


The Design and Redesign of an Online Socio- Constructivist Course on Engineering Management: The Role of Learning Scenarios and Learning Analytics

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EXECUTIVE SUMMARY

This chapter focuses on the design and redesign of an online engineering management course, based on a socio-constructivist approach. At first, the theoretical and contextual premises will be presented with a focus on the suggested teaching and

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learning methods to acquire domain-related knowledge and crucial skills and on the importance of learning scenario to support an effective learning design. After the background introduction, a user case will be described, focusing on the course online environment and its tools, on the proposed pedagogical strategies and above all, on how instructors can obtain and analyze useful educational data from various sources. Finally, some redesign recommendations will be provided to better use educational data for continuous course improvement.

INTRODUCTION

Engineering management is a specialized field of management concerned with the engineering sector. Reflecting industry demand for management-focused engineers, a growing number of specialized engineering management degrees are available to help develop the knowledge and skills needed for these roles. During an engineering management course, students develop industrial engineering skills, knowledge and expertise, alongside knowledge of business and management techniques, strategies and concerns. Plus, one of the main goals of higher education, whatever the domain, is to ensure that students acquire useful skills to achieve success not only in their studies but also in their future career and life in general. Through specific techniques and educational strategies, students should learn to act, study and work intentionally and effectively, individually or together with others, in authentic contexts, solving complex problems and creating new solutions and new knowledge. Based on these outcomes and core competencies, instructors should design their courses, focusing not just on the courseware, rather on the whole teaching/learning experience. Once a course is fully designed, according to the specific goals and theoretical approaches the instructor bear in mind, it comes into practice and the design process starts again.

The scope of this chapter is to examine the design and redesign of an Engineering Management course, by following some research questions:

- Which are the core skills that a student and future worker should develop to be successful in his/her career?
- Which teaching and learning strategies could better support the development of the identified skills?
- Which methods a teacher should follow to design and redesign an effective course?

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