Chapter 8
Mobile Gamification to Integrate Face-to-Face and Virtual Students: Synchronous and Asynchronous

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ABSTRACT

This chapter shows the proposal of a team of professors from the Universidad San Pablo-CEU to facilitate the active participation of all students regardless of their type of attendance at classes (face-to-face, virtual synchronous, and virtual asynchronous). The proposal consists of an educational game of questions and answers that has been designed. The students create the game questions themselves and upload them via a web application at any time and from anywhere in the world. The games are developed in the class sessions, and the students, distributed in mixed face-to-face and virtual teams, participate together through their mobile phones. The initiative was enthusiastically embraced by the students, who showed involvement, great interest, and significantly improved their level of comprehension and academic success.

INTRODUCTION

The students in our Degree in Architecture struggle to achieve a proficient level in the technical subjects, as those topics require significant involvement.

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Succeeding in these subjects is highly conditioned by the student's previous knowledge of mathematics and physics and their natural ability to abstract and analytical reasoning. It also depends on the number and variety of subjects enrolled simultaneously. Especially in the first couple of years, many students do not find it easy to combine the demanding dedication that all these design-related, humanistic, and technical disciplines require.

To help them in this task, since 2009, the teaching staff of the Building Structures area of the Universidad San Pablo-CEU has implemented numerous gamification initiatives that encourage the students' interest, engagement, and active participation, contributing effectively to their learning process.

In the past, all these initiatives had been addressed face-to-face, during classes and labs. However, the confinement situations caused by the pandemic do not allow these attendance conditions; thus, the capacity for participation and learning is reduced.

The authors then set themselves the goal of providing students with a new methodology of active learning and procedures and means to continue to take advantage of collaborative activities in their training, despite the current situation.

Background

Architecture is a transversal discipline nourished by three significant areas of knowledge: humanities, design, and technical expertise. In Spain, architects are legally entitled to hold legal responsibility beyond the design of the building, including structural, mechanical, and environmental systems. Thus, our students are trained in subjects as diverse as the history of art, aesthetics, architectural or urban design, or building construction and design of the structural system. Going through the degree requires a great capacity to adapt to disciplines of a quite different nature; students hop between them, acquiring a large amount of knowledge, skills, and abilities while trying to relate and integrate them into their training during a process of constant maturation. The amount of work developed is remarkably high, identifying this degree as an extremely demanding discipline.

It is widespread practice that the subjects related to the architectural design (studio) represent the cornerstone for the rest of the training of architects, being organized in semester workshops in which different exercises of increasing complexity are proposed. The students end their degree with a complete and individual project (capstone, final thesis) where the ability to integrate everything learned is shown by applying it to a specific design problem. They must also demonstrate other competencies, such as having decision-making capacity, hoarding leadership capacity, empathizing with the social, historical, cultural, environmental or anthropological context, caring about the protection of biodiversity and natural heritage, urban livability and resilience, being sensitive to sustainable solutions, energy management and the environmental and economic impact of their decisions, as well as mastering the ability to develop technical aspects in their designs (Hernández de León et al., 2005).

The technical knowledge, more related to STEM, has extremely specific and differentiated contents, learning methods, and training if compared with the humanistic and design disciplines. Due to their difficulty and degree of abstraction, they pose less attractive to many students. This circumstance can contribute to their demotivation. To help clarify concepts and stimulate the students in decision-making, challenges are proposed during the course. The traditional training through exercises and problems, which does not usually provide closeness to a more tangible reality, must be complemented by practice. To this end, site visits, the study of unique cases, practice through virtual laboratories (Karweit, 2002), research laboratories (Lucke, 2009) and, also competitions of various kinds (Gobesz, 2016; Gobesz, 2017)),

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