Chapter 14
A Synergized Education 4.0 Ecosystem Sustainably Aligned With Industry 4.0

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ABSTRACT

Education is about creating sustainable innovations for future learning. This tagline emphasizes the role of education policymakers and educators to ensure successful learning for digital natives and neo digital natives as the education landscape is currently challenged by the great disruptors. Knowledge, as capital and technological innovations, has empowered the industry. As such, Industry 4.0 has created a vacuum in the education landscape today at education prepares to handle and embrace Industry 4.0. Therefore, this chapter discusses the role of education sector globally and selectively in some Asian countries such as Malaysia, Thailand, Myanmar, Singapore, etc. in improving its delivery in terms of being an Education 4.0 standard and equipping the global workforce citizens of the future to work in parallel with intelligent systems and robots.

INTRODUCTION

Why do we need a synergy between Education 4.0 and Industry 4.0? Industry 4.0 requires a successful synergy for sustainability of the industry. The revolutions, especially the 3rd and 4th industrial revolutions introduced production automation and intangible value creation (World Economic Forum 2019). As such, these new drivers transformed the requirement of skills needed for economic growth, and the way in which people work. This forced the current global education system to question whether it can keep pace with these changes. Education systems that cannot keep abreast with growth in industry will limit accessibility to the skills needed to drive thriving economies and thus, impact global productivity negatively. Subsequently, education needs to be the game-changer. The type of change required is change

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to prepare the future workforce with hard skills, such as technology design and data analysis, and at the same time, noting the crucial need to also foster human-centric skills – cooperation, empathy, social awareness and global citizenship (Morshidi & Wan, 2018). These are the humanistic values that will enable the future generation to mold future citizens to be more inclusive and equitable.

The Malaysian Higher Education (HE) Ministry has created the Industry 4.0 framework document with the objective of aligning the education ecosystem with artificial intelligence (AI) and Industry 4.0. Although the prime objective of the Industry 4.0 framework is to increase digital and AI literacy, in the context of HE's, the main agenda is humanizing HE. An aligned Industry 4.0 framework with humanistic Education 4.0 is the way forward for all levels of education. In the current global landscape, in addition to the Covid-19 era that has elevated most of our daily activities into online mode, human technology convergence is vital for successful, meaningful and holistic education. Empowering learners with the necessary technological tools to play a role in the AI scope is one crucial agenda of HE institutions, especially of engaging in holistic transformation of education ecosystems globally. This should be done, however, by not sacrificing the humanistic values of education and ensuring a balanced and sustainable humanistic competence and technological competence to move forward and align oneself to AI in Industry 4.0. In the same vein, it requires rebranding education and ensuring Education 4.0 is not depriving learners of the necessities of humanistic values and at the same time converging with Industry 4.0.

Humanistic values involve an ecosystem that emphasizes a circle of learning-centric new and ubiquitous technologies that are sustainable, balanced and principled, driven by values and powered by intellect. It is about humans' capabilities of being in action with the assistance of smart technology and machines. It is not about smart technology and the machine's role in replacing humans (Academic Affairs Division, Universiti Teknologi MARA, 2019). Education 4.0 is predicted to have impact on all the domains (Cognitive, Affective and Psychomotor) in Bloom's model. In the cognitive domain, Application, Analysis, Evaluating and Creating will have a more important role to play compared to the lower level cognitive skills. In addition, Industry 4.0 will require human resources that can apply, analyze, evaluate and create through the acquisition of adequate digital and data literacy. This form of convergence of Man through education and machine in Industry 4.0 will mean that the disciplinary disparity between the fields of science and technology, and humanities and social sciences will be greatly minimized.

Industry 4.0

The term was initially used in relation to Germany's manufacturing field. Today, its description covers the current trend of automation and data exchange in manufacturing technologies and is a great influencer in the developments of alternative sectors of the economy and society. According to Schwab, in the World Economic Forum 2016, Industry 1.0 utilized water and steam power to mechanize production, while mass production was powered by electricity during Industry 2.0, electronics and IT automated production during Industry 3.0 and finally, Industry 4.0 is known as the fourth industrial revolution. Industry 4.0 involves an increase in the use of intelligent systems and robotics working productively, efficiently and effectively to replace humans. Its other name is digital revolution, due to the integration of technological and human capacities through self-learning algorithms, self-driving cars, human-machine interconnection and big-data analytics.

Kirchner (2017) defined Industry 4.0 as the automated collection, and programmed analysis of digitized industrial data and the automated resulting action. Kirchner created six building blocks of IR4.0. According to Kirchner, subscribing to each based on complexity stage at progressive levels of education