

Gamification of eHealth Business Cases to Enhance Rich Learning Experience

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Abstract : Introduction of games has expanded the application area of computer-aided learning tools to wide variety of age groups of learners. Serious games engage the learners into a real-world -type of simulation and potentially enrich the learning experience. Institutional background of a Bachelor's level engineering program in Information and Communication Technology is introduced, with detailed focus on one of its majors, Health Technology. As part of a Customer Oriented Software Application thematic semester, one particular course of "eHealth Business and Solutions" is described and reflected in a gamified framework. Learning a consistent view into vast literature of business management, strategies, marketing and finance in a very limited time enforces selection of topics relevant to the industry. Health Technology is a novel and growing industry with a growing sector in consumer wearable devices and homecare applications. The business sector is attracting new entrepreneurs and impatient investor funds. From engineering education point of view the sector is driven by miniaturizing electronics, sensors and wireless applications. However, the market is highly consumer-driven and usability, safety and data integrity requirements are extremely high. When the same technology is used in analysis or treatment of patients, very strict regulatory measures are enforced. The paper introduces a course structure using gamification as a tool to learn the most essential in a new market: customer value proposition design, followed by a market entry game. Students analyze the existing market size and pricing structure of eHealth web-service market and enter the market as a steering group of their company, competing against the legacy players and with each other. The market is growing but has its rules of demand and supply balance. New products can be developed with an R&D-investment, and targeted to market with unique quality- and price-combinations. Product cost structure can be improved by investing to enhanced production capacity. Investments can be funded optionally by foreign capital. Students make management decisions and face the dynamics of the market competition in form of income statement and balance sheet after each decision cycle. The focus of the learning outcome is to understand customer value creation to be the source of cash flow. The benefit of gamification is to enrich the learning experience on structure and meaning of financial statements. The paper describes the gamification approach and discusses outcomes after two course implementations. Along the case description of learning challenges, some unexpected misconceptions are noted. Improvements of the game or the semi-gamified teaching pedagogy are discussed. The case description serves as an additional support to new game coordinator, as well as helps to improve the method. Overall, the gamified approach has helped to engage engineering student to business studies in an energizing way.

Keywords : engineering education, integrated curriculum, learning experience, learning outcomes

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