

STEM PROFESSIONAL ACADEMY PROJECT DESCRIPTION

It is the intention of SEAMEO STEM-ED to offer a series of professional workshops for STEM educators that are evidence-based and interactive, and whose workshop presenters will model skills in effective teaching strategies in order to assist classroom teachers in developing student critical thinking, problem-solving, communication, and collaboration. Through engagement with national teacher development agencies in Thailand and in the region, the STEM Professional Academy will be institutionalized as part of the professional development for teachers and as part of the pre-service teacher development system. This is a key component of the Centre's capacity building initiative.

BACKGROUND

The primary purpose of this project is to strengthen the capacity and broaden the repertoires of STEM teacher development agencies through the addition of a professional academy delivered by experienced teacher trainers who can model effective instructional strategies and help teachers implement them in their classrooms. In addition, mentors who can provide constructive feedback during teacher practicum programs or when novice teachers start their teaching careers are badly needed. As a consequence, many new teachers do not know how to plan well-structured lessons, manage their classrooms, or effectively adapt their lessons to varied levels of students' learning performance. Furthermore, the current professional development programs are often delivered by university faculty who lack teaching experience in K-12 classrooms.

The project aims to work in close partnership with pre-service and in-service teacher development institutions in Thailand and in the region on the development of a STEM professional academy. The end result will be a series of STEM professional development courses taught a core group of master teachers in the region who can act as "trainers" for other teachers in Thailand and the region, with ongoing support from SEAMEO STEM-Ed mentors.

OBJECTIVES

- Design a set of courses or curricular modules that will prepare prospective STEM teachers to deliver high-impact instructional practices in their classrooms as well as to be instructional leaders and build a culture of improvement in their schools;
- Develop a core group of master trainers in Thailand and selected countries in the region;
- Demonstrate the effectiveness of the new courses by testing their efficacy as professional development offered by the STEM Professional Academy in collaboration with Teacher Development Agencies in Thailand and in the region;
- Transfer the courses offered by new STEM professional academy to the pre-service programs in major universities and in-service teacher development institutions in Thailand and in the region;

- Provide ongoing mentoring and feedback to master teachers for continuous improvement and sustainability.

SCOPE OF THE PROJECT

The scope of the project is region-wide in Southeast Asia, but the model will first be developed in Thailand. The workshops will eventually be made accessible to educators and policymakers across the region. In order to be relevant to the entire region, the project must:

1. Work with the pre-service/in-service teacher development and certification agencies to assemble a working committee of outstanding teachers and university faculty in developing the courses;
2. Identify master teachers across the region who are committed to implementing effective teaching methods;
3. Recruit and train English speaking teachers in the region who have knowledge of and use effective teaching strategies to be part of teams to deliver workshops;
4. Provide 1-2-day professional development workshops four times per year;
5. Receive feedback from teachers and mentors and revise for course improvement;
6. Studies will be conducted to explore the academy's effectiveness and impact on teachers' instructional practices;
7. The final program will be offered to universities and teacher development agencies for adoption.

DELIVERABLES

The deliverables for the project will be:

1. The courses or modules for STEM professionals;
2. The development of core master trainers in the region;
3. The results of the study of the academy's effectiveness and its impact on teachers' instructional practices and student performance;
4. The adoption of the Academy courses by universities and teacher development agencies in the region.

EXPECTED BENEFITS

The expected benefits include:

1. An increase in the number of STEM teachers in Southeast Asia using effective teaching strategies;

2. In the long-run, improved outcomes in learner results in technology, mathematics, and science;
3. An increase in STEM-literate adults who make critical decisions, both privately and in careers for the betterment of society.

STAKEHOLDERS AND BENEFICIARIES

The primary stakeholders in the project will be institutions and agencies responsible for teacher development and certification. Policy and Research organizations will also be urged to take part in the development of the studies of the efficacy of the project. Over time, the project intends to build the capacity of the teacher development institutions while influencing the policy makers and government leaders on investing in the quality professional development programs which lead to improved student outcomes.

The initial beneficiaries will be students, policymakers, school leaders, and teachers, but in the longer-term, parents and communities will also benefit from the improvements in STEM education which lead to the growth of the social and economic development contributed by the STEM-literate workforce.

PROJECT TIMELINE AND SOURCES OF FUNDS

This five-year project will begin in 2020 with the funding of Chevron Enjoy Science Project Phase II in combination with the allocated government budget. In the first year, a committee will be formed to develop the courses. In the second year, the first cohort of trainers from the region will be developed and the first pilot course delivered to teachers. After the completion of Chevron Enjoy Science Project in 2022, additional funding will be sought to scale up the project in the following three years.