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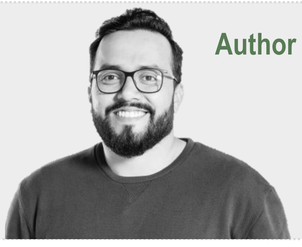
Strategies for Innovative Learning

Applying PBL Methodologies to the Chemical Engineering Courses: Unit Operations and Modeling and Simulation



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Modality: Attending class with ICT

Training area: Undergraduate

Course code: IQUI 3010

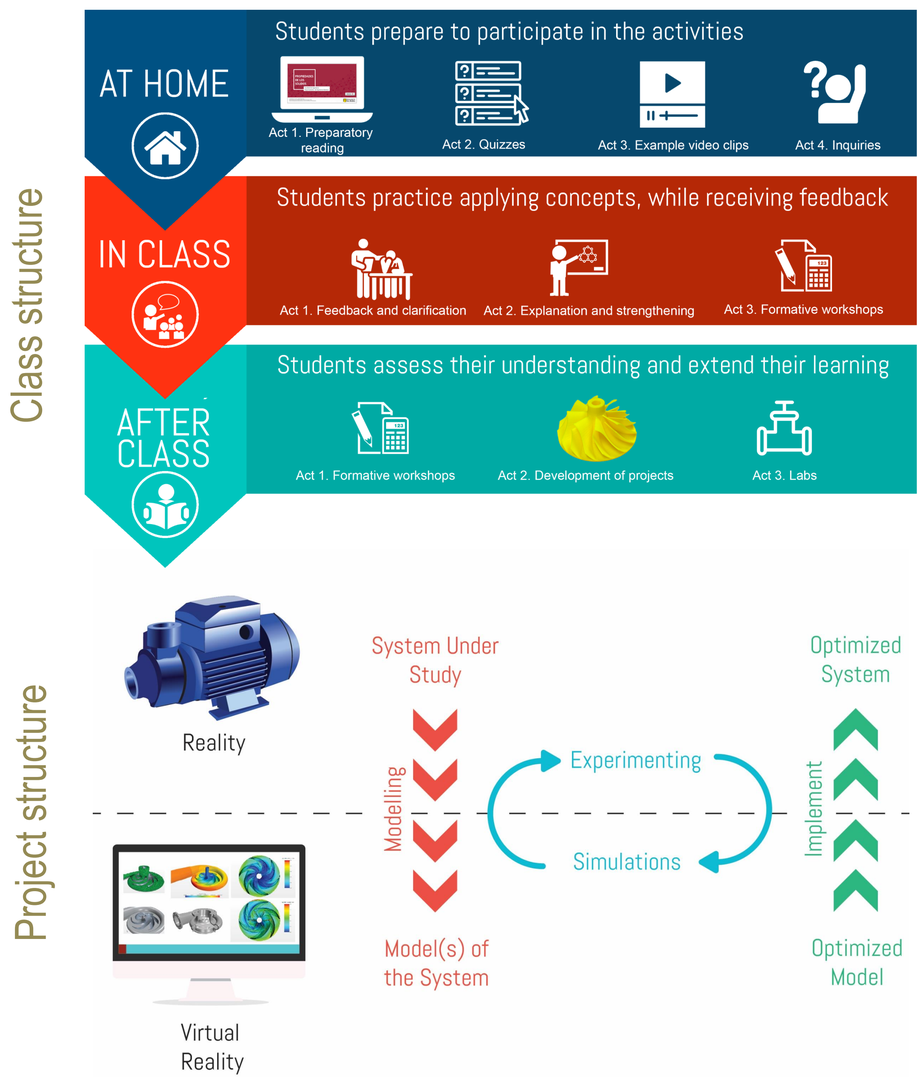
Numbers of credits: 3

Characteristics / essentials

One of the main incentives for the improvement of the Unit Operations course is the integration of the different modules in a coherent way, the reduction of the academic load to the students, and the incorporation of ICT (Information and Communications Technologies) as facilitating tools. For this purpose, projects were designed in order to be convergent with the Modeling and Simulation course taught by Professor Nicolás Ratkovich. These projects involve the application of the knowledge acquired in the two courses, applying Project-Based Learning (PBL) methodologies.

Transformation elements

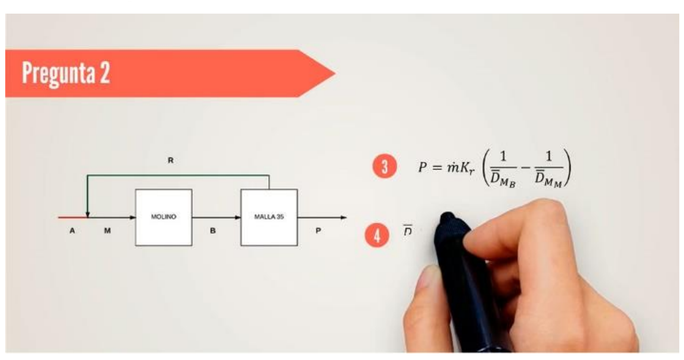
Pedagogical



Technological

eBooks

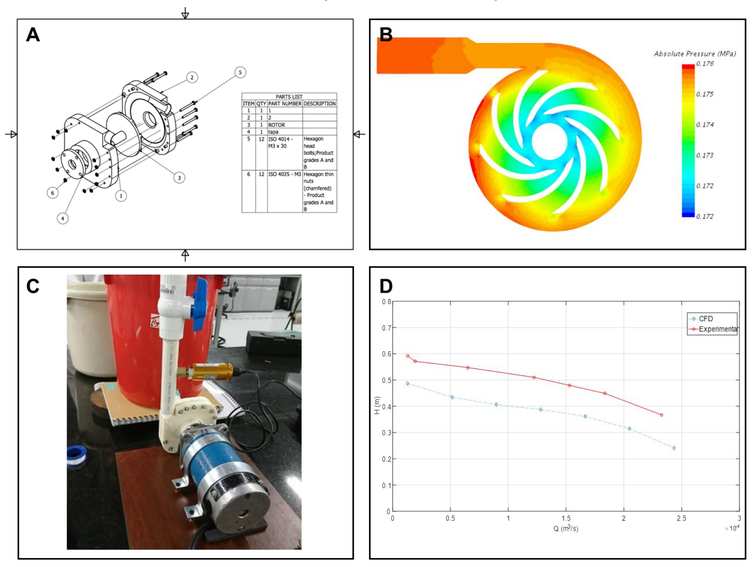
Theory modules



Problem solving modules

Effect and impact evidences

Example of a project developed in the class. A. Design, B. Simulation, C. and D. Experimental setup and results.



Using a survey it was determined that the modifications were well received.

4.11
Organization: Resolution of concerns, training, content availability, attention to difficulties and distribution and organization of activities.

4.20
Contents: Clarity, instructions and relevance.

3.97
Activities: Activities in class and at home.

4.46
Technology: Online platform and interactive activities.

4.14
Interaction and participation.

4.30
Evaluation policies.

Lessons learned

- PBL provides opportunities for students to use technology.
- PBL connect students with the real world.
- PBL encourages students to be more engaged and to learn actively.
- PBL as a tool for team work and time management.
- Learning integration between two courses (reality and virtual reality).
- Reduction on academic load.
- Broad and integrated knowledge.

Acknowledgements

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