Chapter 2

Adopting Internet of Things for Higher Education

Ruuhina Mohd Sani
Universiti Utara Malaysia, Malaysia

ABSTRACT

To respond to the needs of IR 4.0, universities must continue to play their role as proving ground for educating the future generation and innovation. However, close collaboration with industry and stakeholders will be even more important to implement Education 4.0. Many of the components of IR 4.0 already exist in the Malaysian higher education system, but perhaps in separation such as soft skills that IR 4.0 demands have already been introduced to higher education in the country. In the context of demanding requirements of IR 4.0, it is important to look back on how the delivery of soft skills can be made more effective. Efforts should be made on how to make digital or even data literacy more accessible to the overall student regardless of discipline. Hence, the need for human resources in the key technical areas in IR 4.0 such internet of things (IoT), big data and analytics, cloud computing, virtual/augmented reality, and robotics should be assessed. This chapter will focus on integrating IoT in higher education.

INTRODUCTION

In effort to support the needs of IR 4.0, universities and college must continue to lead and become the proving ground for educating the next generation and innovation. Hence, close collaboration between industry and stakeholders is important to enable the implementation of Education 4.0 will be success. So, it is important for national educational system to have not just technology blueprint for the major economic but also for industrial sectors of the country. Such technology blueprint will provide the right path that may include two important aspects which are to improve education across disciplines in terms of content, delivery, management; and also create special education programs for technical workers development.

Many of the aspects related to IR 4.0 already applied in the Malaysian higher education system, but perhaps in separation for example soft skills that becoming demanding for IR 4.0 which have already been introduced to higher education. In the context of understanding the needs of IR 4.0 in today’s

DOI: 10.4018/978-1-5225-7832-1.ch002
higher educational system, it is important to look back on how the conveyance of soft skills can be made more effective. The efforts on how to make digital or even data literacy more accessible to the overall student regardless of their field of study should be priority. Hence, the need for human resources in the key technical areas in IR 4.0 such Internet of Things (IoT), big data and analytics, cloud computing, virtual/augmented reality and robotics should be assessed. This chapter will focus on integrating IoT in higher education.

ICT educators in higher education institutions suggest some incentives for teaching IoT concepts, such as:

1. IoT winds up critical pattern in educational system and the present students will require understanding on the best way to create and keep up these systems.
2. IoT may present processing in a way that widens cooperation in figuring since it is integrative.
3. IoT systems extent significant part of modern computing, including embedded systems, networking, client–server architectures, cloud services, service-oriented architectures, and human-computer interaction.
4. IoT provides greater chance to connect with the students by demonstrating an application domain that is part of their daily life and may indicate them more extensive uses of computing.
5. IoT help to broaden students’ knowledge areas as they can deliver, analyze, and manage data to maintain systems or even build solutions in ethical and secure ways.

CONCEPT OF INTERNET OF THINGS

The Internet of Things (IoT), also known as Internet of Everything or the Internet of Objects is a latest advancement featured as a global network of machines and devices into a network that enable them to interact with each other. The idea of IoT is to integrate all devices such mobile devices, vehicles, appliances and additional into the network, which may be managed from net and within the end, it will offer data and knowledge in real time conjointly permitting the interaction with those who use it.

In 2014, Gartner forecasts that by 2020 the IoT will reach 26 billion units, up from 0.9 billion in 2009 and then will impact the information available to be access anytime and anywhere. This notion is making progress due to advances in nanotechnology that permits the creations of devices capable of connecting to the net efficiently. The new prospect of the net, that allows devices to integrate and communicate with one another and share information which may then be processed for decision-making and later becomes ‘Smarts’. This whole conception is called as ‘Internet of Things’.

Since the start of Internet of Things (IoT), many researchers have tried to outline IoT in many ways like Internet of Everything, Internet of Anything, Internet of People, Internet of Signs, Internet of Services, Internet of Data or Internet of Processes (Cornel, 2015). According to Mark Weiser, “The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it” (Weiser, 1999). However in 1999, Kevin Ashton a British technology pioneer, who is known for coining the term Internet of Things to describe a system where the Internet is connected to the physical world via ubiquitous sensors. According to Oriwoh and Conrad
Related Content

Guidelines for Design and Implementation of Mobile Learning
www.igi-global.com/chapter/guidelines-for-design-and-implementation-of-mobile-learning/157780?camid=4v1a

iPad Usage and Appropriate Applications: K-12 Classroom With a 1-to-1 iPad Initiative
www.igi-global.com/chapter/ipad-usage-and-appropriate-applications/199240?camid=4v1a

Global Crisis in Higher Education
(2020). Global Demand for Borderless Online Degrees (pp. 24-51).
www.igi-global.com/chapter/global-crisis-in-higher-education/234514?camid=4v1a

Eliciting Pre-Service Secondary Mathematics Teachers' Technological Pedagogical Function Knowledge
www.igi-global.com/chapter/elicitng-pre-service-secondary-mathematics-teachers-technological-pedagogical-function-knowledge/215511?camid=4v1a