E·A·S·E East-Asian Association for Science Education

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Words from the EASE 2013 Conference Committee

We are very pleased to invite EASE members and other science educators and scientists to the forthcoming EASE 2013 conference. This conference will be held at the Hong Kong Institute of Education, Hong Kong, China, on 4–6 July, 2013. Hong Kong, the Pearl of the Orient, is Asia's financial hub for international commerce and a gateway into China, where both Eastern and Western cultures coexist harmoniously. We are sure that you will enjoy the vigor, beauty, modernity, and diversity of Hong Kong. We look forward to meeting you in Hong Kong.

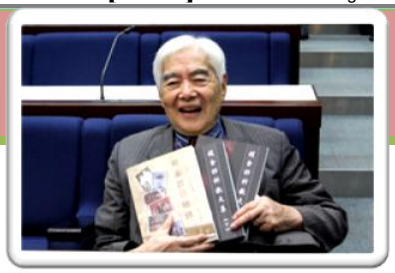
Following is the programme summary of the conference. For further information, please visit: http://new.theease.org/conference.php

PROGRAMME SUMMARY

DAY 0	3th July, 2013	Wednesday
18:00-20:00	Welcome Reception	BlockD1-LP
DAY 1	**4th July, 2013**	**Thursday**
08:45-09:30	Registration	BlockD1-LP
09:30-10:15	Opening Ceremony	D1-LP-04
10:15-11:00	Plenary Session *Prof. Yu WEI*	D1-LP-02
11:00-11:20	Tea Break	D1 Area
11:20-12:40	OP-1A1 to 1A4 D1-LP-02 | OP-1B1 to 1B4 D1-LP-04 | OP-1C1 to 1C4 D1-LP-07 | OP-1D1 to 1D4 D1-LP-06	
	OP-1E1 to 1E4 D2-LP-10 | OP-1F1 to 1F4 D2-LP-09 | OP-1G1 to 1G4 D2-LP-08	
12:40-13:45	Lunch + Poster Session - Optional	Canteen
13:45-14:30	KS-01 *Prof. Reinders DUIT*	D1-LP-02
14:30-15:00	IS-01 *Prof. Enshan LIU* D1-LP-02 | IS02 *Prof. XingKai LUO*	D1-LP-03
15:00-15:15	Tea Break	D2 Area
15:15-16:00	WS-01 D4-LP-02 | WS-02 D4-LP-05 | WS-03 D3-G-05 | WS-04 D2-LP-10 | PS-101-135 Poster Area	
16:00-18:00	OP-1H1 to 1H6 D1-LP-02 | OP-1I1 to 1I6 D1-LP-04 | OP-1J1 to 1J6 D1-LP-07 | OP-1K1 to 1K6 D1-LP-06	
	OP-1L1 to 1L6 D2-LP-10 | OP-1M1 to1M5D2-LP-09 | OP-1N1 to 1N6 D2-LP-08 | OP-1P1 to 1P6 D2-LP-02	
18:00-19:30	EASE Executive Board Meeting	
19:30-21:00	EASE Executive Dinner	
DAY 2	**5th July, 2013**	**Friday**
09:30-10:15	KS-02 *Prof. Dana ZEIDLER*	D1-LP-02
10:15-11:00	WS-05 D4-LP-02 | WS-06 D4-LP-05 | WS-07 D3-G-05 | PS-201-241 Poster Area	
11:00-11:15	Tea Break	D1 Area
11:15-12:00	KS-03 *Prof. John GILBERT*	D1-LP-02
12:00-12:30	EASE General Assembly	D1-LP-02
12:30-13:30	Lunch + Poster Session (Optional)	Canteen
13:30-14:15	KS-04 *Prof. Fu Kwun HWANG*	D1-LP-02
14:15-15:15	OP-2A1-2A3 D1-LP-02 | OP-2B1-2B3 D1-LP-03 | OP-2C1-2C3 D2-LP-08	
	OP-2D1-2D3 D1-LP-07 | OP-2E1-2E3 D1-LP-06 | OP-2F1-2F3 D2-LP-03	
	OP-2G1-2G3 D2-LP-04 | OP-2H1-2H3 D2-LP-09 | OP-2I1-2I3 D2-LP-02	
15:15-15:30	Tea Break	D1 Area
15:30-17:30	OP-2J1-2J6 D1-LP-02 | OP-2K1-2K6 D1-LP-03 | OP-2L1-2L6 D2-LP-08 | OP-2M1-2M6 D1-LP-07	
	OP-2N1-2N6 D1-LP-06 | OP-2P1-2P6 D2-LP-04 | OP-2Q1-2Q6 D2-LP-03 | OP-2R1-2R6 D2-LP-09	
17:30-18:45	SS-01 D1-LP-02 | SS-02 D1-LP-03 | SS-03 D1-LP-07 | SS-04 D1-LP-06 | PS-201-241 Poster Area	
18:45-19:30	Bus Transfer to Dinner Venue	
19:30-21:00	Conference Dinner	Science Park
DAY 3	**6th July, 2013**	**Saturday**
09:30-10:15	KS-05 *Prof. Samuel SUN*	D1-LP-02
10:15-10:45	IS-03 *Prof. Jack HOLBROOK* D1-LP-02 | IS-04 *Dr. Vanessa KIND*	D1-LP-03
10:45-11:00	Tea Break	Area D1
11:00-12:40	OP-3A1-3A4D1-LP-02 | OP-3B1-3B5D1-LP-03 | OP-3C1-3C5 D2-LP-8 | OP-3D1-3D5 D1-LP-7 | OP-3E1-3E5 D2-LP-09	
	OP-3F1-3F5 D1-LP-6 | OP-3G1-3G5 D2-LP-7 | OP-3H1-3H5 D2-LP-3 | OP-3I1-3I5 D2-LP-04 | OP-3J1-3J5 D2-LP-02	
12:40-13:45	Lunch + Poster Session (Optional)	Canteen
13:45-14:45	SS-05 D1-LP-02 | SS-06 D1-LP-03 | SS-07 D1-LP-07 | TS-01 D1-LP-06 | PS-301-337 Poster Area	
14:45-15:30	Closing Ceremony	D1-LP-02
16:00 -	Sky100 Visit (Optional)	
DAY 4	**7th July, 2013**	**Sunday**
0900 -12:30	Ocean Park Visit (Optional) – Visitors are welcome to stay until 19:00	
15:00-	Transportation to Guangzhou for GCCSE 2013 conference	

A glance at the 2013 EASE Distinguished Service Awardee

Professor Chin-Chi Chao



AFFILIATION

- Retired Professor, National Taiwan Normal University, Taiwan

SERVICES IN ADMINISTRATION

- President of National Sun Yat-Sen University
- Dean of College of Science and Director of Science Education Center, National Taiwan Normal University

SERVICES IN PUBLIC SOCIETY AND COMMUNITIES

- Deputy Minister of Education, Taiwan
- Chair of Arbitration Board for Teacher's Appeal, Ministry of Education, Taiwan
- Chair of National Association of Physics Education, Taiwan

HONORS

- First-class Education and Culture Medal, Ministry of Education, Taiwan
- Award of Distinguished Contribution, National Association of Physics Education, Taiwan
- Award of Distinguished Fellow, National Taiwan Normal University, Taiwan
- Award of Distinguished Contribution, Association of Science Education, Taiwan

IMPORTANT SERVICE CONTRIBUTIONS TO EAST-ASIA REGIONS

- As the first Ph.D. degree holder in science education in Taiwan, Prof. Chao established the modern science education and science teacher education system in Taiwan as well as the potential academic faculty bridges across regions in East-Asia.
- As a science education pioneer in East-Asia regions, Prof. Chao also coordinated with the authorities about science educational policies in developing science curriculum from primary to secondary schools as well as the promotion of innovative science curriculum for references in East-Asia regions.
- As an important advocator of the development of Science Education, Prof. Chao's devotion to the nurture of following science education researchers and international academic cooperation has extended his contributions to many regions in Asia and other parts of the world.

A glance at the 2013 EASE Distinguished Research Awardee

Professor Masakata Ogawa

AFFILIATION

- Dean of Graduate School of Mathematics and Science Education, Tokyo University of Science, Japan

IMPORTANT EXPERIENCES

- President, East-Asian Association for Science Education
- President, Japan Society for Science Education
- Contributing editor, Science Education (John Wiley & Sons)
- Editorial board: Canadian Journal of Science, Mathematics and Technology Education, International Journal of Science Education (Part B), Cultural Studies of Science Education, International Journal of Science and Mathematics Education
- Editorial advisory board: Studies in Science Education, Encyclopedia of Science Education, Springer
- Editor-in-Chief, Journal of Science and Technology Studies (Japan) Professor: Science and Technology Education; Dean: Graduate School of Mathematics and Science Education, Tokyo University of Science, Japan
- Extraordinary Professor University of the Western Cape (South Africa) 2008-2010
- Professor Emeritus Kobe University, Awarded in 2009
- Dean, Graduate School of Mathematics and Science Education, Tokyo University of Science

HONORS

- Member of Committee on Human Resources in Council for Science and Technology (Ministry of Education, Culture, Sports, Science and Technology)
- 2003 Distinguished Contributions Through Research' Award (Japan Society for Science Education)

RESEARCH INTERESTS

- Cultural Studies in Science Education
- Public Understanding of Science (Science Literacy)
- Science and Technology Education Policy
- Scientific and Technological Human Resource Development in Higher Education

A glance at the 2013 EASE Distinguished Research Awardee

Professor Huann-shyang Lin

AFFILIATION

- Chair Professor/Director, Center for General Education, National Sun Yat-sen University, Taiwan

IMPORTANT EXPERIENCES

- Editor-in-Chief, International Journal of Science and Mathematics Education
- Vice President East-Asian Association for Science Education
- President, Association of Science Education in Taiwan
- President, National Hualien University of Education
- Chief Editor, Chinese Journal of Science Education
- Dean, College of Science, National Kaohsiung Normal University
- Chair, Department of Chemistry, National Kaohsiung Normal University

HONORS

- National Program Manager, Programme for International Student Assessment (PISA) 2006 & 2015
- Outstanding Researcher Award (3 times), National Science Council
- Distinguished International Alumni, University of Minnesota. USA

RESEARCH INTERESTS

- Integrating the history of science into science teaching
- Investigation of student progress on inquiry ability
- Assessment of student conceptual understanding and application
- Use of argumentation in science teaching and asynchronous discussion
- Reflective peer assessment

A glance at the 2013 EASE Distinguished Research Awardee

Professor Jongwon Park

AFFILIATION

- Professor of Department of Physics Education, Chonnam National University, Gwangju, Korea

IMPORTANT EXPERIENCES

- Visiting Scholar at University of British Columbia, Canada
- Chief Editor of the "Journal of The Korean Association in Science Education"
- Director of the Center for the Gifted Education in Science and Mathematics, Chonnam National University, Gwangju, Korea
- Vice Dean of College of Education, Chonnam National University, Gwangju, Korea

HONORS

- Korean Virtual Campus (on-line lecture) Best Teacher Award
- Listed in "Who's Who in Asia"
- Academic Award from The Korean Association in Science Education
- Best Teacher Award from Chonnam National University, Korea

RESEARCH INTERESTS

- Conceptual understanding and conceptual change in physics
- The cognitive processes of student's scientific inquiry
- The nature of science
- Defining scientific creativity and developing materials for improving scientific creativity
- Teacher Education
- Developing physics demonstrations and their application to teaching/learning materials

Announcement from EASE Headquarters

EASE INVITED TO THE ESERA FOR A SYMPOSIUM

The EASE Association is invited by the ESERA (European Science Education Research Association) for organizing a Symposium in 2013 ESERA Conference in University of Cyprus, Sep. 02-07. This EASE symposium themed as Research updates from the East-Asian Region- View scientific concept, teaching/learning, and evaluation from complementary perspectives, will be chaired the President of EASE, Prof. Lien. Science Educators and Executive Members of EASE, including China Mainland, Hong Kong, Japan, Korea, and Taiwan will present their studies and share their experiences in the symposium.

The five presentations are as follows:

1. An Investigation on the Similarity between Misconceptions of Junior Secondary Biology Teachers and That of Their Students (Enshan LIU, Beijing Normal University, China Mainland).
   The study presents findings of examining misconceptions on photosynthesis and respiration held by 1442 students and their teachers. Similarities and suggestions will be reported.
2. One Country, Two Systems: Assessment Policy in New Senior Physics Curriculum Documents Hong Kong and Mainland China (CHENG May Hung, May, WAN Zhi Hong, Hong Kong Institute of Education, Hong Kong).
   This paper reports common issues, differences in the conceptualization, aspects being emphasized, and policy implementation strategies.
3. Development of a Web-Based Collaborative Lesson Study System for the Professional Development of Science Educators (Manabu SUMIDA, Ehime University, Japan).
   The system developed by the author and how it was used successful by science teachers in Japan will be introduced. The potential of further applications will be illustrated.
4. Co-construction of Scientific Models in East Asian Science Classrooms (Chan-Jong KIM, Min-Suk KIM, Seoul National University, Korea).
   With a belief that culture/educational context affects modeling construction, this report explored classroom interaction, dynamic process of co-construction, and measures to meet the challenges to introduce modeling in Korean classrooms.
5. What do science teachers need to have to implement inquiry-based science instruction—Perspectives from Taiwanese Science Teachers (Hsiao-Lin TUAN, Pi-Yun Cheng, Chung-Hsien TSENG, National Changhua University of Education, Taiwan).
   How science teachers perceive their inquiry-based teaching competence and what factors influence instruction? This study surveyed more than 700 high school science teachers in Taiwan to reach research findings. Results and suggestions will be explained.

The East-Asian Region, with its special tradition of culture and family values, has special figures of science education. It is hoped that the visit and the dialogue between the East and the West will spark new cooperation among organizations and science educators.

SEOUL SCIENCE TEACHERS' TRIP TO BEIJING (JUNE 19–23, 2013)

Jinwoong Song, Seoul National University, Seoul, Korea

As a part of SNU SERC (Science Education Research Center, Seoul National University) program, a group of 16 secondary teachers (8 math teachers and 8 science teachers), two postgraduate students of science education at SNU, and myself made a four days' trip to Beijing. The teachers are supported for six months by SOME (Seoul Metropolitan Office of Education) to study and develop their professional competence by joining the Master courses and research activities at SNU. While SMOE selects teachers and support their salary during the program, SNU SERC runs the program and provides them the opportunity to join and work with each individual research laboratories at SNU science and mathematics education departments. The Seoul teachers' group had an invaluable opportunity to visit Beijing Normal University, China Science and Technology Museum, Beijing Haidian Teachers' Training College, the Affiliated Middle School of Tsinghua University, and other cultural sites in Beijing.

As the director of SNU SERC, I had to lead the teachers' group and in doing so I could see many different aspects of Chinese formal and informal science education. In particular, I am extremely happy to develop such a program with a strong support from Prof. Enshan Liu at Beijing Normal University, a former vice-president with whom I have developed a good friendship throughout the earlier activities for the establishment of EASE. Prof. Liu and his two postgraduate students developed the details of the visit programs for our group and took care of every part of our trip to Beijing. I think, this visit program was possible only through a strong link developed through close links among our EASE members. I wish, we could have a similar opportunity to host a Chinese (or any other member of EASE) science teachers' group here in Seoul.

Fig.1 Joint Symposium between Chinese and Korean Science & Math Teachers held at Beijing Haidian Teachers Training College on June 20, 2013

Fig.2 Science Lab with a Networked Microscope System at the Affiliated Middle School of Tsinghua University

Fig.3 Korean Teachers' Group to Beijing at the Campus of Tsinghua University

인생의 위대한 목표는 지식이 아니라 행동이다.

A Brief Introduction of the Japan Society for Science Education (JSSE)

Shiho Miyake, Kobe College, Japan

Hello members of EASE. I am Shiho Miyake, one of editorial members of the EASE letter from Japan region. In this short report, I will introduce you a representative science education association in Japan called the Japan Society for Science Education (JSSE).

The JSSE was founded in 1977 to contribute to the progress and diffusion of "Education in/about science" and "Education by scientific and technological methods. Since 2013, Prof. Hayashi Nakayama, one of the authors in this newsletter, has been the president. In order to contribute to the progress and diffusion of "Education in/about science" and "Education by scientific and technological methods," the purposes of the JSSE are as follows:

1. To play an active role in the publication of research and exchanges of knowledge/academic information on science education by JSSE members.
2. To support liaison and collaboration between JSSE members and with other related academic societies in Japan and other countries.
3. To contribute to research in science education by JSSE members and the implementation thereof.

As an additional purpose, the JSSE also collaborates and cooperates with educators, boards of education, and education centers. (JSSE, access 2013/05/01)

Every summer, the JSSE held its annual conference. In this year 2013, it will be organized between 6th and 8th September at Mie University nearby the Central Japan International Airport in Nagoya (Figure). A small group of international session may be announced at the website. If you are interested in the JSSE, please check [http://www.jsse.jp/jsse/modules/note8/] or contact [jsse@nacos.com].

The 64th Summer Conference of KASE

The Korean Association for Science Education (KASE) is excited to announce upcoming event, the 64th Summer Conference July 26-27, 2013 in Gwangju, South Korea. The theme of the conference will be - The Future of Science Curriculum.

Conference Location：Chonnam National University

We are now accepting abstracts for oral or poster presentations. Please email your abstract(s) with your name, affiliation, and contact information to the program organizer: Nam-Hwa Kang (nama.kang@knue.ac.kr) by July 12. Upon receipt of your abstract, you will be pre-registered.

Registration fee: $30 for pre-registration $40 for on-site registration

Those who want to attend the conference without presenting research, please email your name, affiliation, and contact information to the program organizer: Nam-Hwa Kang (nama.kang@knue.ac.kr) by July 19. You will be pre-registered.

We look forward to meeting you.

Youngmin Kim, President of KASE

-Welcome to 2013 ASET—

On behalf of the Association of Science Education in Taiwan (ASET) and the EASE headquarter, we would like to invite you to join us for the 29th ASET Annual International Conference. The conference is set on December 12-14 2013, at the National Changhua University of Education in Changhua Taiwan. ASET is the largest science education association in Taiwan, established since 1988. Each year during the conference, we invited internationally renowned scholars as speakers. Last year, there were about 240 presentations in math and science education. The 29th ASET Conference is also one of the activities recognized by the EASE association. The theme of this year's conference is "Science and Mathematics Manpower Cultivation: Key Literacy and Essential Skills for the 21st Century." Further detailed information regarding proposal submission will be announced in early summer. Please book the dates and join us! If you have any questions regarding the conference, please send your inquiries to aset.ncue@gmail.com

More pictures please visit: http://aps.ncue.edu.tw/ncue_photo/build.html

好きこそものの上手なれ

Types of questioning terms in the Japanese Lower Secondary School Science Textbooks

Hayashi NAKAYAMA, University of Miyazaki,
Yuji SARUTA, National Institute for Educational Policy Research
Eri YAMAMOTO, Student of Graduate School of Education, University of Miyazaki
Norio NOMURA, Former Student of Graduate School of Education, University of Miyazaki

The aim of our study is to find out the types of questions in the Japanese lower secondary school science textbooks that published in 2006. According to the course of study in Japan, to develop students' ability of problem solving or investigation is one of the important objectives of school science. However, the course of study does not obviously refer to develop students' ability to make questions scientifically by words. On the other hand, there are many questions in school science textbooks as the starting point of investigating activity. Those questioning sentences will lead students to make sense of the process of scientific inquiry.

We extracted all questions from the Japanese lower secondary school science textbooks of five publishers such as Tokyo-shoseki, Dainippon-tosho, Sinkoshuppansha-Keirinkan, Kyoiku-shuppan, and Gakko-tosho. Then we grouped them by four content areas of physics, chemistry, biology, and earth science. As a result, the frequency of the questions in each content areas are summarised as Figure 1: physics, Figure 2: chemistry, Figure 3: biology and Figure 4: earth science. Furthermore, words after "what kind of" or "how" are figure out respectively as Table 1 and 2: physics, Table 3 and 4: chemistry, Table 5 and 6: biology, and Table 7 and 8: earth science. Some characteristic points can be seen as follows.

In physics, biology and earth science area "how" and "what kind of" questions are dominant (Figure1, Figure 3, and Figure 4). In these questions, a particular verb or noun determines the concrete meaning. For example, in the physics and earth science area "relate" or "relations" are attached repeatedly (Table1, and Table 7). Closed questions such as yes-no questions they include hypotheses also are used frequently. They are especially dominant in chemistry area. Such terms of question suggest the typical flow of Japanese school science lessons.

We will continue to analyse relevance between students' ability to make questions scientifically and words in science textbooks.

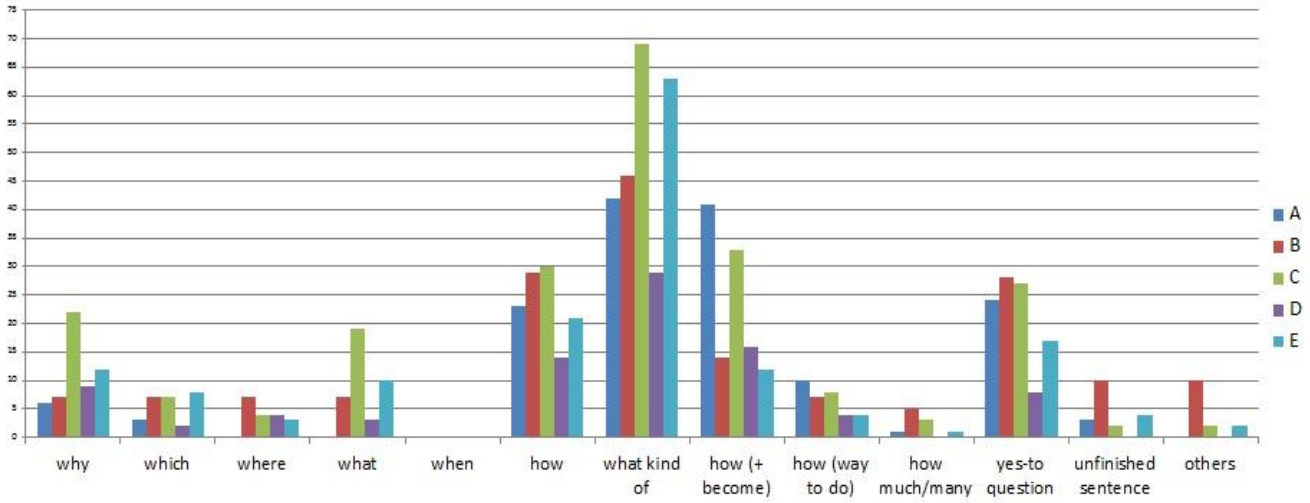


Fig. 1 Frequency of Questions in Physics Area

Tab. 1 Words after "what kind of": Phys.

relation	87
condition	27
function	21
matter	18
force	18
motion	15
regulation	10
characteristic	7
magnetic field	6
thing	6
way to connect	5
difference	3
others	26

Tab. 2. Words after "how": Phys.

change	30
go	15
convey	9
move	7
flow	7
can be seen	6
present	5
operate	5
connect	4
different	3
happen	3
reflect	3
others	19

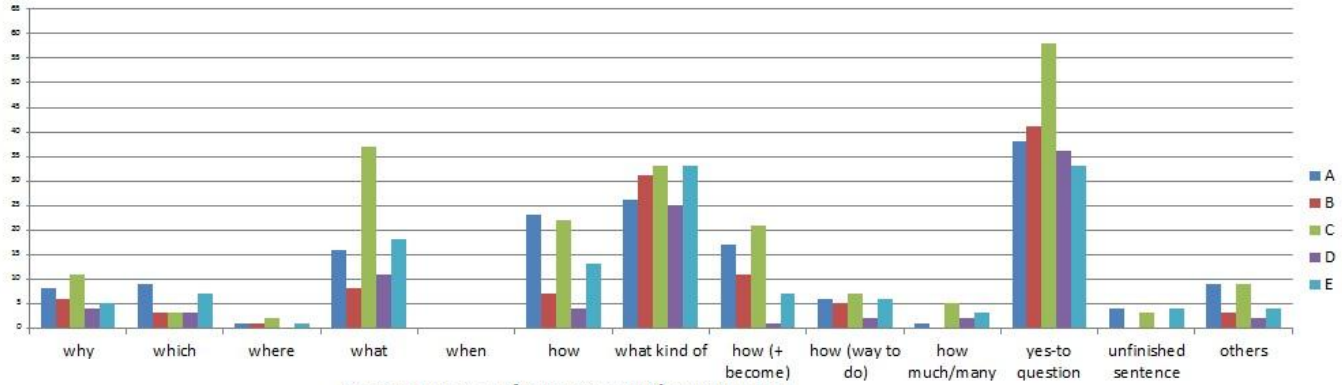


Fig. 2 Frequency of Questions in Chemistry Area

Tab. 3 Words after "what kid of": Chem.	
characteristic	29
substance	21
chage	21
matter	16
relation	12
way	9
chemical change	4
thing	4
gas	4
shape	3
function	2
difference	2
time	2
regulation	2
others	17

Tab. 4 Words after "how": Chem.	
chaner	32
present	7
distinguich	3
take out	3
compare	2
use	2
happen	2
can be seen	2
connect	2
make	2
differ	2
others	10

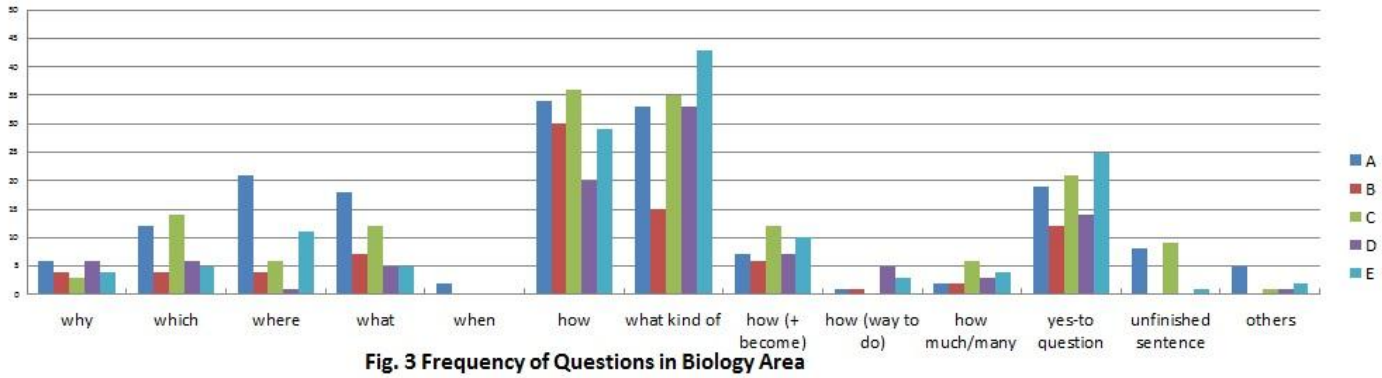


Fig. 3 Frequency of Questions in Biology Area

Tab. 5 Words after "what kind of": Biol.	
form	29
structure	21
characteristic	14
thing	10
group member	9
living thing	8
place	8
function	6
difference	6
animal	4
fom and function	4
change	3
group	3
others	34

Tab. 6 Words after "how": Biol.	
change	15
convey	9
propagate	8
move	7
absorb	6
do/done	6
make/made	5
react	5
sense	4
grow	4
used	3
can do	3
know	3
happen	3
differ	3
others	85

아는 것을 안다 하고 모르는 것을 모른다 하는 것이 말의 근본이다.

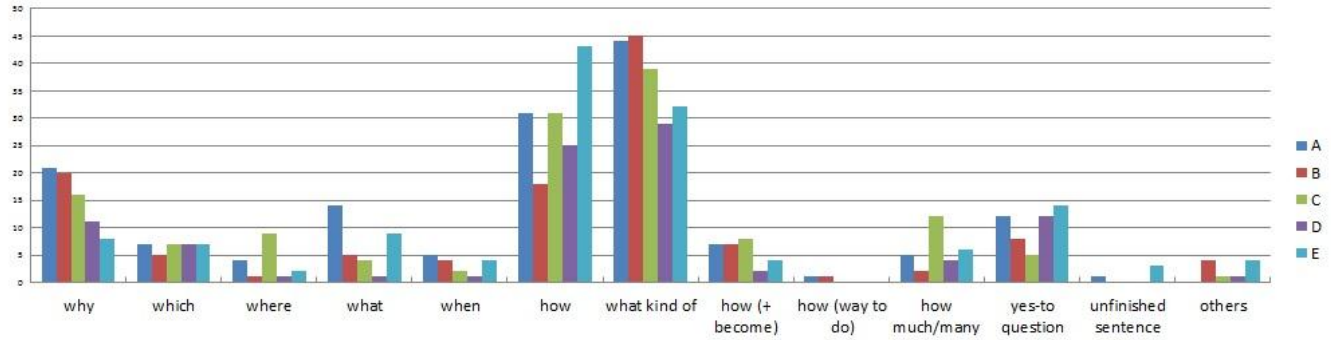


Fig. 4 Frequency of Questions in Earth Science Area

Tab. 7. Words after "what kind of": Earth Sci.

relation	28
matter	20
difference	15
characterictic	13
place	13
time	12
heavenly body	12
thing	7
form	4
change	4
structure	4

Tab. 8 Words after "how": Earth Sci.

change	30
be made	21
move	13
happen	12
convey	10
differ	10
can be seen to move	10
changed	7
relate	4
be formed	3
can be seen	3
others	25

Coping with the Challenges in Teaching Science Inquiry Skills to Filipino Students Gifted in Science

Aris C. Larroder [PhD student] Tokyo University of Science

Introduction

The teaching of science inquiry skills is one of the major competencies required of any special science teacher in the Philippines for both elementary and secondary levels and even in regular schools (Department of Education, 2013). Each year, teachers and students are preoccupied to beat the deadline to participate in the end-of-the-school year science fair competition or to stage an exhibition. This situation drives science teachers to merely comply with the required science fair project or exhibition and consequently withdrawal from the teaching of requisite science inquiry skills vis-à-vis the same project.

Due to the complexity arising in the fulfilment of producing a science investigatory paper; problems arise in the beginning with the teacher and eventually passed on to the students. These concerns are conveyed to the science district supervisor, and where possible, seminars and workshops are held to address these issues. Largely these problems are a product of either or of a combination of the following: (1) inexperience of both students and teachers, (2) confusion between science research and science investigatory project, (3) lack of time for conducting science investigations, (4) availability of materials, and (5) limited teaching resources.

In this article, I will present how I managed to cope with the challenges in teaching science investigatory project to Filipinos gifted in science.

Science Inquiry Requirement to Special Science Students

Among its neighbor countries, the Philippines is said to be a pioneer in embracing giftedness education focusing to science discipline. In fact, the first mainstream school for the gifted in science is distinctly called Manila Science High School, after the capital of the country and a year after the Philippine Science High School (Wu, W.T., Cho, S., & Munandar, U., 2000). The latter, as a premier public scholarship-based secondary school, set the standard in terms of educating Filipinos gifted in science. Although science high schools abound in the Philippines in different categories, they all share one common requirement: publication of a science research before graduation that is at par with university-level research paper.

Preparing high school students to the rigor of science research requires the conduct of investigatory project and summer science internship in research-based institutions in nearby facilities. In the elementary, the requirement only ends in the conduct of investigatory project and publishing the results. Being first time science investigators plus the lack of experience in teaching science investigation compounds the problem which results to a general distaste for science by both teacher and students.

Issues in Teaching Science Investigation and Coping with the Challenges

Issue Number 1: Inexperienced Students

Most students conduct investigatory project on their own for the first time. Some students might have an experience doing investigatory project during their elementary but they were guided or personally supervised. When students are left to work on their own, they sometimes feel overwhelmed by the magnitude of the work especially when they choose to work in small groups or when they choose to work alone.

To combat the issue, students are first provided an overview of the investigatory process from formulation of problem up to presentation of results. Then, students who are experienced are paired with an inexperienced group mates, as far as practicable. Since the choice for a pair or group mates lie on the group members, students are encouraged to work with someone who is knowledgeable.

Another scheme is provision of exemplar investigatory output for students to refer to. These exemplars are best outputs from previous batches of students who conducted investigatory projects. During initiation of the students to the program, enough examples are provided to them. Finally, students are exposed to simulated investigatory project as a class for a vicarious experience in conducting an investigatory project. This is done by standard inquiry-based activities and letting students choose variables for modification.

Issue Number 2: Confusion between Science Research and Science Investigation

Science Investigation and Science Internship are prerequisites in doing Science Research. In other science high schools, there is no clear demarcation between Science Investigation and Science Research. As long as one performs experimentation with the intention of making a report afterwards for defence then it is referred to as "research". Even searching for information in Google or books for articles is called as "doing (science) research". When students are clueless of the distinction between the two endeavours, they struggle on knowing what the expected outcome is, as well as, the nature and scope of their work. Knowing the fine line which divides between the two activities has great implication on how students design, write, defend and conduct the investigatory project.

From the start of the investigation, a reorientation is provided to the students. It is made clear to them what the very essence of an investigatory project is. It must be clear what separates Science Research from Science Investigation.

Issue Number 3: Availability of Time for Conducting an Investigatory Problem

The maximum class duration in all classes is 50 minutes which is meant for instructional purposes. Teachers have to deal with finishing the course syllabus just to spend contact hours doing an investigatory project. Likewise, students have various stages of progress, nature and scope of investigation. Aside from the other subjects which demand time, the conduct of investigatory project requires a separate time.

The concept of time depends relatively how time is spent. If it is spent on one's hobbies, time becomes insignificant. One can never get tired doing things repeatedly on things they are interested at. Knowing this, students are encouraged to investigate on topics of their own interest and not anyone else's interest. Students are also guided on extent of their project and what it entails to finish the project without jeopardizing other aspects of their life as students.

Issue Number 4: Unavailability of Teaching Resources

There might be a reference material on what investigatory project making is all about however there is no concrete steps how to technically teach the students. Doing an investigatory project is entirely different from teaching students how to conduct science investigation. It is comparable to easily knowing one and one adds up to two and how tough it is to teach a first grader how that is so. Knowing is simply different from teaching and implementing science inquiry.

Exemplar outputs, mini presentations and worksheets were prepared to cope with unavailability of teaching resources. Because most students are usually having a hard time how to begin, they are exposed to presentations on how others were inspired on what project to pursue. Students have to submit recent progress report and updates using worksheets for easy tracking of students' performance.

Issue Number 5: Limited Resources

It is a fact that science investigation requires the use of equipment which even well-equipped school may not have. With several questions requiring different designs and methods, it is expected that the investigatory problem may require from simple to sophisticated equipment. When the latter equipment is needed, this is where ingenuity comes in.

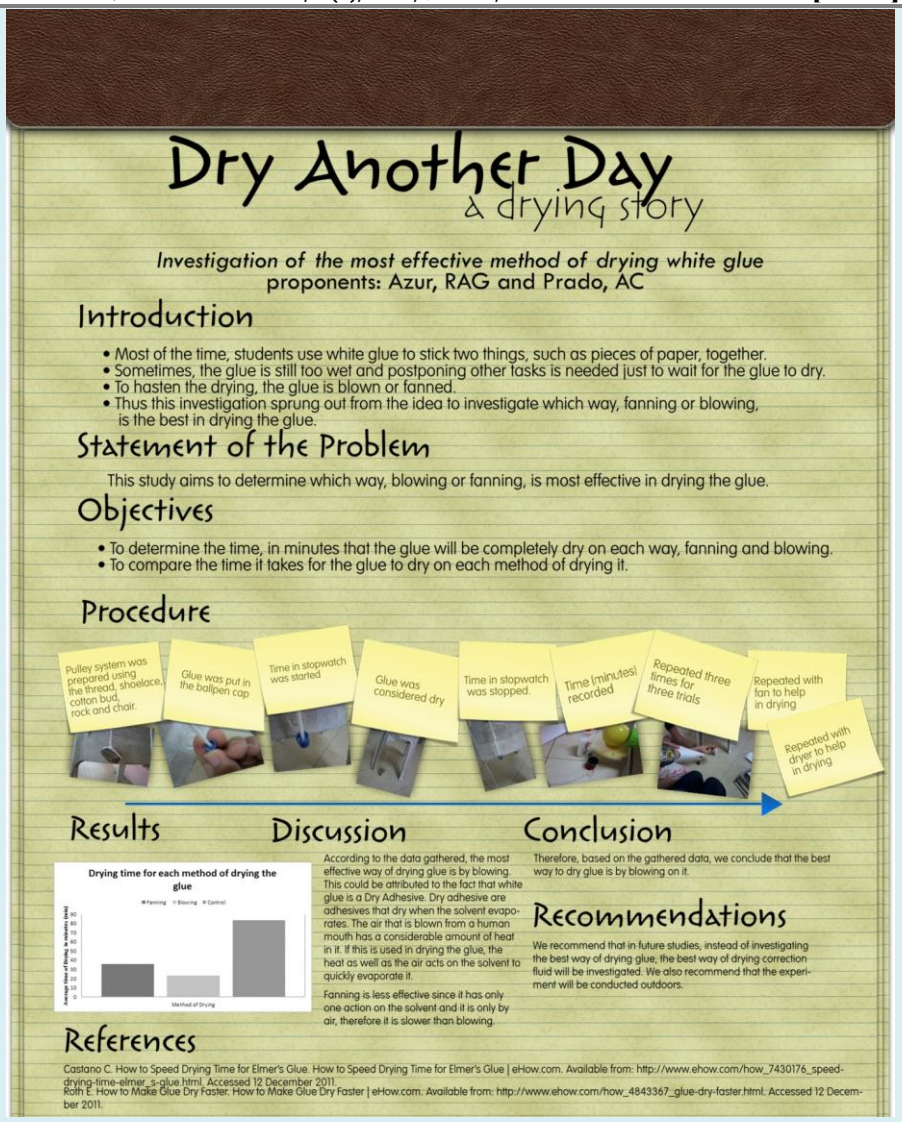
In the case of my students, all projects must accompany a budget proposal. All investigatory proposals with budget beyond Php 50 pesos (US $ 1.21) are denied. In fact, an item in a rubric is made to ensure that less budget would mean higher rating. If a proposal requires little or no expense at all, a group can get a perfect rating in that component. It is noticed that students who wish to earn a perfect rating tend to improvise, borrow or recycle. They ponder hard to design their objectives and methods with minimal cost taking same result. Likewise, students are advised to check on available resources and equipment in the laboratory that can be possibly borrowed in the conduct of the experiment. At the same time, we take advantage of smart phones with free applications which can be used to measure physical quantities at an acceptable approximation.

Celebrating Success in Overcoming the Challenges

It is inevitable that students encounter so many challenges to start, continue and eventually finish the investigatory project. Fortunately, majority would emerge triumphant in the end, while there are quite a few who struggled to meet the quality output. Nevertheless, what is certain is that each student undergoes the entire investigatory process. There can never be simple nor complex investigative study as long as learners get to experience how it is to become like a scientist.

Below is an example of an investigatory project poster ready for presentation to public. This is either presented in class or displayed in bulletin boards for other students to learn from. This year, students were made to make as short video presentation lasting for 3 minutes to present their work as another alternative of presenting results.

An adhesive force set-up was thought of by one group of students to measure the adhesive strength of a masking tape. This was done to answer the investigatory problem if which brand of masking tape adheres best on writing board. It even became more sophisticated in design due to inclusion of type of writing board (magnetic versus chalk) and type of surface (written versus unwritten).



Figures 1. Dry Another Day, A Drying Story: An Investigation of the Most Effective Method of Drying White Glue

Conclusion and Implication in Science Teaching

Exposing students to the science investigatory project provides them a glimpse on how science works. The process they went through is comparable to how scientists would do in field or in the laboratory. Certainly, there are problems encountered along the way but these problems are basically challenges that are also faced by science professionals during their researches. The learning experiences in conducting investigation can serve as lessons for students to weigh on how to improve themselves when conducting science research. Unfortunately, science investigation is never seen as a prerequisite activity, much in the same way as science internship as vital disciplines one needs to understand before embarking on science research.

Learning science should be designed addressing the innate curiosity of the learners. It should be in line with student's interest and investigators must have a full sense of ownership of the project. It inculcates in them responsibility to spearhead on the project with minimal intervention from the teachers. Doing investigation on their own empowers students to own their learning. After all, learning must be geared towards training students to find answers on their own and fulfil the ultimate goal of becoming lifelong learners. It promotes freedom and creativity on learner's part. When students are trained to ask good science questions, design an investigation to answer it and find meaning to the observations gathered from investigation, science teachers have already contributed a lot in making an individual become a scientific literate citizen.

Teaching science investigation seems insurmountable yet it challenges science teachers to be creative in dealing with the problems that come with the teaching. After all, these challenges are like investigatory problems themselves which need action rather than indifference. In the final analysis, science investigation is far more than making students learn inquiry. It promotes, inspires, and motivates young learners to delve into the unknown and discover the wonders of the world.

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2013 International Summer Symposium on Science Education at Ewha Womans University

Hyunju Lee, Ewha Womans University, Seoul, Korea

Global Institute of STS Education at Ewha Womans University hosted an international symposium, entitled "Sociocultural Approaches to Socioscientific Issues and Nature of Science" supported by World Class University project through National Research Foundation of Korea. It was held from June 26 to June 28. The primary purpose of the symposium was to form an international community specialized in SSI and NOS research. In addition, like EASE summer school, we would like to provide a unique opportunity for graduate students to explore and learn about research trends in science education from international scholars in the field.

For this symposium, we invited 5 foreign scholars who have produced prominent academic achievement in the area of socioscientific issues (SSI) and nature of science (NOS). Our distinguished panel of speakers included Dr. Dana Zeidler and Dr. Benjamin Herman from University of South Florida, Dr. Troy Sadler from University of Missouri, Dr. Fouad Abd-El-Khalick from University of Illinois at Urbana-Champaign, and Dr. Alice Wong from The University of Hong Kong.

About 40 graduate students and 25 professors and post-doc researchers participated in meaningful dialogue about connections between SSI and NOS in science education. We prepared various formats of sessions. We had lectures given by each scholar. After each scholar's lecture, we held informal small group discussion sessions with small student groups lead by each of the visiting scholars. We also offered small group seminar meetings. The participating students presented a short abstract to a mentor scholar and asked questions based on their areas of interest. Scholars provided mentorship and feedback on their research. On the last day, we invited the students to participate in the poster presentation sessions and so they could share their research interest with scholars and colleagues.

We are sure that the participants took advantage of this intimate setting to make new friends, form lasting friendships, make connections with professional colleagues, and engage in discourse that will help to advance their understanding of critical areas of research in sociocultural aspects of science education.

Lecture given by Dr. Alice Wong

Small group discussions led by Dr. Fouad Abd-El-Khalick

Small group research seminar with Dr. Troy Sadler

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You're welcome to contact the regional responsible editors,
if you have any news about science education around you at any time.
We will help you spread the news around! ^^

True science teaches, above all, to doubt and be ignorant.—Miguel de Unamuno

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Upcoming Conferences

- **ASERA Conference 2013, Jul. 2-5, 2013 @Te Papa Tongarewa Wellington, New Zealand**
  http://www.nzcer.org.nz/asera-2013
- **EASE 2013 Conference. Jul. 4-6, 2013 @ Hong Kong**
  http://ses.web.ied.edu.hk/ease2013/
- **ASP 2013 Annual Meeting. Jul. 20-24, 2013@ San Jose, USA**
  http://astrosociety.org/education/asp-annual-meeting/
- **KASE 64th Summer Conference, Jul. 26-27, 2013 @ Gwangju, South Korea**
- **2013 International Conference on Education, Psychology and Society. Jul. 26-28, 2013@ Bangkok, Thailand**
  http://icepas.org/Index.asp.
- **ESERA Conference 2013, Sept. 2-5 @ Nicosia, Cyprus**
  http://www.esera2013.org.cy/ngcontent.cfm?a_id=1
- **2013 JSSE annual conference, Sep. 6th and 8th @ Mie University, Japan**
  http://www.jsse.jp/jsse/modules/note8/
- **ICASE 2013 Borneo. Sep. 29 - Oct. 3, 2013. Kuching City, Sarawak, Malaysia**
  http://worldste2013.org/conference.html
- **29th ASET Annual International Conference. Dec. 12-14, 2013 @Taiwan**
- **ASTE 2014 International Meeting. Jan. 15-18, 2014 @ San Antonio, TX**
  http://theaste.org/meetings/2014-international-meeting/
- **2014 NARST Annual International Conference. Mar. 30-Apr. 2 @ Pittsburgh, PA, USA**
- **NSTA 2014 National Conference Apr. 3–6, 2014 @ Boston, MA**
  http://www.nsta.org/conferences/2014bos/