International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

January/February 2018

Welcome to the ICASE June/July 2017 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.

http://www.icaseonline.net

Over the past 40+ years, over 200 organizations have been members of ICASE. Currently, there are 32 organizations from 30 countries contributing to the financial administration of ICASE.
www.icaseonline.net/membership.html

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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ARK OF INQUIRY

INQUIRY ACTIVITIES FOR YOUTH OVER EUROPE

Ark of Inquiry: Inquiry Activities for Youth over Europe

The Ark of Inquiry project is a research and development project funded by the European Commission. Coordinated by the University of Tartu, 13 project partners from 12 countries aspired to attract more young people, between the ages of 7 and 18, to the STEM subjects (science, technology, engineering, and mathematics) through the application of Responsible Research and Innovation (RRI) and Inquiry-Based Science Education (IBSE).

The Ark of Inquiry project aims at raising youth awareness to RRI and, at the same time, building a scientifically literate and responsible society through IBSE practices. By doing so, the project has built capacity of youth to tackle societal challenges in the long term through empowering teachers to create conducive learning environments that foster mutual learning and equal participation of both genders in the STEM subjects.

To this end, the Ark of Inquiry project has endeavoured to provide comprehensive and detailed training to over 1100 teachers of STEM subjects on using the principles of RRI through inquiry learning methods. Here, authentic, challenging and higher-order learning experiences using tools and techniques, advocated by the project, facilitated the creation of a “new science classroom”; wherein pupils are encouraged to reflect, think critically, discuss and participate in scientific discourse and the inquiry process, i.e. scientific thinking.

The project approaches the end of its 4-year implementation in February 2018, by when a large community consisting of **1,100 trained teachers**, at least **100 science and teacher education students** and **50 staff members of science centres and museums, universities and research centres** across Europe will support over **23,000 pupils** in inquiry-based science educational activities.

The final conference of the project was successfully held at UNESCO headquarters in Paris, France, on 20 November 2017. The conference casted a broad spectrum of 80 participants: from teachers to policy-makers, researchers, EU projects coordinators, consortium members and pupils - all of which attended the conference as a testimony of the "EU-project community" speaking with one voice. The conference aimed to foster an interactive place of connection between all its 13 partners and a place of acknowledgments for each member participant.

The final conference gave a first-hand understanding on how inquiry learning, RRI and empowering girls in science directly ignite the passion of learning in the next generation of global citizens and how UNESCO is striving to stoke the fire for generations to come. The 3 main key findings of the Ark of Inquiry project are:

1. The right tools can better enable teachers to utilize inquiry-based learning with their pupils. To be able to tackle this head-on, teachers need to strive relentlessly to be abreast of new and innovative pedagogical strategies and subject knowledge. The Ark of Inquiry project has provided tools and techniques that allow teachers to identify learning needs in classes, design and tailor content to address these diverse learning needs and encourage participation in the classroom. The 'right' tools go a long way in promoting this sense of empowerment for teachers and in turn with their pupils. The Ark of Inquiry project identified several strategies that have yielded promising results:

- Following an inquiry model helps teachers structure classroom activities, while leaving room for flexibility when needed;
- Involving pupils in evaluation of inquiry activities better engages them in the inquiry learning process;
- Pedagogical scenarios help teachers maintain an active role as designers of inquiry learning activities;
- The use of an awards system is motivating for teachers and pupils alike and works best when integrated into existing contests and communities;
- Inquiry activities engage pupils and may help promote learning of 21st-century skills.

2.A supportive community can provide teachers with the training and resources needed to successfully use inquiry learning in the classroom. A supportive community enables the restructuring and reimagining of professional learning; it presents an opportunity for teachers to learn from one another in a cooperative and collaborative manner, taking turns being the learner and teacher. Within the Ark of Inquiry project, the trainings were designed to facilitate a strong sense of community by orienting teachers within a group context, first as "learners", then as "thinkers" and finally as "reflective practitioners". Based on qualitative and quantitative information, the following results attest to the important role played by a supportive community in enhancing teachers' expertise:

- Collaboration with different actors (researchers, parents, peers) helps promote RRI and inquiry learning in the classroom;
- Teachers need to experience inquiry learning themselves during teacher training in order to design and implement inquiry in the classroom;
- Whole-school training of teachers fosters collaboration and greater understanding of how to use inquiry learning in the classroom;
- Approaching teachers as designers of activities enables the flexibility needed to apply inquiry learning across different contexts and cultures.

3.Concepts like Responsible Research and Innovation (RRI) are effective in enriching the inquiry learning process. As the project sought to incorporate RRI in its activities, one of the major challenges identified was how to help teachers and science educators promote the development of RRI awareness among their pupils and thereby enrich the overall inquiry experience. To this end, the Ark of Inquiry project identified several strategies that have yielded promising results:

- RRI helps teachers translate important matters into their classroom materials;
- RRI provides a framework within which the research process, its ethical/social dimension and sustainability can be suitably discussed;
- The effectiveness of RRI is enhanced when teachers give responsibility for discussions and ownership of the inquiry learning process during its different stages;
- Adequate flexibility is needed in the classroom for an effective application of the RRI concept during inquiry learning lessons;
- RRI is an important tool for engaging girls in science;
- When discussion of RRI is promoted outside the classroom, it increases the staying power of inquiry learning;
- The RRI concept favours pupils' orientation towards scientific jobs and careers.

Link:
The Ark of inquiry project website:
http://www.arkofinquiry.eu/homepage

The Ark of inquiry project portal:
http://arkportal.ut.ee/

The Ark of inquiry project Tweets:
https://twitter.com/ArkofInquiry

The Ark of inquiry project Facebook:
https://www.facebook.com/ArkofInquiry

ASSOCIATION FOR SCIENCE EDUCATION CONFERENCE

By Dr. Declan Kennedy

The annual Association for Science Education (ASE) conference was held from 3rd – 6th January 2018 at the University of Liverpool, England. The conference was attended by several thousand science teachers from primary, secondary and tertiary level. ICASE was well represented and, as usual, we had our own stand in the exhibition area. The ICASE stand was staffed throughout the conference by Sue Dale Tunnicliffe, Jeff Jamias (ISTA) and Declan Kennedy. Full marks to Sue Dale Tunnicliffee for taking charge of the setting up of the stand each year at the ASE conference.

We were pleased that a steady stream of conference delegates visited the ICASE stand to learn about the work of ICASE. The ASE Conference is always a good opportunity for ICASE representatives to meet its members and to encourage other organisations to join ICASE. The membership information packs produced by Dr Teresa Kennedy were of enormous benefit to us in our efforts to promote membership of ICASE and, over the four days of the conference, our entire supply of promotional material was completely depleted.

The new ICASE banner designed by Bulent Cavas being unveiled by Sue Dale Tunnicliffe and Declan Kennedy at the ASE conference. (Photo: Jeff Jamias)

In previous years we were frequently asked about resources available to help teachers teach science in the classroom and in the school laboratory. Hence, this year we displayed some posters summarising the modules developed by the ICASE teachers in Ireland who were involved in the PROFILES project. PROFILES stand for Professional Reflection-Oriented Focus on Inquiry-based Learning and Education though 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. The key driving force behind the ICASE component of PROFILES was Jack Holbrook and full marks to him for all his hard work in ensuring that ICASE played such a prominent role in this project.

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 pharmachemical industry in Ireland.

The ICASE stand at the ASE Conference in Liverpool were (left to right) Declan Kennedy, Sue Dale Tunnicliffe and Bob Worley. (Photo: Jeff Jamias)

In addition to the PROFILES materials, Sue had a wide variety of primary and pre-primary science materials on display and these helped to attract many primary science teachers to the stand who discussed with us the state of primary science in their countries. The ASE conference was the first conference at which we displayed the new ICASE pull-up banner which was designed by Bulent Cavas. Many thanks to Sue for arranging the printing of this banner locally and to Mary Mullaghy, ICASE Hon Treasurer, for arranging payment for the manufacture of the banner.

The ICASE stand at the ASE conference is always an ideal opportunity for us to promote membership of ICASE, to introduce teachers to some of the teaching resources that ICASE has created, to carry out networking activities with other organisations involved in science education and to emphasise the important role that ICASE is playing in providing leadership and support to science teachers all over the world.

The Science Store
(Security & Audit)

By Bob Worley

Is security a safety issue? It is our opinion in the UK that it certainly is. The school has a duty of care to others and that includes not only the staff, teachers and other employees and of course the students **but thieves well**. The common-sense response would be it was the thieves' fault if they come to harm, breaking and entering and stealing from the premises. If the thieves ignite themselves, blow themselves up making explosives or poison themselves sniffing/ingesting the chemical, surely it is poetic justice. Well that is a point of law which may differ from country to country. In the UK, an investigation would be undertaken by the Health and Safety Executive and the owner would have to demonstrate that the building was as secure as it could possibly be. Also, the owner would need to demonstrate that the premises were well managed, clean and not overstocked to such a degree that it made the place an obvious target.

If you are going to carry out any science practical work you need to store chemicals, equipment paper, electrical equipment, and possibly as we do in the UK, very weak radioactive materials. Storing is often neglected and stores become a dumping ground. Teachers are notorious hoarders. "Hmm that could be useful sometime "is a statement I myself must resist, in the lab and at home.

The UK government became aware of school chemical stores (along with stores in hospitals and farms) in the run up to the Olympics in 2012, because the chemicals used to make illegal bombs can be sourced from school science stores including the chemicals used in the devastating attack on the London Underground in 2007.

We have also thefts ranging from students stealing mixtures to make fireworks or potassium and magnesium because it seems fun, to a well-planned burglary of secure stores in several schools to remove solvents (and they had inside information of them being recently delivered). There has recently been a rise in acid attacks in London recently. None of the chemicals have yet been traced back to a school which is a credit to our security at the present. If shops are prevented from selling corrosive chemicals, schools may next in line by thieves. I was once involved in a case where a member of staff lured a female student into the stores which contained bottles of chloroform (a chemical not now used in teaching but not removed because disposal is expensive). There was an attempt to anaesthetise the student. The stores were filthy, neglected a place to dump rubbish.

We also store very low-grade radioactive materials in our schools and the government is aware this material could be used in “dirty” bombs. We are now entering a huge phase of logging the radioactive material held in schools.

Equipment may not seem such an issue, but it is. The balance is very useful in the distribution of illegal drugs, lasers may be used as offensive weapons and there might be a nice selection of tools, including knives, scalpel blades and chisels.

If a school is deemed negligent in securing materials and pupils (as thieves), a parent might bring a civil action. So, there are a few simple rules to think about.

• School senior management should be aware of their responsibilities with regard to security. They can of course delegate the work of storing to staff, but management need to monitor the function.

• Each establishment should store its chemicals and equipment in securely (lock and key) and restrict access to a known number of people. They should not remain open for anyone to enter during the school day.

• School senior management should determine how this security managed. Is there someone who ensures security within the establishment when the school is on holiday?

• Each establishment should conduct an annual audit of chemicals and expensive/potentially dangerous equipment, keeping the same list in two different buildings (in case one building catches fire). This list is useful for any insurance claims as well. By doing this, the school managers can demonstrate their involvement.

For the school senior managers, this is not a glamourous side to their work. They want to show visitors their teachers guiding students produce excellent work. One would never take a visitor to the science stores to see the new radioactive cupboard!

For the teacher, conducting an audit is a boring task and needs to be carried out by at least two people. We are fortunate in the UK in that we have a fine body of technicians who undertake this work. I should imagine that this work would be low down on the “to do” list if only the teacher is responsible. There are so many other important tasks and commitments in just teaching. School managers should ensure there is time and a knowledgeable workforce for this to be done.

This is why the store descends into a dumping ground and neglected. This is what happens when nobody is concerned about storage. A new technician at a school on an island in Asia wrote to our organisation as follows.

"I thought it was about time to check the chem store, and was, shall we say, surprised to find about 12 x 1L bottles of conc nitric acid, stored with all sorts of other acids, underneath sulphuric and better still next to the same amount of ammonium hydroxide....

I also find it incredibly hard to believe there is no waste disposal company that will help - the small bit of information that I have forced out of the other techs, is that the company we use for the chem waste will not enter the school or deal with full bottles. Let's just say that the 2 other techs do not seem at all willing to help me, to take any responsibility and are trying to belittle me each time."

There are lots of safety and managerial issues in this plea for help. If there had been any attempt to conduct an annual audit, surely the excess ordering would have come to the fore. They now have on their premises, many bottles of a chemical used to make other very nasty chemicals and even as a weapon itself. They have wasted several hundred pounds buying these chemicals and if they solve their waste disposal issues, this could rise to over £1000 in disposal costs (small islands have a particular problem with chemical waste). The state of the stores is an obvious danger to those working in the store.

So in the interests of safety alone, Secure Your Stores.

NEWS FROM UNESCO

UNESCO Chair at York University in Toronto, Canada

United Nations Educational, Scientific and Cultural Organization

UNESCO Chair in Reorienting Teacher Education towards Sustainability (Toronto, Canada)

International Network of Teacher Education Institutions (INTEI)

Online education through mobile phone technology, especially for continuing professional development of in-service teachers, will help TEIs reach more teachers, especially those working and living in rural areas. The Secretariat would like to tap the collective wisdom of the teacher education institutions (TEI) related to online teacher education and ESD. If you or your TEI are active in education for sustainable development (ESD) and teacher education online, please notify Rosalyn McKeown, Secretariat to the International Network of Teacher Education Institutions (INTEI) (mail to: rosalynmckeown@hotmail.com).

Key Partner
UNESCO Global Action Programme on Education for Sustainable Development

Education 2030

UNESCO Chair on Reorienting Teacher Education to Address Sustainability

During 2017, the UNESCO Chair has strengthened its involvement in ESD in all fields of education to develop the most impact in these crucial first years of the Sustainable Development Goals. We have launched a number of new projects and activities. Please also follow us on Facebook for all activities of the UNESCO Chair www.facebook.com/hopkinsesd/.

While continuing to prioritize gender equality as a global priority and to supporting countries in Africa in all of its programmes, UNESCO is intending to mainstream specific interventions for youth, LDCs, SIDS, and marginalized social and ethnic groups, including Indigenous Peoples and local communities in all of its progamme where applicable.

The UNESCO Chair is currently building an international network in 40 countries working with Indigenous Peoples and ESD. Its first project is a major research on how to use ESD to improve the lives of the Indigenous. For INTEI members who would like to partner with this new network, please contact the Secretariat to the #IndigenousESD research network, Katrin Kohl (mail to: kkohl@edu.yorku.ca).

Other ongoing work of the UNESCO Chair is its involvement in the Global Network of Regional Centres of Expertise on ESD (RCEs). Please contact the RCE Service Centres if you would like advice on building an RCE in your area (mail to: rceservicecentre@unu.edu).

NGO liaison committee UNESCO
international conference

UNESCO NGO Liaison Committee

The UNESCO partnership with non-governmental organizations (NGOs) representing civil society constitutes a valuable cooperation network in the service of people for sustainable development, equity, international understanding and peace in UNESCO's fields of competence. The NGO-UNESCO Liaison Committee is currently planning its 10th Forum entitled "**Science Matters to All"** which is centered around the understanding that science is important to everyone, not just scientists. The event is scheduled to take place in Russia in July 2018. Representatives from all NGOs in official partnership with UNESCO are invited to attend. We hope that many ICASE representatives will choose to attend! More information will be available soon.

Fourth SDG-Education 2030 Steering Committee meeting

The SDG-Education 2030 Steering Committee is the global multi-stakeholder coordination mechanism for education in the 2030 Agenda. Its primary objective is to harmonize and strengthen support to Member States and their partners to achieve the education-related targets of the global agenda.

One of the key roles of the SDG-Education 2030 Steering Committee is to ensure the systematic alignment of approaches for education-related targets within the wider United Nations SDG structure. The Steering Committee engages with the wider United Nations SDG structure at global and regional levels. At the global level, it provides inputs for follow-up and review of the 2030 Agenda through United Nations processes, including the High-Level Political Forum.
When, local time: Wednesday, 28 February 2018 - 9:00am to Friday, 2 March 2018 - 6:00pm
Where: France, Paris

SCIENCE TEACHERS ASSOCIATION (FENÖDER) IN TURKEY

The science teachers in Turkey, came together and etablished Science Teachers Association (FENÖDER), on 22/03/2016. The Association was founded to support the provision of effective teaching-learning environment for the science or science teachers who work at Primary education institutions. We aim to support the teachers by organising workshops, courses, conferences, exhibitions, science festivals, science activities.

Science Teachers Association (FENÖDER) is organized several workshops on different dates.

Alternate energy workshops for Science Teachers- Association Office

Our Association has supported STEM & Makers Fest / Expo 2016 and 2. STEM Teacher's Conference with workshops and the broad participation of its members. Deputy Undersecretary of the Ministry of National Education Assoc. Dr. Mustafa Hilmi Çolakoğlu received information about the work of the Association of Science Teachers.

Photo: 3-4 September 2016 Hacettepe University, Beytepe Congress Center –ANKARA

We supported European Researchers' Night and World Environment Day activities. On 3rd December, 2016 7th National Science Teachers Sharing Meeting brougt all the science teachers and candidate teachers together in İzmir under the theme of "Share your Diversity". On 29 September, 2017, The "European Researchers Night Project" named "Combining Science Everywhere" held at Yaşar University. FENÖDER contributed by 4 workshops, 2 stands, 40 guiding teachers and different activities.

İZMİR-Karsiyaka District Directorate of National Education –In the theme of "Journey to the science with my family" TUBITAK 4007 Science fair,on12-13-14 October, 2017 our members gave voluntary support at workshops and stands.

Our Association gives seminars to teachers and parents about the new gains added to the 5th grade Curriculum. One day Mini Astronomy Teacher Seminar was introduced and lectured by Prof.Dr. Serdar EVREN, Prof.Dr.Zeynel TUNCA and Astrophotographer Kubilay AKDEMİR.

Our association conducted a STEM seminar with Ege University Faculty of Education for science teachers. 40 hours "STEM Seminars" given by Prof. Dr. Hülya YILMAZ and Graduate Student Merve SOLAK.

www.fenoder.org fenogretmenleridernegi@gmail.com

Bülent DAL (President of the Association) Erdoğan DEMİRCİ (vice president) Burcu KILIÇ (vice president)

The Keynote Speech at the 7th International Conference on Science and Mathematics Education (CoSMEd 2017) in Pengnan, Malaysia

By Prof. BaoHui Zhang

The Seventh International Conference on Science and Mathematics Education 2017 (CoSMEd 2017) was successfully held from 13 to 17 November 2017 in SEAMEO RECSAM, Penang, Malaysia. A total of 187 papers were presented in the form of keynote addresses, parallel sessions, symposia, poster presentations as well as conference workshops during the conference. The presentations were conducted relating to science education, mathematics education, information and communications technology, curriculum and assessment, professional development, education for sustainable development and STEM education during the conference.

Collective Photo of Conference Delegates

The theme for CoSMEd 2017 is 'Humanising STEM Education for Sustainable Development Goals in the 21st Century. CoSMEd 2017 was attended by 273 delegates from 15 countries (i.e. Bangladesh, Brunei Darussalam, Cambodia, China, Indonesia, Japan, Malaysia, Myanmar, Nigeria, Philippines, Singapore, Taiwan, Thailand, Uganda and Vietnam). The delegates were comprised of five conference speakers, 220 conference delegates, 18 academic staff from SEAMEO RECSAM, eight workshop facilitators and 22 guests. Prof. BaoHui Zhang, President-elect, International Council of Associations of Science Education (ICASE) and executive committee member of East Asia Association of Science Education (EASE), was invited to give a keynote speech at the conference. The title of his talk was "iMVT Science Leaning Model". The abstract of the talk was "iMVT stands for Modeling and Visualization Technology integrated inquiry-based Science Learning. It was invented based on learning sciences research projects in classroom in the US, Singapore and China. A model is a representation of a real thing/science phenomenon.

Prof. Zhang Gave A Keynote Talk

A model might have different parts/variables that are interrelated; one variable can affect other variables and might also be affected. A model as a whole highlights certain aspects of a system. Modeling is the process of designing, testing, revising/abandoning models. Because modeling is at the center of scientists' work, many countries promote modeling/computer-based modeling for science learning in order for K-12/college students to understand the concepts, processes and the nature of science."

Prof. BaoHui Zhang then gave a workshop as a follow-up hands-on session. The workshop introduced the speaker and his collaborators' efforts in developing and implementing iMVT curricula in elementary science, high school chemistry, physics, biology, geology and the like in the US, Singapore and China. The speaker called for more research in using modeling and visualization technologies in science learning. Furthermore, science educators should produce more large-scale projects that not only introduce iMVT model, but to sustain and scale up the efforts. Both the keynote talk and the workshop were well-attended and received positive responses according to the conference organizer's post-survey.

Prof. Zhang Organized A Workshop

About CoSMED

CoSMED is the acronym for International Conference on Science and Mathematics Education. The seventh (7th) biennial international conference to be held in SEAMEO RECSAM, Penang, Malaysia. The first CoSMEd was initiated in 2005 and four more conferences in the CoSMEd series have been successfully held in 2007, 2009, 2011, 2013 and 2015.

Search for SEAMEO Young Scientists (SSYS): 10th Regional Congress

The Search for SEAMEO Young Scientists (SSYS) 2018 was held in Penang – Malaysia between 26 Feb – 3 March 2018.

The photo above show organizers, judges, young scientists, teachers and media representatives in front of RECSAM building.

The main aim of the SSYS 2018 is to create a platform for young scientists all over the ASEAN region as a venue for sharing and dissemination of information on their scientific and mathematical research projects. It was initiated in 1997 and since then, has been held every two years with a specific theme. SSYS aims to encourage young learners to apply scientific and mathematical knowledge into technological problem-solving activities to address sustainable development. It plays a strong role in encouraging and involving young learners in projects which will generate much interest in science and mathematics.

ICASE President, Prof.Dr. Bulent Cavas contributed to SSYS 2018 as judge for science congress. More than 32 science excellent science projects were presented by young scientists came from eleven SEAMEO countries.

More information can be found on the http://www.recsam.edu.my/joomla/index.php/courses/ssys

International Council of Associations for Science Education

Annual Membership Updates

It's time to renew your organizational ICASE member fees! Membership fees are due January 1st each year and three year options are available at a reduced rate! Membership renewal is easy and can be done totally online on the ICASE Website at: http://www.icaseonline.net/membership.html and a receipt will be sent to you. If your organization needs to receive an invoice please notify us to request an invoice.

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;
- opportunities to serve in ICASE international leadership positions on standing committees and in international research initiatives;
- communication venues to disseminate information internationally to the members of international science organizations through the ICASE listserv, newsletter and peer-reviewed ICASE journal;
- collaborative funding opportunities to promote science education at regional levels; and
- organization of ICASE World Conferences, regional events, and workshops providing opportunities for professional development and networking.

How are your membership fees put in to use?

In February 2017, the ICASE Executive Committee approved a new a new policy on financial support of regional activities. Approval for funding will be considered based on a written submission (request for funding support) to the ICASE secretary, which clearly indicates how the activity meets the following criteria. All financial support for activities will be approved by the ICASE management committee, in consultation with the Executive Committee, and is subject to funds (generated by ICASE membership fees) being available.

1. The applicant organisation must be a current financial member of ICASE.
2. The activity must promote science education at a regional level.
3. The applicant organisation should provide a description of the activity and the potential benefits (including the extent of benefits - number of beneficiaries, and how it meets the short term and long term goals of promoting science education in that region).
4. ICASE must be acknowledged as a sponsor on all publicity material including the website advertising the initiative. The ICASE logo must be displayed on all materials associated with the funding.
5. Funding requests will be accepted for the following range: $500 - $2,000. These funds are intended to cover special initiatives associated with activities occurring in benefit of each region.

6. The applicant organisation must provide a budget for the activity including other sources of funding.
7. The applicant organisation must have an institutional bank account for the transfer of funds.
8. The applicant organisation must nominate a person in their organisation who will take responsibility for the activity, all expenditures and reporting (in writing) at the subsequent World Conference.

The report may be presented via video conferencing if the organization is unable to fund a member to attend an ICASE World Conference. Please note that the ICASE Management Committee reserves the right to approve funding for second and subsequent applications, from the same region within a three-year period, even when the application may come from a different organisation.

BECOMING A MEMBER ORGANISATION

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.

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- communication venues to disseminate information internationally to the members of international science organizations through the ICASE listserv, newsletter and peer-reviewed ICASE journal;
- collaborative funding opportunities to promote science education at regional levels; and
- organization of ICASE World Conferences, regional events, and workshops providing opportunities for professional development and networking.

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

http://www.icaseonline.net/membership.html

13th Annual Cambodia STEM Festival

On 29th to 30th April, 2017, STEM Education Organization for Cambodia, in partnership with STEAM Cambodia, hosted the 13th Annual Cambodia STEM Festival in cooperation with the Cambodian Ministry of Education, Youth and Sport and UNESCO Office in Phnom Penh. Our mission is to re-invigorate the interest of Cambodia's youth in science, technology, engineering and mathematics (STEM) by producing and presenting the most compelling, exciting, educational and entertaining science festival in Cambodia.

This two-day event attracted more than 11,500 visitors including 4,000 students from primary and secondary schools from Phnom Penh and provinces around Cambodia. A highlight was a visit by Dr Sheikh Muszaphar Shukor, a Malaysian astronaut, who shared his experiences with an open-to-the-public presentation. Visitors were also invited to listen to several STEM-related talks from Cambodian and international speakers including Professor Dr. Manabu Sumida, ICASE regional representative for Asia, who spoke on 'Emerging Trends in Japan in STEAM Education for the Gifted'. With free entry, this event brought science and society together in a fun, dynamic environment. Over 600 students created projects in STEM subjects including mathematics, physics, chemistry, IT and biology. These projects provided an opportunity for enthusiastic STEM students to spread their knowledge and joy in this field. With presentations in both Khmer and English, visitors learned about STEM topics through engaging activities. There were also entertaining 'Science On Stage' (SOS) demonstrations from university students, along with activities for kindergarten students. The schedule also included STEM talks from invited academics who spoke about their area of interest including Engineering, Biology, Maths, Entrepreneurship and STEM education.

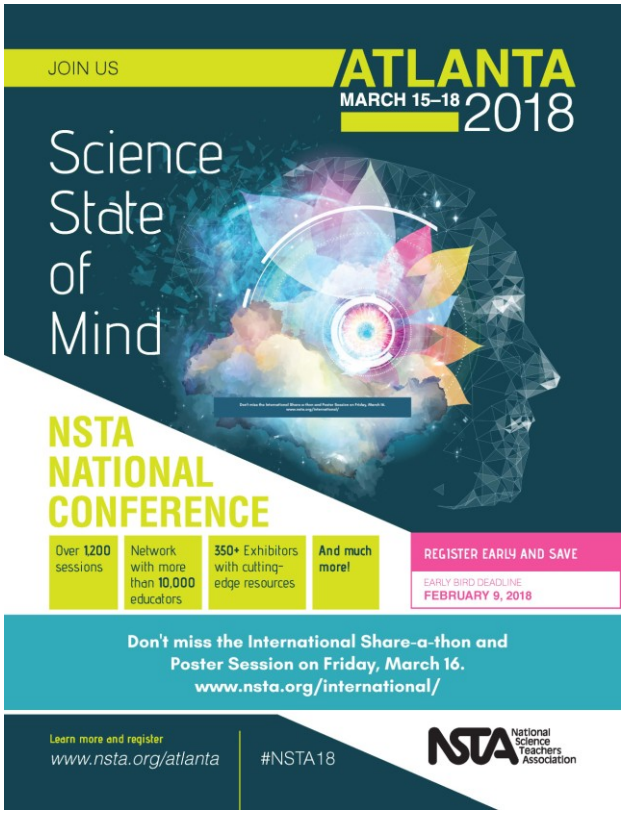
The event received significant media coverage with live broadcasts on national TV and daily news bulletins. It was encouraging to witness a high level of female involvement in the STEM projects as we are strong advocates of the importance of the equality of boys and girls in the STEM field. We hope that events like this festival will help girls realise their potential in STEM careers and stand shoulder-to shoulder with their male counterparts.

The success of this festival is with thanks to 28 sponsors and 13 partners who understand the importance of investing in STEM education. The festival brings together schools, universities, companies and government in a dynamic, enjoyable environment in order to inspire the future generation of innovative entrepreneurs. We are proud to support, and to witness, the growth of STEM education in Cambodia and look forward to the positive effects this will have on the future of the Cambodian economy.

The 14th Annual Cambodia STEM Festival is due to take place in Phnom Penh on 30th November and 1st December 2018. Please visit our website for more details: http://www.stemcambodia.org/

UPCOMING EVENTS

National Conference in Atlanta: Science on My Mind



Save the date—NSTA is holding its 2018 national conference in Atlanta, Georgia, in March 2018.

The conference will begin with concurrent sessions on Thursday, March 15, at 8:00 AM and end on Sunday, March 18, at 12 Noon.

NSTA conferences offer the latest in science content, teaching strategy, and research to enhance and expand your professional growth. Take advantage of this unique opportunity to collaborate with science education leaders and your peers. Each year, NSTA hosts a national conference on science education (in the spring), three area conferences (in the fall), and a STEM Forum & Expo.

ESERA Summer School 2018

The 15th ESERA Summer School 2018 in Jyväskylä, Finland June 25th to July 1st

The 15th ESERA Summer School will be held in the city of Jyväskylä, Finland from June 25th to July 1st, 2018. The summer school sessions take place in the Ruusupuisto building at the University of Jyväskylä.

The academic programme of the ESERA Summer School 2018 will take place during June 26th to June 30th. The programme includes small group sessions, plenary lectures and workshops. Breakfasts, lunches, dinners and social program will also be included.

ASE Scotland Annual Conference 2018 - Edinburgh

The ASE Scotland Annual Conference is a festival of best practice in science education for everyone with an interest- teachers, technicians, lecturers, trainees, advisors, CPD suppliers and more. Discounts are available for ASE members.

In addition to supporting teaching in biology, chemistry and physics, the conference will explore primary science and careers in STEM. There will also be a full exhibition of support and resources for science education at this conference.

Date : Saturday 3rd March 2017, 09.00am - 17.00pm
Location : Currie Community High School, 31 Dolphin Avenue, Currie, EH14 5RD

ASE Annual Conference 2019 - University of Birmingham

Europe's Largest Science Education Conference.

The ASE Annual Conference attracts science educators from across the UK and beyond to share good practice, research and practical ideas for the classroom. The conference also hosts an exhibition with over 100 other organisations, all focused on great STEM education.

The deadline for submissions will be 5 June 2018. There will be fuller coverage of the Conference in the February issue of ASE's members' magazine, EiS.

World STEM Education Conference

Istanbul Aydın University (IAU) and The International Council of Associations for Science Education (ICASE) organize the World Science Technology Engineering and Mathematics (STEM) Education Conference in order to bring all stakeholders together (universities, research institutions, civil society organizations, SMEs, public bodies, science centers etc.) to promote STEM education around the world.

Organized by

Istanbul Aydın University (IAU)

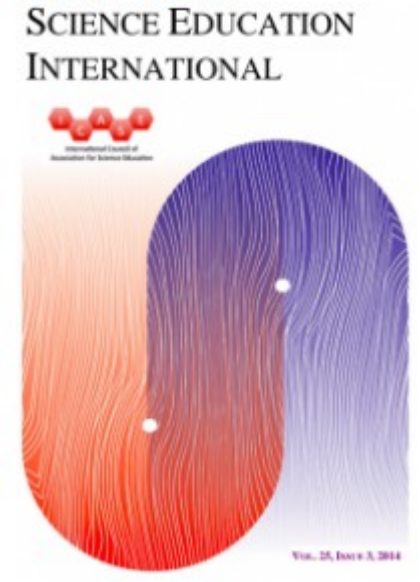
The International Council of Associations for Science Education (ICASE)

The term "STEM education" refers to the teaching and learning associated with the disciplines of science, technology, engineering, and mathematics, and typically includes educational activities across all grade levels and in both formal and informal classroom settings. The integration of STEM disciplines aims to develop the "four C's" of the 21st century skills: creativity, critical thinking, collaboration and communication. The primarily goal of STEM education is to prepare students for their future lives and careers, and to create problem solvers that are prepared to engage in design and production. Therefore, its culture of inquiry leads to important contributions to the country's economic developments since students will be better prepared to use high-level critical thinking skills in innovative ways.

Educationally speaking, STEM is curriculum-based and incorporates an interdisciplinary approach to educating students in all four specific disciplines: science, technology, engineering and mathematics. Instead of teaching these four disciplines as separate and discrete subjects, STEM integrates these four disciplines into an active and inquiry-based learning paradigm based on socio-scientific issues.

Conference Committee expect to receive contribution from STEM stakeholders in different capacities and wish all participants a wonderful, rewarding and successful conference.

Selected papers will be published in the



The theme of the World STEM Education Conference: Interdisciplinary Practices in STEM Education

- STEM Teaching and Learning
- STEM Learning in Informal Contexts
- STEM in Teacher Training Programmes
- STEM in Teachers' Professional Development
- STEM in Teachers' Reflective Practice
- STEM in Curriculum, Evaluation, and Assessment
- STEM in Gender Issues
- STEM in Cultural and Social Studies
- STEM in Instructional Technology
- STEM in Environmental Education
- STEM Policy
- STEM Funded Projects (NSF, European Union, National Agencies, Erasmus Plus etc)
- Innovation & Entrepreneurship in STEM Education
- Other issues related to STEM Education

Registration Fees

	Early Bird (Before march 31, 2018)	Late registration (After April 1, 2018)
Delegate	200 Euro	250 Euro
Accompanied person	50 Euro	100 Euro

Deadline for Paper Abstract Submission: May 15, 2018

http://www.worldstemed.org/

ICASE Journal - Science Education International

The ICASE quarterly journal is now about to enter its 26th year. From humble beginnings in 1990 when it was created to serve as the dissemination channel for ICASE, the journal has now grown to be a major English language international science education journal, receiving articles from science educators around the world. Thanks to its team of volunteers, the journal follows a strict review process to ensure the research and philosophical articles meet the ICASE criteria as relating to primary or secondary science education, or to pre-service teacher education at the tertiary level. Since 2008, the journal is available as open access, online only, although limited copies of occasional issues are published and distributed to interested science educators.

THE ICASE JOURNAL IS A MAJOR DISSEMINATION CHANNEL FOR ICASE MEMBER ORGANISATIONS AND THEIR MEMBERS. AS SUCH, ICASE GIVES PRIORITY TO ARTICLES SUBMITTED VIA ICASE MEMBER ORGANISATIONS AND IS VERY WILLING TO ASSIST MEMBER ORGANISATIONS IN PREPARING ARTICLES FOR THE JOURNAL (especially with respect to written English).

A major attraction of SEI is that there is no payment for those wishing to publish in the journal. And ICASE welcomes submissions by teachers, higher degree students or science educators in general from around the world. ICASE will do its best to assist authors whose native language is not English.

Before making a submission, please consult the Author's Manual for SEI located at www.icaseonline.net/seiweb for information related to the following topics:

(a) Copyright	(b) Plagiarism	(c) Language
(d) Material submission	(e) Formatting	(f) Artwork & Photos
(g) The Review Process	(h) Non-native English authors	

And we very much appreciate referencing articles previously published in SEI in your submissions.

ICASE also welcomes new reviewers. If you are interested please contact Dr. Steven Sexton, steven.sexton@otago.ac.nz

Please refer to www.icaseonline.net/seiweb for the full articles.

Science Education International is now indexed in

- AE Global Index Master Journals List 2015
  http://aeglobalindex.com/?page_id=264
- European Reference Index for the Humanities and Social Sciences (ERIH Plus)
  https://dbh.nsd.uib.no/publiseringskanaler/erihplus/periodical/info.action?id=480336

In addition to 6 international indexes, including ERIC, The Asian Education Index, Education Research Complete Database, Index Copernicus Journals Master List, DOAJ Directory of Open Access Journals, and The Education Research Global Observatory.

Science Education International, Official Journal of ICASE

Editor
Dr. Steven Sexton
College of Education, University of Otago, New Zealand

Science Education International (SEI) is the journal of the International Council of Associations for Science Education (ICASE). As such, this 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 which will serve as a chronicle of the advancement of science education throughout the world. SEI accepts articles focussed on all areas and levels of science education from early childhood through tertiary education and seeks to represent the worldwide community of science education.

SEI is published quarterly each year: March, June, September, and December.

In late 2017, the journal redeveloped the publication layout and now publishes a journal in which the layout reflects the quality of its content. The new layout can be seen in the current issue available at:

http://www.icaseonline.net/seiweb/index.php?option=com_content&view=article&id=55&Itemid=63

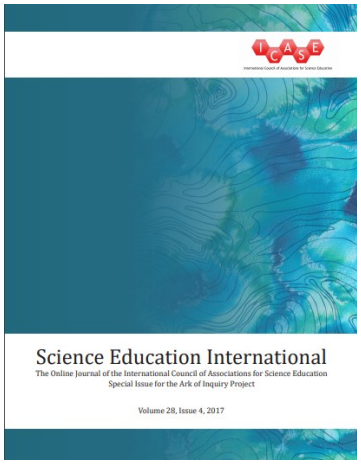
Because of this new layout, SEI now has a €50 publication fee for articles that have been accepted for publication.

Articles for possible publication should be submitted online through the Open Jo
http://www.icaseonline.net/journal/index.php/sei/user. The fourth issue of 2018 is anticipat
issue with papers selected from the WorldSTEM Education Conference held in Istanbul, Turkey

Please refer to www.icaseonline.net/seiweb for the full articles.

Authors wishing to submit articles to SEI should now go to:

http://www.icaseonline.net/journal/index.php/sei/user



International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

January/February 2018

ICASE Executive Committee 2017-2020

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

President (2017-2020)
Dr. Bulent Cavas
Associate Professor Department of Science Education Dokuz Eylul University
Izmir, Turkey
E-mail: bulentcavas@gmail.com
Also Webmaster/Web Communications

Immediate Past President (Presidential Term: 2014-2017)
Dr. Teresa Kennedy
Professor, STEM Education
University of Texas at Tyler
Tyler, Texas, USA
E-mail: tkennedy45@gmail.com
Also Membership Chair

President-Elect (2017-2020)
Dr. Baohui Zhang
Professor at Shaanxi Normal University in Xi'an, China
The National Association for Science Education, The Chinese Society
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E-mail: mmullaghy@gmail.com

Secretary
Ms. Yasemin Özdem-Yilmaz
Assistant Professor, Gaziosmanpasa University, Turkey
E-mail: yasemin.ozdem@hotmail.com
ICASE Newsletter:
http://www.icaseonline.net/news.html

ICASE Website:
http://www.icaseonline.net/
The ICASE Constitution, Strategic Plan and World Conferneence Declarations can be viewed at:
http://www.icaseonline.net/const.html

Regional Representatives (2013-2016)

Regional Representative for Africa
Mr. David Itamah, Science Teachers Association of Nigeria (STAN)
Director of Education, Chair of the STAN Board of Trustees; Chair of the Board of Directors of The STAN Place Ltd, the official publishers of STAN books. E-mail:

Regional Representative for Europe
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Regional Representative for Asia
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Professor, Faculty of Education, Ehime University Bunkyo-cho, Matsuyama City, Japan, E-mail:
sumida.manabu.mm@ehime-u.ac.jp

Regional Representative for Latin America
Dr. Cesar Mora, Latin American Science Education Research Association (LASERA)
Centro de Investigación en Ciencia Aplicada y Tecnología Avanzada Unidad Legaria del Instituto Politécnico Nacional (CICATA-IPN), México E-mail:

Regional Representative for Australia/Pacific
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University of Canberra, Australia E-mail:

Regional Representative for North America
Dr. Jim McDonald
department of Teacher Education and Professional Development at Central Michigan University
E-mail:

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Past President and Newsletter Editor
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ICASE Journal - Science Education International - In its 26th Year! 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. www.icaseonline.net/seiweb