

Formation of Managers of Biotechnology Companies: A “Presentual” (Presential and Virtual) Environment for Learning

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ABSTRACT

This teaching system was built on materials prepared by experts in biotechnology and management with the contribution of the students themselves, engendered by their discussions about real life based business situations. This system is fully supported by the resources available within the Moodle platform, especially the adaptability of content depending on the profile of the students. But this system goes beyond this. It promotes constant teacher-student and student-student interaction; it achieves this by using all the possibilities offered by the network, by using an approach that stimulates participation in different forums and recommends a series of scheduled tasks based upon the company they work for. The goal of this system is to organize and take advantage of all the available knowledge, and especially that which the students themselves build in each edition, so that the following edition participants can profit from it.

Key Words: Adaptability, Directive Formation, Social Web, Technological Based Companies

1. INTRODUCTION

The Foundation for the development of research in genomics and proteomics in Spain, “Genoma España”, (2001-2013) had among its main goals the promotion of the biotechnology industry. To achieve this, it launched a program to create biotechnology-based companies. The results were extraordinary. In twelve years the number

of biotechnology-based companies grew by 459%, as outlined in the ICONO-FECYT report of Indicators of the Science, Technology and Innovation (ICONO-FECYT, 2013) that uses the data from the “Relevance of Biotechnology in Spain 2011” report (Genoma España, 2011). According to data from the European employers association in 2013, the Spanish biotech industry reached eighth place in the

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Western world. This was truly a “prodigious decade” (J. Barrero, 2013) in which companies, defined as financial instruments that show whether ideas work or not, have consolidated an internationally competitive biotechnology industry in Spain.

However, something was missing. Its promoters, mostly scientists with a very specialized knowledge in one of the technologies - some of them more than a century old - that contribute to biotechnology (Muñoz, E., 1998), lacked a general knowledge in business management. Some of these technologies are biochemistry, molecular and cell biology, genetics, cell therapy, the neurosciences, and productive connections between these disciplines and physical and chemical techniques and technologies: X-ray spectroscopy (crystallography), nuclear magnetic resonance, fluorescence, photonics, and those derived from computational analysis that in the end integrates them into complex fields such as genomics and proteomics, systemic and synthetic biology, bioengineering applied to medicine, nutrition science and countless industrial processes. This lack of business skills was identified as a problem in their relationship with investors, who are necessary agents to the consolidation of their businesses. This is precisely why Genoma España launched an ambitious training project to teach management techniques to biotech executives that ought to be capable to teach its participants the necessary skills for dealing with the venture capital professionals.

Now we will present and describe this experience, in the following order: the designing of the educational process, and then the evaluation of the results obtained in the nine editions of this project. This will be done by dividing this article in three parts the first being the characteristics of the course and its pedagogical context. Then, the different learning strategies used will be explained, together with the results of the educational evaluation about the learning process.

2. CHARACTERISTICS AND PEDAGOGICAL CONTEXT OF THE COURSE

2.1. Characteristics

The Management Training Course of Genoma España that began in 2008 is the result of an educational research project that involved the DMAMI (of the Universidad Politécnica de Madrid) and the CICEI (of the Universidad de Las Palmas de Gran Canaria) along with professional experts in the field of biotechnology, developed a training system based on action and participation. It follows the usual format of Management Development Programs. It’s specifically designed for professionals from biotech companies. The course lasts four months and to date there have been nine editions and 247 students. 229 of them completed it successfully.

This course is intended for C-level directors or high-potential employees in biotech companies that, due to their close collaboration with senior management, need to face high-level problems and situations and to have an overall view of their organization.

The core of this training system is the discussion of a case study. The students start working on texts that combine the experience of three Spanish biotech companies whose main problem was the search for funding and, as the course advances, they are divided in groups, each working on the challenges of the company that most resembles the professional and personal situation of the student and the life cycle of the company she works for. It also involves the creation of a micro social network structured as a system with learning goals to meet.

Throughout the first two months of the course, the students discuss the three companies’ challenges in a structured way: they analyze the driving idea of each business, its business model, its financial situation and the way it is organized. Over the next two months, the students are divided in groups, each working with what best suits their professional interests

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