

# Chapter IV

## A Topic–Case Driven Methodology for Web Course Design

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### **ABSTRACT**

*A topic-case driven methodology for a Web course design and realization process is based on software engineering metaphors for capturing the necessary steps in creating Web courses by means of a content-based development method. The methodology combines instructional issues to design phases that guide teachers and instructors to design and implement online courses. The methodology has been used by students of teacher education in computer science, as well as professional university educators from different educational fields. The results from these experiences have been reported as case studies. In this chapter, the methodology is introduced with the summarized results from three case studies.*

### **INTRODUCTION**

Even today, Web courses are often based on the idea of exporting traditional written materials to the Web without the proper planning and pedagogical design. However, we need more than just a translation of books and lectures into

an electronic format along with Web delivery. We need online courses that teach and present information adequately. There should be no more page-turning or scroll-down architectures where the learner just presses the button for the next page or scrolls down the screen. Moreover, students need to be more active while they learn. By not

being passive TV-viewers, the students will learn by doing, by accomplishing tasks, not by being told (for example, Bork 1986; Schank, 1998). As Twigg (2001, p. 7) points out, “we need to be more thoughtful about course design so that we include structures and activities that work well with diverse types of students.”

Many online communications take place in written format without students seeing or hearing their learning mates. New knowledge is being built through communication with other learners and teachers or instructors. Learning is no longer confined to institutions such as schools, colleges, and universities. Technology provides new possibilities: easy access to information and opportunities for lifelong learning—also online. To support lifelong learning, we need more quality in online learning context; instead of using new technology to do the same old things differently, we should focus on doing new things in new ways (for example, McDonald, 2002). In many cases, while realizing a Web course, testing and evaluation are just forgotten and educators are satisfied with having something up and running. Such simplistic approaches do not support students in their individual learning styles which lead them to poor learning experiences and an unwillingness to take part in the next Web course.

The creation of digital contents is regarded as the next wave in the development of the information society (see Council of European Union, 2000, 2005; Finnish Ministry of Education, 2006). At the core of content production and independent of the purpose of the material to be produced, one should employ a content creation and development process, which supports structural and incremental development and thus also reusability of the resulting materials as suitable learning objects.

The content of a Web-based course is similar to the functionality of a computer program: they are both drivers for further development, presenting functionality and content to all users and students

to enhance usage and learning. In software engineering, Humphrey (1998) emphasizes effective planning and quality management. Both of these are also useful principles in Web course design. Thus, Web course design requires good planning and documentation as well as some development process to follow (McNaught, 2002). However, all of the existing methodologies fail to describe a development process that allows well-managed integration and incorporation of structural and multigranular digital material with pedagogical knowledge as well as, for example, communication and cognitive tools.

The key questions for Web course design is how to design learning material that benefits from using the Web and how and when to integrate such a (Web-) pedagogy into training that enhances learning. Although these are important steps towards a structured method in which to develop Web courses, we feel that these two central aspects are not clearly captured in the existing approaches. White (2000), Montilva (2000), Baloian, Fuller, and Ochoa (2001), and Anglada (2002) seem to apply mainly an organization-centric approach; that is, time and schedule drive the development of content that is immediately organized, for example, in weekly units. Here there is very little learning-centric focus on what to learn and how to learn the contents. In some models, a pedagogical design has been included, but the whole content of the Web course is supposed to fit under the same pedagogical solution. Our contribution to this quality problem in e-learning is a topic-case driven approach for Web course design. The approach utilizes metaphors from software engineering, following the unified process in Jacobson, Booch, and Rumbaugh (1999) to describe a unified way to design and realize Web courses, but those are blended together with educational issues. This approach allows incremental and iterative development of the Web course. Moreover, it can be utilized as a content development mini-project within other similar methods.

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