Chapter 82

Advancing Personal Learning Using the Internet of Things:
Creating Bonds for Societal Inclusivity

Barbara Truman
University of Central Florida, USA

Jaclyn M. Truman
Columbia International University, USA

ABSTRACT

Personal learning is a unique ability and requires self-determination to master. Personal learning also involves constructing representational learning artifacts that are used across life into work and society. Using avatars to foster identity within collaborative virtual environments (CVEs) can represent expressions of selfhood useful for participating in diverse communities. The Internet of Things (IoT) provides a spectrum of emerging technologies that can connect physical and virtual world activities resulting in new realms of human-computer abilities. Interconnected smart devices automate services and provide timely information resulting in safety, security, and efficiencies, especially for vulnerable populations such as persons with disabilities. The relationship is explored when IoT applications are combined with use of CVEs, avatars, and a discipline of presencing. Inclusivity becomes probable. Future research is described how individuals, organizations, and communities can be impacted by personal learning influenced by the inevitable growth of IoT and virtual learning.

INTRODUCTION

This chapter explores the notion of generating greater responsibility for a concept of personal learning framed through the use of avatars and collaborative virtual environments. The premise of responsibility for cultivating identity will be shown as a function of transparency aided by new information made possible by emerging technology and sensor data arising from the phenomenon that is the Internet of Things (IoT). The authors posit that improved self-discovery and self-determination contributes to the development of authenticity and ownership of identity. Future developments in IoT are discussed for

applications of personal and environmental uses that when combined and integrated into virtual environments provide the potential for transformative benefits. Further, as empowered individuals discover greater personal abilities through courageous self-examination, community involvement becomes more likely increasing the imaginative uses of IoT for societal benefit through experimentation. Implications for supporting under-served populations such as persons with disabilities are considered within the frame of an enabled, smart community.

BACKGROUND

Educators have probably experienced the occasional pang resulting from the glut of ever increasing volume of new information, new technological devices, and manner of which to consume media. Lifelong learning is an essential habit an educator must embrace to stay current in one's field. Lifewide learning, a strategy that involves authentic settings is recommended to increase social consciousness. Building habits of mind to engage cognitive agility can help navigate the educational possibilities to promote teaching and learning with emerging technology. Practicing the development of habits of mind require embracing *personal mastery* so that we shape technology more than it shapes our humanity. An essential component of the discipline of personal mastery involves taking the time to focus and reflect on our vision so we can see objectively (Senge, 2006, p. 136).

The Internet of Things represents an opportunity for educators and leaders to research the emerging technology to better cultivate personal mastery and create new abilities through self-discovery of strengths. IoT is made up of smart sensors that when used personally can improve health and fitness using wearables. The explosion of IoT technologies made up of often inexpensive and miniaturized components are resulting in the development of smart cities where services are created to support safety, sustainability, and economic development. Emerging IoT capabilities can be used for advancing the development of human-computer abilities when we can answer the question, "How does an individual create and use his own assistive service from the various devices present in the environment?" (de la Guía, et. al., 2015, p. 64). As individuals practice their new IoT-discovered abilities and participate in their communities to exchange and validate contributions, the positive impact for society is dramatic. The potential to create *enabled*, smart communities using IoT capabilities designed to integrate the physical world with cyberspace and virtual environments poses the affordance of radical inclusivity for involving everyone irrespective of age or disability (p. 63).

The World Wide Web Consortium (W3C) has been a champion of inclusivity through advocacy of accessible content on the Internet. Various working committees are continuously researching how to make rich media accessible to persons with disabilities. One W3C working group is involved in IoT and has created The Web of Things (WoT) to research how smart objects in a physical environment can be integrated with the Web (Domingo, 2012, p. 588). Such integration would lead to enabled environments that may include sensors to illuminate pathways or detect obstacles that interact with shoes, canes, wheelchairs, haptic devices, and report to dashboards on mobile devices for users and administrators.

As IoT matures, new capabilities to bridge health, wellness, and education will be possible through the additional information offered from data obtained from our states in varied contexts. This IoT-enabled information can lead to improved personal mastery when combined with what Stephen Covey (2006) describes as the Seventh Habit, a commitment to continuous improvement of the whole person, or Kaizen (p. 156). The whole person paradigm is what distinguishes the educational offering of insti-

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