Chapter 60
E-Learning at Politecnico di Torino:
Moving to a Sustainable Large-Scale Multi-Channel System of Services

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ABSTRACT

Politecnico di Torino has been actively experimenting distance education scenarios since 1992, through the development of innovative methodologies and tools. The real challenge today, however, is to move from small settings to a large-scale system able to suit the needs of a broad number of users belonging to different categories, from traditional students to part-time or full-time workers, from students living far from Torino to people with participation restriction due to disability. The emphasis then, is not only on the innovation of methodologies and technologies, but on their effective and economically sustainable use in a complex and multi-faceted setting. This chapter describes the services introduced in this direction and gives a preliminary evaluation after the first year of delivery.

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INTRODUCTION

Politecnico di Torino, one of the major technical universities in Italy that offers B.S., M.S., and Ph.D. degrees in engineering and architecture, actively experimented distance education models, tools and scenarios since 1992, to cover the needs of the widest possible variety of potential users, ranging from "traditional" students to part-time or full-time workers, from students living far from Torino to people with participation restriction due to disability.

Politecnico di Torino has about 30,000 students studying on 120 courses (28 B.S. degree courses; 32 M.S. courses, 33 Ph.D. courses and 37 specialization courses); 12 of them are held in English. In the academic year 2011/2012 Politecnico had around 5,600 students enrolled in the first year; in 2010 around 4.500 students graduated with a Master of Science or a Bachelor's Degree. Each year, between lectures, laboratories and practical exercises there are 170,000 hours of teaching.

Starting from the academic year 2010/2011, delivery and management of e-learning in Politecnico di Torino have been completely revisited and newly designed, to better exploit the potential of Internet and allow higher flexibility in terms of time and space. The blended learning approach (Bersin, 2004; Bonk and Graham, 2004; Hoen and Rietsch, 2008; Lee, 2007) has been chosen, since a mix of traditional education and technology-supported learning have the right flexibility, suitable economic sustainability and the highest grade of acceptance by the students.

However, the major challenge of this experience was to design a blended learning educational model that meets the needs of the largest number of users' categories and is economically sustainable at the same time.

The experience involved all the students attending the first year of the B.S. in engineering (common to all 20 different engineering curricula) or the first year of the M.S. in computer engineering, i.e., over 4.000 students. The number of supported courses was 15, for a total of 1.240 lecture hours; 30 teachers were involved in the experience.

The described solution is not monolithic, but includes a variety of methodologies and tools (summarized in Figure 1) and consists of three main services, which can be combined according to the user's profile and requirements. The "online video-lecture service" ensures that all classroom activities are video-recorded and available to students via streaming and download. The "Poli@Home service" adds the interactive component of education by providing the online support of tutors that proactively involve students in synchronous and asynchronous activities like video-chats or forums. The "support to remote locations" service covers the educational role in a larger territory; Politecnico di Torino has several different geographical sites, but the recent changes in university regulation forced a strong limitation of face-to-face activities in these sites.

Figure 1 evidences that online video-lectures play a central role in the model: for distance students they allow the individual access to teaching material, and for face-to-face ones they represent an important tool for enhancing the educational offer, thanks to their asynchronous usage potential. Despite interaction between students and teacher still requires different methodologies and tools for face-to-face and distance students, a large-scale common model based on video streaming has a positive impact on the economical sustainability of the proposed solution. This partial large-scale saving made the creation of a significant corpus of educational material possible, which is available for any educational offer.

People involved in the experience were all the actors involved in the educational process inside a university: students, teachers, tutors, and the technicians that took care of the design and the implementation of the technological solution, and the everyday provision of the services.