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Transforming Teaching Practices to Foster Deep Learning in University Classrooms

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Abstract

In recent years, many students at undergraduate and master's levels find it harder to stay focused for long periods. As a result, traditional lecture?based classes are becoming increasingly difficult for them to follow. This situation encourages instructors to adopt student centered strategies that promote motivation, autonomy, and deep learning.

This study presents the experience of nine professors and two researchers from STEM disciplines at the University of Lleida (Catalonia, Spain). Since the 2019–20 academic year, we have implemented inductive learning methodologies across 11 courses taught from the second year of undergraduate studies to master's level. The potential number of students per year is about 350, with class sizes ranging from 20 to 200.

Our teaching approach combines flipped learning, cross course integrated projects, and artificial intelligence tools into selected activities. These strategies aim to position students as active participants in their own learning, promoting critical thinking and autonomy. Cross course integrated projects enable students to connect concepts across subjects and perceive knowledge as a professional relevant whole rather than isolated academic units.

About 80% of the students who used flipped learning liked being able to learn at their own pace. In addition, around 70% reported that learning with this method was easier than with traditional teaching.

As an overall result, classroom sessions become dynamic and interactive, allowing instructors to dedicate face to face time to the most conceptually demanding topics. Findings suggest that students achieve deeper understanding, demonstrating that active and integrated approaches are effective across different degrees, academic levels, and class sizes.

Keywords: **Artificial Intelligence; Cross-Course Projects; Deep-Learning; Flipped Learning; Inductive Teaching**