Chapter 22
Educational Personalized Contents in a Web Environment:
The Virtual Museum Net of Magna Graecia

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ABSTRACT

This chapter presents a system called Virtual Museum Net of Magna Graecia, part of a Cultural Heritage project supported by the Regional Operational Programme 2000-2006 to promote archaeological patrimony of Calabria, a region of southern Italy. In particular, the Virtual Museum Net offers personalized learning paths though an intelligent match between a user's preferences, needs, and requests and Calabrian Cultural Heritage data from museums, archaeological sites and libraries, including maps, images, movies, historical writings, and architectural reconstructions.The system provides educational contents and recommendations on the basis of a thematic search or a map, and the user can select both the contents to visualize and the level of detail. In this way, the educational quality, the users' entertainment, and the learning process are improved by the virtual experience.

INTRODUCTION

In recent years, several researches have emphasized a scarce interest of some targets of users in Cultural Heritage (CH). For instance both young people and the elderly have been classified as groups that are not attracted by museums and galleries (Botti, 2000; Mason & McCarthy, 2006).

Moreover, the Article 12 of the Council of Europe Framework Convention on the Value of CH for Society highlights that a wide effort should be expended for the enhancement of participation in culture for particular societal groups. In particular, it states the necessity to «improve access to the heritage, especially among young people and the disadvantaged, in order to raise awareness about its value, the need to maintain and preserve it, and the benefits which may be derived from it».

However, since younger generation feels comfortable using Information and Communication Technology (ICT), it has the opportunity to expand its own knowledge taking charge of the complete learning experience in the ways that best suit individual needs and interests (Berdichevsky, 2008). In fact, the current advances in ICT offer immersive tools which can be used to allow learners to explore both personalized environments and scenarios, harness their own skills and enhance their education. These new tools have important implications on lesson planning, didactic contents, and fruition (de Freitas & Neumann, 2009), as well on self-tuition.

BACKGROUND

Over the last decade, several researches have demonstrated that learning through interactive technologies has a positive effect on students, supporting the diffusion of scientific knowledge and showing entertainment aspects that can facilitate the educational process (Pan et al., 2006; Cai et al., 2006; Bieliková et al., 2008; Dobson & Ha, 2008; Knipfer et al., 2009). In particular, web technology has been taken into account for the improving of education by providing texts, audios, videos and 3D virtual reconstructions of real objects, as well as new and engaging experiences (Alfano et al., 2008). Moreover, many researchers have developed new tools capable of accessing to highly personalized educational contents; a meaningful example is the personalized Knowledge Navigation Service (Wu et al., 2006), a navigation service which supports the process of self-learning and is based on the Interpretive Structural Modeling (ISM), which consists of a computer-aided method which allows to organize a large amounts of information (Warfield, 1982). In particular, the Knowledge Navigation System allows the evaluation of the learning performance by figuring out what information are already learned and what are to review. Another meaning-

ful tool is the Questions Sharing and Interactive Assignments (QSIA), a web-based learning tool which allows the online development, collecting, managing and sharing of knowledge. It consists of an online platform which can facilitate the collaboration among users to create new knowledge. Furthermore, it facilitates the collaboration among teachers and learners by offering online recommendations. (Rafaeli et al., 2004). In the field of Cultural Heritage (CH), the most used technologies have been based on multimedia, 3D graphics and virtual reconstructions (Lepouras & Vassilakis, 2005). Their aim was the creation of virtual environments where users can play and discover the different elements of the cultural patrimony by using several modality of interaction. In fact, having real and virtual information combined, users have the possibility to experience the 3D Virtual Reality environments as a videogame using the mouse or keyboard, as well as a joystick and the Wii™ wireless controller based on the gestures of the user. This kind of "virtual tour" in an ancient faraway world incorporates information about the culture and the society of the period, and provides an advanced learning opportunity through the display of built-ad-hoc contents. Such navigable environments have a long technological tradition, based on the diffusion of multi-players games, virtual worlds and virtual communities. Moreover, the proposed learning path is both very attractive and stimulating and particularly successful because of its visually based "nature", with the prevalent immediacy of images in relation to the sequential nature of the texts and the sounds. Given these characteristics, it is consequential that this motor - sensory manner acquisition and processing of knowledge is less tiring on account of the mental effort required (Antinucci, 1998). The described involvement can be also carried out thanks to the potentialities offered by GIS technologies, Internet and Google tools (Van Gool & Sablatnig, 2006; Cutrì et al., 2008; Pantano & Tavernise, 2009). Hence, the web is a powerful tool to be used for surfing

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