Chapter 3
Digital Diorama:
An Interactive Multimedia Resource for Learning the Life Sciences

Annamaria Poli
University of Milano-Bicocca, Italy

Annastella Gambini
University of Milano-Bicocca, Italy

Antonella Pezzotti
University of Milano-Bicocca, Italy

Alfredo Broglia
University of Milano-Bicocca, Italy

Alessandra Mazzola
Politecnico di Milano, Italy

Sabrina Muschiato
Politecnico di Milano, Italy

Carlo Emilio Standoli
Politecnico di Milano, Italy

Daniela Zambarbieri
Politecnico di Milano, Italy

Fiammetta Costa
Politecnico di Milano, Italy

ABSTRACT

Digital technologies that increase communication among students/users are viewed as interactive resources for enhancing learning, especially in the field of science teaching. The new digital mission is to produce innovative learning environments and educational tools to enhance the traditional teaching methods still widely used today. The Digital Diorama project reproduces a set of Natural History Museum dioramas for IWBs and other electronic devices. Using the Digital Diorama enhances cooperative learning. This comes from the students/users' explorations of the Digital Diorama and from strategies that we recommend to teachers.

INTRODUCTION

The *Digital Diorama* research project proposes using digital technologies in schools as a resource for boosting cooperative and collaborative learning, mainly in relation to scientific knowledge and the use of ICT (Information Communication Technology). Such tools offer great potential for schools at all levels of education and open up new prospects for teaching/learning in many fields. In addition, advances in

the computer sciences are contributing to the development of increasingly sophisticated educational technologies.

If they are appropriately used, and applied following socio-constructivist teaching methods, the new devices can help meet the widely recognized challenges of the contemporary knowledge society, such as providing for lifelong learning, or fostering young people's interest and motivation in order to achieve the learning outcomes required for everyday life[1]. Specifically, virtual learning environments can become places in which to experience active enquiry, teaching practices, and interaction with learning contents, as well as places for enhanced interpersonal relationships, discussion and sharing (Ghislandi, 2012).

In these learning environments, each learner is an active and involved member of a community, who helps to complete tasks or joint projects, and contributes his/her own experience, knowledge and skills to build collective knowledge (Herrington, Reeves, & Oliver, 2014).

STATE OF THE ART

Digital Technologies

The role of digital technologies and the importance of appropriate education and training in using digital media for children, teenagers and adults has long been acknowledged. The first institution to recognize this was Unesco: in 1982, thanks to the Grunwald Declaration on Media Education, attention was drawn for the first time to the need for educational programmes in digital technology at all levels of schooling[2]. In keeping with this early position, in 2002 Unesco launched the *Youth Media Education Seminar* initiative in Seville, which emphasized the need to promote digital technology literacy both critically and creatively, in both formal and informal educational contexts. In particular, the objectives identified by Unesco include providing incentives for the development of individual and collective digital citizenship abilities.

Like Unesco, starting with the meeting in Lisbon in 2000, the European Commission has also launched initiatives promoting and supporting digital literacy, particularly in relation to the protection and promotion of human rights. These include *Safer Internet* and the multi-annual e-Learning programme from 2004-2006 for combatting the *Digital divide*, which, as well as defining the concept of *digital literacy*, sought to identify and disseminate good practices, such as fostering digital literacy in schools through e-learning[3].

The European directives from 2000 onwards have called for ongoing debate on the function of digital technologies in the development of active and aware digital citizenship, and especial attention has been drawn to the integration of digital technologies and new media into the school curriculum, as well as to the accessibility required to facilitate inclusion.

A few years later, in 2007, Unesco again posed the question of including digital education in the school curriculum and issued its first recommendations for digital education in the document known as the "Paris Agenda"[4].

Thanks to the European directives, in Italy, from 2007 onwards, the Ministry of Education, University and Research (MIUR) circulated a set of National Curricular Guidelines for Preschool, Primary and Lower Secondary Education ("Indicazioni nazionali per il curricolo della scuola dell'infanzia e del primo ciclo di istruzione"). In 2012, a revised edition of these guidelines was produced and published

Related Content

Retail Marketing Strategies and Brand Management: A Global Retail Industry Perspective
Kijpokin Kasemsap (2016). *International Journal of Social and Organizational Dynamics in IT (pp. 66-78).*
www.irma-international.org/article/retail-marketing-strategies-and-brand-management/158057

The Culture(s) of Cyberspace
Leah P. Macfadyen (2006). *Encyclopedia of Human Computer Interaction (pp. 143-149).*
www.irma-international.org/chapter/cultures-cyberspace/13113

Change and Challenge: Managing the E-Business Organization
John Mendonca (2004). *Issues of Human Computer Interaction (pp. 277-290).*
www.irma-international.org/chapter/change-challenge-managing-business-organization/24739

Moral Psychology and Artificial Agents (Part One): Ontologically Categorizing Bio-Cultural Humans
Michael Laakasuo, Jukka R. I. Sundvall, Anton Berg, Marianna Drosinou, Volo Herzon, Anton Kunnari, Mika Koverola, Marko Repo, Teemu Saikkonenand Jussi Palomäki (2021). *Machine Law, Ethics, and Morality in the Age of Artificial Intelligence (pp. 166-188).*
www.irma-international.org/chapter/moral-psychology-and-artificial-agents-part-one/265719

Evaluating Usability and User Experience Amid COVID-19: The Case of Innovative Digital Retailers
Ghazi A. Samawi, Luai Jraisat, Fadi Khlaif, Mohannad Jreissat, Mohammad Akram Ta'amnha, Samah Alomariand Ala'aldin Khawajah (2023). *International Journal of Technology and Human Interaction (pp. 1-23).*
www.irma-international.org/article/evaluating-usability-and-user-experience-amid-covid-19/328090