Chapter 7
Collaborative Development of Educational Modules: A Need for Lifelong Learning

Ellen Francine Barbosa
University of São Paulo – ICMC/USP, Brazil

José Carlos Maldonado
University of São Paulo – ICMC/USP, Brazil

ABSTRACT

Lifelong learning has to accommodate a variety of types of learners who differ in age, learning experiences, media preferences, learning styles, capability for working in teams, among others. To be more effective, lifelong learning scenarios require the establishment and integration of innovative methods, tools, and procedures into well-defined processes, aiming at producing customized and high-quality educational products, capable of better engaging the students (and teachers as well) in an active learning process. Collaborative development plays an important role in this perspective, providing means for developers from different domains, working on multi-disciplinary and heterogeneous teams, geographically dispersed or not, cooperating, sharing data and information regarding the materials being developed. At the very end, the envisioned scenario is to evolve collaborative development in collaborative learning, broadening the learning opportunities to actively involve learners in their own knowledge construction process. In this chapter, the authors explore the collaborative development of educational modules and its implications in lifelong learning scenarios. They discuss the establishment of a systematic process for developing educational modules, providing a set of guidelines and supporting mechanisms to collaboratively create, reuse and evolve them. Also, as part of the process, the authors focus on issues of content modeling aiming at helping the developers to determine the relevant parts of the knowledge domain and to structure the concepts and related information. They illustrate the application of ideas by the collaborative development of an educational module for software testing domain. The module has been preliminarily evaluated; in general, positive attitudes toward the quality and flexibility it provides can be observed.

DOI: 10.4018/978-1-61520-983-5.ch007

INTRODUCTION

Education has been through enormous changes in the last decades. The need for a global education, capable of crossing international, cultural and social borders in order to prepare the learners for the global market has been rapidly changing the concept of learning (Barbosa & Maldonado, 2006b). Besides that, the fast evolution of information and communication technologies has leveraged and multiplied the possibilities of learning.

Several initiatives have been investigated in order to provide new learning opportunities and facilitate the learning process. In this evolving educational landscape, the idea of lifelong learning has emerged – it is ever more important for college graduates and professionals to be able to take their place in the changing world scene and to be adaptable and creative within the organization that employs them (Peat et al., 2005). Also, in addition to a diversified student population in terms of ethnicity, social status and expectations, the proportion of nontraditional older adult reentry students is increasing significantly. Higher education plays an important role in this context, having a mission to provide older adult learners with re-education or retraining such that they can be able to remain competitive in the workforce of today's technologically sophisticated society (Inoue, 2007).

The growing worldwide demand for more flexible, self-directed, informal and formal lifelong learning opportunities points out the need for more efficient and productive learning development scenarios. For instance, the changes within education have brought about changes to the roles of teachers and students and to the nature of the learning process. As stated by Koper (2005), in lifelong learning students can be (co-) producers of course materials, can perform assessments, and can support other students. Indeed, lifelong learning implies on exploiting the heterogeneity of learners by setting up learning communities in which novices collaborate with more experienced people. Similarly, teachers and experts can teach and learn at the same time in a certain field of expertise.

The main challenge in building lifelong learning experiences is how to provide ways to establish flexible and high-quality educational products, capable of stimulating the learners (and teachers as well) and effectively contribute to their knowledge construction processes in active learning environments. In this scenario, collaborative issues can be explored under two different but complementary perspectives: collaborative development and collaborative learning. In the first perspective, the idea is to provide means for developers from different domains, working on multi-disciplinary and heterogeneous teams, geographically dispersed or not, cooperate, sharing data and information regarding the product being developed. In the second perspective, the goal is to design personalized content and foster collaborative and cooperative activities for learners working in different places, at different times, and with varying facilities. In the emerging approaches of learning, such perspectives are ever more related, where the term "developer" refers not only to the designer professional and/or to the teacher, but also to the learner. In such cases, collaborative development turns into collaborative learning and vice-versa.

In this chapter we explore the collaborative development of educational modules and its implications in lifelong learning scenarios. Educational modules correspond to *concise units of study, composed of theoretical and practical content, which can be delivered to learners by using technological and computational resources* (Barbosa, 2004; Barbosa & Maldonado, 2006a; Barbosa & Maldonado, 2006b). In a very broad definition, IEEE/LTSC states that a learning object corresponds to "*any entity, digital or non-digital, that can be used, reused or referenced during technology supported learning… Examples of learning objects include multimedia content, instructional content, learning objectives, instructional software and*