



International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

Welcome to the ICASE June – July 2015 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.



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<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

Contents of Newsletter

ICASE News	2
BSCS 5E Instruction Model	3
ICASE Service Highlight on Dr. Bulent Cavas	4-11
ICASE World STE 2016	12
ICASE Member Highlight: CLEAPPS - Safety in Science Education	13
Science Education International The ICASE Journal	14
ICASE Networking European Region	15-20
HSCI Annual Conference	15
ISTA Annual Conference	16-19
North American Region NSTA Annual Conference	20
ICASE Executive Committee	21-22

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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>

International Council of Associations for Science Education (ICASE)
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International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

ICASE News

ICASE World STE Conference, Antalya, Turkey: 1-5 November 2016 – MARK YOUR CALENDAR!

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!

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>

Science Education International – the ICASE journal – SEND YOUR MANUSCRIPTS FOR REVIEW!

This ICASE quarterly, open access, online journal, is now entering its 26th year. Volume 26, issues 1 and 2, are now online. 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.icasonline.net/seiweb.

Upcoming ICASE Regional events – FIND OUT ABOUT WHAT IS HAPPENING AROUND THE WORLD!

A **Caribbean regional conference** is currently in the planning stages to take place in Jamaica on 21-23 March 2016. This is the 1st ICASE regional conference in this region and is focusing on the Jamaican ministry's recent decision to introduce a new science curriculum based on the American (BSCS) developments on the 5E Instructional Model – see page 3 of this newsletter). For more details please contact Sadpha Bennett (e-mail sadpha.bennett@moey.gov.jm).

The 2016 **North America regional conference** will once again be held in conjunction with the National Science Teachers Association (NSTA) Global Conversations Conference. This one day event will take place in Nashville, Tennessee on 30 March 2016, followed by the NSTA national event (31 March – 3 April 2016). With the theme "Science Goes Global: The Next Generation" we are hopeful many ICASE members will present poster presentations and share their current initiatives. <http://www.nsta.org/international/>

ICASE Executive Committee

The current ICASE Executive Committee is listed on page 20.



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International Council of Associations for Science Education (ICASE)
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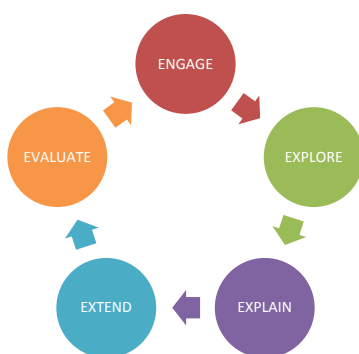
International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

The 5E Instructional Model

The 5E Instructional Model describes a teaching sequence that can be used for entire programs, specific units, and individual lessons: **Engage, Explore, Explain, Extend (or Elaborate), and Evaluate.**



ENGAGE: The purpose for the ENGAGE stage is to promote student interest and engagement at a personal level in the lesson and in so doing determine prior understanding. During this experience, students first encounter and identify the instructional task. During the ENGAGE stage, students make connections between past and present learning experiences, setting the organizational ground work for upcoming activities.

EXPLORE: The purpose for the EXPLORE stage is to get students involved in the topic; providing them with a chance to build their own understanding. In the EXPLORATION stage, students are given the opportunity to be directly involved in the development, planning and exploring of phenomena and materials. The students, working in groups, are actively learning through inquiry-based science instruction and engineering challenges. The teacher acts as a facilitator, providing materials and guiding the students' focus. Emphasis is placed on **Questioning, Data Analysis and Critical Thinking.**

EXPLAIN: The purpose for the EXPLAIN stage is to provide students with an opportunity to communicate their findings and interpretation. EXPLAIN is the stage when learners are given the opportunity to reflect on their learning. Much communication occurs between peers, with the facilitator (teacher), and through the reflective process.

EXTEND: The purpose for the EXTEND stage is to allow students to use their new knowledge and continue to explore its implications. At this stage, students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways.

EVALUATE: The purpose for the EVALUATION stage is for both students and teachers to determine how much learning and understanding has taken place. EVALUATE is an on-going diagnostic process that allows the teacher to determine if the learner has attained understanding of concepts and knowledge. Evaluation and assessment can occur at all points along the continuum of the instructional process. Some of the tools that assist in this diagnostic process include: teacher observation, student interviews, portfolios, project and problem-based learning products, debates and role playing.

The 5E approach was developed by The Biological Science Curriculum Study (BSCS), a team led by Principal Investigator Roger Bybee. For more information see <http://bscs.org/bscs-5e-instructional-model>.

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International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

ICASE Service Highlight: Dr. Bulent Cavas, ICASE President-Elect

Since being elected as ICASE President-elect at the 2013 ICASE World STE Conference in Kuching, Malaysia, on the island of Borneo, Dr. Bulent Cavas has been actively promoting ICASE by organising as well as being involved in a number of events and projects. The highlights below focus on just a few of the many activities he has been engaged in.

1. The Full Science Project

Dr. Cavas coordinated the European Union Project entitled "Full Science" (Have Fun with Science, Love Science, and Live Science) in 2013. The main aim of this project was to enhance researchers' public recognition, notably through offering the public at large (in all its components, regardless of their age and scientific background), the opportunity of discovering the "human face" of research via direct exchanges and discussions with the researchers, as well as understanding the impact of research on their daily lives. More than 5,000 participants attended the exhibition area. In addition, the ICASE PROFILES and ENGINEER projects were presented via posters.



Opening ceremony.



One of the hands-on STEM workshops for K-12 students.



2. International Teacher Seminar in Thailand

Dr. Cavas participated in the ICASE organised 2013 International Teacher Seminar in Thailand along with Dr. Teresa Kennedy, ICASE President, and others from the ICASE Executive Committee, where he led workshops on the use of Robotics in science education.



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International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

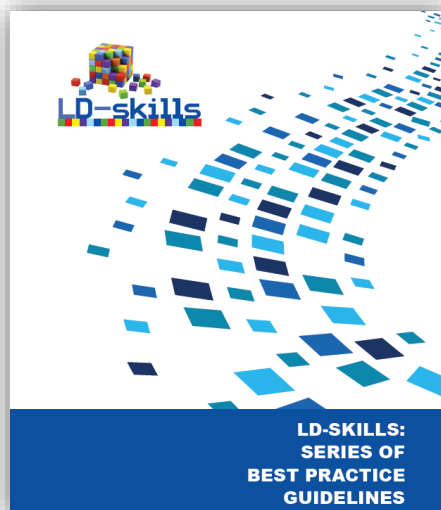
JUNE-JULY 2015

3. The Learning Design Skills Project

Dr. Cavas worked on the Learning Design Skills Project in 2013. The aim of the Project was to help European teachers engage in learning practices using appropriate educational design tools, develop training materials for teacher professional development, and develop a community of best practice that will facilitate the sustainability of the project. ICASE materials developed from EU projects or other ICASE resources were used to train teachers for better science education environments.



Closing Conference of LD-Skills Project.



One of the outcomes of the project – LD Book.

4. IOSTE (International Organisation of Science and Technology Education) Symposium

Dr. Cavas participated to the 2012 XV IOSTE Symposium in Tunis representing ICASE. Together with the University of Tartu Staff (including ICASE University Liaison Dr. Miiia Rannikmaa), a PROFILES Workshop was provided to conference participants. Congratulations to Dr. Cavas for being selected as the Mediterranean representative of IOSTE during the symposium!



Closing of XV IOSTE Symposium in Tunis.

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International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

5. INSTEM Project Conference

Dr. Cavas was invited to the INSTEM project's conference in Amsterdam in March 2013. The pictures below show him in action introducing an analogy to participants about how EU projects can be collaboratively coordinated by international experts. He shared his EU Project management experiences and ICASE successful approaches in our collaborative EU Projects.



Introducing an analogy.



Group discussions.

6. ICASE involvement in Turkish PROFILES Project's teacher professional development seminars

Dr. Cavas has organized ongoing professional development seminars for Turkish Teachers with the contribution of ICASE. Dr. Jack Holbrook, International Projects standing committee chair, and Dr. Janchai Yingprayoon, ICASE Science Centre standing committee chair, assisted at many of these seminars enabling ICASE to play an important dissemination and coordination role. Dr. Cavas is member of the ICASE PROFILES team and involved a number of science teachers in PROFILES CPD and intervention in the classroom using ICASE modules.



Introduction by Dr. Jack Holbrook and Dr. Cavas.



Workshop co-led with Dr. Janchai Yingprayoon.

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<http://www.icaseonline.net>



International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

7. Instructional technologies and Material Design Exhibitions in Turkey

Dr. Cavas, together with his science education preservice teachers, contributed to the Instructional technologies and Material Design Exhibitions in the Buca Faculty of Education in 2013, 2014 and 2015. Students from K-12 schools, teachers, teacher educators, scientists and policy makers were the main guests of these exhibitions. Dr. Cavas and his pre-service teachers prepared science materials using both the ICASE PROFILES and ENGINEER projects and presented information gleaned from the ICASE network.



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<http://www.icaseonline.net>



International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

8. National Life Park in science education

Dr. Cavas coordinated a national project on the use of national life park in science education in 2012 and 2014. The project focused on inquiry-based science education activities within zoo environments. The materials are based on the approach developed by ICASE (Inquiry-Based Science Education and Socio-scientific issues-based modules). Dr. Sue Tunnicliffe (ICASE European Representative) visited Izmir Natural Life Park and provided feedback about educational approaches successfully implemented in natural life parks. An EU-Based project was written and submitted to the European Union for EU implementation of this project led by ICASE representatives Dr. Bulent Cavas, Dr. Miia Rannikmae and Dr. Sue Tunnicliffe.



Students doing IBSE activities in Izmir Natural Life Park in Turkey.

9. German - Turkish Education, Research and Innovation Year

With funding from Tubitak, in the framework of German-Turkish Education, Research and Innovation Year – 2014, Dr. Cavas organized a German-Turkish workshop to develop science education in Germany and Turkey. Twenty-five (25) participants from Turkey and Germany attended to the workshop. Many of the initiatives and activities from the international ICASE community were introduced to the participants. After the workshop, German Researcher Madeline Mansmann visited Dokuz Eylul University in Izmir to continue working with Dr. Cavas.



Group discussions during the workshops.

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International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

10. The 8th PROFILES Consortium Meeting in Istanbul

ICASE was duly represented at the final PROFILES Consortium meeting on 23 April 2015 by Dr. Bulent Cavas (also representing DEU), Dr. Jack Holbrook and Dr. Miia Rannikmae (also representing UTARTU) held in conjunction with the IOSTE Eurasia Regional Symposium and Brokerage Event Horizon 2020-Science with and for Society (SWAFS), held in Istanbul, Turkey. The consortium consisted of 22 European partners (ICASE being involved via its European base). This event highlighted the outcomes of the PROFILES IBSE (Inquiry-based Science Education), including raising the self-efficacy of science teachers to take ownership of more effective ways of teaching students. The proposal innovation is through working with 'teacher partnerships' to implement existing, exemplary context-led, IBSE focussed, science teaching materials enhanced by inspired, teacher relevant, training and intervention programmes. For more information see <http://icaseonline.net/profiles/> and profiles-project.eu.



PROFILES Project Partners in front of Bosphorus in Istanbul.

11. PROFILES Final Conference

The PROFILES Project's final conference was held in Berlin on 23-27 August 2014. During this event, Dr. Cavas conducted an IBSE based workshop for European Teachers in Berlin on behalf of DEU and ICASE.



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International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

12. Science with/for Society Information Day in Brussels

Dr. Bulent Cavas, together with ICASE journal associate editor Kader Bilican, attended the SWAFS meeting in 2015, sharing information about science education research activities conducted by ICASE member organizations. Discussions taking place at this meeting aimed to promote awareness for science education throughout Europe.



Photos from SWAFS info day.

13. The U.S. National Science Teachers Association (NSTA) Global Conversations Conference

Dr. Cavas played an important role in the 10th Annual NSTA Global Conversations in Science Education Conference in conjunction with ICASE and CESI, held on Wednesday, 11 March 2015 in Chicago, Illinois. During the event, he participated in round table discussions with participants from around the world and also served as the moderator of a plenary session focused on Science Education and Technology in the Upper Grades. In addition, a number of ICASE Executive Committee members and member organisations actively supported ICASE President, Dr. Teresa Kennedy, by participating in and displaying a range of posters on the PROFILES project.



ICASE highlights from the 2015 Global Conversations Conference during NSTA in Chicago – USA.

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<http://www.icasonline.net>



International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

14. STEM Workshop in Ankara

Dr. Cavas joined the teaching staff of the 2015 STEM workshop organized by Middle East Technical University in Ankara. He organized hands-on activities for students from ICASE's ENGINEER project.



16. STEM Workshop for Teachers in Ankara

Dr. Cavas also joined the teaching staff of the 2015 STEM workshop organized by Turkish Academy of Sciences and conducted ENGINEER and PROFILES based activities.



Thank you to Dr. Bulent Cavas, ICASE President-Elect, for his international contributions.

International Council of Associations for Science Education (ICASE)
<http://www.icaseonline.net>



International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

ICASE World STE2016 – Don't miss this amazing event!



MARK YOUR CALENDARS: The ICASE World Science and Technology Education (STE) Conference in Antalya, Turkey will take place on 1 - 5 November 2016

<http://www.icasest2016.org/>

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 and 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

---- TIMELINE FOR CALL FOR PROPOSALS TO HOST THE 2019 ICASE WORLD STE ----

March 2015: Call for Expression of Interest to STAs

June 2015: Pre-qualification of STAs

September 2015: Bidding information to pre-qualified STAs

December 2015: Submission of bids by pre-qualified STAs

March 2016: Selection of host for 2019 conference

International Council of Associations for Science Education (ICASE)
<http://www.icasestonline.net>



International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

ICASE Member Organization Highlight – CLEAPSS

Supporting practical science and technology in schools and colleges

CLEAPSS is an advisory service based at the Brunel University Science Park in Uxbridge, UK, providing support in science and technology for a consortium of local authorities and their schools, including establishments for pupils with special needs. CLEAPSS first started in 1963 as CLEAPSE (Consortium of Local Education Authorities for the Provision of Science Equipment). In 1988 the name was changed to CLEAPSS (Consortium of Local Education Authorities for the Provision of Science Services) to reflect a change of emphasis from equipment to a range of services.

CLEAPSS serves teachers (including head teachers), technicians, science advisers/inspectors/consultants, teacher trainer, health and safety advisers, architects (working for subscribers), other local authority officers, and school governors, and focuses on health and safety including model risk assessments, chemicals, living organisms, equipment, sources of resources, laboratory design, facilities and fittings, technicians and their jobs, D&T facilities and fittings.

Every year CLEAPSS hosts a conference in London where they invite UK local authority safety officers and school groups with a head safety officer to presentations and other sessions focusing on Science and Design/Technology health and safety talks.

CLEAPSS provides newsletters for primary and secondary schools, a wide range of free publications, model risk assessments, special risk assessments, low-cost training courses for technicians, teachers and local authority officers, and a multitude of other services. CLEAPSS also provides teacher resources that contain “ideas for exciting and engaging practical activities that fire pupils' imaginations and then, unlike many other sources of ideas, go on to show teachers and technicians in detail how to translate the ideas into safe and exciting experiences in the classroom.”

CLEAPSS is a subscription service, however some publications are available to all. For more details see <http://www.cleapss.org.uk/free-publications/general-publications>. In addition, CLEAPSS practical-videos can be viewed on the CLEAPSS You-tube channel (<https://www.youtube.com/user/CLEAPSS>).

For more information see: www.cleapss.org.uk



Safety in Science Education

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International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

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 major 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 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.

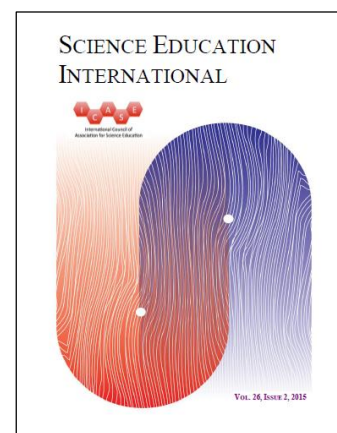
A major attraction of SEI is that there is no payment for those wishing to publish in the journal. And ICASE welcomes submissions by teachers, higher degree students or science educators in general from around the world. ICASE will do its best to assist authors whose native language is not English.

Before making a submission, please consult the Author's Manual for SEI located at www.icasonline.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 |

ICASE continues to explore ways of including SEI in well known international databases (we welcome suggestions from perspective authors). At present, SEI is listed in the following databases:

ERIC (Education Resources Information Center)
The Asian Education Index
Education Research Complete Database
Index Copernicus Journals Master List
DOAJ Directory of Open Access Journals
The Education Research Global Observatory



ICASE also welcomes new reviewers. If you are interested please contact Dr. Baohui Zhang, Chair, ICASE Research and Publications Standing Committee at baohui.zhang@snnu.edu.cn.

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

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International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

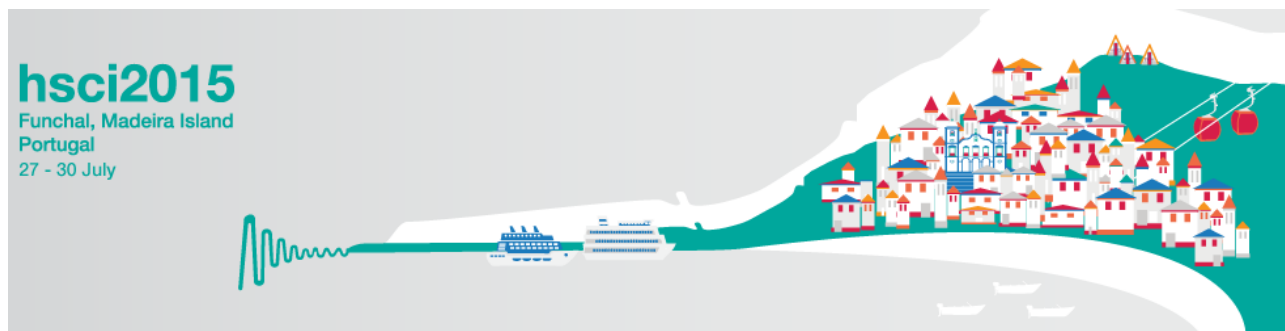
JUNE-JULY 2015

ICASE Networking Around the World

ICASE highlights science education conferences and events occurring around the world. We ask our member associations to send us updates about the outcomes of their event to share in order to communicate trends and build future networking opportunities. The following member organizations reported on recent events:

European Region: The Hands-on Science Network (HSCI) Annual Conference – Funchal, Portugal

The twelfth annual conference on Hands-on Science, HSCI2015, was held on Madeira Island in Portugal at Francisco Franco High School on 27 – 30 July 2015. The aim of the Conference was to promote an open broad exchange of experiences on good practices, syllabus and policy matters, social factors and the learning of science, and other issues related to Science Education and its development, through an enlarged use of hands-on experiments in the classroom. The Conference provided the ideal opportunity for presentations of all kinds of activities related to Science Education, including a number of activities organized to celebrate the International Year of Light, focusing on Light and of Optics and Photonics research and education. View the program: <http://hsci2015.info/program.html>



The conference theme, “Brightening our future,” provided the perfect venue for all participants to share presentations and participate in discussions about working towards this aspiration from early years, including pre-school children, to university level, and ranged through the spectrum of science topics from biology to digital technology. High standard conference proceedings were provided to every participant, and interesting visits were arranged for delegates to experience aspects of Madeira Island and its beautiful culture. See the free proceedings book at www.hsci.info.

Plan now for the 2016 event 18-21 July in Brno, Czech Republic!

See the HSCI2016 website at www.hsci.info/hsci2016.



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<http://www.icaseonline.net>



International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

ICASE Networking Around the World

European Region: ICASE plays leading role at ISTA Conference - By Dr. Declan Kennedy

The 53rd Annual Conference of the Irish Science Teachers' Association (ISTA) was held from Friday 27-29 March 2015 in the ICASE Eureka Science and Technology Education Centre of University College Cork. It was attended by over 340 science teachers from Ireland as well as several international delegates. The plenary section of the conference was devoted to an ICASE symposium which was held on Saturday, 28 March, from 11.00 - 12.30pm. Among the keynote speakers were Dr. Teresa Kennedy, ICASE President, and Dr. Jack Holbrook, ICASE Chair of International Projects. The ISTA has a membership of 1,200 science teachers and has been an enthusiastic member of ICASE since its founding year 1973. The background to the symposium lay in a request made by ISTA to ICASE for assistance with moving forward science education in Ireland in the light of the findings of the Hyland Report (2014).



Present at the ISTA Conference were (left to right): Professor Teresa Kennedy, ICASE, Prof. Bill McComas, USA, Prof. Paul Ross, Head of College of Science, Engineering and Food Science University College Cork, Charlie Dolan, President ISTA and Dr. Declan Kennedy, chairman Organising Committee.

The Hyland Report

The Irish Science Teachers' Association (ISTA) has voiced considerable concern about the quality of the Leaving Certificate syllabi published in 2014 by the National Council for Curriculum and Assessment (NCCA). The Leaving Certificate examination is a national state examination taken by students at the age of 18 years in Ireland. The examination is a "high stakes" examination as the results of the examination are used to allocate places at third level. In view of the fact that no progress was being made by the ISTA in their various submissions to the NCCA, the ISTA commissioned Professor Áine Hyland, Emeritus Professor of Education, University College Cork to study the draft syllabi published by the NCCA and to address the following two research questions:

1. What is international best practice in the drafting of syllabi for second-level curricula?
2. Is the current reform of Leaving Cert syllabi in Ireland in line with international best practice?

The Hyland Report was entitled *The Design of Science Syllabi in Ireland - an International Comparison* was published in May 2014 and may be downloaded from <http://www.ista.ie/news/hyland-report-0>.

There were six key findings of the Hyland Report which may be summarised as follows:

1. **Depth of treatment.** It is clear from the report that the lack of depth of treatment in the proposed new Leaving Certificate biology, chemistry and physics syllabi is **not** in keeping with best international practice. After carrying out her analysis of syllabi at an international level Prof Hyland states that "in every public examination system identified for this report, the syllabi for the end of senior cycle examinations include considerable detail about depth of treatment, examination specification, practicals and laboratory experiments and other advice for teachers and pupils. While learning outcomes are specified in all the syllabi, they are only one element of the detail provided. (p. 5 Hyland Report).

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**European Region: ICASE plays leading role at ISTA Conference, Cont.**

Table 1 Comparison of syllabus lengths

	Current syllabus	Draft syllabus
Biology	38 pages	13 pages
Chemistry	35 pages	18 pages
Physics	20 pages	12 pages

2. More work required on the draft syllabi. Professor Hyland points out that more work is needed on the draft syllabi in biology, chemistry and physics in order to bring them up to international standard: "While the current NCCA draft specifications may be a valid first step in outlining the syllabi, this researcher agrees with the ISTA that it is not sufficient to describe a high-stakes examination programme in terms merely of topics and learning outcomes. More detailed information about the depth of treatment of subjects and the requirements for examination must be provided at national level in Ireland to bring the syllabi into line with international good practice." (p. 42 Hyland Report)

3. Fundamental flaws in template being used by NCCA for syllabus design. It is clear from the reports of the ISTA representatives working on NCCA syllabus committees that considerable frustration was experienced as a result of all three science syllabi being forced into a template consisting of nothing more than a list of learning outcomes. The fundamental flaw in the template being used by the NCCA is highlighted in the Hyland Report. Professor Hyland points out that the practice of the NCCA in designing syllabi that consist solely of a list of topics and learning outcomes is not good practice in syllabus design and that "this researcher has not come across any centralised or public examination syllabus at this level which provides only a list of topics and learning outcomes. (p. 5 Hyland Report). In addition, Professor Hyland points out that "while learning outcomes are a very valuable tool for identifying what learners should know and be able to do at the end of a course or programme, it is not appropriate to use learning outcomes alone to define a syllabus and its assessment." (p. 5 Hyland Report).

4. Problems identified in NCCA benchmarking exercise. Professor Hyland expresses concern with the benchmarking exercise carried out by the NCCA in designing the Leaving Certificate Science syllabi: "It would appear that for international benchmarking purposes, the NCCA has used the curriculum framework *Curriculum for Excellence* of Education Scotland, and the national curriculum framework for the whole of Australia, set by the Australian Curriculum, Assessment and Reporting Authority (ACARA), rather than the examination syllabi provided by the Scottish Qualifications Authority (SQA) and by the Victorian Curriculum and Assessment Authority (VCAA), which in the view of this researcher are the more relevant benchmarks." (p. 41 Hyland Report). Having expressed concern at the benchmarking exercise, Prof. Hyland provides very good evidence to support her concern at the quality of the benchmarking exercise carried out by the NCCA. She compares three chemistry syllabi (Scotland, Australia and International Baccalaureate) with the NCCA draft Leaving Certificate Chemistry syllabus: "Comparing these three chemistry syllabi with the NCCA draft specification for Leaving Cert chemistry, one notes a significant difference in approach between the three systems chosen and the approach of the NCCA. While the NCCA document resembles, to some extent, the national curriculum and assessment guidelines of Education Scotland, or the curriculum and assessment guidelines of the Australian Curriculum and Assessment Authority it does not resemble the detailed examination syllabi provided by the examining and awarding bodies in Scotland (the Scottish Qualifications Authority), in Victoria, Australia (the Victorian Curriculum and Assessment Authority) and the International Baccalaureate Organisation (IBO)." (p. 41 Hyland Report).



International Council of Associations for Science Education

5. Fall in standards of science syllabi. Professor Hyland warns of the dangers of writing syllabi solely in terms of a list of topics and learning outcomes as this could lead to a fall in standards: "Learning outcomes are statements of essential learning, and as such they are written at minimum acceptable or threshold (pass / fail) standard. If teachers focus only on learning outcomes, there is a real risk that the teaching and learning targets will be at a minimum rather than a maximum level, that the bar will not be set high enough for student learning, and that as a result, standards will fall" (p. 5 Hyland Report). Prof. Hyland also points out that the design of the Leaving Certificate biology, chemistry and physics syllabi currently being taught in schools are of a high standard with a format that is "consistent and clear across subjects" (p. 12 Hyland Report). The report also states that "the current Leaving Certificate physics, chemistry and biology syllabi, which have been implemented since the early 2000s, are highly regarded by teachers and have contributed to a reversal of the decline in the numbers of pupils taking science subjects at senior cycle" (p. 40 Hyland Report).



Dr. Cyril Isenberg in action at his lecture *The Magic of Soap Bubbles* at the ISTA conference.

6. No justification for keeping syllabi vague. One of the reasons put forward by NCCA representatives at NCCA syllabus committee meetings for not including depth of treatment was that over-specification of syllabus design contributes to rote learning. In Chapter 4 of the Hyland Report, it is made very clear that there is no link between giving detailed depth of treatment and rote learning: "The international comparisons in Section 2 of this report show that it is possible to provide syllabi or examination programmes which include detailed guidelines; teachers' notes; assessment specifications etc. while at the same time devising an approach to assessment which does not reward rote-learning and ensures that higher order skills are recognised and rewarded. To my knowledge, it has

never been suggested that the detail provided by the IBO Diploma syllabi or the Scottish Highers or the Victorian Certificate of Education has led to or leads to rote-learning." (p. 39 Hyland Report).

ICASE Symposium

The overall aim of the ICASE symposium was to build on the work of the Hyland Report, and help the ISTA plan for the future of science education in Ireland. Among the speaker were:

1. Dr. Teresa Kennedy, USA, ICASE President, who spoke on science education in USA with particular reference to syllabus design and resources provided to teachers in the USA to help them implement the curriculum.
2. Dr. Rob Toplis, University College London Institute of Education, gave an overview of the education system in England, the examination board system and the design of syllabus specifications published by the examination boards.



Dr. Teresa Kennedy, ICASE President, speaking at the ISTA ICASE symposium.



International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

3. Hilary Rimbi, St Andrews College, Dublin spoke on her experience and that of her colleagues of teaching the Biology, Chemistry and Physics syllabi of the International Baccalaureate.
4. Kyran Johnson, Pharmachemical Ireland, spoke about Industry-Education links in Ireland, and gave the perspective of the role of the pharmaceutical industry in Ireland supporting science education.
5. Dr. Jack Holbrook, ICASE spoke (via a video link) on the ICASE perspective of science education with particular reference to the design of the science curriculum as reflected in the Hyland Report.
6. Mary Mullaghy, immediate past chairman of ISTA spoke on science education throughout Europe and on the role of Scientix on the promotion of science education.

ICASE Workshop on PROFILES project. In addition to the ICASE symposium, an ICASE workshop held on the EU funded FP7 PROFILES project (Professional Reflection-Oriented Focus on Inquiry-based Learning and Education though Science), represented by Dr. Jack Holbrook. PROFILES involves a consortium of 21 partner institutions from 19 different countries. The provision of extensive CPD to help teachers develop, implement, and evaluate IBSE science teaching modules is a key component of the PROFILES project. The ICASE / UCC research group has developed 10 intervention packages to promote Inquiry Based Science Education in Ireland and in schools throughout Europe. These modules may be downloaded from <http://chemweb.ucc.ie/Pro2/PROFILES-ucc.htm>



Irish Science teachers involved in the PROFILES modules with Jack Holbrook, Noel Brett and Declan Kennedy.

The workshop was held in the science education laboratories of the Eureka Centre which is one of the ICASE Science and Technology Education centre. It was organised by John Lucey, Noel Brett and Declan Kennedy and was run by teachers involved in implementing the PROFILES project in their school. Large numbers of teachers attended the workshop and were clearly impressed by the teaching packages created by the ICASE teachers involved in the PROFILES project.



Attending the ICASE PROFILES workshop were (left to right) Dr. Cyril Isenberg, Bill Lynch, National Council for Curriculum and Assessment, Sudirman Sudirman, physics teacher from Indonesia and Simon Hill, science teacher and member of PROFILES team in Ireland.

Conclusion. The strong involvement of ICASE in the ISTA conference was of enormous benefit to the ISTA and clearly shows one of the great advantages of membership of ICASE. Whilst the ISTA is a relatively small organisation dedicated to science education in Ireland, the fact that it could draw on the expertise and wisdom of ICASE is of huge benefit to the ISTA. The ICASE symposium has helped ISTA to get a clear picture of syllabus design at an international level and it was heartening to hear the views and experiences of the speakers at national and international level. I would like to take this opportunity to express my sincere thanks to ICASE for the assistance and advice given to the ISTA. All of us in ISTA look forward to this continued collaboration between ISTA and ICASE.

ISTA 2016: Limerick Institute of Technology, 8-10 April – Don't miss it!

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International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

ICASE Networking Around the World

North America Region: 10th Annual Global Conversations Conference – during National NSTA event

The NSTA 10th Annual International Science Education Day and Global Conversations in Science Education Conference, organized in collaboration with ICASE and the Council for Elementary Science International (CESI), took place on 11 March 2015 in Chicago, Illinois and commenced with welcome remarks from NSTA President Dr. Juliana Texley, NSTA International Advisory Board Chair and ICASE President Dr. Teresa Kennedy, and Conference co-chair, Dr. Michael Padilla, ICASE North America Representative.

More than 60 representatives from 16 countries participated in activities related to the conference theme, "Sharing International Classroom Perspectives of Science: PreK–16." Mr. Frank Owens, 2002–2008 NSTA Associate Executive Director for Programs, provided the opening address followed by keynote speakers from Ireland, including Ms. Aine Hyland, Emeritus Professor of Education; Mr. Rory Geoghegan, Hon. Editor of *SCIENCE*, the official journal of the Irish Science Teachers' Association; and Dr. Declan Kennedy, Senior Lecturer in Science Education, University College Cork, Ireland. Dr. Sue Tunnicliffe's presentation entitled "*Science Learning Starts Here! The Importance of the Early Years*" was well received and Martha Patricia Pérez Villegas from México provided an engaging plenary presentation on the use of Ipads in the chemistry classroom. Round Table Discussions and over 20 poster presentations followed, including a series of posters on the PROFILES project by Dr. Jack Holbrook, Dr. Miia Rannikmae, Dr. Declan Kennedy, Dr. Bulent Cavas, and Mr. Rory Geoghegan.



ExxonMobil sponsored the event and **Northrop Grumman Foundation** announced the recipients of their prestigious teacher awards, Ms. Diana Tomazos from Australia and Ms. Kulvinder Kaur Johal from the United Kingdom. Additional events included a morning field trip to local schools and an evening international reception hosted by NSTA President Juliana Texley and NSTA Executive Director Dr. David Evans.

The 11th International Science Education Day will take place in Nashville, Tennessee: 30 March 2016.

Submit your abstract to present at <http://www.nsta.org/international/>

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International Council of Associations for Science Education

Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

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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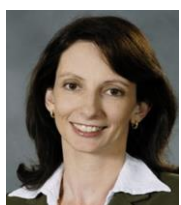
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Supporting and promoting science education internationally
The ICASE Newsletter

JUNE-JULY 2015

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