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## **TVET@Asia Issue 23: International Research Cooperation on TVET**

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In recent years, research on technical and vocational education and training (TVET) has become increasingly vital for developing TVET systems and is recognized by political stakeholders. However, challenges persist in building research capacities at universities and research institutes. Encouragingly, Southeast Asia has seen the establishment of several TVET research institutes like MyRIVET in Malaysia, the TVET Research Center at RMUTL in Thailand, and PUI TVET-RC at Universitas Pendidikan Indonesia, which support both national objectives and international cooperation in TVET research. The Thai-German TVET Conference on Research Cooperation in Southeast Asia, held from 25-26 September 2023 in Bangkok and organized under the BMBF-funded project “Progressing Work-based Learning in Thailand (ProWoThai)”, was pivotal in advancing international TVET research. The conference built on collaboration with the European Training Foundation, UNESCO-UNEVOC, and BIBB, strengthening research ties between Asia and Europe and providing a platform for TVET researchers, practitioners, industry representatives, and policymakers from Southeast Asia and beyond to share their insights on research cooperation.

TVET@Asia Issue 23 offers participants of the Thai-German TVET Conference and other stakeholders involved in international TVET research cooperation a platform to publish their research outcomes.

VINA DWIYANTI and DEDE RIDWAN (Universitas Pendidikan Indonesia) investigate the persistent mismatch between vocational schools and industry in **Indonesia**, where graduates of vocational high schools (Sekolah Menengah Kejuruan or SMK) face the highest unemployment rates compared to those from elementary schools, junior high schools, senior high schools, and universities. This issue persists despite national regulations designating SMK as institutions that prepare students for the workforce. Their article seeks to identify effective learning patterns that align school curricula with industry needs. Utilizing a systematic literature review (SLR) of sources from the past decade, including nationally and internationally indexed journals, the authors advocate industrial education through collaboration between SMKs and industries. This approach aims to produce a competitive and industry-relevant workforce by mapping industry requirements and implementing a realistic learning methodology that reflects current industrial practices and rapid sectoral changes.

In their paper, PATCHAREE CHAIYONG, TIN GANGERN, ARTITCHAI TANAPENG, NIWAT MOONPA (Rajamangala University of Technology Lanna, Thailand), and SIRIPHORN SCHLATTMANN (TU Dortmund University, Germany) explore the Tripartite Education System (TES) in **Thailand** and the **ASEAN region**. Their study examines public-

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private partnerships (PPP) involving government, industry, and educational institutions, mainly focusing on the Thai School-in-Factory (SiF) model at Rajamangala University of Technology Lanna. Three collaboration variants (A, B, and C) are analyzed through project documents, revealing similarities in structure and objectives but differences in curriculum and student selection processes. RMUTL acts as a key facilitator in these collaborations. The findings aim to bridge the gap between academia and industry, offering best practices for Thailand and the broader ASEAN region.

RAVY VOEUN and SONGHEANG AI from the SEAMEO Regional Center for Technical Education Development (SEAMEO TED) investigate effective hands-on activities among technical education students in **Cambodia**. Their study surveys 205 students using a quantitative method and factor analysis with principal component analysis (PCA). Descriptive statistics from SPSS version 25 reveal high proficiency in procedures, creativity, skill incorporation, and immediate application, with moderate proficiency in competition. The research identifies five key factors: procedural proficiency, creativity, skill incorporation, competition skills, and immediate application. The findings emphasize that national goals and quality education are essential in producing skilled employees. The researchers recommend these elements as critical motivators for TVET teachers to excel in their roles.

In their paper, TAWANDA CHINENGUNDU (University of Pretoria, South Africa) and JERALD HONDONGA (New Era College, Botswana) study inclusive education practices in TVET institutions in **Botswana, South Africa, and Thailand**. The research uses a systematic review of international policies, government reports, and peer-reviewed journal articles to assess current practices, policies, and challenges in inclusive education. Despite existing policies, the TVET sector in these countries fails to meet the diverse needs of students, with facilities remaining segregated and excluding individuals with special needs. Effective inclusion relies more on institutional implementation than student abilities. The study identifies gaps in policy and practice, including a lack of teacher training in inclusive pedagogies and inadequate funding for infrastructure modernization and specialized equipment. The authors call for TVET leaders to address these barriers and develop inclusive solutions.

XUAN TIEN VO (Ho Chi Minh City University of Technology and Education, Vietnam) explores the role of Foreign Direct Investment (FDI) companies in addressing skilled worker shortages in **Vietnam** through workplace training. This informal training model is especially prominent in the logistics and engineering sectors. Support from international agencies like JICA, KOICA, GIZ, and DIHK has also been crucial in enhancing TVET in Vietnam. These agencies offer policy advice and help bridge gaps between stakeholders by promoting dual training models and tripartite collaborations between vocational schools and enterprises. The paper provides insights from the author's experiences in TVET Vietnam, highlighting how international practices influence local policy and training organizations. It discusses how Vietnam can adopt international methods for curriculum development and cooperative training, suggesting models such as dual training and cooperative clustering.

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In his article, ANEKWONG YODDUMNERN (Chiang Rai Vocational College, **Thailand**) focuses on drafting the creation of an Internet of Things (IoT) technology learning center with three main objectives: establishing a prototype IoT learning center, designing IoT learning modules, and setting up a maintenance center. This initiative showcases how emerging technologies can transform learning methodologies and enhance educational effectiveness. The study utilizes the ADDIE instructional design model, covering both hardware and software aspects. Collaborating with students, education officials, and local farmers, the project uses agile methods to manage stakeholders. The IoT system, based on a private cloud server, includes a smart device for wireless agricultural control and cloud-based monitoring via a mobile app. User feedback highlights high satisfaction with the lab environment (4.65 mean score) and strong module compliance with technology standards (5.00 score). Senior community members benefit significantly (5.00 score) from the IoT system, simplifying daily tasks. Visual diagrams clarify hardware and software maintenance processes, enhancing usability.

*The Editors of Issue 23:*

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