Chapter 4

From Europe to China: Adapting Courseware Generation to a Different Educational Context

Xiaohong Tan
Shanghai Jiao Tong University, China

Carsten Ullrich
Shanghai Jiao Tong University, China

Ruimin Shen
Shanghai Jiao Tong University, China

ABSTRACT

Course(ware) generation is the process of assembling a sequence of learning objects that is adapted to an individual user’s goals, preferences, and capabilities. This chapter investigates course generation and how it is adapted to a different educational context, an area of research that has been barely researched until now. The authors present a course generator developed within a European project and show how it was adapted to meet requirements arising from the Chinese educational setting—a setting that differs from Europe being significantly more-teacher centered and whose foremost goal is to enable access to higher education to the largest amount of citizens possible.

INTRODUCTION

Course(ware) generation is the process of assembling a sequence of learning objects that is adapted to an individual user’s goals, preferences and capabilities. Research on course generation started early on in the history of technology-enhanced learning. The first ideas, which formulated the basic principles today’s approaches are still build on, were published in the 80s and early 90ties. Despite this long time of research, course generation has been mainly investigated by researchers from Europe and North America, which are part of the Western culture cluster according to the GLOBE framework for categorizing cultural differences (House, Hanges, & Javidan, 2004). However, teaching and learning differs in each educational context and we feel that there is...
From Europe to China

a lack of literature describing and addressing the specific needs of teaching and learning regarding the topic of course generation. The most significant general differences are the following:

- Teaching and learning in the Confucian Asian cluster is still influenced by Confucian values, leading to more teacher-centered education than in the West (Zhang et al., 2007). This directly influences the pedagogy embedded in a course generator.
- China’s education system is still developing, and facing the challenging question of how to quickly provide education to large, ever increasing numbers of learners. In China, the number of graduates at all level of higher education has quadrupled in seven years, from 830,000 (1998) to 3,068,000 students (2005) (Li et al., 2008). This raises the question how this massive increase of students can be handled effectively and leads to different research questions and solutions, also in the area of course generation, than those investigated in the West.

The objective of this chapter is to contribute to the understanding of differences in technology-enhanced learning, especially in the area of course generation. In particular, we aim at the following objectives:

- To increase awareness of how the researchers’ own background influences the pedagogy embodied within a technical artifact.
- To help Western researchers understand the needs of different educational contexts.
- To help non-Western researchers understanding that it is legitimate that their research focuses on different aspects than that of their Western colleagues. While this sounds obvious, a closer look at the literature reveals that research on technology that supports “traditional” or “didactic” ways of teaching is often looked down upon, e.g., Chan et al. (2006) who state that “[t]his simplistic view [of delivering instructional content] ignores the fact that modern education and pedagogy … converge in their high valuation of active … learning methods much beyond the absorption of codified knowledge”. It is not a question about ignoring facts – it is a question about constraints and possibilities. In settings such as China there is not much choice. The foremost goal is to establish an infrastructure that enables access to education. This involves participation of existing stakeholders and taking serious established, culturally embedded ways of teaching and learning.

The learned lessons are relevant for technology-enhanced learning in general, especially when taking into consideration that the challenges that China faces are shared by other countries. For instance, Nigeria’s universities can accommodate only 20% of those seeking admission (Adesope et al., 2007).

The chapter is structured as follows. We start with a description of a state-of-the-art approach to course generation that distinguishes itself from most current work by its explicit modeling of pedagogical knowledge. The presented approach allows the formalization of course generation scenarios that support the learner in achieving different learning goals, such as “discover new content”, “rehearse learned content” and “prepare for exam”. This work was done within the European project LeActiveMath. We then describe the background of Chinese online education and the effects of these on the requirements towards course generation, such as a more teacher-based approach, ease of use, scalability, and different learning needs. The third section describes how the Western framework was adapted to the Chinese needs. The presented system is applied in large scale online learning, namely at the SJTU School.