of science education. The table of contents for this issue is located in the right hand column.

The International Council of Associations for Science Education (ICASE) was established in 1973 to extend and improve science education for chldren and young people throughout the world. Today, ICASE is a huge network of science education associations, institutions, foundations and companies, facilitating communication and cooperation at the regional and international level.

International Council of Associations for Science Education

http://www.icaseonline.net

To be included on the listserve for notification of future newsletters please follow the guidelines on www.icaseonline.net/news.html

Join the ICASE Community to receive the Newsletter

For information please visit our web page: http://www.icaseonline.net/news.html

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

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

Contents of Newsletter

Editorial;
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ICASE News

Jack Holbrook, ICASE Project & Secondary Journal

New ICASE publications

While the quarterly journal, Science Education International continues to flourish, this journal does not really cater for the classroom science teacher unless they are involved in undertaking higher degrees. It is with this in mind that ICASE is now wishing to launch new journals, one at the Primary level (grades 1-6; age 5-11/12) and the other Secondary (approximately grade 7 upwards) with both drawing on teacher professional development aspects and relating to both formal and informal education. This message is a 'call for interest' from anyone interested in being a contributor, a reviewer, or even on the Editorial Board. It is also to start discussion on the focus of these journals, initially for the one planned for the secondary level. What can an international journal do for teachers of science subjects in these times of a changing focus for science education? Whatever is put forward, will teachers look at it and maybe even read it ? Can it compete with the multitude of material on the internet ? Can it be a focus for change in the way teachers operate in the classroom? Perhaps a look at the article in this newsletter on a better way of approaching conferences for the Professional Development of Teachers – the article is actually entitled **Getting More Science Teachers to Model "Doing" Science**, or failing that a look at the **Safety in Science Education** article, one of a long running series in this newsletter, will provide some direction for the new journals. Certainly the intention is to focus on the classroom operationalisation of teaching within the field of science, to pay attention to meaningful, motivational, important, useful classroom activities. But it will need to be more than that – articles will need to provide evidence for the claims they make whether it is ' how students can have fun', provoking a 'sense of wonder', portraying meaningful science education, enhancing 21st centuiy skills, or simply being a suggestion for a good teaching approach or experimental situation. The launch of the new secondary level journal, covering all aspects of 'science' in an educational sense, is being planned for December 2012 or January 2013. Although it has yet to receive an official name (you are invited to make suggestions), ICASE is now interested in receiving manuscripts. Manuscripts need to be (at this stage) in English, although NO submission will be rejected on the grounds of 'poor English'. Diagrams, photos charts etc are very welcome and as the journhl will be online, open source, the use of colour is encouraged. By and large article should not exceed 10 pages (1.5 spaced, 12 point) and can be in the form of general articles, ideas and teaching/experimental notes as long as evidence of worth is included. Sent all materials, comments etc, in the first instance, to jack@ut.ee

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Poster displayed 17-19th May at a conference at the University of Dortmund, Germany

PROFILES

Professional Reflection Oriented Focus on Inquiry-based Learning and Education through Science

Networking among Science and Technology Teachers: Experiences from the Profiles Project in Turkey to reduce heterogeneity in inquiry based science teaching and learning

Jack Holbrook (ICASE-University of Tartu), Bulent Cavas, Yasemin Ozdem, Pınar Cavas (Dokuz Eylül University)

What is PROFILES?

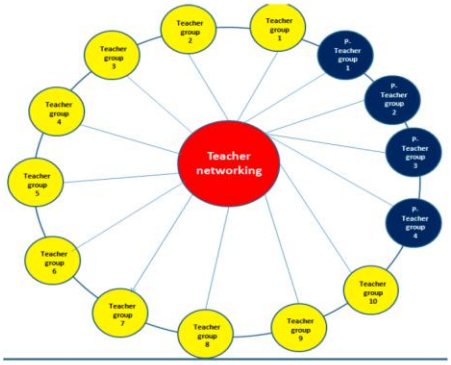
PROFILES is currently one of the largest European FP7 funded project in the field of "Science in Society." The consortium consists of 22 partners from 20 different countries. PROFILES promotes IBSE through raising the self-efficacy of science teachers to take ownership of more effective ways of teaching students, supported by stakeholders.
The proposal innovation is through working with teacher partnerships to implement existing, exemplary context-led, IBSE focused, science teaching materials enhanced by inspired, teacher relevant, training and intervention programs. This is undertaken by reflection, interactions and seeking to meaningfully raise teacher skills in developing creative, scientific problem-solving and socio-scientific decision-making abilities in students.

Dissemination of approaches, reactions, and reflections form a further key project target, making much use of the internet and other formats useful for sharing science teacher profiles in an interactive forum. PROFILES involves the development of teachers on four fronts (teacher as learner, teacher as effective teacher, teacher as reflective practitioner, teacher as leader) consolidating their ownership of society-led, IBSE approaches and incorporating use-inspired research, evaluative methods and stakeholder networking. The project disseminates its innovation with trained lead teachers spearheading further teacher development at pre- and in-service levels and initiating a series of workshops for key stakeholders nationwide.

The teachers prepared, improved and implemented their teaching and learning modules using IBSE principles. The teachers from different schools and the university worked together to create a module using a socio-scientific issue.

The preliminary results of the study show that the effective networking among the teachers led to increases in the conceptualisation and quality of the teaching and learning modules. It is also clear from the study that the networking improved science and technology teachers' self efficacy towards using the intended approaches in their classrooms.

http://www.profiles-project.eu



Networking among In service and pre service Science and Technology Teachers

The figure above shows the networking among in service & pre-service Science and Technology teachers in Turkey. The network consists of 40 full-time Science and Technology teachers with full-time classroom teaching responsibilities (yellow) and 24 Pre-service Science and Technology teachers (blue) with teaching practice responsibilities in the schools.

The networking included online meetings on the web, face to face meetings in the schools and faculty, social media communications (Facebook), e-mail communications and group works.

Best photos of PROFILES Teacher Workshop

Partner Countries

The PROFILES Project is funded by European Union Seventh Framework Programme Grant Agreement No: 266589

The ICASE World Conference Flyer

Musings

Getting More Science Teachers to Model "Doing" Science

Robert E Yager
University of Iowa

Why is there not more attention for getting all students (and teachers) actually "doing" science in every science classroom? The faulty assumption is that there is information thought to be accurate that all students must "Know" before really "Doing" science. Most science teachers continue to use typical science textbooks and lab directions in excess of 90% of the time! Yet 'Doing' science means urging all students to personally explore nature with attempts to explain the objects and events encountered. It also means exploring what others have done (and reported) as ways of evaluating their initial ideas as well. Science cannot be done in a vacuum! It takes "doing", "trying", "creative thinking", and "evidence gathering"! **Textbooks, laboratory manuals, and other quick fixes are all opposite examples of actually "doing science".** Most Professional Development efforts invite persons with current understandings of science to tell, share, and encourage others to remember and repeat relevant research results. This view of doing science is what characterizes presentations at conferences and also for most teacher Professional Development efforts which are typically designed to influence the science that is taught. There should be major efforts to produce students **who recognize and produce questions and then proceed to investigate them personally**. It is then, finally, important to establish their validity with actual evidence collected. Such actions would illustrate "doing science".

Could not Professional Development efforts (including reports at conferences) start with problems/questions by the attendees, followed by varied attempts to answer them? This could lead to a collection of multiple responses and encourage the sharing of such evidence in science classrooms? Could there be some focus on results from students as well as changes in teaching noted? These could occur after actual Professional Development sessions or experience with conference "presentations"? We need more than happy attendees; we need reporting of new approaches to teaching which can be tried out and evaluated after each Professional Development experience! Science is typically taught by sharing explanations and interpretations of others. These are then used to determine what is put in textbooks. Repeating this information is then used for evaluating student learning. Student ideas and involvement are not expected, nor are they welcomed. Science is too often like art or drama, where teachers admire and/or criticize the performances of their best students. Standardized tests too often require students only to repeat what has been presented or assigned by teachers. The information included in textbooks or directions for laboratories too often only focus on students remembering and/or duplicating performances with no use of questions, possible answers, real investigations, or interpretations. Such typical teaching does not consider how science can be done better and made a part of efforts illustrating real learning as an experience itself! Treating Professional Development efforts as science (i.e., questions about the objects and events in nature) should not only be a goal for reform teaching but an outcome of a real and personal experience with science.

SCIENCE AND TECHNOLOGY EDUCATION POST BASIC PROJECT (STEP-B)
[FEDERAL MINISTRY OF EDUCATION, ABUJA, NIGERIA]

Professor M. U. Adikwu, *FAS, FSTAN*
National Project Coordinator,

Science and Technology Education Post-Basic (STEP-B) Project, No. 245 Samuel Adesujo Ademulegun Street, 4th Floor Federal Ministry of Education Annex, Opposite Arewa Suites, Central Business District, Abuja, Federal Capital Territory, Nigeria

Background

The Federal Government of Nigeria, in pursuance of its desire to diversify sources of revenue, create more jobs and compete more favourably at the international market had invited the World Bank group in 2005 to conduct a study on the competitiveness of the Nigerian economy and the roles and contributions of science and technology to Nigeria's development particularly with respect to the non-oil sector.

The study established several disconnects notably between graduate output from the post basic educational institutions and the needs of the Nigerian private sector. In the same vein, the research outputs from the educational and research sub-sectors were also adjudged to be largely non responsive to the needs of the Nigerian productive sector.

The above conclusions set the pace for the negotiation of a USD180 million World Bank credit facility to implement a Science and Technology Education Post Basic (STEP-B) Project. The STEP-B project essentially aims at improving the quality, equitable access to, and relevance of science and technology education at the federal post-basic level so as to increase the country's competitiveness in a globalising world and to promote improved responsiveness of the post basic institutions to the needs of the labour market.

The Nigerian education system is subdivided into two main sectors-basic and post-basic sectors. The basic sector comprises the primary education and the junior secondary education levels. The post-basic level comprises the senior secondary to the tertiary education levels. The STEP-B funding is, therefore, limited to the senior secondary schools, the colleges of education, monotechnics, polytechnics, universities and research institutes. The aspect of this sector being focused upon is science education.

The Project Development Objective (PDO)

The Project Development Objective (PDO) of the STEP-B project is to support all institutions under the Nigerian federal post-basic education and research sub-sectors **to produce more and better qualified science & technology graduates, and higher quality and more relevant research.**

The project is designed to catalyze innovation and to encourage partnership between the eligible institutions on the one hand and the Nigerian private sector, professional associations and international academic & donor partners on the other. They key thrusts of the project more towards teacher professional development particularly technical education area. As a result support is being given to the University of Nigeria which has a highly developed Technical and Vocational Education and Training (TVET) Department to emerge as a centre of excellence for the training of technical teachers.

Akin to this is the funding of the National Board for Technical Education to develop a national Vocational Qualifications Framework (NVQF) for Nigeria. Funds have been given to the Nigerian Educational Research and Development Council (NERDC) towards curriculum renewal. Through the Project the Nigerian Commission for Colleges of Education (NCCE) has also developed Teachers Standards for the nation. Many Federal Government Secondary schools now use interactive boards for teaching as they have all received funds from the Project.

In the area of Information Communication Technology, the project is supporting what is commonly known as New Economic Skills for Africa Program- Information Communication Technology (NESAP-ICT). The NESAP-ICT program is an innovative program that was recently launched in the Africa Region of the World Bank to support efforts by African governments to develop skills in the area of Information Technology (IT) and IT Enabled Services (ITES). It is anticipated that the program will increase the effectiveness of IT investments, and catalyze the development of the IT/ITES industry in sub-Saharan Africa – an industry which has great potential for creation of new jobs with an impact on economic growth. The program will focus on the development of employable skills in the area of IT/ITES closely aligned to private sector needs and employment creation.

Nigeria needs to create an internationally benchmarked talent pool to be a viable player in the ITES industry. It was agreed with Nigerian stakeholders that it would be extremely beneficial if a mechanism is put in place for systematically assessing the quality of existing skills, in order to identify skill gaps and weaknesses. The assessment could form the basis for certifying skilled individuals, and taking up remedial training for those found to be wanting. Such training could be provided by accredited private sector training firms and supported through a scheme of matching grants. Government grants could supplement student contributions and re-imbursements by employers on hiring of employees. It is hoped that with NESAP-ICT program graduates 21st century skills will be made available to the market.

Project Design

(a) The project design involves competitive funding and wide-ranging systemic reform and it is too ambitious to be completed in the originally planned period of four years;
(b) The project requires extensive capacity building for a range of activities at institutions at different levels (from schools to research laboratories) spread throughout Nigeria;
(c) Component 2 – Centers of Excellence needed identification of national priorities in S&T followed by revision in grant proposal guidelines before grants could be disbursed; and
(d) Many Post-Basic Educational Institutions and the Federal Government of Nigeria are now developing strategies to ensure sustainability of the expected project gains. This is an aspect of Component 3 of the project that deals with sector-wide issues such as curriculum reform, educational management information system, teacher and laboratory standards, national vocational qualifications framework, labour market observatory, etc.

For effective coordinator the Project has collaboration with learned society groups such as the Science Teachers' Association of Nigeria (STAN) and regulatory bodies such as The Teachers'' Registration Council of Nigeria of Nigeria (TRCN). STEP-B has generously funded the bodies for various activities. STEP-B has collaborations with other global bodies both at the institutional and national levels and is sin search other bodies such as the ICASE that positively contribute to its initiatives. A body such as ICASE will certainly assist in African and international dissemination of developments and successes of the Project.

SAFE SCI: Be Protected!

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

KISS: Keep It Simple – Safety!

Classroom accidents can happen at any grade level. In fact the chances are greater in science classes involving hands-on activities using potentially hazardous equipment or materials. Planning for safety can be complicated and overwhelming, especially for elementary or primary level classroom teachers. Many, if not most elementary/primary teachers have little to no background or experience in science to begin with, never mind entertaining the safety piece. In fact, sometimes the whole hands-on piece is so overwhelming that it just turns off elementary/primary grade teachers to the point where they no longer want to do any activities!

It is a well-known fact that learning science by doing science is the road to successful understanding of science. Wouldn't it be nice to have a set of 10 basic safety "Do's" & "Don'ts" that could be available as a quick and simple safety reference for elementary/ primary level classroom teachers as a starting point? To address this need, the Safety Advisory Board of the National Science Teachers Association has recently developed just such a poster in PDF format titled "The Science Educator's Top 10 Safety "Do's" and "Don'ts"" The 10 basic tenets of this quick reference are as follows (columnist's comments have also been added!):

1. If it can splash in your face, you need to protect your space: Goggles On!
(Comment – Use indirectly vented chemical splash goggles (meeting ANSI Z87.1 standard) when dealing with any hazardous liquids. When dealing with potentially hazardous solids such as glassware, metre sticks, projectiles, etc., either safety glasses or goggles must be used, (again meeting the ANSI Z87.1 standard.)

1. Don't just stash your trash (rubbish)! What can cut you, can cut the person after you: put all sharp broken material in its proper disposal container—NOT in the trash!
(Comment – Make sure container is labelled appropriately! Also make sure any other chemicals are appropriately disposed of - not treated as general rubbish.)

2. If it can grow on you, it shouldn't be grown in the lab!
(Comment – Bacteria should not be secured, cultured, sampled, fixed, stained and viewed, especially at the elementary/primary grade levels. Only use commercially prepared slides of known bacteria. There are too many opportunities for exposure to hazardous type biological substances by surveying and culturing.)

3. Wash your hands, wash your hands, wash your hands!
(Comment – Hand washing with soap is a more effective way to clean your hands after handling biological, physical and chemical substances. Only use hand wipes if water and soap are not available. Repeated use of alcohol base hand wipes also dries out the skin, creating kinks in the "armour" and an open gateway for bacteria to cause infection.)

4. What burns can't learn: tie back that hair and use goggles, gloves, & aprons whenever working with flame and/or chemicals.
(Comment – Be extremely careful when working near combustibles or flammables. Select hot plates rather than alcohol lamps. Also remember hot glass and metal looks the same as cold glass and metal.)

5. See Johnny play with sharp tool without prior instruction on its safe use! See Johnny lose a piece of his anatomy! See Johnny's teacher get sued back to the Stone Age!
(Comment – Teachers have a legal responsibility and duty to warn, duty to model and duty to supervise when dealing with sharps and other hazards.)

6. Remember! The live animal or plant you just used for the "Ooh! Wow!" moment will still be around after you're done. Prepare in advance for its proper long-term care and/or responsible disposal.
(Comment – Be sure to select only animals and plants that are indigenous to your location. Also remember that some individuals are allergic to certain plants and animals. Always wash hands as noted in #4 tenet after working with plants or animals.)

7. A cluttered lab is an accident waiting to happen.
(Comment – Good housekeeping helps to prevent or reduce accidents – especially trip/fall and slip/fall hazards. Teachers should set the example for students by having an organized classroom with appropriate shelving, cabinets, etc. for storage.)

8. When in doubt, throw it out—into a biohazard safety bag for proper disposal!
(Comment – Bloodborne pathogens and Other Potentially Infectious Materials place students, teachers and other employees at risk. This is especially true if anyone has immune suppressed issues. Make sure regulated waste is appropriately disposed of in all instances.)

9. Just because you and children can think of it, doesn't mean any of you should try it: think that lesson through beforehand! PLAN AHEAD! PLAN AHEAD! PLAN AHEAD!
(Comment – Accidents cannot be totally prevented! However, by planning ahead it can be made a safer working/learning environment. Always do a dry run ahead of time on a science activity to try and get the kinks out of it.)

Final Thought!
Safety compliance can be a convoluted and intimidating road to go down if you are not familiar with the myriad of issues that need to be addressed when doing science. Sometimes it just makes sense to try to simplify the process initially and "grow" from there.

Internet Resource:
NSTA Science Safety Portal – 10 Safety Tips: http://www.nsta.org/pdfs/Top10SafetyTipsPoster.pdf
ICASE Safety Page – Laboratory Safety Guidelines
http://www.icaseonline.net/safety.html
Laboratory Safety Institute – Resources
http://www.labsafetyinstitute.org/Resources.html

Calendar of Events

Welcome to the World Conference on Physics Education

We are looking forward to seeing physics educators, teachers, researchers, and policy makers from around the world at this very first World Conference on Physics Education

Date: July 1-6, 2012

Venue: **Bahçeşehir Üniversitesi, İstanbul / Turkey**
Çırağan Caddesi, Osmanpaşa Mektebi Sokak, No: 4 - 6
34353 Beşiktaş, ISTANBUL, TURKEY

The conference was initiated by **Groupe International de Recherche sur l'Enseignement de la Physique (GIREP)** and the **International Commission on Physics Education (ICPE)** – Commission 14 of the **International Union for Pure and Applied Physics (IUPAP)**.

It is being sponsored by **GIREP**, **ICPE** and the **Multimedia in Physics Teaching and Learning (MPTL)** group and endorsed by **American Association of Physics Teachers (AAPT), Latin American Physics Education Network (LAPEN)** and the **Asian Physics Education Network (AsPEN).**

The vision for **2012 World Conference on Physics Education** is to follow a global participative process before, during and after the conference.

The Conference will be structured to help foster collaborations on physics education research and development which can transcend national boundaries.

The goal will be reached through working sessions which will develop actions plans that strengthen the teaching and learning of physics at all levels and in many countries.

The 2012 World Conference on Physics Education will be a concrete step forward in global cooperation.

Envisaged as a series of conferences with a four year periodicity, it would be a working conference with follow-up actions that presumably would carry over to the following conference.

IV Brazilian National Meeting of Biology Education

II Regional Meeting of Biology Education in Central Brazil

September 18-21st, 2012

Theme: Rethinking experience and new formative contexts to Biology Teaching

Thematic strings:

1. Teaching-learning processes in Science and Biology Education
2. Science and Biology Teacher Education
3. Development of strategies to teach biology
4. Non-formal education and PBS
5. History and Philosophy of Science
6. Public policies for Science Education
7. Relations among education, science and cultures

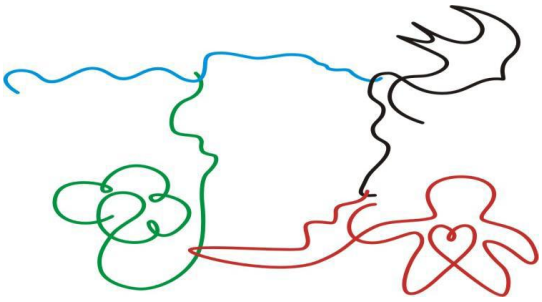
The Federal University of Goiás – Samambaia campus

Gioania,GO - Brazil

Deadline for papers: June 10, 2012

Info from: Brazilian Association for Biology Education

SBEnBio
Associação Brasileira
de Ensino de Biologia



V International Conference on Biology Education

Theme: knitting the lines of Biology Education in a emancipatory warp

October 11 – 13, 2012

Villa Giardino – Córdoba Argentina

More info on the url:

http://www.congresoadbia2012.com

for foreign information and payment please refer to: tesoreriacongreso2012@gmail.com

June 15th is the deadline to submit an oral presentation

info from: the Association of Biology Teachers of the Argentine

XV IOSTE INTERNATIONAL SYMPOSIUM

Yasmine Hammamet – Tunisia – 29 October – 3 November, 2012

We are pleased to invite you to participate in the XV IOSTE International Symposium on **Science & Technology Education for Development, Citizenship and Social Justice** to be held at Yasmine Hammamet (29 October – 3 November, 2012).

The conference is organized by EDIPS / ISEFC in cooperation with **UVT, DISEMEF, FSB, CENAFFE, ATDSVT, ATDM**, and other institutions and associations *(see below the meaning of these acronyms).*

IOSTE XV is an International Symposium for researchers to present research papers, workshops, posters and explore collaboration with other researchers in the fields of Education and Research. Our aim is to inspire and provoke meaningful discussions and debates.

IOSTE XV will include a diverse and comprehensive program covering a number of areas of science and technology education (teaching, learning, practice, development, innovations, evaluation,..). The program will also include a wide range of activities designed to facilitate the exchange of expertise, experience, and resources amongst researchers, educators and trainers.

The IOSTE XV will be held in **Yasmine Hammamet**, a city in the North-East part of Tunisia. The event will bring together scientists, technologists, teachers, trainers, education inspectors, policy makers and graduate students from across the globe to promote discussion of issues relating to the theme and sub-themes.

Early Registration Fees	**Late Registration Fees**	**Symposium dates**
Before July 31, 2012	After July 31, 2012	October 29 - November 3, 2012

SUBMISSION:
You can propose:
A single oral communication (a slot of 30 minutes, including 10 minutes of discussion)
Coordinated interventions during a slot of 90 minutes: mini-symposium or round-table, with authors coming from at least two countries
A poster, which will be visible during all the symposium; it will be orally presented and discussed during the posters' sessions

- Each participant can be first author for only one proposal (one oral communication, or round table / mini-symposium, or poster). He / she can be co-author of several other proposals.
- Each first author must present the communication (or the poster).
- **For each proposal, you have to choose one of the nine strands, and to submit an abstract and a 3 pages synopsis only, or an abstract plus the full paper**.
- Each proposal will be pair-reviewed. The proposal's originality, its relationship to the conference theme and the clarity of its objectives, organization and approach are factors considered in selection.

The form for abstract can be uploaded from http://www.inedp.org/ioste-XV and will be sent by email (iosteXV@gmail.com) or through the online submission system by March 1, 2012. **Please note that submissions must be made through the online submission system and by email at the same time.** (To facilitate file management, please use the following system to name your file: YourSurname_Country.doc or YourSurname_Country.docx or YourSurname_Country.rtf)
Accepted proposals will be included in the Symposium Proceedings, only after reception of the registration fees of the first author.
The deadline for the full paper submissions is July 1, 2012. It will be peer reviewed. The guideline for the presentation of the full papers is joined below.
For further details on the symposium, please visit our website: http://www.inedp.org/ioste-XV

I, on behalf of **IOSTE / EDIPS / DISEMEF / ISEFC / UVT** and cooperating partners, feel honored to be hosting the conference in Tunisia. We look forward to seeing you at the conference.
IOSTE *(International Organization for Science and Technology Education);* ***EDIPS*** *(Research Laboratory of education, didactics and psychology: Laboratoire de recherche en éducation,* didactique *et psychologie));* ***ISEFC*** *(Higher Institute of Education and Continuous Training*: *Institut Supérieur de l'Education et de la Formation Continue);* ***UVT*** *(University Virtual of Tunis: Université Virtuelle de Tunis);* ***DISEMEF*** *(Ecole doctorale "Didactiques, Sciences de l'enseignement, Métiers de l'Education et de la Formation");* ***FSB*** *(Faculty of Sciences, Bizerte) ;* ***CENAFFE (****Centre National de Formation des Formateurs en Éducation de* Tunisie*);* ***ATDSVT (****Association Tunisienne de Didactique des Sciences de la Vie et de la Terre);* ***ATDM*** *(Association Tunisienne de Didactique des Mathématiques).*
Kind regards,
*Mondher****ABROUGUI,***
Contact: *abrouguimondher@yahoo.fr*
EDIPS - ISEFC - University Virtual of Tunis Chair, Local XV IOSTE Symposium Organizing Committee
Website URL: *http://www.inedp.org* ***Direct URL:*** http://www.inedp.org/?conference=ioste-XV
Organizing Committee Email: iosteXV@gmail.com

The THEME: "Science & Technology Education for development, citizenship and social justice" is expressed through **9 Strands (S1 to S9):**

S1: **Education for Sustainable Development, Human Rights and Health**.
Suggested topics
- Education for all. - Citizenship education. - ESD (Education for Sustainable Development) / Environmental education.
- Health education/ health promotion/Sex education. - Ethics in STE

S2: Cultural, social and gender issues in STE
Suggested topics
- Gender issues. - Values and Ethics in STE. - International comparisons. - Student diversity and inclusive education.
- Political issues in STE. - Indigenous Knowledge and Intercultural Education. - Language problems / linguistic diversity
- Conceptions, science, justice and citizenship - Science, Technology and Society.

S3: STE and religion.
Suggested topics
- Nature of science, nature of religion. - Science education versus religious education
- Science and religion: strategies for learning and teaching, teachers training, curriculum design.
- Science and Belief: alternative conceptions. - Teaching religions or enrolling in a religion? Inside or outside school?

S4: ICT for equity and democracy in STE.
Suggested topics
- Digital divide. - ICT and e-learning in teacher development. - Smart school and ICT-based education.
- Distance learning and blended learning. - ICT learning and instructional design.
- Perspectives and educational programs beyond ICT

S5: Epistemology, History and Philosophy in STE.
Suggested topics
- History and epistemology in mathematics, fundamental and applied sciences
- History and Philosophy of Biomedical and Health Education. - Philosophy of Science: Modeling, complexity, prediction

S6: Socio-scientific issues in STE.
Suggested topics
- Socio-scientific issues and cognitive process in formal and nonformal learning - Using Socio-scientific issues for STE
- Education in science centres and museums - Positioning arguments and controversies in STE

S7: **Teacher training and teaching practices**
Suggested topics
- Teachers and trainers in science and technology: Policy, missions, training, roles, values and perspectives. - Teaching STE versus conception and competence - STE: Practices and didactic design

S8: Curricula, textbooks and media in STE
Suggested topics
- Critical analysis of official programs and textbooks. - Curriculum design and development in STE.
- Inter/intra / trans-disciplinary topics. - Science, Media and Society

S9: Evaluation in STE.
Suggested topics
- Assessment and ranking of schools and universities. - Assessment dealing with learning, training and citizenship education
- Competency assessment. - Social impact of assessment. - Theory and practice of Assessment, Evaluation, Testing and Measurement. - Evaluation of Educational Research. - Educational Assessment Policies and System Monitoring.
- International comparative evaluations (PISA, TIMMS, ROSE,…)

ICASE World Conference 2013

Following similar conferences in 2003, 2007 and 2010, the International Council of Associations of Science Education holds the next World Conference on Science and Technology Education

Sunday 29 September - Thursday 3 October, 2013.
in the Borneo Convention Centre, Kuching, Sarawak. See: http://www.icase2013.org/

The theme of the conference, ***'Live Science, Love Learning, Create Change'***, addresses contemporary issues of importance to Science Teacher Associations, Science Centres, science teacher educators as well as both students and teachers as we move into the second decade after the millennium.

"Live Science" – encourages ICASE member Science Teacher Associations and Science and Technology Education Centres to recognize that science is more than just a subject at school, to impact knowledge and skills adopted from yesterday's approaches. The promotion of science education as interdisciplinary learning is a vital step toward promoting students' acquisition of 21st Century skills not only for sustainable and responsibly citizenship but for a career in an increasing science and technology driven world society.

"Love Learning" – focusses on the role of the teacher, and hence considerations for Science Teacher Associations and Science and Technology Education Centres, not only to guide students to want to participate and acquire the knowledge and skills for tomorrow's society, but that students' own self-motivation is a necessary and key factor in embracing science education as a crucial component of learning.

"Create Change" - deals with the role of Science Teacher Associations, Science and Technology Education Centres as well as teachers themselves in using science education at every level as a way of shifting the mindset on meaningful sustainability, from merely 'talking about' best pedagogical practices to 'undertaking' them, creating a generational change in student attitudes and values towards science and school and the role of leanring through science lessons in shaping their future lives.

ICASE Executive Committee 2011-2013

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

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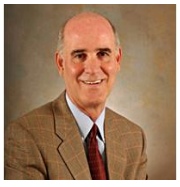

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