# Chapter 8
# Authoring Tools for Edutainment Environments to Design Active Learning Activities

**Gilberto Huesca**
*Tecnológico de Monterrey, Campus Cd. de México, Mexico*

**Julieta Noguez**
*Tecnológico de Monterrey, Campus Cd. de México, Mexico*

## ABSTRACT

*Engaging game features could be a tool to involve students in an active learning process. Edutainment is used to improve education by presenting learning concepts in a less stressful way. However, a multidisciplinary work team is needed to create these environments. Authoring tools are a framework that allows virtual learning environments production with a lower effort. The authors defined the RchEd architecture for edutainment environments. Based on this architecture, they propose an authoring tool architecture, named Archaud, which identifies two components to define simulation and knowledge arguments. A programming object oriented framework has been developed as an implementation of the Archaud architecture. This framework defines the entities to create edutainment modules that can be configured and connected. Based on this, an authoring tool was developed and a RPG game for an undergraduate Physics course was created. The authoring tool facilities were evaluated with the help of undergraduate professors.*

## INTRODUCTION

This chapter will describe the challenges presents in the process of involving professors, not always experts in computer sciences, in the use of authoring systems and some architectures and authoring systems will be analyzed.

A research area that has emerged is the use of technology for teaching concepts in innovative ways in order to attract the student so they could learn and be entertained at the same time so to help the teaching-learning process. Pedagogical theories have embrace games in the past years as a teaching tool because of its engaging capabili-

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ties. These can be used as a medium to expose educational concepts so students receive them with less resistance.

Computational research over years has made available new developments so new platforms can be used to build more entertaining and funnier games. Also, large companies have worked to distribute these systems to consumers directly to their home.

From another point of view, new generations are more used to this kind of technologies. Nowadays, young people are not afraid of using cell phones as an entertainment tool rather than only a communication device for example. Also, these systems are more and more popular and have a great acceptance between people.

Serious games have emerged as a computational application that takes profit from these elements and combines serious aspects (teaching, learning, communication or information) with the playful characteristics of entertainment activities (Álvarez, 2007). These systems provide channels with attractive features that can capture and hold students' attention and can be used for the delivery of learning content. This concept is used to refer to software or hardware applications developed using video game technologies and design principles for another purpose besides pure entertainment like communication, learning, teaching, or information (Susi, 2007).

As an educative computational tool, edutainment is a specific serious game environment that combines education and entertainment. Edutainment is the contraction of education and entertainment. Edutainment is a methodology that combines teaching methods and games characteristics to engage students in order to make easier their learning process (Qianping, 2007). It tries to increase the educational value of games by adding pedagogical techniques to display educational content. A main objective is to present education in a less stressful way as it can be in traditional ways. With this, students can enjoy more this process and increases their interest on the content that is taught. This could, in some degree, augment the quality and efficiency of the teaching-learning process between professors and students. These environments take advantage of educational technology skills of students to present attractive tools that support their learning process. Similarly, the characteristics of these educational environments can be aligned to different learning styles of students to achieve the learning objectives of the course (Cela, 2008).

However, developing such an educational computer system is not an easy task. This kind of systems requires a multidisciplinary development team (Zyda, 2005). A design team is required to work over the storyline of the video game. Also, an art team must get involved to create all game images and sounds. A software development team will put all this together to have a final product that can be played by the students. But, as an educational tool, a pedagogical expert is necessary to be present in the design process. This expert could show what places in the game can be used as insertion point for pedagogical elements for scaffolding learning. Additionally, it is important to mark out that the professors that will use this development must be included in the pedagogical team so the software is aligned to their teaching objectives and could be later applied to their courses.

Most of professors don't have the computational expertise to compose the system (Blessing, 1997). These features can be a communication barrier between the development team and the pedagogical team. This can cause that the teaching objectives would not be correctly translated in the final edutainment environment. So, some research is necessary to find tools to help reduce this gap.

Authoring systems are a framework that allows virtual learning environment production with a lower material (effort and time) cost and that reduce the abilities or training needed to create them (Murray, 2003). Authoring tools can help in the process of developing edutainment environments by providing professors with instruments that require less computer expertise. So profes-