Chapter 5
Technology Education and Learning in Smart Cities

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ABSTRACT

This chapter gives a thorough description about aspects of smart cities and learning. The concept of smart city has already been deeply involved in our communities. Education and learning are discussed as part of the environment in a smart city. Three relevant components of smart city are provided first, followed by a wide literature review and background about smart learning. We give findings of the perception of the term smart city by young talents. A study about the perception of smart learning and relevant technological aspects was conducted and described. Students are willing to share knowledge and work together in the digital age. Sharing knowledge in a smart city is imperative for better performance in many aspects of the smart city and especially in smart learning and education.

INTRODUCTION

Technology has enhanced its role in education, in general, and would affect more when dealing with a smart city as the concept of the smart city is adaptive. It would be of interest to learn the perception of people in various countries about several aspects of smart cities and learning.

There are three different types of common definitions for smart cities: the smart city with a technological focus, a human resource focus, and a governance focus (Meijer & Bolívar, 2016). However, combinations of these three elements—smart technology, smart people, and smart governance (collaboration)—are made in quite several papers. Smart cities not only require sophisticated information

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but also people who can continuously operate, maintain, and innovate it (Hollands, 2008). The digital transformation of a city is what happens when people apply innovation to solve the city’s problems using ICT (information and communication technologies) or other types of technology.

Publications that refer to a smart city with a technological focus mainly consider the use of ICT, which comes as a recurrent aspect in all definitions. Another key common point is that technology is a means to solve different problems in the community, improving existing solutions to strengthen the urban system (Lee, Phaal, & Lee, 2013). The technologies can be very different, ranging from sophisticated energy systems, traffic, health, or construction, etc. Through technology, a city can become more intelligent, interconnected, and efficient, making significant improvements in several areas such as city administration, education, healthcare, public safety, real estate, transportation, and utilities. Technology can pave the way towards a more equalitarian society, an efficient method for accessing resources and growing the economy.

Publications that have a human resource focus emphasize the importance of the people as the central point for operating and running a smart city. In this case, the smart city is perceived as a metropolitan area with educated people, usually with a college. The level of education of the inhabitants is seen as the main driver of economic and urban growth (Lombardi et al., 2012). These are often small and mid-size cities that have experienced substantial growth in recent years, and that are university centers (Winters, 2010). There are different reasons and opinions about why there is a high level of education in a smart city. Some authors consider that highly educated people are moving to cities to get a better quality of life, while others think that students decide to move into the city after graduation.

Finally, publications with a governance focus put the user at the center and emphasize the interactions and collaboration between different stakeholders as a key element of a smart city. This perspective highlights the importance of a systematic approach. The idea is connecting knowledge centers to the action perspectives of various stakeholders in the city to create “innovation hubs” (Kourtit, Nijkamp, & Arribas, 2012). To be able to unlock opportunities in the society/community, you need a supportive ecosystem of stakeholders and a systematic approach to innovation.

When considering the technology component of a smart city, several aspects should be noted. The notion of a “smart city” is found at the border between the knowledge-based society (a society that focuses on knowledge) and creativity. Human capital and social capital are considered the most valuable resources within the digital city. A smart city is a city that has all the information technology infrastructure and the latest telecommunication, electronic and mechanical technologies. Smart city initiatives make conscious efforts when they use information technology to transform living and working in a particular region in a significant manner (Markkula & Kune, 2015). One can identify a conceptual and practical distinction between smart and digital cities. The smart city involves research, technology transfer, product development, and innovative technological development functions. The digital city consists of all features of a city such as mobility, recreation, and the environment. The name smart city is usually used to describe a city that can facilitate learning, technological development, and innovative procedures. In this sense, not every digital city is considered smart, although every smart city deals with digital aspects.

A smart city is a learning city that improves its competitiveness in a global context. Learning cities are actively involved in building a skilled labor force in the information economy (Plumb, Leverman, & McGray, 2007). A city of knowledge is analogous to a learning city. It is “a city that was deliberately designed to encourage the assimilation of knowledge”. A knowledge-based city is closely linked to the knowledge economy, primarily through innovation. The concept of being smart, intelligent, competent, creative, connected, and competitive is one of the key ingredients of knowledge-based urban develop-