

## Flipped classroom design: the use of multimedia tools to improve the teaching experience of theoretical contents

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### Abstract

Active learning methodologies, such as Project and Problem Based Learning, teaching through games or the flipped classroom have been gaining space in the contents of the curriculum of engineering studies, during the last years. These teaching strategies aim to improve the learning efficiency by creating attractive contents and by giving a more active role to the student during the learning process.

In particular, the flipped classroom design consists of preparing learning contents that the students will have available before the class. This way, they are supposed to access and prepare the mentioned content before they attend to the class so that the time in class can be used to work in specifically difficult content, or deepen further in the learning objectives.

The feedback of published experiences with this teaching tool is very positive, highlighting a better teaching experience and good academic results [1]. Some difficulties have been identified as well, especially related to the preparation of the content to be used outside the class in order to make sure that students will be able to get to the class with the required knowledge acquired [2].

This work presents an experience of the design of flipped classroom sessions for engineering studies based on the use of multimedia tools, such as mini-videos, collaborative mind maps, board games etc. The goal was to apply this methodology to impart some of the theoretical content of the subject. Each learning content was divided in mini-pills and the fundamentals were explained in mini videos of 5 minutes long, which were uploaded to the shared platform through which the learning material is offered to the students. Then, a specific activity, such as an interactive quiz, or a collaborative mind maps or board was prepared to be done at the beginning of the lesson, in order to check whether the students had prepared the previous content or not. As a result, several pros could be mentioned. The mini-videos were useful as a resource to be revisited each time the students got lost and the starting evaluation activities were motivating and reached the goal of attracting the students compromise with the work outside the class.

### References

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