Chapter 11

Smart Learning Model Based on Competences and Activities

Alberto Real-Fernandez

Universidad de Alicante, Spain

Faraón Llorens-Largo

https://orcid.org/0000-0002-2117-0784

Universidad de Alicante, Spain

Rafael Molina-Carmona

Universidad de Alicante, Spain

ABSTRACT

The educational environment we find in our current world does not look like it did some years ago. The learning process has become dynamic and continuous, mainly driven by the great evolution of technology, implying an inevitable change in education. It is a change that requires a complete digital transformation of education to change the teaching and learning process by means of information technologies. This is why, faced with the traditional one-size-fits-all learning, this chapter proposes an open, collaborative, flexible, and scalable adaptive learning model based on information technologies. Because current students need to be prepared for a lifelong formation, let them know they should assume a continuous cycle of learning, unlearning, and relearning. A model that aims to fulfill all the new learning needs emerged on this digital world. It lets the students develop a lifelong learning, where the concepts are updated and reinforced, and dynamically adapted to their learning needs and progress.

INTRODUCTION

The current digital society in which we are immersed presents a different set of necessities to those we were used to perceive years ago. Knowledge is no longer static, concepts are continuously changing, and students must be prepared for all of this, so we need to change the way learning is presented to our current learners, we need to prepare them for a continuous learning and formation cycle. Besides, each student presents different learning needs, learning styles and learning progress. For that reason, we should
assume other learning concepts instead of the static one we are used to, we need to consider a learning
that can be personalized for the students and adapted to them.

In such a changing context, an Exploratory Research methodology seems to be adequate to study and
analyze what these changes have brought, what our learners need to be prepared for and how these needs
can be covered. Exploratory research seeks to find out how people get along in the setting under question,
what meanings they give to their actions, and what issues concern them (Schutt, 2012). In this work, the
object of research is the learning environments, and we try to find out how the learners develop in them,
and what actions to take to optimize learning. This purpose will be achieved by studying unstructured
information from the literature, online resources and case studies. This is a secondary research method,
since we have used preexisting data from other sources instead of first hand on purpose data, obtained
by surveys or interviews (Schutt, 2012).

The steps to conduct this research are:

1. Exploration: In an exploratory research, the exploration phase is determinant, since it will allow
   the identification of the main aspects of the problem. Particularly, we are interested in improving
   student performance by providing adaptive and personalized learning thanks to the use of technol-
gy, so we propose a non-systematic review of literature, online resources and case studies on these
   aspects. The issue or variable to explore is the proposal of an intelligent learning model based on
   competences and activities. This issue, can be divided into more specific issues:
   a. Analyze the situation of the current society regarding the continuous development of Information
      Technology we face nowadays. The research will be focused on the educational scope, com-
      menting and valuing the most important aspects in which it has been affected, how it has
      changed given the current digital world.
   b. Study the needs that education and so the digital society present nowadays, what the current
      changes imply to this environment, how education should react and transform to really afford
      and take all the advantage of this continuously changing digital world.
   c. Investigate where this transformation should reside on, the learning aspects and concepts that
      could really lead this process, their current situation and where they should point.
   d. Define the different aspects of adaptive and personalized learning.
   e. Explore the learning tools and platforms existing nowadays that try to cover all those presented
      needs, mentioning some of them based on modern learning concepts and others that appeared
      before that seemed to be the antecessor of this type of technology tools.

2. Problem identification and hypothesis statement: This step is devoted to clearly identify the problem
   from the previous exploration. Once the problem is identified it is necessary to state a research
   hypothesis, so that its proof supposes a contribution to the solution of the problem.

3. Model proposal: A first attempt to address the problem is proposed: a learning model based on
   adaptive and personalized learning, based on the current power of Information Technology, aimed
   at covering the needs of the educational environment, and focusing on each student individually. It is
   a preliminary model based on competences and learning activities, so a definition of both concepts
   in the context of this work is needed. The description must be completed with an explanation of
   the design of the intelligent learning environment as well as the main elements of the model.

4. Reflections and conclusions: In an exploratory research the main objective is determining the nature
   of the problem and having a better understanding of it. The proposed model is an attempt to prove
   the hypothesis, although no conclusive evidences are obtained but new lines of research are open.