Implementation of 2012 International Workshop on Educational Co-research for Sustainability

"International Co-research on SD Educational Materials to Be Conscious of the Usefulness of Science and to Foster Scientific Attitude"

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Brief summary

Under the program of Grants-in-Aid for Scientific Research "KAKENHI" Scientific Research (B) "International Co-research on SD Educational Materials to Be Conscious of the Usefulness of Science and to Foster Scientific Attitude" (The Principal Investigator : Prof. Matsubara Shizuo, Toin University of Yokohama), the Third International Workshop on SD Educational Materials (IWS-3) has been held receiving researchers and practitioners in Chemistry Education from the Philippines, Malaysia, Korea and Japan. The major purpose of the international workshop was to develop a framework for international co-research for sustainability (abbreviation: ECoS) as well as to share research progress among the international participants. While the first and second international workshops (IWS-1 and IWS-2) were held in Tokyo in 2010 and 2011 respectively, this third international workshop was held in the Philippines with voluntary but strong initiative from the Pilipino participants.

Background

The concept of Green and Sustainable Chemistry, GSC, was formed in the 1990s. It can be said its approach now prevails in Chemistry. After having developed the teaching and learning materials on air pollution, Matsubara S. (2005) implemented that teaching unit and discussed some of the importance of the teaching and learning materials with the idea using GSC. In a close collaboration with practitioners, junior and senior high schools teachers, his research group continued developing teaching and learning materials relevant to GSC or SD educational materials. They produced such SD educational materials on electricity, water and plastics. The developed SD educational materials were then put into practice receiving mutual co-work with the practitioners of veteran teachers (Takano, 2010; Miyauchi, 2011). Through intense practices, several important aspects of the

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SD educational materials, including some challenges, were determined.

The research group expanded its horizon by implementing the approach in other countries; the Philippines, Malaysia, Indonesia and Korea. This quest gave the research group a better understanding about the differences in classroom instruction in those countries. For instance, Miyauchi (2007) pointed out that those teachers required more detailed explanations as a guide. By contrast, it was found that the way of listing items at a summary assessment that Indonesian teachers performed were close to that of Japanese teachers (Goto, 2008). As a veteran high school teacher of Japan, Nouchi (2010) prepared and tried the SD teaching material unit on air pollution at upper secondary schools in Malaysia, obtaining insights about the recognition of the local students against the particular SD educational materials. It should be noted that one of the strong factors that made these findings possible was the mutual understanding and collaboration they had with the researchers and teachers involved in the activities in those countries. Having gone through the quest mentioned above, it was thought that this kind of international research opportunities among science researchers and practitioners would function well when conducting co-research in such fields like the development of Asian versions of the teaching and learning materials with the idea of GSC (Matsubara S., 2012).

With the meaningful experience and insights gained, the research group with Prof. Matsubara, Toin University of Yokohama, as the Principal Investigator of Kakenhi project, implemented the first international workshop, IWS-1, in September, 2010. According to Matsubara S. (2012), its purpose was to offer an opportunity for researchers from different Asian countries to observe some aspects of Japanese education, such as popular processes of developing and revising teaching material units and learning methods. This opportunity was expected to deepen mutual understanding among the participants, leading to realization of a joint study. Most of the participants attended IWS-1 voraciously expressed interests in continuity of the international workshop and it implied the IWS-1 had been successful. Their strong interests led to the second international workshop, which was held in the Tokyo area in September, 2011. Throughout the two international workshops, the participants from various Asian countries shared their ideas on education generally and more importantly made dozen of presentations about SD educational materials relevant to GSC, as a result of the joint study.

Implementation of IWS-3

The Third International Workshop on SD Educational Materials (IWS-3) was held in the Philippines, mainly organized by the Pilipino participants. IWS-3 started on August 23 (Thur.) and ended on August 25 (Sat.), 2012. The following shows major expected outcomes of IWS-3.

- To share research progress on the SD educational materials
- To observe lessons and exchange ideas on the practice at local schools
- To discuss a framework and roles for international co-research on SD Educational Materials (ECoS)
- To implement demonstration lessons
- To study on the natural environment and environmental education in the Philippines

Table1 : Program of IWS-3

Date	Activity	Venue
Aug. 22 (Wed.)	• Arrival, Meeting, Reception	University of the Philippines NISMED
Aug.23 (Thur.)	• School Visit 1 (Lesson observation and cultural exchange) • Field study	Malinao Jaeya National High School Magsaysay Multi-grade Elementary School Lamon Bay, Atimonan Quezon Province National Park
Aug. 24 (Fri.)	• Discussion on ECoS • Demonstration of experiment in Chemistry and exchange of ideas	Marikina Polytechnic College Marikina City Hall
Aug. 25 (Sat.)	• Presentation of research / practice from international participants (Country Report) • Demonstration of a Chemistry lesson on ECoS and exchange of ideas • Discussion about a framework for ECoS and Asian Version of ECoS	Philippine Normal University

The international participants for the workshop are those researchers and practitioners who are involved in development of the SD educational materials: two researchers and two teachers from the Philippines; one researcher and one teacher from Korea; one researcher from Malaysia and four researchers, one educational officer and one teacher from Japan. Table 1 shows the program of IWS-3.

A total of eight papers were orally presented by the international participants at the Philippine Normal University on August 25th (Country Report). The titles and names of the presenters are shown in Table 2.

Among the issues and questions raised at the meeting discussing on ECoS were as follows:

- There was a question about whether the ECoS group was expanding its membership. Professor Matsubara stated that ECoS had currently no intention of expanding its membership (countries) actively.
- The participants from the Philippines were planning to translate the GSC modules into 12 Philippines dialects for their local elementary and secondary

Table2 : Presentation of research / practice from international participants (Country Report)

Country	Title	Presenter
Japan	Revision of WS4 in Air Pollution Material Unit	Matsubara Shizuo
The Philippines	21st Century Chemistry, in Touch with the Environment	Cynthia V. Andaya
The Philippines	Energy Transfer in Asia	Virgilio Manzano
Korea	Implementation of ESD Units of Air Pollution in Korea	Kong Young Tae
The Philippines	Feasibility of Pumped-Storage Marine Reservoir as Alternative Source of Hydroelectric Power	Samson Buqueron
Malaysia	Using Principles of Green Chemistry on the Solvay Process of Soda Ash	Roslinda Ithnin
The Philippines	Impressions of Secondary School Students on Air Pollution Modules	Arlene C. Marasigan
Japan	Teikeibun (Report Writing Template) and Basic Model Approach - Identification of Substance	Teratani Shousuke

schools and universities. The meeting agreed to allow the ECoS Philippines Chapter or any other delegates to use the GSC modules at their respective countries for the purpose of spreading the knowledge to others as intended in the original objective of this GSC group.

- The idea of seeking other funds is accepted as long as it does not incur any conflict of interest with the ECoS group.
- There was a suggestion about the formation of associated school's project between countries to enhance the application of ECoS studies.
- The Basic Model Approach introduced by Professor Teratani could be adopted as the next module.
- The meeting acknowledged the importance of ECoS and its continuation.
- The meeting welcomed the initiative about next year's international workshop that Prof. Matsubara proposed to hold in Tokyo September, 2013.
- The international participants thanked the Philippines organizing the programs.

We have seen that through co-researching at the global level, the awareness amongst students, teachers and researchers is enhanced regarding the importance of scientific attitude. Thus this group of researchers plans to continue with the co-researching and also improving the SD materials.

The List of Participants
Japanese Participants

	Name	Position	Professional Affiliation
Project Leader	Matsubara Shizuo	Professor	Toin University of Yokohama
	Teratani Shousuke	Professor Emeritus	Tokyo Gakugei University
	Hayashi Seiichi	Senior Curriculum Specialist	Ministry of Education, Culture, Sports, Science and Technology National Institute for Educational Policy Research
	Goto Kenichi	Senior Researcher	National Institute for Educational Policy Research
	Kitagawa Teruhiro	Teacher	Chiba Prefectural Chibahigashi High School
	Matsubara Kenji	Senior Researcher	National Institute for Educational Policy Research

International Participants

Country and Name	Position	Professional Affiliation
Korea :		
Kong Young Tae	Associate Professor	Chinju National University of Education
Chang Hee Sun	Teacher	Kimhae Kaya High School
Malaysia :		
Roslinda BT Ithnin	Deputy Director	University of Malaya
Philippines :		
Virgilio U. Manzano	Professor	University of the Philippines
Cynthia V. Andaya	Teacher	Philippine Science High School
Samson S. Buqueron	Education Program Supervisor Secondary Science	Department of Education, Division of City Schools, Olongapo City, Philippines
Arlyne C. Marasigan	Lecturer	Philippine Normal University

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