

Concept note

Regional experts meeting on the future of STEM (Science, Technology, Engineering and Mathematics) education and training in TVETs (Technical Vocational Education and Training) in South East Asia.

Bangkok, 11-12th of December, 2019

Background

Over the next decade, technological advances including artificial intelligence, automation and robotics, will significantly change the skills workers need in South East Asia. The ILO estimates that 49 per cent of employment (about 18 million jobs) in the Philippines, 44 per cent of employment (about 17 million jobs) in Thailand, and 56 per cent of employment in Indonesia (about 60 million jobs) face a risk of automation. The impact is greatest in high growth STEM sectors where the majority of jobs require not only technical knowledge, but also higher cognitive, social and emotional skills. Women make up most of this workforce and it is these jobs that require a new set of skills.

To address these issues, and considering the national economic and social development priorities, the ILO identified the Information Technology and Business Process Management (IT-BPM) in the Philippines, the Electrical and Electronics sector in Thailand and Automotive and Information and Communication Technology (ICT) sectors in Indonesia as high-growth STEM sectors, presenting significant projected STEM-related skills gaps and opportunities for growth for women over the next decade. Women employment in these industries is currently concentrated in low-skilled occupations. To change this, the ILO through its *Women in STEM Workforce Readiness and Development Program* aims to improve women acquisition and adoption of critical soft and technical STEM-related skills for these sectors and, in this way, contribute to reduce the skills mismatches that are affecting workers' productivity and enterprises' competitiveness in this rapidly changing context.

Productivity is a key source of improved living standards for women and also a major contributor to economic growth. Therefore, to improve productivity and support women entering high growth STEM sectors, the ILO Program seeks to strengthen linkages between private sector firms, social partner institutions and technical vocational education and training (TVET) institutions to ensure greater opportunity through higher entry, retention and advancement of women workers in STEM-related jobs.

TVET institutions play a central role in promoting productive participation of women in the labor market, equipping them with the necessary competencies and skills to fulfil the skills requirements of the industries of the 21st Century. However, the participation of women in STEM education within TVETs remains still very low and subsequently in a number of STEM-related occupations which are in high demand, particularly those requiring STEM skills. In South East Asia, women are less likely than men to enroll in TVETs, with even lower enrollment numbers in STEM fields of education and training. With women at higher risk than men to be displaced by automation, it is necessary to support the promotion on STEM education and training in TVETs, thus these institutions can play a fundamental role in preparing the workforce of the future.

Objective

To equip the workforce of the future –particularly women- with demand driven STEM-related skills and ultimately prepare them to gain access to STEM-related occupations, the ILO Women in STEM Program aims to enhance the capacity of national TVET institutions to deliver STEM education and skills development training programs, particularly intervening to ensure co-work skills taught in TVETs are more STEM ready. With more employers across South East Asia demanding STEM-related skills, there is a need to review then strengthen the TVET approach to design and deliver STEM training programs as well as its ability to integrate relevant STEM competencies into training regulations and trainings for future occupations.

In response to these challenges, the ILO aims to gather a selected group of STEM experts and practitioners in South East Asia to:

- What are STEM skills and which skills are vital for employability in the workplace of the future;
- Review good international practices integrating STEM education in TVETs;
- Assess the demand of STEM-related competencies and skills in South East Asia to bridge the policy gaps against industry needs and requirements;
- Identify main challenges of TVET institutions when developing STEM-related skills necessary to fulfil the skills requirements of the Industry 4.0;
- Review the evolving role of instructors as key drivers of change within TVETs including their teaching and assessment beliefs, translation of knowledge into practice, and connection with practitioners in the private sector;
- Lastly, based on the results of the above mentioned bullet points, develop a strategy framework to prioritize the development of STEM subjects in high-quality TVET education.

The insights and recommendations of the experts participating in this workshop will guide the development of an ILO country specific framework and tools to be integrated in TVET institutions and national training programs in collaboration with the ILO constituents. The framework and tools shall serve as a reference model and foundation for integrating STEM competencies into TVET programs in those countries the ILO is implementing its Women in STEM Program, namely Indonesia, Thailand and the Philippines, particularly in ICT-related programs.

The Experts meeting will be conducted on 11-12th of December 2019 in Bangkok, Thailand. A selected group of regional TVET experts including scholars and practitioners along with representatives' of government from a number of countries including Indonesia, Philippines, Thailand, Singapore and Malaysia are invited to participate in this technical workshop.

Dates and location

December 11-12th, 2019

Amari Watergate Hotel Bangkok

847 Phetchaburi Rd, Thanon Phaya Thai, Ratchathewi

Bangkok 10400