



### SEAMEO TED Journey Highlights

SEAMEO TED was established to support the implementation of Priority #4 of SEAMEO countries, which promotes TVET among learners and their parents by making more visible investments in the field and improving the relevance of curricula to emphasise creativity and innovation. The Center also aims to contribute to achieving Priority #2 by providing access to basic learning opportunities to all learners through more innovative education delivery and management. It also hopes to make Priorities #6 and #7 a reality by pursuing radical reforms through systematic analyses of the knowledge, skills, and values needed to effectively respond to changing global contexts, particularly amidst the ever-increasing complexity of the Southeast Asian economic, sociocultural, and political environment while promoting ASEAN ideals to build the ASEAN Community.

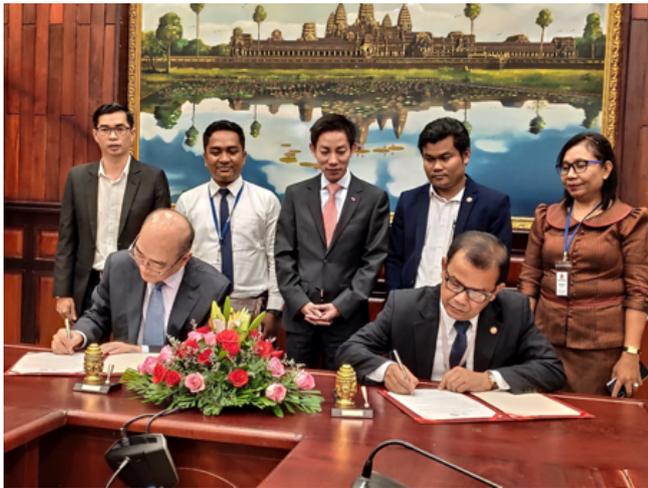
SEAMEO TED is one of 26 SEAMEO Centers in Southeast Asia, established according to a Sub-degree of Royal Government of Cambodia No.104, dated 28 June 2017 and endorsed by the 49th SEAMEO Council Conference in 2017 in Jakarta, Indonesia.

SEAMEO TED has developed its annual capacity-building and development plans using 21<sup>st</sup> century education methods. SEAMEO TED conducted a needs assessment survey on technical education in six technical high schools in Cambodia to investigate the current needs of students in the fields

on basic agriculture, handicraft making, electronic and mechanic engineering, and ICT. It also proposed a comparative study on Instructional competencies of technical teachers in Southeast Asia. A number of research and training programmes are proposed to contribute on technical education development in the region.

The Center has signed an MoU with the Royal University of Agriculture for sustainable capacity development support for a training programme on vegetable production techniques for technical high school teachers. A total of 30 teachers from various technical high schools in Cambodia were trained to enhance their competencies in soil preparation and management, water management for vegetable production, and pest management and agricultural cooperatives. SEAMEO TED also widened its network with the addition of the National Polytechnic Institute of Cambodia (NPIC) by signing an MoU on 26 October 2018 during its Governing Board Meeting and International Conference on TED, with the theme, "Better Skills, Better Jobs."

The Center also conducted a training on using AutoCAD for 35 technical high school teachers so they can update their skills and build their capacity. Furthermore, with regional collaboration, seven technical teachers of Cambodia were benefited from a one-week internship and training programme on School Gardening and Hydroponics in SEAMEO BIOTROP, Indonesia.



**SEAMEO TED works hand in hand with Yeungnam University, Korea National University of Education and partners**

SEAMEO TED also moved beyond the Southeast Asian region's borders by collaborating with the Yeungnam University of the Republic of Korea, along with other Regional Centres. Centre representatives attended a training programme on regional education management and strategic planning hosted by the university. This experience allowed the Centre to share its own experiences and hear about those of others with international cooperation development. It also built a good network of potential for future endeavours. We will work together to share experience and lessons learned from the agricultural and education modernization project for Southeast Asian Technical High School teachers and leaders.



SEAMEO TED also signed an MoU with Korean National University of Education (KNUE) for potential partnerships in promoting regional education development through teacher training and research programmes. We will also support each other for technology, demonstration and leadership projects via expertise exchange. Furthermore, We also agreed to promote each other's activities in our publications and internship programmes for exchange of students and technical teachers in southeast asia.

***“Skill is the unified force of experience, intellect, and passion in their operation.”***

**\_\_John Ruskin**

## ***Industrial Revolution 4.0 and its Impacts on Education***

The provision of vocational and technical education is important not only for partly solving the problems of unemployment poverty, and rural development of the poor and disable students but also supplying enough skilled workers demanded by some foreign companies in the era of industrial revolution 4.0. and the context of sustainable development.

Guided by SEAMEO Priority No 4 to promote “TVET among learners, teachers and parents with more visible investments and relevant curricula that focus on creativity and innovation with a clear pathway to lifelong learning, higher education and regional labour, skill and learners’ mobility”, SEAMEO TED is aware of the essential role that technical education is playing in enhancing the capacities of peoples in Southeast Asia and meet the emerging challenges brought about by the ever-changing education landscape and the emergence of 4.0 Industries.

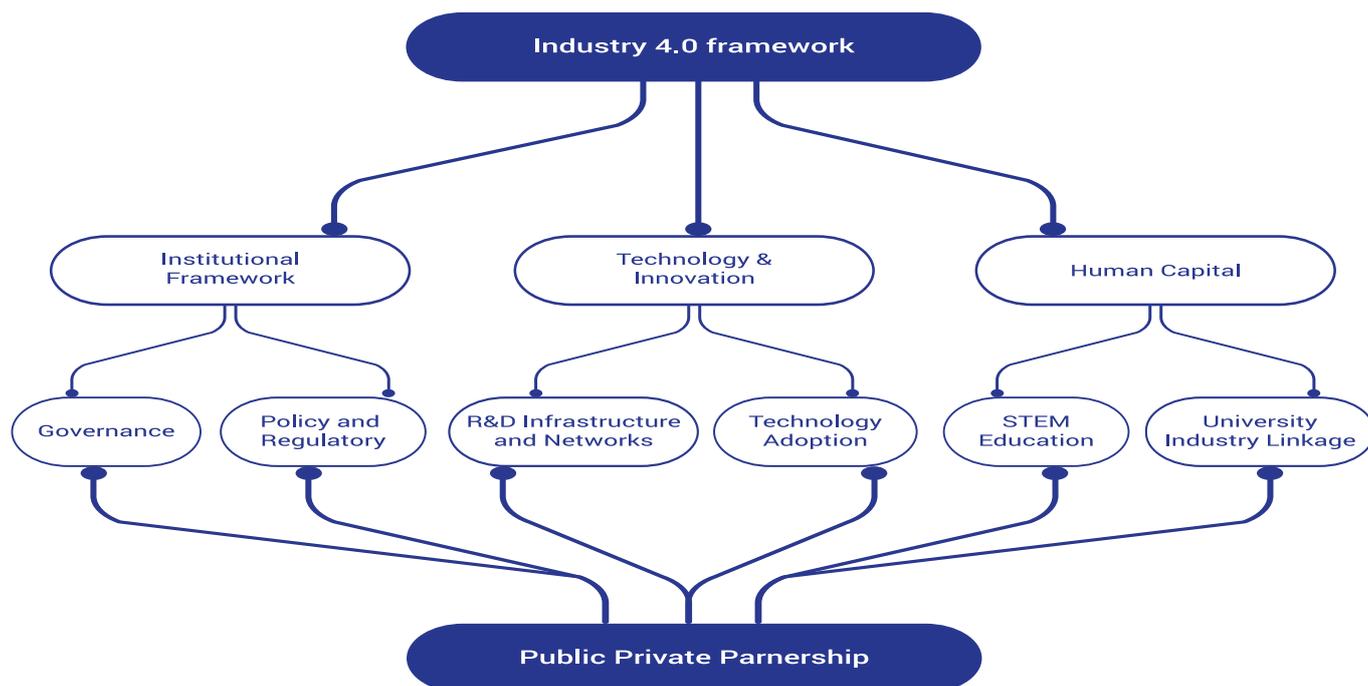
Industrial Revolution 4.0 represents an integration of the IoT and relevant physical technologies, including analytics, additive manufacturing, block chain, robotics, HPC, artificial intelligence and cognitive technologies, advanced materials, and augmented reality, that complete the physical-to-digital-to-physical cycle. (Sniderman, Mahto and Cotteleer 2016, 8).

In the future, we must not only possess the ability to develop the technology but also to know whether, when, and where to use that technology. That kind of thinking is both reflective and interdisciplinary. Schools must reinvent themselves quickly. Students need to understand how they can correlate and use and apply different knowledge in diversified contexts, what they really mean and how they can create synergies among different subjects to develop/create “something” that connects to the real world.

They need to work in a framework of projects and from there they need to collaborate with their colleagues, with their teachers and with the outside world. They need to develop new ways of communicating; they need to be put in front of complex situations to develop critical thinking and complex problem solving and to learn how to be imaginative, creative, adaptable, flexible and to develop brain plasticity. Tomorrow's industry leaders and managers must possess new skill sets to adapt, to manage, and to take advantage of Industry 4.0. This kind of leader requires a new approach to education. Source: Retrieved from <https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/>

### Ecosystem of Industry 4.0

Industry 4.0 relies on new and emerging technology that requires an ecosystem for supporting and maintaining fast growth. Building a strong national innovation ecosystem, with the government playing a lead role, is crucial. The Industry 4.0 framework should focus on four elements: institutional framework, technology and innovation, human capital and public-private partnership.



Source: CDRI: *Industry 4.0: Prospects and Challenges for Cambodia's Manufacturing Sector*

By Dr. Doung Vuth, SEAMEO TED's Director

### Messages from SEAMEO TED'S Governing Board Members



*"Industry 4.0 utilizes data by means of managing computation and dissolution of work boundaries as computers are more capable of making independent decision processes. Henceforward, the impact of providing additional tasks in aspects of quality and labour division between man and machine becomes apparent. As a result, in preparation towards Industry 4.0, at Institute of Brunei Technical Education (IBTE), the emphasize of acquiring competencies relating to learning has included understanding others and work environment such as self-evaluation, public speaking, decision making, leadership, teamwork and negotiation skills. All of these transferable skills were combined to create new emerging skills such as adaptive environmental thinking, entrepreneurial actions, transdisciplinary and computational thinking, linking to non-technical skills such economic development with strong emphasize on social and collaborative skills. Without doubt, governments, private, multi-sectoral agencies should approach education, skills training to collaborate to put talent and workforce strategy at the centre for growth. In addition, the approach should be instigated with a different mindset to optimize with a grounded understanding of the nations' skill based for the new disruptive innovation for businesses and the changing for future skill requirements."*

By DR. SHEIKH LUKMAN BIN SHEIKH ABDUL HAMID, Principal For Institute of Bureau Technical Education (IBTE), Brunei Darussalam

*The Ministry of Education Malaysia reaffirms the importance of equipping our students with relevant skills and competencies especially in this challenging era set within the context of the fourth Industrial Revolution (4IR). The 4IR has contributed to a landscape that is laden with VUCA, hence, skills and competencies attained at school and education institutions, including in technical and vocational education and training (TVET), must be able to address these challenges and in meeting the demands of the labour market. SEAMEO TED gives the opportunities for member countries to collaborate to understand the skills and competencies gaps which each country face and to improve talent development, mobility, governance and TVET accreditation.*



By Dr Habibah Binti Abdul Rahim Ministry of Education, Malaysia



*"The Fourth Industrial Revolution and the subset Industry 4.0 is the new trend of automation and data exchange in manufacturing technologies (Smart Manufacturing) that are adopted globally to drive innovation, accelerate advancement and capture the maximum economic benefits. The Fourth Industrial Revolution is a global trend of cyber-physical system adopting the digital technology. The new generation learners should be technically educated and capacitated to address the challenges and advancement of the Industry 4.0 and the 21st Century employment. To drive the economy in the 21st century, it is important that the Government and its citizens are mindful on the effect of the Industrial Revolution 4.0."*

By Mr. Raul C La Rosa, Director Bureau of Learning Resources Department of Education, Philippines

*"The Industrial Revolution 4.0 requires a massive transformation in employee skills and training to meet demands of labour market in 21st century. Therefore, technical education plays a very crucial role in well-preparing learners with diverse technical backgrounds and real-world experiences for gainful employment and lifelong learning. I strongly believe that developing action-oriented training programs engaged closely technical universities with industries / businesses/ communities and constructing an innovative and human learning environment based on the emerging technology and deep learning instruction will provide learners with opportunities to develop technical/professional and core skills to adapt with jobs becoming more cognitively demanding."*



By Associate Prof. Dr. Do Van Dung, President, University of Technology and Education Ho Chi Minh, Ministry of Education and Training, Vietnam