Chapter 15
Creating Educational Resources for Medical Education in the Web2.0/Web3.0 Era

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ABSTRACT

The accelerated development of the networked society throughout the last few years had a strong impact on the teaching and learning activities from the medical related domains. E-learning applications have become very popular and encouraged the shift from traditional training activities – having the teacher as a mediator, towards self-guided ones where the teacher is rather a supervisor. These changes imposed the creation of new, more complex and more interactive teaching resources, with high quality standards, that could fulfill the requirements of the new approach. At present, the lack of specialized development tools requires the involvement of both medical and IT specialists in the resources creation process, consequently, generating higher production costs. In this chapter, the authors present two specialized tools – MetaMorphosis+ and eGLE – together with a new resources development methodology based on the repurposing approach and the blend of social networks activities with semantic web functionalities. In addition, the authors describe the user evaluation activities performed over the MetaMorphosis+ application and the results obtained.

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INTRODUCTION

The networked society, the social structure based on information and communication networks that process and distribute information on the basis of the knowledge accumulated in the nodes of the networks, is what currently boosts the change towards a knowledge economy. This emphasizes the need for new approaches to learning and a transformation of the education model in formal and continuing education alike which is strongly supported by information and communication technologies, what usually comes under the collective term of ‘e-learning.’

E-learning has evolved from early stand-alone multimedia applications, through experiments of supporting remote teaching via the Internet, to recent integrated approaches where the Internet and especially the Web is used as a means to create active, context based, personalized learning experiences. This last generation of e-learning shifts the emphasis from ‘teaching’ to ‘learning’ and from the notion of technology as a didactic mediator to the notion of a sociable, peer-supported, involved learner.

E-learning environments are currently used widely in different domains of formal education and in all sorts of networked organizations. Medical education is drawing much attention, due to its special characteristics (Kaldoudi et al., 2010). Firstly, it is a field that encompasses not only the fundamental issue of education, but also the sensitive issue of health and health care services. Furthermore, education in medicine is multidisciplinary and rather long, involving a good number of academic years and extending to life-long continuing updating and learning. Additionally, medical education is traditionally based on a two-fold model: theoretical instruction based on textbooks and clinical practice with one-to-one interaction. Finally, one should stress the current enormous expansion in medical and biomedical knowledge, which constitutes a fundamental challenge in medical education. As a result the necessity for overspecialized learning material and educators is central in contemporary medical education.

In fact, during the last few years, a large amount of teaching resources are being developed in the medical field, especially due to the increasing number of cross-domain research innovations. The development of new educational material is however a rather costly activity (Dietze et al., 2013), especially due to the high standards requirements in information quality, user interaction techniques or data presentation methods (images, videos, interactive 3D models, simulators etc.). Furthermore, many of the medical specialists lack the advanced technical knowledge that is required to develop this kind of resources, and usually cannot contribute in the desired manner to the e-learning environment. Reusing some of the already existing materials in order to create new ones, has proven to be an effective solution (Wang et al., 2007), but implies often an extensive research for identifying these resources. This approach helps medical experts to concentrate more on the information quality rather than technical related problems during the creation of the resources.

This chapter elaborates on current trends and challenges in medical education as this is supported by advances in the Web, such as participative social Web technologies and semantic Web and linked data. As an indicative example, the chapter also presents a novel approach for describing and sculpting the profile of an educational resource through the blend of its social attributes and Web semantic capabilities, so that this enriched profile can be used in the context of creating new resources based on repurposing of existing material. In this approach, existing applications are integrated to support seamlessly the entire process of generating and/or repurposing and finally publishing educational material in health sciences so that such material can be retrieved and consumed by learners and/or other educators. The eGLE application, a specialized e-learning content development tool, is described briefly in