



International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JANUARY-FEBRUARY 2016

Welcome to the ICASE January – February 2016 Newsletter!

The ICASE Newsletter is a publication containing current information about ICASE, initiatives conducted by ICASE member organisations, and 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 by leadership at the United Nations Educational, Scientific and Cultural Organization (UNESCO) to link national science teacher associations and to extend and improve science education for children and young people throughout the world. Today, ICASE is a network of science teacher education associations, institutions, foundations and companies, working together to promote science and technology education internationally. ICASE facilitates communication and cooperation at national, regional, and international levels. The ICASE Strategic Plan (2013-2023) calls for ICASE member organisations to adopt a position of Excellence and Leadership in Science Education.



International Council of Associations for Science Education

<http://www.icaseonline.net>

Over the past 40+ years, more than 200 organizations have been members of ICASE. Currently, there are 57 organizations from 28 countries contributing to the financial administration of ICASE.

www.icaseonline.net/membership.html

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The ICASE Newsletter is distributed to Member Organisations and through them to their members



To be included on the listserve for notification of future newsletters please follow the guidelines at:
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>

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ICASE News

ICASE World STE Conference, Antalya, Turkey: 1-5 November 2016

MARK YOUR CALENDAR! REGISTER FOR THE EVENT! SUBMIT YOUR PRESENTATION!

The ICASE World STE Conference brings together policy makers, curriculum developers, scientists, science and university educators and researchers, science teacher association officers, and of course, primary and secondary science teachers. See <http://www.icas2016.org/> and page 12 of this newsletter for more details!



ICASE World STE Conferences brings together policy makers, curriculum developers, scientists, science and university educators and researchers, science teacher association officers and of course primary and secondary science teachers. The 2016 Theme, *Interdisciplinary Research Practices in Science and Technology Education*, will focus around the following strands.

- Strand 1: Science and Technology Teachers and STA Roles in Promoting 21st Century Skills
- Strand 2: Impacts of National and International Projects on Classroom Practices and Science Teachers' Experiences (such as from regional [European Union] or national [NSF] funded projects)
- Strand 3: Science Teaching and Learning: Teaching Resources Developed/Tested by Teachers
- Strand 4: Science Learning in Informal Contexts (such as in Science Centers and Museums)
- Strand 5: Curriculum Development, Evaluation, and Assessment
- Strand 6: Innovation & Entrepreneurship in Science and Technology Education
- Strand 7: Environmental Education
- Strand 8: Information and Communication Technologies in Science Education
- Strand 9: Cultural, Social and Gender Issues in Science Education

**Over 200 abstracts
have been submitted to present!
Join this large event!
Deadline to submit an abstract:**

- 1 April 2016 -

The ICASE General Assembly will be held prior to the 2016 World STE event in Antalya, Turkey. During the General Assembly, the governing body of ICASE (the representatives of ICASE member organisations - AS NOMINATED by ICASE member organisations) will be called upon to elect new Executive Committee officers.

Call for Nominations for ICASE Officers and Committee Members – SUBMIT YOUR INTEREST TO SERVE!

The ICASE Executive Committee consists of a Management Committee (President, President-Elect, Immediate Past President, Secretary, and Treasurer) responsible for the day-to-day administration and operation of the Council, working closely with Regional Representatives and Chairs of Standing Committees. During the upcoming World STE 2016 event in Turkey, new officers will be elected, new standing committees will be formed, and their respective committee members will be appointed. If you or someone you know would be interested in serving in a leadership role, please provide your contact information on the following webpage: <https://goo.gl/KdVXVf>

The current ICASE Executive Committee is listed on page 20. See page 3 for positions available!

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The ICASE Constitution - Description of position membership and specifies terms of service

<http://www.icaseonline.net/const.html>

ELECTIONS AND APPOINTMENTS

7.1 General Regulations

7.1.1. To be eligible for election to the Executive Committee a person must be a member of one of the Full Members of ICASE.

7.1.2. The cycle of President Elect, President and Immediate Past President shall be regarded as a single position which a person shall occupy for six years. The six term shall consist of two years as President Elect, three years as President and one year as Immediate Past President.

7.1.3. No person shall be able to stand for election to the cycle outlined in 7.1.2 immediately after completing a cycle.

7.1.4. Consecutive Presidents cannot come from the same Region.

7.1.5. Terms of office for all other positions on the Executive Committee shall be three years.

7.1.6. Except for the cycle outlined in 7.1.2, no person shall be able to stand for election for the position on the Executive Committee for more than two consecutive terms.

7.1.7. The period of office for members of the Executive Committee shall be the period from six months after a General Assembly until six months after the next General Assemblies except for:

- a) the position of President Elect, where the person will take office eighteen months after the General Assembly at which he/she is elected, and
- b) the position of Immediate Past President, where the person will complete their term of office eighteen months after the General Assembly at which a new President Elect is elected.



AVAILABLE POSITIONS ON THE ICASE MANAGEMENT COMMITTEE AND EXECUTIVE COMMITTEE

- **President Elect** (7.1.4. The European Region must wait until the 2019 elections to submit a candidate)
- **Secretary** (Second Term of current secretary ends; ineligible for re-election)
- **Treasurer** (Second Term of current secretary ends; ineligible for re-election)

Regional Representatives:

Regions up for election include: Africa; Australia/Pacific; Latin America; North America.

Standing Committee Chairs:

- International Projects
- Membership
- Pre-secondary & Informal Science Education
- Safety
- Science Centres
- Sustainability and Environmental Education
- University Liaison

**SUBMIT YOUR INTEREST TO SERVE
on the ICASE Management and / or
ICASE Executive Committee:**

<https://goo.gl/KdVXVf>

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ICASE MEMBER ORGANISATIONS

www.icasonline.net/membership.html

Over the past 40 years, over 200 organizations have been members of ICASE. A list is maintained on the ICASE website to recognize all organizations that have participated in ICASE since 1972. The Organizations currently contributing to the financial administration of ICASE, through paid membership fees (**57 organizations from 28 countries**), are denoted by ** following their name on the web list. ICASE thanks all Member Organizations for their participation, assistance and support.

ICASE invites national, sub-national and multi-national organisations interested in the promotion of science and technology education to join its worldwide network. Organisations eligible to join are STAs, Science Societies, Institutes, Universities (or University Departments/Faculties), Industries, Companies, Centres and Museums. These organisations may have a sole interest in science education (or in one of its sub-disciplines such as biology, chemistry, physics, Earth sciences, etc.) or have wider interests one of which is science education. According to the ICASE Constitution, requests for new members, whether full or associate, are approved by the ICASE Executive Committee.

ICASE provides opportunities for member organizations and their representatives to promote excellence and innovation in science teaching and learning for all through:

- connections to the members of other science organizations around the world;
- serving in international leadership positions on standing committees and research initiatives;
- disseminating information internationally to the members of international science organizations through the ICASE listserv and publications;
- publishing research articles in the peer-reviewed ICASE journal as well as in the ICASE newsletter; and
- attending and presenting at ICASE regional events and workshops.

In addition, ICASE member organizations and their representatives receive reduced conference registration fees for attendance at all ICASE World Conferences.

ICASE MEMBER ORGANIZATIONS AROUND THE WORLD by Region

<http://www.icasonline.net/link2.html>

Member organizations contributing to the financial administration of ICASE are from 28 countries: Australia, Brazil, China, Estonia, Finland, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Jamaica, South Korea, Lithuania, Malaysia, Malta, Mauritius, New Zealand, Nigeria, Philippines, Portugal, Singapore, South Africa, Thailand, Turkey, Uganda, the United Kingdom and the United States.

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Science Education International – The ICASE Journal

SEND YOUR MANUSCRIPTS FOR PEER REVIEW!

Science Education International is the quarterly journal of the International Council of Associations for Science Education (ICASE). ICASE was established in 1973 to extend and improve education in science for all children and youth by assisting member associations throughout the world. Science Education International is in its 26th year!

Our journal provides a means for associations, institutions, centres, foundations, companies, and individuals concerned with science education to share perspectives, concerns, ideas, and information that will foster cooperative efforts to improve science education, and serve as a chronicle of the advancement of science education throughout the world.

ICASE is particularly interested in receiving articles endorsed by its member organizations. All articles undergo a peer review process under the guidance of the SEI journal sub-committee. For more details and information on how to submit articles please see page 12 or visit the ICASE website - www.icaseonline.net/seiweb.

Volume 26, Issue 3 (September 2005) and Issue 4 (December 2015), are now online. Articles included:

- **Examining Curriculum Related Progress Using a Context-based Test Instrument: A Comparison of Estonian Grade 10 and 11 Students.** Authors: R Soobard & M. Rannikmäe (Estonia)
- **A SEM Model in Assessing the Effect of Convergent, Divergent and Logical Thinking on Students' Understanding of Chemical Phenomena.** Authors: D Stamovlasis, N. Kypraios, & G. Papageorgiou
- **Reconceptualising Science Education Practices from New Literacies Research.** Author: K.S. Tang
- **Cross-grade Comparison of Students' Conceptual Understanding with Lenses in Geometric Optics.** Author: G. Tural
- **Teachers' Awareness and Perceived Effectiveness of Instructional Activities in relation to the Allocation of Time in the Classroom.** Authors: S. Kaya, B.B. Akaydin, & D. Demir
- **Factors Impacting on Teachers' Job Satisfaction related to Science Teaching: A mixed Methods Study.** Authors: S. Song & M. Mustafa
- **A study of the Effect of Affective and Social Factors on Teaching for Conceptual Change in Primary Science.** Author: P. Pmthong
- **Environmental Literacy Comparison between Students taught in Eco-Schools and Ordinary Schools in the Madeira Island Region of Portugal.** Author: H. Spínola
- **The Need for an International Geoscience School Syllabus: Its Development and Publication.** Author: C. King
- **Comparing American and Chinese Students' Learning Progression on Carbon Cycling in Socio-Ecological systems.** Authors: J. Chen, & C.W. Anderson
- **How Contextualized Learning Settings Enhance Meaningful Nature of Science Understanding.** Authors: K. Bilican, J. Cakiroglu, & C. Oztekin
- **Effect of Programmed Instruction on Students' Attitude towards Structure of the Atom and the Periodic Table among Kenyan Secondary Schools.** Authors: M.J. Wangila, W. Martin, & M. Ronald
- **A Critical Review: Connecting Nature of Science and Argumentation.** Author: Y. Soysal
- **Effects of a Target-Task Problem-Solving Model on Senior Secondary School Students' Performance in Physics.** Authors: A.O. Olaniyan & E. O. Omosewo
- **Observations from Secondary School Classrooms in Trinidad and Tobago on Science Teachers' Use of Analogies** Authors: R. Maharaj-Sharma & A. Sharma
- **Research Trends in Science Education International: A Content Analysis for the Last Five Years (2011-2015).** Author: B. Cavas

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ICASE Executive Committee Member Highlight: Dr. Sue Dale Tunncliffe Awarded the NSTA Faraday Science Communicator Award



The **National Science Teacher's Association of the United States** teamed with the Discovery Channel in 2003 to create the annual **Faraday Science Communicator Award**.

Through this award, NSTA has honored individuals who are not classroom teachers but who work in or have developed a compatible setting for science communication—e.g., museum, nature center, zoo, state park, aquarium, radio, television, internet, and other science-rich institutions and/or media. The award is named in honor of Michael Faraday (1791–1867), an English chemist and physicist known for his pioneering experiments in electricity and magnetism. Through lectures and letters, Faraday led people of all ages to a greater understanding of the natural scientific laws that govern us all. The Faraday Science Communicator Award recognizes and rewards an individual or organization that has inspired and elevated the public's interest in and appreciation of science.

Please join ICASE in congratulating Dr. Sue Dale Tunncliffe as the 2016 Faraday Science Communicator Awardee. Lady Tunncliffe has inspired and elevated the public's interest in and appreciation of science in the UK, throughout the Commonwealth, and around the world for many years. She will be honored at the Awards Banquet during the NSTA National Conference on Science Education held in Nashville, Tennessee in April 2016 (see page 8 for more details); the awardee receives an all-expense-paid trip (up to \$2,500) to attend the Conference; all awardees will receive recognition in NSTA publications and will be given an opportunity to participate in a poster session during the conference.

A paradigm shift - The Changing Nature of Science Education- is Lifelong By Dr. Sue Dale Tunncliffe

There is a paradigm shift in the air. The Science education community is increasingly and vocally recognising (and also feeling threatened) by a number of factors. Firstly, by the realisation that the science taught in school, particularly secondary school, is not as relevant to future citizens as it might be and should be. Secondly, that in fact school is but a small part of science education in terms of the now very topical realisation that learning is life long. We also increasingly recognise that for many children in the world who do manage to attend school, a few years of primary/pre-secondary education is all they receive. Thirdly, the learners, be it pre-schooler, primary or secondary student adults, parents or others, have their own mental model and their own life experiences which they bring to any potential learning encounter. Hence, science education should be embracing this wider spectrum of learning opportunities and not be entirely focused on school based science. Albeit it is critical that the science education community provides optimum learning opportunities for their students. The historically named 'informal education' field is hence increasingly important, as is the use of such locations and venues for school initiated science education. Thus science educators need to understand this aspect of our craft in teaching training courses. At the present time we know that many school organised field trips are ineffective in developing science knowledge and a challenge to teacher educators is to assist their students on understanding the process of science out of school and in assisting students to gain a meaningful educational experience.

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Cont. A paradigm shift - The Changing Nature of Science Education- is Lifelong

However, we need to find out more about how people of all ages learn in various venues and contexts for science learning. We need to find out how learners- students or visitors- interact with the facilities in all these venues- conventional ones such as science and natural history museums, zoos, botanical gardens and field and science centres - as well as in less conventional places such as shopping malls and the street. Traditional science education could establish a knowledge base of how this subject can be accessed and presented in alternative science settings, conventional and unconventional, and then find out how visitors respond to these situations affectively and cognitively.

It is increasingly accepted that the pre school years are the most important in the formation of understanding and attitudes to the scientific aspects of the learner's everyday life (Developing scientific literacy) and more academic science. Furthermore that communities, parents, carers and peers are the first important teachers, hence we need to encourage this cadre of 'educators' along the lines of community and family involvement in identifying the science in their everyday activities. If parents talk about what their very young children do they are surprised and pleased to discover how much experiential science is taking place.

Furthermore, learning is a social phenomenon. Traditional science education in school has not considered the affective and social aspects of learning yet these areas are important in alternative science learning so traditional educators have an area in which they too need to rethink their position. Teachers need to be aware of the ways in which people construct dialogues which is often very different out of school. For instance, children at home initiate conversational exchanges, and teachers have a characteristic way of opening and closing an exchange, often referred to as triadic dialogue.

Home is also an important site for science learning and part of the life long learning impetus. This movement considers learning in a whole family using everyday materials as well as kits prepared for this task. In home science, the whole family has the opportunity to realise how much science there is around them and that they use, and therefore learn science that is related to the familiar. This approach particularly encourages girls and women to be involved and apply their already extensive everyday knowledge to a more formal framework of science where they find that they know a great deal. Thus, identifying existing everyday science raises scientific literacy in communities. Partnerships with home, the school and the community, develop links as well as extending the life long learning of the adults associated with the child in the widest sense, not just parents. Links



with the wider community are critical and essential in developing the science repertoire of a child. I urge the ICASE community to be alert to the changes that I have highlighted and to be seen to actively increase its brief to embrace these life long learning areas. In 1988 it acknowledge primary/pre secondary science, now it is time to go further!

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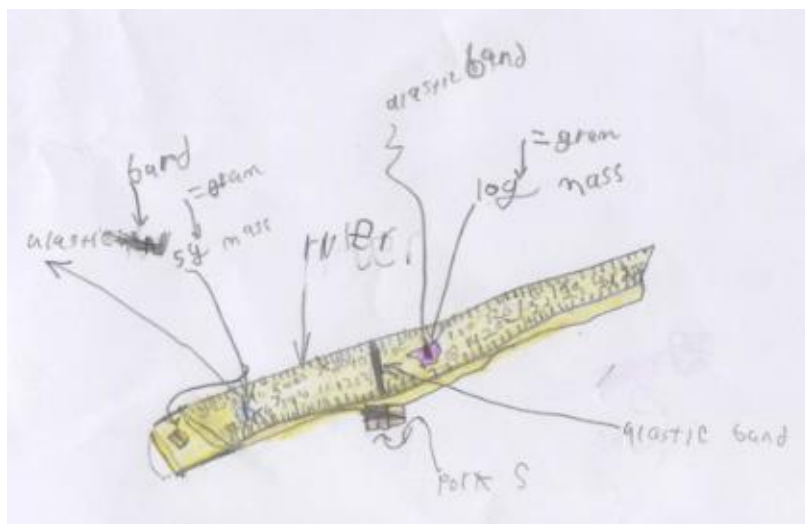
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Cont. A paradigm shift - The Changing Nature of Science Education- is Lifelong

Science is dependent on observations of phenomenon, which often gives rise to questions leading to investigations. Observations are particularly important in biological science. Observations are a key component of the processes of science and there is a definite emphasis the requirement of many countries for the skill of observations to be developed. . Many previous categorisations of pupil investigations have either been for the purposes of assessment or for teaching and learning Underlying much of these studies is the assumptions that have long been made about children's abilities to observe accurately and record their observations as a true record of what they have observed.

Observation is principally a matter of both carefully watching and noting. Indeed biology is essentially and observational rather than a doing science primary teachers have assumed that children observe naturally. We were particularly interested in whether children did observe carefully and accurately and whether their observations varied in terms of accuracy, as they grew older. However, primary pupils are expected to make accurate representations of objects as part of their art curriculum. Young schools children in England have been required to be taught the 'creative imaginative and practical skills to be able to record observations'. Early learners studying art are often expected to have opportunities to use and investigate, in a variety of scales, 2d and 3D media.

In the science learning facilitating pupils drawing from life is an important part of learning science and children should be helped to obtain evidence by making 'observations and measurements' and later recorded through annotated drawings First hand observations of animals and the recording of what is seen provide an opportunity to practice skills for both art and science. The drawing below was made by an 8 year old summarizing his investigation of how to lift a mass heavier than the mass that lifted it.



Dr. Sue Dale Tunnicliffe is a biologist, a researcher and a former primary and secondary teacher. Her interests include: children's acquisition of biological concepts, what they learn from everyday eg inside bodies, animals, plants, in museums, particularly with dioramas, zoos, gardens and 'around'; teaching/learning of first aid across curriculum; new life education including birth, child development; and comparative science (biology) education.



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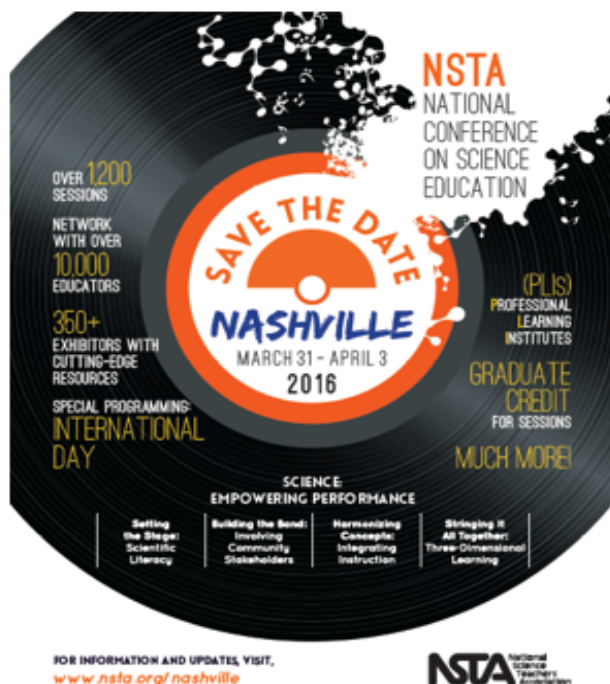


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National Science Teacher Association of the U.S. Annual Conference Nashville, Tennessee, USA 30 March – 3 April 2016



Wednesday, March 30, 2016

Morning Local school visits – (W-1 and W-2)

Ticket Price \$30; by preregistration only

Welcome to My Classroom is a program sponsored by the International Advisory Board intended primarily for our international participants to view a science or STEM classroom. This year's program is cosponsored by Hattie Cotton STEM Magnet Elementary School and Stratford STEM Magnet High School, both located in Nashville, Tennessee. Participants have the option of visiting the elementary school or the high school. The tour will have participants back in time for the Global Conversations Conference.

Global Conversations, Welcome to My Classroom: Elementary (W-1)

Participants will tour Hattie Cotton STEM Magnet Elementary School, which promotes high academic achievement and a positive school culture and climate. Time includes a visit to a classroom to see how students learn through exciting hands-on lessons and real work experience.

Global Conversations, Welcome to My Classroom: High School (W-2)

Participants will tour Stratford STEM Magnet High School, whose mission is to create postsecondary opportunities for all students to better prepare them to actively engage in STEM-related careers. Time includes a visit to a classroom to see how students learn through an inquiry-based and project-based STEM curriculum.

Afternoon Global Conversations Conference (M-1) – Registration Fee \$10; by preregistration only NSTA has planned an afternoon dedicated to sharing science education from an international perspective. This mini-conference begins and ends with plenary talks by distinguished international scholars and includes roundtable discussions on specific topics relevant to the international science educator community, a panel discussion, and poster presentations providing opportunities for networking and idea exchange.

Evening President's International Reception (Tentative) Open to all international visitors and invited guests

Access to the entire NSTA Conference

Thursday, March 31, 2016 – Sunday, April 3, 2016

For more information, please visit

www.nsta.org/international/

NSTA National Science Teachers Association
International Division

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ICASE Member Highlights – Northrop Grumman International Teacher Awardees

Congratulations to two very deserving teachers who won the 2015 NSTA - Northrop Grumman International Teacher Awards. **Mr. Doug Young, Vice President, Northrop Grumman Aerospace Systems**, welcomed the teachers to NSTA's Global Conversations conference. Both teachers, **Ms. Diana Tomazos (Australia)** and **Ms. Kulvinder Kaur Johal (UK)** provided detailed summaries of their experiences at NSTA's conference in Chicago, Illinois, USA. Excerpts are shared below.

Ms. Diana Tomazos, Schools of Isolated and Distance Education, Australia

As part of the scholarship's requirements it was essential to prepare a poster on the STEM activities I had been involved with in Western Australia therefore I shared a poster entitled "SIDE Western Australia enabling a Science education for everyone." I am a teacher with the Government of Western Australia, employed to work at the Schools of Isolated and Distance Education (SIDE). I am actively involved with the **Science Teachers' Association of Western Australia's (STAWA)**, therefore affiliated with **Australian Science Teachers Association (ASTA)** and **ICASE**. Re-engaging our students to have a passion to study STEM subjects is my key priority. I have made it my ambition in the workplace to encourage students to seek out their potential and forge on with their dreams especially encouraging them to not be frightened of the complexity and difficulty some of the sciences appear to entail. In order to cultivate a generation of thinkers and innovators, I feel there is a need to teach with the same style of pedagogies that will influence our students to become those creators and pioneers. It is very important for teachers to upskill their teaching methodologies and stay with-it, connected and evolve with the next generation.

This was a fantastic opportunity to network with other people across the globe and share their experiences of teaching in the classroom. My first day involved the session "Welcome to My Classroom". This involved visiting the Lincolnshire-Prairie View School District 103 Rivershire Nature Centre. We were exposed to the many programs that this Centre offers to stimulate student engagement. Their mission statement excites me. It is "To provide innovative learning experiences which empower each student to excel and make a difference in a diverse and interconnected world." Our next visit was to Adlai E Stevenson High School which was in District 125. This high School was ranked as the fifth-best high school in Illinois and 150th in the country by the SHS. Networking with ICASE and being involved in Global Conversations has fulfilled my life long aspiration to be involved in this sharing on a much larger scale than I ever imagined when first starting out in my career as a High School Teacher. I sincerely thank Northrop Grumman for supporting me in attending the NSTA conference and the one day 10th Annual Global Conversations event, as well as the NSTA and ICASE Committees for selecting me as the Australian candidate. I am now truly motivated to be more involved on the international level.

I can clearly visualise the Kaleidoscope of Activities occurring within the International Council of Associations for Science Education. I am going to suggest to the Australian Science Teachers Association (ASTA) that they have a similar ICASE Global Conversations day or part day, where international guests combine to present international panel sessions or symposia during CONASTA, the ASTA national conference. I will also put in a paper to the next CONASTA about my experiences with ICASE Global Conversations and my experiences with STEM teaching in the USA.



NSTA Workshop with Carolina Biological

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Cont. ICASE Member Highlights – Northrop Grumman International Teacher Awardees **Excerpts on Perceptions of attending an international conference By Kulvinder Kaur Johal, ASE**

On a cold and grey Chicago morning, we took our seats for the NSTA International Day. I was the very fortunate ASE colleague who was chosen to attend the National Science Teachers Association Conference (NSTA) in Chicago, USA. How lucky was I that NSTA had been offered sponsorship by Northrop Grumman. The International Day, began with a group of international colleagues travelling to a nature reserve to see how the three schools in the district use it to inform and push the curriculum on. Over the course of a pupil's school life, they will spend about 45 hours of learning there. This is something we in the UK are working towards with the emphasis on outdoor learning, engaging with nature and also the heavy biology focus of the new Science national curriculum.

During the Afternoon session, we were treated to presentations from as far afield as Mexico, Ireland and the UK. It was fascinating listening to practices in a range of countries and their similarities. We all face issues regarding how much technology should be allowed our classrooms. The International Conference ended with a poster session, where each International delegate displayed a poster of science learning or practice. We visited each poster to learn more and the hall was full of colour and talk.

The next day the conference began! It was a shock to the system and also to have a whole programme for each day, and when I mean programme, I mean a 60 page A4 programme. I believe that there were roughly 20-30 talks at the same time. It is the USA so everything is on a bigger scale. I was concerned that I may never come out of the exhibition hall in Chicago. I visited many booths including the booth of my sponsor, Northrop Grumman, who has built a newer/more advanced telescope which will be launching in 2018 with the help of ESA and UKSA. There were more science books which really seemed to jump out at me. They were colourful, easy to access and very readable. My suitcase was full of catalogues.

Overall I was surprised to see that there is a lot of literacy based learning going on, in terms of using literacy as a springboard for science. Away from the conference centre itself, there was an opportunity to book onto field trips to various places of scientific interest. I decided to visit Brookfield Zoo and meet the bears. To my amazement, even the zoo was set up differently to our zoos. The animals are organised into their respective habitats. So there are hoofed animals, birds, reptiles etc in each area. The South American animals are in one area, the Australian animals, European and so on. This made a great deal of sense really as it is best for the animals, a very simple and natural way of organising them. I found by first visit to the NSTA conference a very interesting one. Each morning, I came flying out of my room, knowing it was a 15-20 mins walk to the lecture room, tea cup in hand and off I went. Each session I attended made me think, wow.... I can write about this and we can do this. Then the next one....And the next one..... It was fascinating. Escalators going up and down, full of teachers carrying coffee cup to my tea cup, bags and badges in hand all off to the relevant lecture. The size of the place and the level of the organisation involved. Just breathe taking really. Thank you to Northrop Grumman and NSTA for making this possible! I learned so much and will be sharing with my colleagues for quite some time. Lots of great ideas and resources to share. I would highly recommend attending this conference!

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ICASE Member Organization Highlight: Governor's School STEM Awards in Western Australia by Dr. Elaine Horne

The first Governor's School STEM Awards for Western Australia were presented by the Governor, Her Excellency the Hon Kerry Sanderson AO, at Government House and announced at Future Science with four schools receiving awards from a group of 10 finalist schools. The purpose of the Governor's School STEM Awards is to acknowledge school leadership in STEM, encourage high participation levels in STEM education in schools, acknowledge excellence in STEM education and promote the importance of STEM education for the future prosperity of Western Australia.

Awards and citations

In all schools visited, the Panels were impressed by the priority given and level of activity in Science, Technology, Engineering and Mathematics (STEM) innovations and activities being undertaken. Leadership was evident at all levels and enthusiasm was contagious. In conversations with the students at these schools, it was evident that they had been inspired by their teachers, and were keen to explore their own investigations within their STEM subjects.

SECONDARY SCHOOLS

Award for Leadership Excellence was won by Newton Moore Senior High School

This school lives and breathes STEM. STEM is inculcated within their culture, educational and physical environment. Planning is extensive and across the learning areas comprising STEM. Teachers from science, technology, engineering and mathematics collaborate extensively and each knew and respected what was happening elsewhere in the school. Leadership, engagement and initiative are evident at all levels, from the Principal to the students. Teachers are actively re-learning their profession as new opportunities arise for improving outcomes for their students. In addition, the school actively attends to the full range of student abilities.

With a nurturing, inclusive approach to all students they have the opportunity to study more STEM by selecting courses in addition to the traditional science, mathematics and technology courses from Years 8 to 10. For example, students may choose Science Horizons, a biology-based program, or Engineering. In Science Horizons, for example, they were involved in aquaculture projects and breeding numerous types of fish. In Engineering, the teacher had learned about the discipline and his students were making a variety of robots with different functions, carving wood using a machine which they had programmed and students made recumbent bicycles. The school engages with the community by running a STEM Fair and inviting schools in the area to participate.

Award for Meritorious Leadership was won by John Curtin College of the Arts

This school provides an enriched environment for all students through their focus programs, including STEM. The teachers pursue research-based innovations and principles in their teaching, provide clubs and revision tutorials before school and at lunchtimes through the year and support other schools through a local network. Students work on an extensive range of classroom and extra-curricula STEM projects which provides them with the opportunity to explore their own ideas and present their research. Large numbers participate in state and national STEM competitions. The passion of their staff is reflected in the growing numbers of students attracted to STEM programs and their improved STEM learning outcomes.



Award for Leadership Excellence awarded to Newton Moore Senior High School by the Governor Her Excellency the Hon Kerry Sanderson AO.

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Cont. Governor's School STEM Awards in Western Australia

Other finalist secondary schools were:

Perth Modern School, Penrhos, Leeming SHS and Georgiana Molloy Anglican School.

PRIMARY SCHOOLS

Award for Leadership Excellence was won by Rosalie Primary School

The Principal and Deputy Principals encourage and authorise key teaching staff to develop their own skills and be creative in how they teach and inspire students. The leadership group has actively engaged with the wider community, particularly the local council, and nearby high school Perth Modern School.



Award for Leadership Excellence being awarded to Rosalie Primary School by the Governor Her Excellency the Hon Kerry Sanderson AO.

Award for Meritorious Leadership was won by Beaconsfield Primary School

Led by the principal, there is planning for the next 3-5 years to further develop the schools' STEM program. It has recently recruited a specialist teacher in technology, and has introduced coding and other technologies into the classroom. There is a strong emphasis on technology and STEM built into all areas.

Other finalist primary schools were: Lesmurdie Primary School and Armadale Primary School.

Process: The Science Teachers' Association of Western Australia (STAWA) and the Mathematics Association of Western Australia (MAWA) nominated schools for the 'first cut' of potential award winners based on participation and performance in STAWA's Science Talent Search and a range of science activities and MAWA's range of competitions and activities. Nominated schools were invited to submit extra data. David Wood, Life Member of STAWA and currently of the Catholic Education Office, consulted, coordinated and organized the Awards process. Two Panels were convened, with the high school panel comprising STAWA and MAWA life members, including Dr Pam Garnett, Dr Shelley Yeo, Dr Elaine Horne (Chair), Ms Sheila Byfield, Mr John Anderton and Dr Barry Bastow. The primary school panel comprised former Governor Dr Ken Michael (Chair), Dr Jack Bana from MAWA and Ms Fiona Roche from the Office of Science. These panels had discussions with the principal and/or deputy of the Finalist schools, curriculum leaders, a selection of teachers and groups of participating students.

The Awards were a great example of collaboration across all parts of the education sector, with STAWA, MAWA, the Western Australia Department of Education, the Association of Independent Schools of WA and the Catholic Education Office all working together with the Office of Science to recognise and applaud STEM education.

2016

The Governor has indicated her strong support for the Awards continuing in 2016. Schools can check the information for these on the STAWA website <http://stawa.net>. For further information, the Office of Science can also be contacted <https://www.dpc.wa.gov.au/science/>.

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ICASE Member Organization Highlight – CASTME



CASTME links science, technology and mathematics (STM) educators across the Commonwealth. It has a UK-based board of trustees, with regional branches or groups in Africa, Asia, and Europe.

We, The **Commonwealth Association of Science Technology and Maths Educators**, urge the Heads of Government to endorse the decision of the Education Ministers formulated in Nassau in June to recognise the importance of early learning pre school, in learner's communities and in primary schools, particularly in the development of STEM literacy. Such literacy is incrementally acquired from the earliest years and some time before formal schooling from parents, carers, and other family members and from their community. We urge that formal education recognise that attitudes to STEM are formed before the end of primary education and through observation, inquiry and hands-on activities in an everyday context, not factual recall, and that much money invested in secondary education does not yield expected improvement in take up of STEM. Investment in pre secondary and community STEM, public understanding, can increase understanding and that primary teachers urgently need such training. Concepts and skills need constructing from the initial learning of the youngest upwards.

The Commonwealth Association of Science, Technology and Mathematics Educators (CASTME) (CASTMEuk@gmail.com, www.castme.org.uk) was established in 1974 as an NGO recognized by the Commonwealth Secretariat. It now has members throughout the Commonwealth and has regional groups in Africa, Asia, the Caribbean and Europe. There is a country branch in Mauritius recently established. The European branch is based in Malta.

Essentially we are a network disseminating effective practice and ideas in STEM subjects in schools from, preschool to end of schooling but also out of school for example, field centers, museums. And also in promoting the vital role of women (or other family member or carers) as the first and most important teacher of a child and highlighting the role communities have in the foundation education of their members. Its aims are to share best practices in STEM and to demonstrate the relevance of STEM to local environments and to promote the relationship between science, technology and mathematics especially at all ages, both at schools and informal learning sites and with communities in a social and locally relevant context and to ensure that access to such learning is universally available. It has a network of regional meetings and papers at conferences CASTME, a newsletter and its website (under reorganization at present). See <http://castme.online/> and <http://bit.ly/CASTME>.

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**18th Annual Commonwealth Lecture held at the Queen Elizabeth II Conference Centre
by Margaret Lenton**

The annual February lecture was given by Irina Bokova the Director General of UNESCO with the theme of “Educating for inclusion, dialogue and peace.” She talked about the need for a quality education for all and gender equality. These aims are shared by the Commonwealth. They are so important not least in confronting extremism, which was seen as the major challenge to global society and this issue permeated the whole address. In Syria, 2.1 million are outside school as are 50% of the refugees. Education cannot wait and there is no stronger foundation for peace and security. Irina Bokova discussed the fact that the world is getting younger and it is a concern that so many young people are out of school or unemployed. The Crown Prince of Jordan had said there was a race to invest in the capabilities of youth. There are, in addition, other issues to be addressed such as forced marriage. Education could break the cycle of poverty and there was a need to promote life-long learning. Teacher Training was crucial. Important was critical thinking in what was a struggle for ‘hearts and minds’. Isis used new methods such as twitter to attract support and the Internet.

Irina spoke at length about the aim of gender equality which had yet to be realised. Girls were more likely to be excluded from Education although pioneer programmes were running Pakistan and Bangladesh. Australia and New Zealand were doing work in the Island States. The importance of technical, vocational and STEM education was stressed. Nelson Mandela said ‘education is the most powerful weapon to change the world’. Questions dwelt on the importance of adult education and illiteracy. Sadly 250 million people who had been through formal education could neither read nor write to an acceptable level. Quality education was essential and there should be a second chance of education at different stages. What was being said entirely accords with what CASTME stands for and intends to promote, particularly as our foci are **STEM subjects and in the UK working with mothers and young children to stress the importance of Science.**

Call to all ICASE Member Organizations:

Please send news from your regions to be included in the next ICASE Newsletter.

Share information about your upcoming professional development events so that other member organizations can plan to attend; provide outcomes of your annual meetings and training events to share the results of your efforts; and highlight the accomplishments of your members.

We look forward to receiving your news for the next ICASE newsletter!

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ICASE Member Organization Highlight – ASE ASSOCIATION FOR SCIENCE EDUCATION CONFERENCE Dr Declan Kennedy

The Association for Science Education (ASE) conference was held from 6th – 9th January 2016 at the University of Birmingham, England. Despite the cold and wet weather, the conference was attended by several thousand science teachers. ICASE was well represented and, as usual, we had our own stand in a very prominent position in the exhibition area. The ICASE stand was staffed by Dr Sue Dale Tunnicliffe, Dr Conor O'Brien (ISTA), Sudirman Sudirman (ISTA) and myself.



The team who staffed the ICASE stand at the ASE conference. Left to right: Dr Conor O'Brien, President, ISTA, Sudirman Sudirman, Dr Sue Dale Tunnicliffe and Dr Declan Kennedy (Left).
Dr Martin Braund, University of York, meeting Dr Conor O'Brien, ISTA at the ICASE Stands (Right).

Throughout the conference a steady stream of conference delegates visited the ICASE stand to learn about the work of ICASE and to receive information on the World Conference on Science and Technology Education to be held in Antalya, Turkey from 1st – 5th November 2016. A very positive response from delegates was received to the conference flyer produced by Prof. Bulent Cavas and his team. Many visitors to the ICASE stand commented on the very good value being offered to delegates attending the ICASE World STE2016 Conference. Full marks to Bulent and his team for the incredible good value of early bird registration for only 250 euros which includes access to all sessions, tea/coffee, lunches, dinners, welcome reception, excursion, conference bag and wifi access.

As well as highlighting the World Conference on Science and Technology Education, the ICASE stand also highlighted some of the work being done by ICASE. We displayed some of the posters summarising some modules developed by the ICASE teachers in Ireland who were involved in the PROFILES project. PROFILES stands for *Professional Reflection-Oriented Focus on Inquiry-based Learning and Education through Science*. This research project in which ICASE played a leading role was funded by the European Community's Seventh Framework Programme (FP7) of the European Commission. Whilst the project is now completed, ICASE is still actively involved in disseminating the resource materials prepared. The project involved a consortium of 21 partner institutions from 19 different countries and the entire project was coordinated by the Chemistry Education division of the Free University of Berlin.

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The PROFILES project aims at promoting inquiry-based Science Education (IBSE) by raising the self efficacy of teachers by means of an ongoing and long-term continuing professional development (CPD) programme. The project is targeted at second-level science teachers and particular attention is paid to student motivation for the learning of science in terms of intrinsic motivation (relevant and meaningful from the point of view of the students) and extrinsic motivation (teacher encouragement and reinforcement).

At the stand we introduced teachers to the various PROFILES modules developed by ICASE and explained how the CPD programme was carried out at the ICASE Science and Technology Education centre based at University College Cork. This centre is part of the Eureka Centre for Inquiry Based Science Education in the College of Science, Engineering and Food Science (SEFS) which was set up with funding from the government of Ireland as well as funding from the university's own resources and from the pharmaceutical industry in Ireland. Dr Conor O'Brien, President of the Irish Science Teachers' Association, and whose background is in the pharmaceutical helped to staff the ICASE stand to emphasise the importance of collaboration between industry and education.

Another great asset to the ICASE stand was Sudirman Sudirman a physics teacher from Indonesia who is undertaking a Masters degree in physics education in University College Cork (UCC). Sudirman had developed a teaching package on Medical Physics for use in secondary schools and is carrying out an investigation of the use of this Intervention Package to create an interest in physics among students in Indonesia and Ireland. Sudirman is working in the ICASE Science and Technology Centre in UCC and is a committee member of the Cork Branch of the Irish Science Teachers' Association. At the ICASE stand Sudirman used the opportunity to talk about his research work and the support he receives from ICASE and ISTA in carrying out this work.



Dr Rob Toplis visiting the ICASE stand and discussing the Sudirman the research work that Sudirman is carrying out at the ICASE Science and Technology Education Centre in University College Cork (Left).

Among the many visitors to the ICASE stand was Prof. Christine Anne Royce. Shippensburg University, Pennsylvania, USA (Right).

We gratefully acknowledge the assistance of ASE in providing the stand free of charge to ICASE.

The ICASE stand is an ideal opportunity for us to promote ICASE, to introduce teachers to some of the teaching resources that ICASE has created and to emphasise the important role the ICASE is playing in providing leadership and support to science teachers all over the world.

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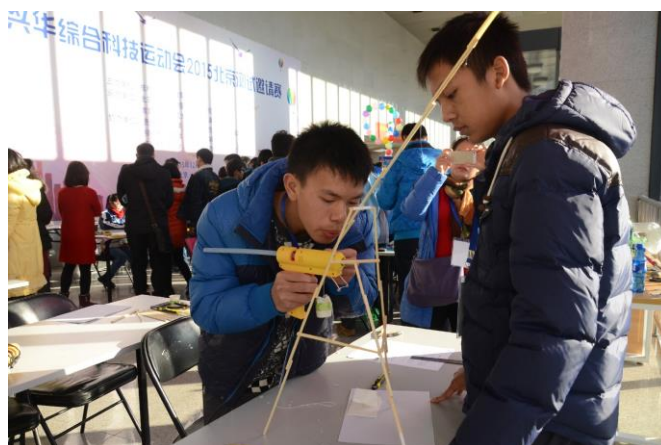
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ICASE Networking Around the World – ICASE Centres in China

Prof. Luo Xingkai at the ICASE Centre-Research Institute for Science Education (RISE) in Guangxi Normal University in Guilin, China, conducted a science teacher workshop led by Dr Janchai Yingprayoon in January 2016. Rise also lead the Xinghua Integrated Technology Games 2015 Beijing Test Tournament. For more information see <http://team.risechina.org/2015-12-07/4316.html>



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ICASE Networking Around the World – ICASE Centres in Indonesia

Dr. Janchai Yingprayoon, ICASE Chair of Science and Technology Education Centres, visited Medan, Indonesia, in December 2015 to provide the Keynote lecture of the Second Annual International Seminar on Trends in Science and Science Education.

Working with professors from the University of Bundung, Dr. Yingprayoon led discussions regarding the reactivation of ICASE research in Indonesia as well as establishing a new ICASE Centre in Bundung.

Research summaries will be presented at the ICASE World Science and Technology Conference in Antalya, Turkey: 1-5 November 2016.



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Upcoming ICASE National and Regional Events: May – July 2016 and Beyond!

CONSTAWA is the Science Teachers' Association of Western Australia's oldest Conference will hold their annual conference on 13-14 May 2016 at the Central Institute of Technology in East Perth. A curriculum assessment planning workshop and conference keynote will take place on Friday, 13 May. For more information see <http://stawa.net/events-2/constawa-2016/>.

ASERA, The Australian Science Education Research Association, will hold their 47th annual conference from 27 June - 1 July in Canberra. The event is hosted by the University of Canberra. For more information see <https://asera.org.au/2016-conference/>.

CONASTA is the annual National Science Education Conference of the Australian Science Teachers Association (ASTA) will take place from 3-6 July in Brisbane. More than 4,000 educators and institutions across Australia, and worldwide, have a voice in the future of science education, policy and practice through ASTA. CONASTA is convened each year in a different State or Territory of Australia. For more information see <http://asta.edu.au/conasta>.

The New Zealand Association of Science Educators (NZASE) will hold their biennial conference for New Zealand Science Educators in July. SCICON2016 for "Earth-shattering Science!" will take place in Wellington's beautiful Hutt Valley, the heartland of New Zealand Science. For details and deadlines see <http://nzase.org.nz/event/scicon-2016/>.

The 2016 International Conference of the East-Asian Association for Science Education will take place on 25-28 August 2016, at the Tokyo University of Science Kagurazaka campus in Tokyo, Japan. The conference theme is "Innovations in Science Education Research and Practice: Strengthening International Collaboration." The event will feature pre-workshops and SIG meetings beginning on Thursday, 25 August, followed by the 2-day meeting ending on Sunday, 28 August. Abstract submission starts on 15 January 2016 and registration will open on 1 March 2016. For more information see <http://ease2016tokyo.jp/>.

Mark your calendar for 2017: A Caribbean regional conference is currently in the planning stages to take place in Jamaica on 10-12 April 2017. This ICASE regional conference will focus on the Jamaican ministry's recent decision to introduce a new science curriculum based on the American (BSCS) developments on the 5E Instructional Model and other regional initiatives. For more details please contact Sadpha Bennett (email sadpha.bennett@moe.gov.jm).

Send us information about your upcoming events so that we can share your information with the ICASE network!

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ICASE Executive Committee 2014-2017

ICASE membership spans the world led by a Management Committee (President, President-Elect, Immediate Past President, Secretary, and Treasurer) responsible for the day-to-day administration and operation of the Council, working closely with Regional Representatives and Chairs of Standing Committees. Leadership terms for all officers are noted below.



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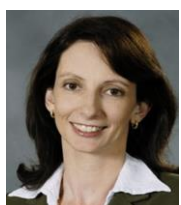
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