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東亞科學教育學會通訊

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#608, Education Information Hall (10-1),  
Seoul National University  
599 Gwanangro, Gwanak-gu, Seoul,  
151-742, Korea  
ph: +82-2-880-4490 fax: +82-2-882-4487  
<http://theease.org/>

## *Learning experiences in other regions: What should be the future of EASE?*

EASE is going to celebrate our first anniversary in October 31, 2008. On this special occasion, I decided to learn experiences of international associations in other regions, and invited two prominent science educators from Southern African and Nordic regions to submit essays relevant to the topic. One is from Professor Meshach Ogunniyi, the University of the Western Cape, South Africa, and the other is from Professor Jari Lavonen, University of Helsinki, Finland. As the President of EASE, it is a great pleasure to share the two essays with all of our EASE members. And, comments and suggestions on our future activities are highly appreciated. (Masakata Ogawa, Kobe University)

## *Regional cooperation in research capacity building in science education: The Southern African experience*

Prof. Meshach B. Ogunniyi  
University of the Western Cape

The Southern African Region popularly known as the Southern African Development Cooperation (SADEC) consists of several countries south of the Equator such as: Angola, Botswana, Burundi, Lesotho, Democratic Republic of Congo, Rwanda, Mauritius, Mozambique, Namibia, South Africa, Seychelles, Swaziland, Tanzania and Zimbabwe. The SADEC countries share a lot in common in that they were under colonial rule for about three hundred years before gaining their independence in the latter part of the twentieth century. For the same reason, and apart from the officially recognized local languages, the official and formal business languages are English, French, Portuguese and until recently, German—all reflecting the languages spoken by the colonialists. In addition, South Africa was subjected to the apartheid system of government for about 50 years before the first democratic government was elected in 1994 with Nelson Mandela as the first President. The SADEC region has a population of about 150 million. The region is endowed with a great variety of natural resources, climatic conditions and vegetation ranging from desert to Mediterranean to tropical biomes. The major rivers traversing the region are the Congo River, Orange River, Limpopo and the Zambezi which empty their waters into the Atlantic and Indian oceans. The economy of the region is largely driven by the mining, fishing and agro-chemical industries, South Africa being the hub of economic activity in the region.

Research capacity building and cooperation in science education in the SADEC have been going on for less than two decades. In January 1992, a workshop on Research in Science and Mathematics Education was held at the Cathedra Park Hotel in Drakensburg, South Africa. That workshop was attended by about 60 science and mathematics educators, scientists, mathematicians and some science and mathematics teachers from the SADEC Region was organized by Diane Grayson, in collaboration with John Volmink and Aletta Zietsman. The aims of the workshop were to develop a sense of Community of Practice among science and mathematics educators in the region and to provide the needed forum for research capacity building in science and mathematics education in the SADEC. At the end of the workshop a proposal was made to form an association to promote mathematics and science education research.

The association which became known as the Southern African Association for Research in Mathematics and Science Education (SAARMSE) had its first meeting at Rhodes University, Grahamstown, South Africa in 1993. Thereafter, it has been held in various countries in the SADEC depending on the willingness of a particular country to host the annual meeting. In 2000 the SAARMSE was changed to SAARMSTE to reflect the addition of Technology Education component. The SAARMSTE Conference in January, 2008 took place in Maseru, Lesotho. Next year (19-22 January, 2009) marks the full circle when the 17th Annual Conference will again take place in Grahamstown, South Africa. The conference will be hosted by the Rhodes University, Grahamstown and the Eastern Cape Chapter of SAARMSTE. The theme for the conference

is, “Reclaiming Knowledge in Mathematics, Science and Technology Education in Southern Africa.” Information about the conference can be found on <http://www.ru.ac.za/saarmste>. Although the majority of members of SAARMSTE come from the SADEC several other members come from Europe, North America, Asia, Australia, New Zealand and many other countries in Africa. Eminent scholars around the world are normally invited as keynote speakers at the annual conferences. Other details about the SAARMSTE can be found on <http://www.phy.uct.ac.za/saarmste/>



As a major professional organization driving research capacity building in the region, the SAARMSTE's annual conference provides the needed opportunity for researchers to present papers while its proceedings and occasional research reports serve as the avenue for young and established researchers to publish their work. Apart from its annual meetings, the SAARMSTE organizes sub-regional research workshops and symposiums mainly for doctoral and post-doctoral students. However, it is its Research School that began in 2003 which plays a major role in assisting post-graduate students and young researchers to complete their theses as well as assist them to bring their research reports to a publishable stage in refereed journals and conference proceedings. Peter Hewson's paper presented at the NARST Conference in California in 2006 titled, “Research Schools for Graduate Students European and South African Models of Research Enculturation” spells out in great detail how a collaborative endeavour which began in 1997 between the National Research Foundation (NRF) in South Africa and the National Science Foundation (NSF) in the US resulted in the Research School. The Research School is a week-long residential event that brings together doctoral and post-doctoral students as well as their supervisors from South Africa and other countries. Further, the experience garnered from the Research School led to the formation of the Research Capacity Building Committee (RCBC) during the SAARMSTE Conference which took place in Windhoek, Namibia in 2005. The RCBC oversees research capacity building in mathematics, science and technology education in the region.

The first journal of the SAARMSTE (then SAARMSE) was launched in 1997 with one issue per year until 2002. However, since 2003 two issues of the journal have been produced per year. Also, in 2003 the name of the journal was changed to the “African Journal of Research in Mathematics, Science and Technology Education (AJRMSTE) to reflect the wide interest shown in the journal by researchers from all over Africa. The journal also runs writing workshops for SAARMSTE chapters and other interested groups across Africa. The SAARMSTE's Editorial Board is consisted of eminent researchers from various parts of the world.

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Apart from research cooperation through the SAARMSTE, there are a number of active nodes of research capacity building and Centres of Excellence in Science, Mathematics and Technology Education where many Masters, doctoral and post-doctoral students from different African countries are trained on full- and part-time basis. Two well known examples in this regard are the Research Development in Mathematics and Science Education Centre at the University of Witwatersrand in Johannesburg and the School of Science and Mathematics Education, University of the Western Cape. The latter also holds the UNESCO/UNITWIN Chair in Science and Mathematics Education for a number of Southern African Universities and has since its inception in 1995 supervised over 60 post-graduate Masters and doctoral students from Southern, Eastern, Central and Western African countries. In the last six years and in collaboration with a number of African and Norwegian academics, the School has supervised to completion 26 doctoral studies. Further the Seminar Series of the School is largely based on post-graduate students' presentation at bi-weekly seminars. The refereed Seminar Series provides the first opportunity for post-graduate students to learn academic writing in their strive to publish in refereed journal. More details about School and its research capacity building efforts can be obtained from

mogunniyi@uwc.ac.za. In addition, the Postgraduate Enrolment and Throughput (PET) project, also at the University of the Western Cape (UWC), provides essential support for post-graduate students in terms of study space, computer access, research software training, basic computer literacy as well as communication and information literacy. Likewise, the PET project runs workshops on research proposal development, data analysis and report writing. More information about the PET project can be found on the UWC website: <http://www.uwc.ac.za/>

It is apposite to mention that what I have sketched here are only a few examples of active nodes of research capacity building efforts in the SADEC region. One important outcome of these research building efforts has been the UWC website: [www.uwc.ac.za/](http://www.uwc.ac.za/) evolution of a virile network presently existing among post-graduate students and researchers in the region and beyond. Without such structures as the SAARMSTE, the Research School, the UNITWIN/UNESCO Chair, RADMASE and similar structures in the region, the sense of being in a Community of Practice in the fields of science, mathematics and technology education would have been difficult to realize.

## Science Education News:

### *The Korea Foundation for the Advancement of Science and Creativity (KOFAC)*

Yoon Chung,  
President of KOFAC

The Korea Science Foundation, after serving for the last 40 years by promoting science culture and increasing public understanding of science, is now charting a fresh course for the future. Taking the new name of the Korea Foundation for the Advancement of Science and Creativity (KOFAC), it now moves forward to meet the challenge of helping education and science technology keep pace with a constantly changing world. Our new mission as KOFAC will include establishing 'the Creative Society based on Science' by promoting the cultivation of creative and talented human resources in science, and contributing to the advancement of science culture in Korea by bringing together science technology, education, culture, and the arts. The projects that KOFAC will carry out include:

1. Substantial Advancement of Science Culture Promotion Projects / Science Outreach Projects  
(Korea science festival, Everyday science class, Youth Science Club, Science ambassador)
2. Promotion of Public Awareness of Global Issues  
(Internet newspaper, 'Sciencetimes', Science portal 'ScienceAll.com', Science lectures for public)
3. Reinforcement of Math and Science Education  
(Revise science & math curriculums, Development and distribution of next-generation text books)
4. Strengthen Education for Gifted Students  
(Education system for gifted students, Teacher training programs)
5. Development of Science Education Resources  
(Korea Science Resource Center, Curriculum development)

For more information, visit <http://www.kofac.or.kr/en/main/main.jsp>



"No great discovery was ever made without a bold guess." Isaac Newton.

## Circulars of Science Education



In this new series, introducing magazines or (non-)academic journals of science education, this newsletter tries to give you powerful communicating tools. We may understand what exact networks are used and how friends communicate for each region. Information here will reveal unknown circumstances of science education in east Asia and will be helpful when

you make a big advertisement spread out! Secretaries are happy to receive your short piece contribution, introducing medias around you. (Hisashi Otsuji, Ibaraki University)

### *Rika no Kyoiku (Science Education Monthly) (Japan)*

Established in 1951, "Rika no Kyoiku (Science Education Monthly)" has been contributing to communicate among Japanese science teachers and researchers all through its long history. Except the table of contents, all of about 70 pages are written in Japanese so you can browse in English 674 issues in 57 volumes. This monthly is published by Toyokan Publishing Co.,Ltd. which is one of main publishers of science education in Japan and edited by the Society of Japan Science Teaching. This is why the monthly has academic taste partly and has been taken a role as a bridge between research and practice mainly in primary and junior secondary level. Each issue (762 yen) has a focusing title whose series tells us all history of science education in Japan and mailed to about 1300 members of the association for free.



**Contact:** Toyokan Publishing Co.,Ltd.

Kanda-Awaji-Cho 2-13, Chiyoda-ku, Tokyo, 101-0063 JAPAN / Tel: +81-3-3253-8821 / Fax: +81-3-3253-6298 / <http://www.toyokan.co.jp/>

## Join Us:

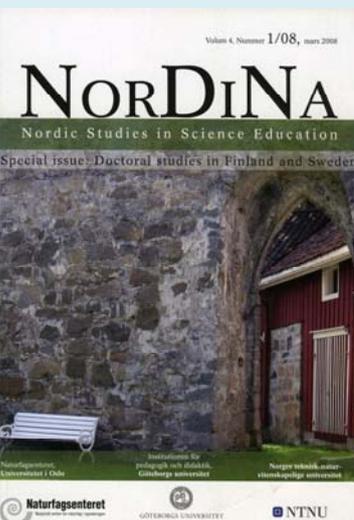
Membership of EASE: It costs US\$20.00 a year to be a member of EASE (US\$10.00 for students). For more information: Just visit EASE Website. <http://theease.org>. And you can download the membership form from <http://theease.org/membership>. If you have any question, do not hesitate to contact Prof. Young-Shin Park ([parkys@chosun.ac.kr](mailto:parkys@chosun.ac.kr)).

## Regional co-operation in science education research and researcher training: An example from Northern Europe

Prof. Jari Lavonen  
University of Helsinki, Finland

The Nordic countries make up a region in Northern Europe called the Nordic region, consisting of Denmark, Finland, Iceland, Norway and Sweden. The region's five states share much common history as well as common traits in their respective societies, such as political systems. Linguistically, the area is heterogeneous, with three unrelated language groups. The Nordic countries have a combined population of approximately 25 million spread over a land area of 3.5 million km<sup>2</sup>.

There is over 20 years of science education research co-operation and about 10 years of PhD education co-operation between the Nordic countries. The first Nordic Research Symposium on Science Education was held in Denmark in 1984. Thereafter, every third year, this symposium has been organised in one of the five Nordic countries. The theme of the 2008 symposium was "From insight to learning to pedagogical practices" and was held in Reykjavik, Iceland (<http://symposium9.khi.is/>). The symposium has been an important forum for the exchange of research results within the Nordic



science education research community. The symposium connects research, developmental work and teaching and has been open to researchers and also teachers from all levels. It has functioned both as a meeting point and platform for the establishment of networks within science education research in the Nordic countries. The research orientation has been strengthened, and nowadays papers in the symposium are peer reviewed.

A second example of regional co-operation is the regional peer reviewed science education research journal *NordiNa* ([http://www.naturfagsenteret.no/tidsskrift/nordina\\_english.html](http://www.naturfagsenteret.no/tidsskrift/nordina_english.html)). This Nordic Journal of Science Education was established in 2005 and publishes scientific articles in the field of science education; both research based and reflective perspectives. In addition to scientific articles, the journal publishes descriptions of curriculum development and ongoing projects and short abstracts of dissertations in the field. This regional journal is especially important for PhD students. It offers the first publishing channel for young researchers in the research field.

A third example is the co-operation between graduate schools in the

Nordic countries. For example, the *Finnish Graduate School of Mathematics, Physics and Chemistry Education* (<http://www.edu.helsinki.fi/malu/tutkijakoulu/english.htm>) and the *Swedish National Graduate School in Science and Technology Education Research* (<http://www.isv.liu.se/pub/jsp/polopoly.jsp?d=5696&a=33897>) co-operate in researcher training through change of experts for the training courses and common activities. For example, a special issue based on PhD students' research projects was published in 2008 in the journal *NordiNa*. The co-operation between the Nordic countries has had an impact on PhD studies, with the structure and aims of such studies now being similar in all the different Nordic countries. The general aim of the doctoral studies is to provide students with an in-depth knowledge of the field of research and the capability to produce novel scientific knowledge independently. A doctoral degree takes approximately 4 years of full-time study to complete.

A new type of co-operation is through common PhD courses for doctoral students in the Nordic countries. In November 2008 a common course for 32 students will be organised in Gothenburg, Sweden. The focus of the course will be on the role of theory in developing doctoral theses in the context of science education. The importance of theory in research will be discussed and the different functions it can have will be examined. This focus has been chosen as the position of theory sometimes appears to be taken for granted in doctoral projects, and at other times an awareness of the theoretical assumptions underpinning the methods, interpretations and results is missing. It is therefore seen as important that new researchers in the field become familiar with the issues regarding the role of theory, as well as with perspectives that may form the theoretical basis of research in science education.

I have outlined here some examples of the types of "official" regional co-operation. We have found this co-operation very useful and fruitful from the point of view of science education research and PhD training. This official co-operation has also led to different types of personal co-operation. There are, for example, common research projects, such as the ROSE-project (<http://www.ils.uio.no/english/rose/>). A supervisor of a doctoral student can be from one of the Nordic countries, and likewise it is also common when examining a PhD thesis, that the evaluators also come from the Nordic countries. It is crystal clear that the rich official and personal co-operation among science education researchers in the Nordic countries has increased the quality of science education research and the PhD theses produced.



### About IESO (International Earth Science Olympiad)

The International Earth Science Olympiad (IESO) is an annual earth science event for secondary school students. The idea of International Earth Science Olympiad (IESO) was suggested by several Korean earth scientists before 2003. IESO was adopted as one of major activities of International Geoscience Education Organization (IGEO) during International Council Meeting held in Calgary, Canada during the Fourth International Conference on Geoscience Education (GeoSciEd IV) on April, 2003. The 1st IESO Conference was held in November 2004 in Seoul and representatives from ten countries participated and discussed the earth science curricula and the desirable format of IESO. In 2005, IESO Syllabus Commission (Chairperson: Nir Orion) was established. IESO logo was designed and approved by the IESO Advisory Committee in March 2006. The 2nd IESO conference was held at Chosun University, Korea, to finalize needs for the 1st IESO held in Korea, OCT 21-29, 2007. The 2nd IESO was held in Philippines, Aug 31-Sept 8, 2008. The 3rd IESO is planned to be held in Taiwan, 2009. Through this event of IESO, IESO intend to raise students' interest in and public awareness of earth science, to enhance earth science learning of students, and to identify talented and gifted students in earth science. Furthermore, IESO is in pursuit of encouraging friendly relationships among young learners from different countries and promoting international cooperation in exchanging ideas and materials about earth science and earth science education. The IESO is also aimed at improvement of teaching earth science in K-16 levels. Teaching earth science can require more unique teaching and learning strategies, which is called "abductive," where students have opportunities to develop their own argumentation based on evidences. When considering my research interest about argumentation, IESO can be one of best resources to explore the nature of earth science. You can find more information about IESO: <http://ieso.or.kr/>

Young-Shin Park (Chosun University, Korea)

**Announcement !!!****The First EASE Conference**

**DATE: Oct. 21-23, 2009**  
**VENUE: Taipei, Taiwan**  
**(Concrete Hotel Name: TBA)**

**Conference Theme****Science Education for Tomorrow (SET): Voices of East Asia****Tentative Strands:**

Curriculum and Teaching, Learning Science in Schools, Learning Science in Informal Settings, ICT and Science Education, Professional Development of Science Teachers, History and Philosophy of Science in Science Education, Policy of Science Education, Assessment and Comparative Studies, Collaborative Studies, Region-Specific Issues, etc

**Registration fees:**

|                     |                        |
|---------------------|------------------------|
| Regular Member      | 150 US \$ (4500 NT\$ ) |
| (Early registration | 120US\$ (3600NT\$))    |
| Student Member      | 50 US\$ (1500 NT\$ )   |
| (Early registration | 40 US\$ (1200 NT\$))   |

**Proposal Call Due Date: April 30th, 2009**

Contact: to *Prof. Huann-shyang Lin*  
 (huannlin@faculty.nsysu.edu.tw)

**EASE strongly encourages** participation of younger generation of science education researchers (junior faculty as well as graduate students) from our regions in order to find out prospective colleagues and research partners from other regions than their own. For that purpose, we are planning to set a special occasion managed by younger generation themselves. Volunteers managing this event are highly appreciated. Those who want to do shall send an email to Masakata Ogawa (ogawam@kobe-u.ac.jp).

**New PhDs in the Regions**

This is a new series of introducing and celebrating newly awarded PhDs from institutions of our regions. The list this time comes from Seoul National University this year. (We are waiting for the inputs from other institutions as well.)

**Congratulations!!!****Dr. Soon Hwa Byun:**

A Study on the Effects and the Learning Processes of Science Instruction Using Experience-based Analogies in Learning the Particulate Nature of Matter

**Dr. Chui Im Choi:**

Development of Scientific Creative Problem Solving Test Model: Through Analysis of Test for Selecting Scientifically Gifted Students and Students Response

**Dr. Mi Hyun Yoo:**

Development and Application Effects of 'Program Inquiring into Scientist' for Enhancing Social-affective Characteristics and Science-related Perceptions of the Science-Gifted

**Dr. Gyeong Sig Nam:**

Middle school students' learning difficulty caused by scientific terminology and ways to solve it via writing using scientific terminology

**Dr. Sun Hee Cho:**

Psychometric and neuro-imaging studies on intelligence, creativity, and creative personality of the gifted in science

**Dr. Won Kyung Lee:**

(The) Influence of systematic analogies on the conceptual changes of enzymes in interpreting experiment results

**Dr. Mi Kyung Kim:**

(The) Science high school students' epistemological understanding of the science through the authentic open inquiry

**Dr. Ki Sang Kim:**

Visitors' interactive learning in dyadic discourses in a natural history museum focusing on the ZPD system

**Dr. My Young Shin:**

Features of the 8th grade students' asking question, planning method, analyzing data, and drawing conclusion generated for conducting self-directed, open-ended scientific inquiry

**Dr. Minkee Kim:**

Causal Relationships among Students' Attitude, Interest, Conceptual Understanding, and School Achievement in Secondary Physics

**Dr. Ji Yeon Park:**

The Development and Effect of 4M Learning Cycle Teaching Model Based on the Integrated Mental Model Theory: Focusing on Learning Circular Motion of High School Students

**Dr. Kyung Won Moon:**

Development and Application of Microcomputer-Based Experiments on Photosynthesis and Respiration

**Dr. Seung Ho Maeng:**

Variations in the modality of science teaching about minerals and rocks based on classroom discourse genres: An application of discourse register and language code theory

**Dr. Chang Suk Lee:**

Development and implementation of computer-based optics experiments focused on the errors and uncertainty

**Dr. Eun Sun Ha:**

Case analysis on the features and persistence factors of middle school students' science discourse during afterschool group activities

(Contact: to Prof. Song, jwsong@snu.ac.kr)

**Message from a New PhD to PhD Candidates:****Greetings from Helsinki!**

Minkee Kim (minkee.kim@helsinki.fi)

It is my great honour to share what I have done recently. I obtained my PhD in Seoul National University, Korea in August. On September 1, I moved to Department of Applied Science of Education, University of Helsinki, Finland as a research fellow. With the helps of my host professor Jari Lavonen and my supervisor Jinwoong Song, I had prepared this post-doc program since December 2007 along with my PhD proposals. The grant is supported by CIMO (Centre for International Mobility), a governmental office in Finland. As well known for its world-highest PISA results, many international educators are visiting this university and this country. I am also analyzing PISA 2006 data and communicating with them. But, most of my time and efforts are spent on preparing my lecture (quantitative methodology), collaborating on a case study with secondary schools, and serving as a blind reviewer for certain international journals. Lastly, what surprised me here is that international collaboration matters much in this academic field. In this semester, a national conference, a PhD-supervision program in Sweden, and another seminar in Germany have been booked for Jari and me. I am looking forward to meeting you all in Europe!

**Conferences in the World**

XIII IOSTE <http://www.ioste2008.org>

Sep. 21-26, 2008 @Izmir, Turkey

ICSSENS 2008 <http://sens.snu.ac.kr/eng/>

Oct. 30-Nov. 1, 2008 @Seoul National University

NARST 2009 [http://](http://www.narst.org/annualconference/2009conference.cfm)

Apr. 17-21, 2009 @Garden Grove, CA, USA.

5<sup>th</sup> World Environmental Education Congress

[http:// www.5weec.org](http://www.5weec.org) May 10-14, 2009 @Montreal, Canada

40<sup>th</sup> ASERA 2009 <http://www.asera.org.au>

Jul. 1-4, 2009 @ Deakin Geelong Waterfront Campus, Victoria, Australia.

CONASTA 2009 Jul. 5-9 @Tasmania

ESERA 2009 <http://www.esera2009.org/>

Aug.31-Sep.4, 2009 @Istanbul, Turkey

JSSE 2009 <http://certcms.shinshu-u.ac.jp/jsse/>

Aug. 21- 23, 2009 @Kyoto, Japan

SJST 2009 <http://www.soc.nii.ac.jp/sjst/>

2009 @Sendai, Miyagi, Japan

EASE 2009 <http://theease.org/>

Oct. 21-23, 2009 @Taipei, Taiwan

International Science Education Conference

2009 Dec. 2-4, 2009 @National Institute of Education, Singapore

41<sup>st</sup> ASERA 2010 <http://www.asera.org.au>

@ Newcastle University, Australia.

EASE 2010 Summer Workshop for Research Students