

## Chapter 2

# Could Innovation Activities Improve the Students Learning Process? Making the Students Work for It – Also Online

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### **ABSTRACT**

*The learning process depends fundamentally on the students' aptitudes and attitudes, but not only: lecturers may affect it by changing the class environment. How? An option is including in the course schedule tasks and activities designed using game strategies. The goal is transforming the student into the main character of each session, no matter if it is held face-to-face or online. All the innovation activities described in this charter have been tested in STEM courses in an architecture program. They aim to be inspirational for other lecturers or course coordinators. Every class group is different so the way of improving its environment is also different. The key to success is adapting the general strategy to each situation. Once a problem is detected, a solution must be released. Stagnation is not an option. Let us make the students work for it.*

### **INTRODUCTION**

#### **Innovation Activities**

At first sight, a student that is enrolled in a Degree in the University has already made the decision of becoming an Architect, or an Engineer or a researcher in any field; so, his commitment with his choice is significant and does not need any extra motivation.

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### ***Could Innovation Activities Improve the Students Learning Process?***

Of course, University lecturers know that this statement is not true; especially in the first ‘basic training’ years. The students face contents that on the one hand are not as close to the daily profession as they expect and on the other hand are quite difficult to understand.

If we add the pandemic situation and the sudden transition from face to face to online learning, teaching STEM courses has become a great challenge. Could ‘Innovation Activities’ be helpful to tackle this challenge even in the University? How?

A widespread belief among lecturers is that these Innovation Activities have to do with playing funny games in class and avoid facing serious and hard content; this is, transforming the course program into a bundle of superficial concepts. Of course, this could be true. The risk of losing thoroughness is there. The key to success relies on how we design the activities we include in the course program: innovation activities are useless if they do not help the students to acquire the skills established in the course syllabus. Moreover, they are not well designed if the students cannot understand the relationship between the tasks they are assigned and the course goals.

Innovation activities are useful if they get to align students curiosity with the main course concepts, if they make the learning process easier for all the students and if they take advantage of the individual students work for all the learning community.

Furthermore, designing a system of innovation activities for a course or a group of courses, requires establishing very clearly: goals for each activity and the participants of each activity; tasks and time each task would require; grades or rewards assigned to every commission.

In other words, innovation proposals must be meet the requirements of SMART activities (George T. Doran 1981):

- Specific: concrete goals and well described process for each participant.
- Measurable: defined method to measure the activity results and analyze its development (what went well and no so well).
- Achievable: able to be brought about successfully by students.
- Relevant: closely connected to the course content or to the skills required to acquire by the students.
- Time Bound: time to invest in each task clearly defined and appropriate for it and for the whole course to succeed.

The aim of this contribution is sharing the experience of including a system of learning and engaging activities in the courses of Building Structures Analysis for Architecture students. In Spain, an architect is not only a designer but also kind of a building engineer that may respond for the construction details, the building structures, and the mechanical systems. Part of the Architecture students are not very fond of technical issues. For more than fifteen years and in order to encourage these students curiosity in structural concepts, the group of teachers of the Building Structures Department at CEU San Pablo University have included different strategies of learning innovation in their courses. Besides, during the pandemic, they have implemented the main ideas laid in those strategies in their online classes.

The design essence of these activities may be useful for other STEM lecturers. But sometimes they may hesitate: is it worth it wasting time preparing and developing these proposals? How to check if an innovation experience will work before trying it with our students? When using them in a course may be convenient? What if the effort required does not produce the desired result?

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