Identification of Core Skills in Vocational Learning for Industry 4.0 in Indonesia, Malaysia, Thailand

by Putu Sudira, Pardjono, Wagiran, Widarto

ABSTRACT

Forty-seven innovative digital technology products in the form of Intelligent Systems have revolutionized lifestyle, how to produce, how to provide services, how to work, how to care for health, how to farm, how to care for and repair tools, how to use equipment, how to capture, tabulate, analyze data be information, how to deliver lessons, how to learn, how people think and move, how to communicate and collaborate. The increasing use of digital system products in the 4.0 Industrial Revolution changed the structure of jobs, types of employment, competencies and job skills. The problem is how to formulate competencies or skills that are relevant to the employment structure and new types of employment in the 4.0 Industrial Revolution era? What is the new concept of vocational learning that is relevant to the needs of the Industrial Revolution 4.0? How to create vocational learning designs for Industry 4.0 needs, for changing learners' lifestyles, for different ways of thinking and moving people, changing ways of communicating and collaborating?

This study aims to: (1) Describe the Competencies and Skills needed to utilize and work with 47 types of Intelligent Systems with digital technology in ASEAN ?; (2) Formulating the core competencies and skills needed to run and work with 47 types of digital smart intelligent systems in the ASEAN environment?

This descriptive study was carried out through international collaboration between UNY, GMI Kuala Lumpur Malaysia, RECOTVET Bangkok Thailand. Data collection was carried out through document analysis, closed interviews via e-mail and whatsapp, and on-line FGDs to determine core competencies in vocational learning for Industry 4.0. Data analysis uses descriptive analysis of the collected data and expert opinions.

The digital transformation and industrial revolution 4.0, which accompanied the Covid 19 pandemic, made major changes in the structure of work and employment. There are already emerging jobs and redundant jobs. Emerging jobs in the era of digital transformation and industrial revolution 4.0 and the Covid 19 pandemic are: (1) Data analysis and Scientists, (2) Big data Specialists, (3) AI and Machine Learning Specialists, (4) Digital Marketing and Strategy Specialists , (5) Renewable Energy Engineers, (6) Process Automation Specialists, (7) Internet of Things Specialists, (8) Digital Transformation Specialists, (9) Business Services and Administration Managers, (10) Business Development Professionalists. Emerging jobs lead to 15 emerging skills. Ten of the fifteen emerging skills are core skills, including: (1) Analytical thinking and innovation; (2) Active learning and learning strategies; (3) Creativity, originality and initiative; Design and programming technology; (5) Critical thinking and analysis; (6) Complex problem-solving; (7) Leadership and social influence; (8) Emotional intelligence; (9) reasoning, problem solving and ideational, and (10) system analysis and evaluation.

Kata Kunci: *core competencies, Industry 4.0, Vocational learning*