Chapter 24
Design of a University Learning Environment for SMART Education

Nataliia V. Morze
Borys Grinchenko Kiev University, Ukraine

Eugenia Smyrnova-Trybulska
University of Silesia in Katowice, Poland

Olena Glazunova
National University of Life and Environmental Sciences of Ukraine, Ukraine

ABSTRACT

This chapter discusses theoretical, methodological and practical aspects of a design of a university learning environment for SMART education. Smart technology is analyzed against university background. The authors consider a process of transformation from e-learning to smart education, in particular the VLE objective according to the concept of smart education, formation of individual learning trajectories in a smart environment and a quality university educational environment for smart education. In the second part of chapter, the authors look at the development of teacher ICT competence of teachers in the system of smart education and present their conclusions. The references include more than thirty items: articles, books, chapters, conference proceedings on SMART education, university learning environment, virtual learning environment (VLE).

INTRODUCTION

Modern information society is being gradually transformed into Smart Society, as noted by sociologists, philosophers, specialists in IT sector, educational specialists, etc. This concept implies a new quality of society, in which a set of technological means, services and the Internet used by trained people contributes

DOI: 10.4018/978-1-7998-3438-0.ch024

to qualitative changes in the interaction of subjects that allow to receive new effects – social, economic and other benefits for a better life (Tikhomirov 2012).

As a result of intensive development of information technologies, in order to replace the solutions that are already familiar and quite limited in their abilities to combine traditional education and e-learning, smart education is gradually being developed. Currently, there is no clearly articulated concept of smart education. Rather, it is an emerging paradigm in education. It is a set of technological, organizational, pedagogical decisions, often contradicting each other, but having a certain potential for innovation.

"Smart" - a property of a system or process that is manifested in its interaction with the environment, and gives the system and\or process the ability to provide an immediate response to changes in the external environment; adapt to the transforming conditions; exercise self-development and self-control; effectively achieve results.

The key in the property of being "smart" is the ability to interact with the environment and adapt to it. This property has an independent meaning and can be applied to categories such as city, university, society and many others. Forty years ago, when the property was devised, the level of technology development did not allow for the property in question to exist in most systems or processes. However, recent advances in ICT have helped build extremely complex systems, such as smart city.

During the Smart Society formation the paradigm of education and educational technology is naturally changing. The tasks of training of the new format specialist, successful and competent to work in the Smart Society rely on new universities – Smart Universities where the integration of technological innovations and the Internet can provide a new quality of educational and scientific processes, the results of training, scientific, innovation, educational, social and other activities.

The conceptual basis of the Smart University is a large number of different scientific sources, and information and educational materials, multimedia resources (audio, graphics, video) that can be easily and quickly designed, assembled as a certain set, adjusted individually for each student's needs and special characteristics of educational activity and the level of educational achievements.

The current situation of the development of higher vocational education is associated with the transition to practical implementation of a new educational paradigm that aims to create an integrated system of lifelong learning, to increase student self-education in learning process by means of information and communication technologies (ICT), which form self-education competence and such skills as self-organization and self- education.

It is obvious that in conditions of development of Smart Society the educational paradigm will also change. Smart Universities will perform new functions. Accordingly, the requirements for an e-learning environment that ensure students' needs in educational resources will change. Our mission is to substantiate theoretically the properties of such an e-learning environment through which students will be able to develop their professional and soft skills according to the conditions of Smart Society.

SMART TECHNOLOGY AT THE UNIVERSITY, LITERATURE REVIEW, AND BACKGROUND

The use of technological devices has changed the way individuals interact with their university environment. The study (Nuzzaci & Vecchia 2012) examines the use of a smart context as a link between individuals and their university environment through an exemplification of urgent problems deriving from different domains and technological systems, as well as of information and communication devices employed in