

INNOVATIVE TEACHING & LEARNING OF SCIENCE THROUGH INQUIRY-BASED SCIENCE EDUCATION (IBSE)

A TRAINING WORKSHOP FOR SCIENCE EDUCATORS FROM
ASIA - PACIFIC REGION

21-26 OCTOBER 2013

BANDUNG, INDONESIA



Organised by:



ISTIC

INTERNATIONAL SCIENCE, TECHNOLOGY AND
INNOVATION CENTRE FOR SOUTH-SOUTH
COOPERATION UNDER THE AUSPICES OF UNESCO



S E A M E O
Regional Centre for
QITEP
IN SCIENCE

In Collaboration with:



FONDATION
La main à la pâte



ATSE

Australian Academy of Technological
Sciences and Engineering

INTRODUCTION

La main à la pâte

La main à la pâte is an inquiry-based science education programme that was introduced in France in 1996 by prominent academicians, namely, Georges Charpak, Pierre Lena and Yves Quéré. The programme was later launched by the French Ministry of Education in primary schools and since then, the number of schools adopting this approach has multiplied. In 2011, *La main à la pâte* became a Foundation for Scientific Cooperation with the Academy of Sciences, the Ecole normale supérieure (Paris) and the Ecole normale supérieure de Lyon as its founding members.

Through the *La main à la pâte* approach in science learning, children are led to discover and learn science spontaneously and naturally, as they construct knowledge using materials and equipment familiar to them. Students are exposed to situations that arouse their curiosity towards natural phenomena, stimulating them to ask questions and discover the answers as they move through the process of scientific investigations.

The *La main à la pâte* Foundation not only encourages active participation in science lessons but also develops the spirit of teamwork among children. By introducing children to argumentation, The *La main à la pâte* Foundation purports to give a better understanding of words that are spoken, written and read. By encouraging children to debate among themselves when they solve problems, *La Main à la Pâte* also encourages constructive citizenship.

Science and Technology Education Leveraging Relevance (STELR)

The Science and Technology Education Leveraging Relevance (STELR) Project is the key education initiative of the Australian Academy of Technological Sciences and Engineering (ATSE).

STELR motivates students by linking science to relevant issues such as minimising global warming and maximising sustainability. STELR engages students' interests by focusing on sustainable living through science and technology.

STELR aims to:

- Get more students studying science and mathematics at the upper secondary school level;
- Improve science literacy and understanding in the community;
- Prepare students to engage with science ideas and be knowledgeable about the way science and scientists work;
- Raise awareness of opportunities in technology-related careers;
- Increase the number of students choosing science and engineering careers to address the shortage of science and engineering graduates; and
- Improve the quality of science classroom teaching practice.

Unique features of STELR:

- STELR featuring hands-on inquiry-based experiments in wind turbines and solar electricity
- STELR uses contexts that are relevant to children and teenagers: Global Warming, Climate Change and Renewable Energy Resources
- STELR equipment is sturdy and effective.
- The STELR programme is taught within the school curriculum. All students benefit.
- STELR has been proven to be effective over a five year evaluation and roll out period.

OBJECTIVES

At the end of the workshop, participants should be able to:

- recognise the philosophy and ten principles of *La main à la pâte*;
- experience the process of inquiry-based science teaching and learning through various *La main à la pâte* lesson exemplars;
- gain insights into activities that can encourage and motivate students in science through the STERL Project;
- develop an action plan for disseminating and sharing of experiences on *La main à la pâte* with colleagues and teachers in their respective home countries; and
- define the roles of trainers and resource persons in operationalising *La main à la pâte* in home countries.

TARGET PARTICIPANTS

Participants should be science teacher trainers, curriculum developers, science supervisors and national trainers and/or decision-makers from Asia Pacific Countries. **Selected participants are expected to pay their own airfares to Bandung, Indonesia.** About forty (40) participants are expected to attend the workshop.

VENUE

SEAMEO QITEP in Science, Jl. Diponegoro No. 12, Bandung 40115, Indonesia

ORGANISERS

International Science, Technology & Innovation Centre (ISTIC) for South-South Cooperation under the Auspices of UNESCO

The creation of the International Science, Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO (ISTIC) is a follow-up of the Doha Plan of Action, which has been adopted by the Head of States and Government of the Group of 77 and China, during the meeting in Doha, Qatar, from 12th to 16th June 2005 on the occasion of the Second South Summit of the Group of 77.

The Summit urged UNESCO to develop and implement a program for South-South cooperation in science and technology with the objective of facilitating the integration of a developmental approach into national science, technology and innovation policies, capacity building in science and technology through providing policy advice and exchange of experience and best practices, and creating a problem solving network of centers of excellence in developing countries as well as supporting the exchange of students, researchers, scientists and technologists among developing countries.

As reflected by its name, the Centre will act as an international platform for South-South cooperation in science, technology and innovation and make use of the network of the G77 plus China and the Organization of the Islamic Conference. The overall goal of the Centre is to increase the capacity for management of science, technology and innovation throughout developing countries. Detail on ISTIC is available at www.istic-unesco.org

SEAMEO Regional Centre for QITEP in Science

The Southeast Asian Ministers of Education Organization (SEAMEO) was established on 30 November 1965 as a chartered international organisation with the purpose of establishing

cooperation in education, science and culture in the Southeast Asian region.

SEAMEO Regional Centre for QITEP in Science, established on 13 July 2009, has the vision to be the centre of excellence in professional development of teachers and education personnel in science towards sustainable development in Southeast Asia and the mission to provide relevant and quality programmes in professional development for science teachers and education personnel through capacity building, research and development, resource sharing, and collaboration. The centre offers courses and training programmes for teachers and education personnel development. Located in Jl. Diponegoro No. 12 Bandung in Bandung, the centre promotes programmes and activities in improving the quality of teachers and education personnel in the areas of science. Detail on QITEP in Science is available at www.qitepscience.org

CO-ORGANISERS

***La main à la pâte* Foundation**

La main à la pâte, which was initiated in 1996 by Georges Charpak, 1992 winner of a Nobel prize for physics, Pierre Léna and Yves Quéré and upheld from its inception by the Academy of Sciences, is a program conducted with the support of the French Ministry of Education, in partnership with the National Institute for Pedagogical Research (INRP) and the *École Normale supérieure* (Paris).

La main à la pâte aims to renew and develop science teaching in primary schools in France and to contribute to achieving the same aim in many countries. It recommends that teachers implement an inquiry-based approach, combining exploring the world, scientific learning, experiments, mastery of language and argumentation.

For many years, *La main à la pâte* has been widely implemented abroad and its expertise is regularly solicited in order to inform and train foreign delegations, to organise training sessions abroad, to contribute to the renewal of science teaching in many countries and to make its resources available to its partners. This action falls within the framework of the many relationships maintained by the Academy of Sciences with a number of other academies throughout the world. Detail on *La main à la pâte* Foundation is available at www.lamap.fr

Australian Academy of Technological Sciences and Engineering (ATSE)

ATSE is made up of some of Australia's leading thinkers in technology and engineering. It is an eclectic group, drawn from academia, government, industry and research, each with a single objective in mind – to apply technology in smart, strategic ways for our social, environmental and economic benefit.

To achieve that goal, ATSE has formed a variety of expert, independent forums for discussion and action – platforms to move debate on issues concerning Australia's future. It is an open, transparent approach, one that government, industry and community leaders can trust for technology-led solutions to national and global challenges.

Each year, the Australian Government recognises the importance of the work it does by awarding the group an establishment grant. That grant goes towards fostering research and scholarship in Australia's technological sciences and engineering, providing and conducting administrative support, workshops, forums and similar events that enable the Academy and its Fellows to contribute on important national issues and managing the development and execution of policy, education and other worthwhile programs as well as supporting relationships with international communities. Details on ATSE is available at www.atse.org.au

WORKSHOP PROGRAMME

21 October 2013 - Monday	
0800 – 0900	Registration
0900 – 0930	All Participants, Guests and Staff to be seated
0930 – 0940	Welcome Address by Academician Dato' Ir. (Dr.) Lee Yee Cheong, Chairman, ISTIC Governing Board
0940 – 0950	Address by Prof Yves Quéré, Co-Founder <i>La main à la pâte</i>
0950 – 1000	Official Opening by Centre Director of SEAMEO-QITEP in Science
1000 – 1010	Group Photo
1010 – 10.30	Tea Break
1030 – 1300	Hands on activity I: according to principles of <i>La main à la pâte</i> – small car workshop – Steps of the inquiry approach
1300 – 1430	Lunch Break
1430 – 1700	Science and language and use of science activity book (LAMAP)
1700	Refreshments and End of Day 1
22 October 2013 - Tuesday	
0830 – 1030	Hands-on activity II: Raising questions: Kinds of questions learners raise when exploring phenomena in Life Sciences (LAMAP)
1030 – 1100	Tea Break
1100 – 1300	Hands-on activity III: Modelling – Astronomy (LAMAP)
1300 – 1430	Lunch Break
1430 – 1700	Hands-on activity III: Modelling – Astronomy (LAMAP)
1700	Refreshments and End of Day 2
23 October 2013 - Wednesday	
0830 – 1030	Hands-on activity IV: Elaboration of an interdisciplinary project. Theme: Water (LAMAP)
1030 – 1100	Tea Break
1100 – 1300	Hands-on activity V: Analysis of practice through video (LAMAP)
1300 – 1430	Lunch Break
1430 – 1830	Cultural Visit to “Saung Angklung Udjo”
1830	End of Day 3

24 October 2013 - Thursday	
0830 – 10.30	Hands-on activity VI: Biodiversity (LAMAP)
1030 – 1100	Tea Break
1100 – 1300	Resources for Teachers (LAMAP)
1300 – 1430	Lunch Break
1430 – 1600	Assessment in the <i>La main à la pâte</i> classroom (LAMAP)
1600 – 1700	Poster session by participants (LAMAP)
1700	Refreshments and End of Day 4
25 October 2013 - Friday	
0830 – 1000	Key Characteristics of Energy (STELR) <ul style="list-style-type: none"> ➤ Energy transfers and transformations ➤ Representing energy changes
1000 – 1030	Tea Break
1030 – 1145	Representation tasks – hands-on activities the teachers will do (STELR) <ul style="list-style-type: none"> ➤ Jumping cups ➤ Flic-flacs ➤ Cotton reel racers ➤ Other toys
1145 – 1400	Lunch and Friday Prayers
1400 – 1545	Identifying and controlling variables (STELR) <ul style="list-style-type: none"> ➤ Bouncing ball experiment
1545 – 1700	Inquiry-based science learning: STELR renewable energy activities (STELR)
1700	Refreshments and End of Day 5
26 October 2013 - Saturday	
0830 – 0930	Strategy for professional development of science teachers Programme (LAMAP)
0930 – 1030	Workshop Evaluation (LAMAP)
1030 – 1100	Tea Break
1100 – 1230	Closing and Certificate Presentation
12.30	Lunch and End of Workshop

Note: This programme schedule may be subjected to minor changes without prior notice.

APPLICATION FORM

(Typewritten or blocked letters)

FOR OFFICIAL USE ONLY	Please affix latest passport photograph
Reference No:	
Received:	
Checked:	

Title Of Course: A TRAINING WORKSHOP ON IBSE FOR SCIENCE EDUCATORS FROM ASIA - PACIFIC REGION	Date, duration & venue of course: 21-26 OCTOBER 2013 BANDUNG, INDONESIA
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1. PERSONAL PARTICULARS:

Family name (surname):	Date of Birth: (Date/Month/Year)
First name:	Nationality: (Citizenship)
Other given names:	Gender: (Male/ Female)
City and country of birth:	Marital status: (Single/ Married)
Passport No:	Designation : Prof./ Dr / Mr / Mrs / Ms

2. COMMUNICATION AND MAILING ADDRESS

Applicant's Office Address:			
Email address:			
Office Phone No:		Mobile No:	
Office Fax No:			
Person to be contacted in case of emergency (name, telephone and address):			

3. EDUCATION

Name of institution and place of study	Major field of study:	Years of study	Degree

4. EMPLOYMENT RECORD

A. Current Post:			B. Previous Post:		
Employer:			Employer:		
Duration of service:	From	To	Duration of service:	From	To
Title of post:			Title of post:		
Current monthly salary(US dollars):			Monthly salary (US dollars):		
Name of supervisor and title:			Name of supervisor and title:		
Type of organisation: Government/ Semi-Government/ Private/ NGO			Type of organisation: Government/ Semi-Government/ Private/ NGO		
Main functions of organisation:			Main functions of organisation:		
Total number of employees in organisation:			Total number of employees in organisation:		
Description of your current work including your responsibilities:					
*Please use supplementary pages if necessary					

5. REASONS FOR APPLYING THIS TRAINING WORKSHOP

Please briefly state the reasons for applying this training workshop and how you hope to benefit from this programme	
Have you participated in any ISTIC training programmes before: YES/ NO	
If yes;	
Name of programme	Date

6. CERTIFICATION OF ENGLISH LANGUAGE PROFICIENCY

	Excellent	Good	Fair	Remarks
Listening				
Speaking				
Writing				
Reading				
Mother tongue:	:			
Language test administered by	:			
Title	:			
Address	:			
Telephone No	:			
Email address	:			
Date and Signature	:			

7. MEDICAL REPORT (to be completed by an authorized position)

Name of Applicant:					
Age:	Sex:	Height:	cm	Weight:	kg
Blood Group:	A	B	AB	O	Other
Blood pressure					
Is the person examined at present in good health?			Is the person examined physically and mentally able to carry out intensive training away from home?		
Is the person free of infectious diseases (AIDS, tuberculosis, trachoma, skin diseases, etc?)			Does the person examined have any condition or defect (including teeth) which might require treatment during the workshop?		
List abnormalities indicated in the chest x-ray.			Pregnancy test (for women only):		
I certify that the applicant is medically fit to undertake a training workshop.					
Name of Physician :					
Address of clinic (printed) :					
Telephone no (printed) :					
Email address :				Date:	
Signature of physician :				Seal of Clinic:	

8. DECLARATION

Have you ever been convicted by a Court of Law of any country? Yes/ No
If yes, please give brief details:

I certify that my statements in answer to the foregoing questions are true, complete and correct to the best of my knowledge and belief.

If accepted to the training workshop, I undertake to:

- i) carry out such instructions and abide by such conditions as may be stipulated by both the nominating government and the host government in respect of this course of training;
- ii) follow the course of study or training, and abide by the rules of the institution in which I undertake to study or train;
- iii) refrain from engaging in political activities, or any form of employment for profit or gain;
- iv) submit any progress reports which may be prescribed; and
- v) return to my home country promptly upon the completion of my course of studies or training.

I fully understand that if I am granted an award it maybe subsequently withdrawn if I fail to make adequate progress or for other sufficient cause determined by the host Government.

Signature of Application : _____
Name : _____
Date : _____

9. OFFICIAL DECLARATION (to be completed by the Head of Department)

The Government / Organisation of

.....
nominates

.....
(name of applicant)

For the training workshop under the International Science, Technology and Innovation Centre for South-South Cooperation (ISTIC) and certifies that:

- i) all information supplied by the nominee is complete and correct;
- ii) the nominee had adequate knowledge and was appropriately tested for English Language proficiency.

Remarks:
.....

(Name)

(Signature of responsible Head of Department)

(Designation)
Official seal/ stamp

Address of Department/ Ministry

Office telephone no:

Office fax no:

Email address:

Date:

Note: INCOMPLETE AND/ OR UNENDORSED FORMS WILL NOT BE PROCESSED

APPLICATION AND ENQUIRIES

All applicants are required to complete the prescribed application form and submit the completed form to the following address:

Secretariat - Training Workshop on IBSE for Science Educators from Asia-Pacific Region

ISTIC,

c/o Academy of Sciences Malaysia,

902- 4, Jalan Tun Ismail,

50480 Kuala Lumpur,

Malaysia.

Tel: +603-2694 9898

Fax: +603-2698 4549

Email: info@istic-unesco.org

Website: www.istic-unesco.org

The participants nominated should be science teacher trainers, curriculum developers, science supervisors and national trainers and/or decision-makers from Asia Pacific Countries

CLOSING DATE OF APPLICATIONS

All applications should be submitted to the ISTIC secretariat office before or by **9 August 2013**.

ISTIC will inform the successful applicants to the training workshop not later than 1 September 2013. Applicants who do not receive word within this date are rendered unsuccessful.

Application form also can be downloaded from www.istic-unesco.org

BANDUNG, INDONESIA

Bandung is provincial capital of West Java, Indonesia. Located at main island of Indonesia, the Java Island on a highland plateau 768 meters above sea level, at 6°55' S 107°36' E.

Bandung is surrounded by mountains and located in the middle of prehistoric lake.



How to reach Bandung

As one of big city in Indonesia, Bandung can be reach from many other cities in Indonesia, even from another island such as Sumatra, Bali, and Borneo (Kalimantan). From Asia, Bandung can be reach directly from Malaysia and Singapore.

Earlier Bandung

Beginning from "De Grote Postweg", The capital city of Bandung Regency were move from Dayeuh Kolot to Cikapundung riverside (near alun-alun now) and Parakan Muncang Regency to Andawadak (Tanjung Sari Now). This is based on article "Sadjarah Soemedang Djaman Koempeni Toeg Nepi Ka Kiwari" by Raden Asik Natanegara. Earlier Bandung was forest thats construct to become small village.



Walk in Bandung

The main part of Bandung lies to the south of the railway line that crosses the city from east to west. Most of the banks, airlines, tourist offices and 5 star hotels are located here, along with the alun alun, as the main square in Indonesian cities is called. The principal thoroughfare, Jalan Asia Afrika, is in this part of town, as is Jalan Braga, which was the up-market shopping area in colonial times and is now the centre of Bandung's nightlife. Most of the city's budget accommodation and any many of its huge shopping malls are also in this area.

On the other side of the railway are the elegant residential areas of the Old Dutch suburbs with their wide tree lined streets, gardens and parks. The urban area stretches north along two parallel arterial roads, Jalan Setiabudi and Jalan Juanda, to the hills of Dago. The offices of the West Java provincial government, the Bandung Institute of Technology and the zoo are located in this area.

Although Bandung is only about 200 years old it has many places of historic and cultural interest, not least its museums and art deco architecture.

