SOUTHEAST ASIA REGIONAL STANDARDS FOR MATHEMATICS TEACHERS (SEARS-MT)

INTRODUCTION

The Southeast Asian Ministers of Education Organisation (SEAMEO) has uniquely represented the collective aspirations of the Southeast Asian region in education and capacity building. The focus on education has accelerated the momentum to provide quality education for the next generation of leaders and human resource needs of the region. The emphasis on mathematics and science education underpins this agenda. Considering this, the SEAMEO Regional Centre for Education in Science and Mathematics (RECSAM) has outlined the Southeast Asia Regional Standards for Mathematics Teachers (SEARS-MT).

METHODOLOGY

Collaborative inquiry approach

First workshop: 12 - 14 March 2013 at SEAMEO RECSAM, Penang

Seminar:

- "Benchmarking Quality: Are Teachers a Precious Asset or a Big Problem?" by Assoc. Prof. Dr. Allan White
- "Professional Competence and Professional Community in Mathematics Education" by Prof. Dr. Takuya Baba
- "Understanding and Teaching Mathematics in Southeast Asian Classrooms: Challenges and Opportunities for Practice and Professional Development" by Prof. Dr. Mohan Chinnappan.

70 educators from Malaysia, Indonesia, the Philippines and Thailand attended the seminar.

Second Workshop: 2 – 5 July 2013 at SEAMEO RECSAM, Penang

International consultants and country experts included Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Thailand, Timor-Leste and Vietnam

PURPOSE

To document a set of standards that describes the qualities that a mathematics teacher in the SEAMEO region should attain in the 21st century.

1

▲ International consultant, country representatives and RECSAM staffs


2

▲ Workshop session


3

▲ Interaction between consultant and participants


4

▲ Presentation from country representative

REFERENCES

Standards for Excellence in Teaching Mathematics in Australian Schools (Australian Association of Mathematics Teachers, 2006),

Professional Teaching Standards (NSW Institute of Teachers, 2005), the Malaysian Teachers Standards (Ministry of Education, n.d.), and

Teaching Competency Standards in Southeast Asian Countries (SEAMEO INNOTECH, 2010).

RESULTS

Four dimensions and its standard and indicators of SEARS-MT were identified:

(1) Professional Knowledge

(2) Professional Teaching

(3) Personal and Professional Attributes

(4) Professional Communities

Table 1 Dimension 1: Professional Knowledge and its Standards and Indicators

STANDARDS	INDICATORS					
Knowledge of Mathematics	Knowledge of the discipline of mathematics	Knowledge of key concepts, procedures, and processes that are relevant to mathematics	Knowledge of mathematics curriculum	Knowledge of making relations between mathematics and other disciplines		
Knowledge of Students	Knowledge of motivational and engagement levels of students for learning mathematics	Knowledge of socioeconomics, cultural, ethnic and religious backgrounds of students		Knowledge of physical, social and intellectual developmental characteristics of the students		
Knowledge of Students' Learning of Mathematics	Knowledge of how students' prior knowledge impacts on learning	Knowledge of students' conceptions and misconceptions about mathematics	Knowledge of potential difficulties faced by the students in learning particular mathematics concepts	Knowledge of the application of learning and instructional theories in the teaching of mathematics	Knowledge of the repertoire of effective teaching strategies	
Knowledge of Intellectual Quality	Knowledge of strategies for supporting creativity and innovation	Knowledge of strategies for developing students' higher order thinking skills in mathematics	Knowledge for making complex relations between and representations of core topics	Knowledge of supporting students to develop complex mathematical thinking and decision-making	Knowledge of cross-curricular relations with mathematics	
Knowledge of ICT	Knowledge of ICT integration in the teaching and learning	Knowledge of how particular software supports a mathematics concept	Knowledge of use of ICT to model context and solve problems	Knowledge of students' knowledge and use of ICT	Knowledge of application/ software development specifically on mathematics lessons	

Table 2 Dimension 2: Professional Teaching and Learning Process and its Standards and Indicators

STANDARDS	INDICATORS						
Mathematical Tasks and Discourse	Engage and enrich students in mathematical thinking through discourse	Communicate thinking through various means of representations and reasoning	Facilitate student use of conjecturing, reasoning, proving, modelling, and verifying to solve mathematical tasks	Provide students with mathematical activities, problem solving tasks and real-life investigations to meet the needs of all students		
Planning for Learning Process	Plan for an effective and safe learning environment to cater to the diversity of all students		Incorporate a variety of commercial and self-developed learning resources and instructional materials with appropriate teaching strategies			
Implementing teaching strategies	Use of effective communication and promotion of classroom discussion	Use of strategies to challenge students' thinking and engage them actively	Manage the learning environment effectively		Negotiate mathematical meaning and modelling mathematical thinking and reasoning	
Monitoring, assessment and evaluation	Provide on-going, constructive and purposeful feedback for learning	Develop and use a range of appropriate assessment tasks and strategies	Regularly assess and report student learning outcomes	Analyse students' learning through assessment	Utilise the performance data to inform teaching practice	Maintain on-going and informative records of student progress and learning outcomes
Reflection of teaching and learning	Document the reflection of teaching practice post-lesson analysis		Utilise the record of reflection for self-improvement			

Table 3 Dimension 3: Personal and Professional Attributes and its Standards and Indicators

STANDARDS	INDICATORS				
Personal attributes	Exhibit enthusiasm and confidence for both mathematics and teaching mathematics	Show a conviction that all students can learn mathematics	Commit to setting high achievable standards for the mathematics learning of each student	Exhibit care and respect to students and colleagues
Personal professional development	Commit to lifelong learning and personal development	Enhance their understanding of mathematics and skills in mathematics teaching	Have informed views on relevant current trends in mathematics education including knowledge of national priorities and associated policies	Participate in a range of professional activities
Personal responsibilities towards community	Contribute to the communities relevant to their professional work	Advocate for mathematics learning in their school and in their wider community	Facilitate effective communication with parents/ careers and stakeholders regarding students' learning and progress	Create opportunities for mathematics learning beyond the classroom

Table 4 Dimension 4: Professional Communities and its Standards and Indicators

STANDARDS	INDICATORS		
Professional ethics	Adhere to the codes of conduct	Demonstrate professionalism	Practise professional autonomy (e.g. willingness to perform duty above expectation)
Professional communities at schools	Enrich the educational context for students (e.g. co-curricular activities, advisor for mathematics club, mathematics competition, mathematics project)		Participate in the school-based professional learning community (e.g. mentoring, lesson study, action research, journal contribution)
Professional communities outside schools	Affiliate with professional organisation (national and local government, international organisation, private company, journal publication)		Take part in professional community networking among practitioners of schools, educational institutes, and/or universities

CONCLUSION

As a regional initiative, the SEARS-MT would be especially beneficial for the developing nations in the region which may not have the capacity to develop their own teachers' standards at the moment. Future research could be extended by developing local descriptors in the context of each SEAMEO member country.

SEAMEO RECSAM

For further details please contact:

The Director, SEAMEO RECSAM,
Jalan Sultan Azlan Shah,
11700 Gelugor, Penang, MALAYSIA
Tel: 60-4-6522700 Fax: 60-4-6522737
E-mail: director@recsam.edu.my
URL: http://www.recsam.edu.my