



## **Mission Report**

### **APEC STEM+ Conference and Workshop**

23-25 May 2019, Taipei, Taiwan

Prepared by  
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#### **A. SEAMEO Official and Staff Member on Mission**

1. Wahyudi, DDPD

#### **B. Background, Description and Objectives of the Activity**

The National Taiwan Normal University (NTNU) supported by APEC Secretariat, Singapore and the Ministry of Education, the Republic of China, Taiwan hosted a two-day APEC (Asian-Pacific Economic Cooperation) workshop on STEM (Science-Technology-Engineering-Math) and a one-day school visit in Taipei, Taiwan, on May 22-24, 2019. With the title "Cross-Border Human Capacity Building for Globalized Scientific Literacy: The Best Practice Models for Innovative STEM Education for Teacher Professional Development", the workshop's aim is mainly to deepen Regional Economic Integration, promote inclusivity, and explore relevant structural reform in APEC region. In more detail, the objectives of the Workshop are to:

1. Empower science teachers' competence on cultivating students' scientific literacy through initiatives via the design of science and technology curriculum standards for K-12;
2. Exchange views on issues and products ranging from curriculum design and implementation of STEM+ curriculum to potential challenges in each participating economy during workshop sessions, as part of the effort to exemplify the expansion and implementation of new science educational initiatives with globalization approach, and
3. Share existing best practices in schools and further present alternative approaches and potential policies for educational reforms for the 21st century citizens during the workshops.

The 2-day workshop comprised themed talks and workshop on STEM teachers' training and panel presentations on STEM education. A total of 8 local and international speakers were invited to give keynote speech and conduct workshop to share recent discoveries on teacher professional development. In addition to expert talks, this workshop also features activities such as school visits and World Café. In the school visit session, participants will get to have a closer look into the STEM education in the economy Chinese Taipei, and reflect on the STEM education in their respective economies. A clearer perspective on STEM education will be cultivated, enabling the participants to have a deeper discussion in the World Café session. In addition, delegates nominated by their economies gave a brief introduction of STEM education in their economies.

### C. Organizer(s)

1. APEC Secretariat, Singapore
2. Ministry of Education, the Republic of China, Taiwan
3. The National Taiwan Normal University (NTNU)

### D. Participants

A total of 17 delegate from 11 economies, namely Chile, Indonesia, Malaysia, Mexico, New Zealand, Peru, Singapore, Chinese Taipei, Thailand, The Philippines, and Vietnam participated and actively involved in all sessions. List of participants is available at the Appendix 1.

### E. Highlight of the Activity/Summary Points

A total of six keynotes speeches and two workshops were presented during the Conferences. The titles and the presenters are listed below.

*Keynote 1: STEM Curriculum Implementation: The Role of Quality Professional Learning,*  
(Assoc. Prof. Judy Anderson, Director STEM Teacher Enrichment Academy, the University of Sydney, Australia)

*Keynote 2: STEM Education in Indonesia: History, Progress, and Challenge*  
(Dr. Wahyudi, former Director of SEAMEO Regional Centre for QITEP in Mathematics, Yogyakarta, Indonesia)

*Keynote 3: Bridging the Gap Between Policy and Practice in Teaching Higher Order Thinking and Metacognition Through a Collaboration Between Researchers and Instructional Leaders*  
(Prof. Anat Zohar, the Seymour Fox School of Education, the Hebrew University of Jerusalem)

*Keynote 4: Integration of STEM and Emerging Technology into High Schools Curriculum: the High Scope Program in Taiwan*  
(Prof. Kuang-Chao Yu, Department of Technology Application and Human Resource Development, National Taiwan Normal University)

*Keynote 5: The Effects of Integrative STEAM Education on Student Learning: A MetaAnalysis*  
(Prof. Nam-Hwa Kang, Korea National University of Education)

*Keynote 6: "Does Gender Gap in STEM+ Education still Exist? " --- A Global Gender Gap Project*  
(Prof. Mei-Hung Chiu, Graduate Institute of Science Education of National Taiwan Normal University)

*Workshop 1: Designing Science Education Learning Environments to Support Learners in Developing Knowledge-in-Use*  
(Prof. Joseph Krajcik, CREATE for STEM, Michigan State University)

*Workshop 2: Finnish Approach to Collaborative Improvement of STEM Teacher Education*

(Prof. Jari Lavonen, Professor of Physics and Chemistry Education at the University of Helsinki, Finland)

On the second day, the participants were invited to do Classroom Instruction Observation At Taipei Municipal Datong High School.



Figure 1. Presentation on STEM Activities by SEAMEO Centre by DDPD



*Figure 2. Visit to an Affiliated Senior High School of National Taiwan Normal University, known as HSNU*

#### **F. Role/Participation of SEAMEO**

DDPD was invited as one of Keynote speaker. He presented STEM movement in SEAMEO member countries particularly in Indonesia.

#### **G. Follow-up Actions Needed**

SEAMEO Secretariat will share the take away lesson from the workshop with relevant SEAMEO Centre such as SEAMEO RECSAM, SEAQiM, SEAQiS and SEAMEO STEM ED.

#### **Appendix 1**

List of Participants:

1. Mrs. Georgina Gutiérrez Academic of the Department of Electrical Engineering Universidad de La Frontera (UFRO) – Chile
2. Mrs. Yendri Wirda, Head of Division of Teacher and Personnel Research Ministry of Education and Culture (MoEC), Indonesia
3. Mr. Atep Kartiansyah, Researcher Ministry of Education and Culture (MoEC), Indonesia
4. Ms. Alina Amir Co-founder Arus Education Sdn. Bhd, Malaysia
5. Ms. Nor'aidah Nordin Head of Unit STEM Centre, Ministry of Education Malaysia
6. Ms. Irene Gómez Jiménez, Secretary of Engineering and Technological Innovation Division University of Guadalajara, Mexico
7. Prof. Stuart Mcnaughton, Chief Education Science Advisor, Ministry of Education, New Zealand

8. Dr. Hugo Flores-Liñan, Director Universidad Peruana Cayetano Heredia, Peru
9. Dr. Tania Sarith Peña-Baca, Specialist National Council for Science Technology and Technological Innovation– (CONCYTEC), Peru
10. Dr. Timothy Ter Ming Tan, Lecturer National Institute Education, Nanyang Technological University, Singapore
11. Dr. Yann Shiou Ong, Post-doctoral Research Fellow, National Institute of Education, Nanyang Technological University, Singapore
12. Mr. Sonthi Phonchaiya, Specialist, The Institute for the Promotion of Teaching Science and Technology (IPST), Ministry of Education Thailand
13. Ms. Benjawan Hanpipat, Academic staff The Institute for the Promotion of Teaching Science and Technology (IPST), Ministry of Education Thailand
14. Dr. Conrado Rotor Director III Philippines Science High School – Cordillera Administrative Region Campus
15. Mr. Leo Andrei Crisologo Special Science Teacher V, Philippines Science High School Main Campus
16. Mrs. Thi Thanh Loan Nguyen, Expert, Ministry of Education and Training, Vietnam
17. Dr. Vinh Thang Ho, Senior Official, Ministry of Education and Training, Vietnam