

## Newsletter

(東亞科學教育學會通訊)

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## **Twin College Envoys Program (TWINCLE)**

TWINCLE is the international exchange program between Chiba University and 12 Universities in ASEAN countries (Indonesia, Thailand, Vietnam, Cambodia and Singapore). This program was set up in 2012 and has been conducted by Faculty of Education, Chiba University with the financial support of Ministry of Education, Culture, Sports, Science and Technology, Japan. However, this support would end in March, 2017, and we continue the program and also are looking for new opportunities of international collaboration programs in science education. It is a good time to reflect the program and our achievements.

TWINCLE refers to twin majors (i.e. students from faculty of education and students studying science in faculty of science, engineering, horticulture and so on) and promote activities to help students 'shine brighter', much like a star twinkling. Students develop a science lesson, by basing on their research at the university by a group of 4 students and go to one of the 12 universities to conduct the lesson at high schools near the university. There are five main steps in the program. (Detailed in Page 3)

### A New Approach to

#### **Science Education Research: Social Network Analysis**

The social network analysis method has recently exploded in the fields of literature and information science, sociology, political science, and computer linguistics. Social network analysis methods developed in different fields are beginning to be used in the field of education as well, sharing a paradigm of convergence analytical methodology along with complexity theory. Although it may be an unfamiliar analysis method in science education yet, it is a useful tool to help new interpretation of various educational situations. Since 2011, our lab has been applying to the science education research by combining the complex network analysis method used in the cognitive neuroscience and statistical physics, the semantic network analysis method in linguistic research, and the social network analysis method used in political science. (Detailed in Page 5)

### **Upcoming conferences**

November 13-17 **The 7th CoSMEd International Conference on Science and Mathematics Education** in Penang, Malaysia

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#### **Ioin EASE!**

If you want to be a member of EASE, contact *here* (wangj@bnu.edu.cn).

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## Update from Japanese EASE Alumni and Alumnae

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Hokkaido University of Education<sup>1</sup>, University of Copenhagen<sup>2</sup>, National Institute for Educational Policy Research<sup>3</sup>, Nagasaki University<sup>4</sup>, Hiroshima University<sup>5</sup>

A half year has passed since EASE2016 Tokyo was held. As EASE Alumni and Alumnae, we are very glad that many researchers and students from foreign countries, and of course from Japan, attended the conference and our two Alumni and Alumnae events were successful. For the successful future of EASE, we, Japanese Alumni and Alumnae, would like to share our thoughts about EASE; the benefits of EASE participation and the requests of Japanese EASE Alumni and Alumnae.

First of all, participation in the EASE conference and summer/winter schools gave us invaluable opportunities. Future participants, especially young scholars, will understandably be able to gain a lot of helpful advice from well-known researchers and consult with them about their research. Moreover, young scholars will be able to make friends with others who are studying hard under similar situations. We call friends who become friends in EASE conferences and summer/winter schools EASE Alumni and Alumnae. One Japanese alumna met other countries' Alumni and Alumnae again in international conferences and caught up on each other's lives. She also said that other Alumni and Alumnae news and their warm words encouraged her to advance her own research. Furthermore, another Japan alumna said that Korean Alumni and Alumnae could kindly provide help to conduct research in Korea. EASE Alumni and Alumnae could help each other not only in research but also in private life.

Secondly, we hope EASE will keep providing young scholars and EASE Alumni and Alumnae with the good opportunities for the expansion and development of their international networks. At EASE2016 Tokyo, EASE Alumni and Alumnae have prepared and held two events. Actually, it was very hard to make it happened because this was the first trial. There was no previous attempt and no manual. However, a lot of EASE Alumni and Alumnae could reunite and make new friends. We hope to have more these events to be held in near the future.

In conclusion, the Japanese Alumni and Alumnae would like to recommend young scholars with no previous experience of participation in international conferences attend an EASE conference and summer/winter schools. We assure you that the members of EASE are very kindly and supportive.

We are looking forward to meeting you in the future EASE conference and schools!

# Twin College Envoys Program (TWINCLE)

Ryugo Oshima

Faculty of Education, Chiba University, Japan

#### Introduction

TWINCLE is the international exchange program between Chiba University and 12 Universities in ASEAN countries (Indonesia, Thailand, Vietnam, Cambodia and Singapore). This program was set up in 2012 and has been conducted by Faculty of Education, Chiba University with the financial support of Ministry of Education, Culture, Sports, Science and Technology, Japan. However, this support would end in March, 2017, and we continue the program and also are looking for new opportunities of international collaboration programs in science education. It is a good time to reflect the program and our achievements.

#### The program for Japanese students

TWINCLE refers to twin majors (i.e. students from faculty of education and students studying science in faculty of science, engineering, horticulture and so on) and promote activities to help students 'shine brighter', much like a star twinkling. Students develop a science lesson, by basing on their research at the university by a group of 4 students and go to one of the 12 universities to conduct the lesson at high schools near the university. There are five main steps in the program.

- 1. Development of a lesson plan and teaching materials: Students form groups of four members, and plan lesson about their research. The lessons focus on how science is interesting and nice, not just on knowledge.
- 2. Mock lessons in front of other groups: Each group is given a chance to improve their lesson and English communication skills.
- 3. Presentation in front of professors and students of a partner university in ASEAN: Each group is given another opportunity to polish their lesson and English communication skills.
- 4. Lessons at high schools: Each group is sent to high schools assigned by the partner university. They provide the lesson four times in English to high school students with the partner university's students during their two-week stay.
- 5. Final presentation at Chiba University: Each group gives a 15-minute presentation in English on their realizations, insights and future endeavors, which are all inspired by their teaching and working experience.

#### The Program for ASEAN students in Japan

The aim of the program for ASEAN students in Japan is to encourage ASEAN students to participate globally by building strong collaborative partnership, and mutual academic and cultural exchange. The two-week program mainly includes laboratory coursework, working on the lesson development with the Japanese students who are going to their county and school visit. We invite ASEAN students before Japanese students go to ASEAN countries so that Japanese students improve their lesson by the ASEAN students' comments in terms of the educational and cultural background in ASEAN and work in ASEAN with the ASEAN students as a team.



Lesson development with ASEAN students



Lesson in Indonesia



Laboratory work in lesson

#### **Achievements**

We have sent 368 Japanese students and accepted 246 ASEAN students in this program in the 5 years. In addition, in total approximately 14,000 ASEAN school students participated in the lesson provided by the Japanese students. We believe ASEAN university and school students and Japanese students learned many things according to our satisfaction surveys. Here is one potential reason for Japanese students, there are at least three challenges to overcome and they did them, the difference between the culture of education and of science, the difference of grade of the Japanese students and the difference between ASEAN and Japan in culture and language. Students from education and those from science have different cultures and ways of thinking. They need to struggle with working together with different grade people who have different background and to struggle with English communication. Through the challenges, they find something new, ex. potentials of science education and global perspectives, and acquire some skills, ex English communication skills and presentation skills.

Moreover, through developing and implementing this student exchange program, we have developed strong relationships between ASEAN universities and schools. And also, we have contributed to schools in Japan by bringing ASEAN students to the schools when they are in Japan.

#### **Next vision**

TWINCLE focuses on developing international and practical abilities and general skills in a context of science education. We might need to launch programs which focus more on pedagogy and in-service teacher training program in science with the global perspectives. We are now developing an in-service teacher training program for Japanese teachers and another one is for teachers in other country. By setting up these new programs, we hope to play an important role of science education in globalizing world.

http://www.education.chiba-u.jp/?lang=english http://www.twincle.jp/eng/

# A New Approach to Science Education Research: Social Network Analysis

Jun-Ki Lee, Sein Shin

Professor & PhD student, Division of Science Education, Biology Major, Chonbuk National University, Korea

Education is an area that deals with human mind and behavior, especially social behavior. As Aristotle says, "Man is a social animal," we identify our own identities in our social relationships. Schools and classrooms are small societies, in which a variety of social relationships such as teachers, students, students and students are created and destroyed several times a day. Until now, natural sciences and sociology have had the confidence that they can understand the world better if they clearly understand the identity of a specific object. However, they pay attention to the unexpected result of the emergence of the relationship between them. This is the flow of complex science, a convergence of scientists who challenged the complex and uncertain real world problems centering on the Santa Fe Institute since the 20th century.

The social network analysis method has recently exploded in the fields of literature and information science, sociology, political science, and computer linguistics. Social network analysis methods developed in different fields are beginning to be used in the field of education as well, sharing a paradigm of convergence analytical methodology along with complexity theory. Although it may be an unfamiliar analysis method in science education yet, it is a useful tool to help new interpretation of various educational situations. Since 2011, our lab has been applying to the science education research by combining the complex network analysis method used in the cognitive neuroscience and statistical physics, the semantic network analysis method in linguistic research, and the social network analysis method used in political science.

Typical applications in educational research are as follows. First, social network analysis can be used for conceptual change research. The concept of students is to regard the connection between concepts as a point (node) within the network as a link and construct a mental model. The second is language network modeling that topological structures open-ended data obtained from students, such as linguistic discourse and answers. It is also called a same initial SNA (semantic network analysis) method. At this time, a word is regarded as a node and a concurrent appearance of a word within one sentence is regarded as a link, and a connection is formed. Through the use of nouns, conceptual cognitive structures can be studied through adjective or adverbials. Third, it is the visualization and measurement of social interaction, which is the inherent function of the original social network. The social network analysis analyzes the interaction between students as a node and the interaction between them as a link. At this time, it is excellent to grasp the topological understanding of the group interaction and the group interaction in the discussion class. It is also possible to analyze the sociological role of what social capital they have structurally. Fourth, it is recommendation and prediction function through big data mining such as topic modeling algorithm. Fifth, it is advantageous to grasp macroscopic trends such as identification of trends in specific academic fields.

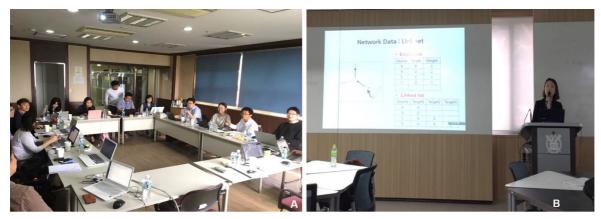


Fig. 1. Intensive workshop on Social Network Analysis at Kangwon National University (A) and Seoul National University (KASE) (B)

The social network analysis method has qualitative and quantitative characteristics at the same time. It is a completely different method from the conventional 'mind mapping' or 'concept-mapping' composition which can be known only by the connection structure. Social network analysis is not a type of infographics that simply visualizes data, but it is a methodology that can be used to draw conclusions through statistical analysis.

Recently, there was a workshop to introduce social network analysis method into the science education centered on researchers at the conference of the KASE in 2017 international conference held at Seoul National University (Fig. 1-B). In addition, before this workshop, a group of young scholars from various research fields gathered at Kangwon National University to discuss the introduction of social network analysis methods in various science education areas through a one-night two-day analysis camp (Fig. 1-A). Although, history of establishing the social network analysis method is not short, but the social network analysis method in the field of science education is just sprouting. I hope that many science education researchers who read this article will make various attempts in their various research areas and hope that this will lead to the formation of a social network of new academic exchanges in East Asian science education.

# **STEM Education in Hong Kong**

Valerie Yip W.Y. The University of Hong Kong

STEM education has been a major movement of science education in Hong Kong since 2015. The government of the Hong Kong Special Administrative Region (HKSAR) has emphasized fostering students' innovation and problem-solving skills through STEM education in its Policy Addresses 2015 and 2016. A number of initiatives have been undertaken by the government, for example, the science and technology curricula at the primary and junior secondary levels are under review. Relevant teaching resources are developed. Every primary and secondary schools funded by the government can receive HK\$100,000 and HK\$200,000 respectively to promote STEM integrative learning activities. School networks are set up through the Professional Development Schools Scheme with the involvement of four leading secondary schools to support their partners; and a number of teacher sharing sessions on STEM education have also been organized.

While Hong Kong schools are actively developing their school-based STEM curriculum, the engagement of community partners is of equal importance. Organizations such as Hong Kong New Generation Cultural Association has been promoting science and creativity through organizing major science and technology competitions in Hong Kong, as well as training programmes for teachers and students. The Science and Technology Parks Corporation has organized robotics workshops and workshops on choosing STEM career for students at various levels. The Academy of Sciences of Hong Kong also published a research report in January 2017 to provide recommendations on moving STEM education forward.

Being one of the major teacher training institutions, the University of Hong Kong has established partnerships with different institutions to prepare our future STEM teachers. As experiential learning activities, our student teachers are working closely with the Science and Technology Parks to develop curriculum materials and workshops. These future teachers will also have the opportunities to visit overseas STEM education centres and STEM industries to understand the trends of STEM development. Our student teachers also serve as interns of STEM related projects to support local teachers in developing the school-based curriculum, for example, the University-School Support Programmes project on self-directed learning and scientific inquiry funded by the Education Bureau of HKSAR government.

STEM education has been flourishing in Hong Kong recently. Through more STEM learning and teaching activities, we hope our students would be effective problem-solvers with creativity and innovative minds.

## A teacher professional development project on STEM education launched by the Education University of Hong Kong

Lee Yeung Chung

Associate Professor, The Education University of Hong Kong

STEM education has become an important movement in the realm of science, technology and mathematics education, which aims to nurture school students' creativity and integrated use of knowledge and skills from multiple disciplines in complex real-life contexts. However, detailed curricular specifications are lacking including progressive learning outcomes and learning activities that guide teachers to integrate STEM elements into the existing curriculum of Hong Kong. Up to date, STEM practices in Hong Kong schools have been piecemeal and fragmented, subject to the initiative of individual schools. In view of this, the Education University of Hong Kong has undertaken from 2016-17 a special project entitled "Developing leadership in STEM education and teachers' professional development – A multi-pronged approach" to explore how STEM activities can best be integrated into the formal and informal curriculum, and how STEM teacher education could best be achieved.

Taking into consideration the broad aims of STEM education and the range of stakeholders involved, a multipronged approach is considered most desirable in enhancing STEM education. The project embraces a number of key events including a teacher conference cum carnival, and a STEM Olympiad for senior secondary students, and the production of STEM education resources to be delivered through a specially designed website and publications for teachers in support of integrative STEM teaching. The teacher conference cum carnival and the STEM Olympiad have been completed. These two activities targeted at three major groups of stakeholders. The first group was pre-service STEM teachers majoring in science, mathematics, IT and GS that were expected to acquire deeper understanding of STEM and STEM pedagogical content knowledge in education through participating and assisting in organizing the events. The second group was in-service teachers who were introduced to school-based STEM curriculum development in addition to pedagogical content knowledge. They were also encouraged to share their STEM practices through conducting workshops and putting up exhibition booths for the other participants. The third group was primary and secondary school students who were engaged as participants or contestants as they are the ultimate recipients of STEM education. In the STEM carnival, students assisted their teachers in setting exhibition or game booths to showcase their work on STEM in their schools. Students' participation in these events provided teachers with valuable opportunities to explore students' motivation, perception and needs regarding STEM education. In addition to these territory-wide activities, Our STEM website is under construction and a resource book for STEM teachers focusing primarily on bridging theory and practice in STEM education is forthcoming. We hope all these events could help to create in the local school sector an atmosphere conducive to STEM education, while establishing the Education University of Hong Kong as one of the leaders in STEM teacher education in Hong Kong and paving the way for developing the University as a local STEM education hub in the long run.

# **STEM Education for Bangladesh:**

## Teachers' Perceptions, Challenges, and Necessary Transformation

Kazi K Shahidullah

PhD, Duwell International, Bangladesh

#### Introduction

STEM education is a major paradigm shift in science education like others such as Scientific Literacy, inquiry, and STS. Like previous reformation trends, developing countries might be also start to incorporate STEM Education in their countries. Part of this process, Bangladesh might introduce STEM education in the country very soon. As a result, this research is one of the STEM education incorporating initiatives in Bangladesh. The research evaluated science teachers' readiness to implement STEM Education in Bangladesh. Following research question covered in the study: what are the science teachers' current practices and attitudes (beliefs) towards STEM education in Bangladesh? Current teaching methods, level of integration of engineering, mathematics, and technology in science class etc. assessed from science teachers' current perceptions and practice. The study has considered four different STEM education perceptions—STEM conceptual perception, curricular perception, instructional perception, professional developmental perception based on the survey data.

#### **Teachers Perceptions and Challenges**

Tapan (2010) stated that science teachers reluctant to use innovative teaching methods such as inquiry rather to continue root-based memorization science teaching method. Tapan also mentioned that the reason for this kind of science teaching methods as science teachers are used to teach science content for the reason the way them have learned from their teachers. The study focused on general perception of STEM and integration perception among the teachers. It found that two-third of the participants (66.4%) understand minimum or above on what's meant by "STEM". Out of four hundred participants, the average response score was 3.97, which is just below 'agree'.

#### **Integration Perception**

Teachers' integration perception among or within STEM disciplines were another force of the study. The participants reported that more than half of them integrate engineering with science in their classrooms. The study also found that more than 90% participants integrate mathematics in science lessons and more than 85% of them integrate technology in science education. The participants also added that more than 75% participants integrate at least two disciplines—engineering, technology, or mathematics with science.

#### **Curriculum Perception**

One of the focus of the study was participants on current curriculum perception to introduce STEM education. The more than half of the participants responded that present science curriculum is not good enough to introduce STEM based science education. On the other hand, most of the participants responded that they utilized problem solving and critical thinking in their science classroom.

#### **Instructional Perception**

The study focused on to find out participants' current instructional perceptions to introduce STEM. The most of the participants responded that they often do STEM activities in their science classrooms. Another statement found that 75% participants provide opportunities to students to develop their science or engineering project. However, they do not have enough science and technological laboratory equipment in their classroom or laboratory. More than half of the participants responded that do not have their necessary equipment to introduce STEM based science education. However, the average response of this statement is 3.13 (out of 6) which very much reflects participants' responses.

#### **Professional Development Perception**

The last part of the survey was teachers' professional perceptions. The two-third of the participants responded that they have received enough training to integrate one or more than disciplines—engineering, technology, and mathematics with science. However, another statement found that the participants responded about lack of professional development for transforming science classroom into STEM based classroom. In-service professional development is not adequate enough to help teachers to implement STEM based science education.

#### **Necessary Transformation**

Bybee (2013) has recommended four step process—purpose, policy, program, and practice for incorporating STEM Education.

#### **STEM Education Purpose**

First step for STEM education reformation is to develop a set of STEM reformation goals, priorities, and provide effective justification for the reformation. Tapan (2010) identified that teachers' preparation was one of the major shortcomings of previous inquiry-based reformation. This research also found that teachers did not have clear perception about STEM education although they reported that they understand and practice some level of STEM in their classrooms. Therefore, STEM based effective teacher preparation program would be a top priority in the purpose for successful reformation.

#### **STEM Education Policy**

Bybee (2013) has recommended development of STEM education based policy as second component for effective reformation. Bybee recommended establish design criteria for STEM programs, identify criteria for instruction, and develop frameworks for curriculum and instruction.

#### **STEM Education Program**

The education system of Bangladesh is highly centralized for 170 million people and mostly controlled by the government. In a sense, there is only one science education program exist in the country. Bybee (2013) recommended STEM education programs as third step for effective reformation.

#### **STEM Education Practice**

Bybee (2013) mentioned 7-10 years effective STEM education practices after successful previous steps. Previous literature found that science education in Bangladesh due to lack of political consensus and reformation plan. Therefore, at least effective STEM education teacher preparation program will help to enhance reformation and practice.

#### Reference

Bybee, R. W. (2013). The Case for STEM Education Challenges and Opportunities, Arlington: NSTA Press. Tapan, M. S. M. (2010). Science education in Bangladesh. In Lee, Y. (Ed.), World of Science Education: Science Education Research in Asia. Rotterdam, Sense Publishers.

## The 32<sup>nd</sup> Annual International Conference

# Of Association of Science Education in Taiwan: Fostering science as a lifelong passion

Shu-Fen Lin

Graduate Institute of Science Education, National Changhua University of Education, Taiwan



The 32nd Annual International Conference of Association of Science Education Taiwan (ASET) was successfully held at the National Museum of Natural Science in Taichung, Taiwan on Dec 8-10, 2016. The theme of the conference was "Fostering Science as a Lifelong Passion". Six scholars provided inspiring speeches under the theme. The keynote speakers include Dr. Wei-Hsin Sun (National Taiwan University; National Museum of Natural Science, Taiwan), Dr. Norman G. Lederman (Illinois Institute of Technology, USA), Dr. Ching-Sing Chai (National Institute of Education, Singapore), Dr. Huann-shyang Lin (National Sun Yat-sen University, Taiwan), Dr. Judith S. Lederman (Illinois Institute of Technology, USA), and Dr. Jinwoong Song (Seoul National University, Korea).



Keynote speech



Invited Symposium: introduction of four new books

The conference was hosted by the National Changhua University of Education, and the president of ASET, Professor Hsiao-Ching She from National Chiao Tung University. The museum is recommended as one of "the 15 museums to visit in your lifetime" by the Spanish Association of Museology. Furthermore, in addition to general activities (i.e., keynote speech, paper presentation, panel discussion, pre-conference workshop), special academic activities were held, such as Special Interest Group (SIG), invited and special symposium, and interactive poster presentation. Especially, in two sessions of the panel discussion, students' outcomes in PISA 2015 and the comparison study of teaching periods of science curriculum among different countries were presented by several scholars respectively, and then they discussed with vice ministers of education affairs for further efforts in science education policy. That is, we hope that the science education policy would be based on research outcomes. Besides, research trends of eight SIG topics were presented by 17 scholars in the SIG sessions. Four

new books in science education were introduced by the editors or the authors in the invited symposium. Furthermore, one chair and one discussant were arranged in each session of stand-alone papers and interactive posters by the organizing committee to provide presenters some suggestions and comments. A lot of presenters appreciated discussants' comments for their studies and the participants enjoyed the atmosphere of academic discussion. In total, around 400 participants from 7 countries attended this conference.





Invited panel

Pre-conference workshop







Interactive poster session

In the ASET membership meeting, Professor Huey-Por Chang was awarded with Distinguished Contribution Award. Professor Meng-Fei Cheng was awarded with Young Scholar Award. Professor Jiun-Tai Chen, and two science teachers were awarded with Outstanding Teaching Awards.

The 33rd Annual International Conference of ASET will be held in association with the Asia Zoo Educators' Conference in Pintung and hosted by the National Pintung University. The ASET is very pleased to invite EASE members to participate in the 2017 ASET international conference.

# **See you again at the 72nd KASE!**After participating in the 71st KASE International Conference

Ju Hyun Ahn

PhD, Teacher, Joongdong High School, Korea

The 71st KASE was held at Seoul National University on February 9-11. I have participated in KASE since 2008, and this time I presented my research in the poster session. Recently I have been interested in improving the common experimentation method by providing accurate and specific information. It is a study that helps students easily carry out experiments in the field by modifying commonly known experiments at the school site. Students who have difficulties in science can be interested in and achieve accomplishment in science through experiments. I think these research topics are very important because I work as a high school teacher after my doctoral degree.

One of my research topics was an experiment to observe meiosis. Cell division is a core concept in understanding the continuity of life, and meiosis is an important mechanism to keep the number of unique chromosomes in organisms of sexual reproduction. The current national curriculum of Korea has teachers deal with observation experiments for meiosis when teaching the students about meiosis, but it offers a shortage of information or wrong information about the experimental methods, resulting in that the teachers have a difficult time with conducting experiments. Therefore, I proposed an improved method for observing meiosis using Liliaceae plants. I was able to introduce my research in front of a number of researchers and hear a lot of advice and encouragement. On the last day of the conference, I received an outstanding presentation award.

Participation in the conference is more meaningful and valuable than introducing the research results simply. It was an honor to be able to attend an important place where we can listen to each other, provide inspiration and share encouragement within a big topic of science education. I look forward to working with more researchers in the future.

See you again at the 72nd KASE!



### News from China

### Dr. Baohui Zhang is elected to be ICASE president-elect



Dr. Zhang works in Shaanxi Normal University, Xian, China. He is the chief editor of International Journal of Science Education, and editorial board member of International Journal of Environmental and Science Education and Journal of Science Teacher Education. Dr. Zhang is recommended by the National Association for Science Education, a branch of the Chinese Society of Education. His duties in the role of ICASE (International Council of Associations for Science Education) President-Elect will begin on 1 May 2017.

The ICASE is held in 1972, sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO). ICASE does not have individual members; rather it is

governed by its member organizations which elect an Executive Committee, currently made up of 17 members. The day-to-day management is handled by an ICASE Executive Management Committee comprising the President, Immediate Past President, President-Elect, Secretary, and Treasurer. In addition, regional representatives, as well as the Chairs of several standing committees, also serve on the Executive Committee.

ICASE operates internationally and includes member associations and organizations from around the world. ICASE has worked on developing networking opportunities through regional and world-wide projects as well as newsletters and publications that bring experiences from many countries to the attention of science teachers at the local, regional and international level.

## **Upcoming conferences**

# The 7th CoSMEd International Conference on Science and Mathematics Education

# Humanising STEM Education for Sustainable Development Goals in the 21st Century

November 13-17, 2017 @ SEAMEO RECSAM, Penang, Malaysia

This conference is the seventh of the series of biennial conference hosted by SEAMEO RECSAM (Southeast Asian Ministers of Education Organization – Regional Centre for Education in Science and Mathematics. SEAMEO is an international organization established in 1965 to promote regional cooperation in education, science and culture among the 11 Southeast Asian Countries with headquarters in Bangkok, Thailand. RECSAM is one of the 21 specialist centres of SEAMEO mandated to promote science and mathematics education in the region nestled in the historic Georgetown City – UNESCO World Heritage site in the beautiful island of Penang, Malaysia. CoSMEd 2017 will bring together world-renowned international speakers, researchers, exhibitors and science and mathematics educators who will share their expertise and research findings on the conference theme with its five strands during the keynote, parallel, poster, exhibition and workshops sessions.

Conference Website: <a href="http://www.recsam.edu.my/cosmed2017">http://www.recsam.edu.my/cosmed2017</a>

#### **Important Dates**

Deadline for submission of abstracts – 15 April 2017
Deadline for submission of full papers – 15 June 2017
Deadline for submission of revised full papers – 15 September 2017
Deadline for early bird registration – 15 September 2017
Confirmation of attendance – 15 October 2017

#### **Keynote Speakers (in alphabetical order)**

Prof. Deborah Corrigan, Faculty of Education, Monash University, Victoria, Australia

Prof. Joseph Krajcik, CREATE for STEM Institute, Michigan State University, USA

Prof. Kokichi Sugihara, Meiji Institute for Advanced Study of Mathematical Sciences, Meiji University, Tokyo, Japan

Prof. BaoHui Zhang, School of Education, Shaanxi Normal University, Xi'an, China

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