

# Invested classroom for the improvement in the learning process in the subject of Physics

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## Abstract.

This work contains a focus on the evolution of the learning process. that uses the inverted classroom method and cooperative learning, collects the results obtained in the discipline of Physics, perfected in a teaching project of spontaneity with the objective of optimizing the production of face-to-face classes. Withdrawing the theoretical topics of the classroom through the visualization of the same through videos delineated by the teacher (or that is in the network) and thus benefit the class hours to optimize the sustenance of the teacher towards his students. These methods are explored and the mandatory requirements for their application are shown.

*Keywords: flipped classroom, active methodologies, engineering education, learned teaching.*

## 1. Introduction

A concern about the progressive detriment along the courses of the use of students in terms of knowledge acquired in Physics. With the great teaching experience of the teacher and having extensive bibliographical material, class presentations, etc.), the applied consequences of the students were declining year by year, close to 50% the number of failures and the grades were low. The results were indeterminate to understand, knowing that it is a subject of the first levels. Reflecting this situation we apply a new teaching methodology used with the aim of improving academic results. The methodology of university education has been drastically transformed in recent years, as the students, professors and technologies on which the teaching tools are based have evolved. The conception and the way of integrating with the superficial world of the new student promotion have changed radically. Our students are not only used to the digital world, but many of them are the only ones who know.

## 2. Inverted class concept

The essential thought for the scientific execution has been to form a platform

manipulating the methodologies and contingencies of the MOOCs in terms of management and presentation of materials that can be used as video-classes, their argument in pdf, questionnaires with self-evaluation, problem relationships and discussion forum.

## 3. Teaching methodology

The students were predisposed to work on this innovative project. AVAC platform was used college.

The teaching methodology that is currently used.

1. Video lectures on the subject.
2. Classes of debate.
3. Practical classes and seminars.
4. Test questionnaires.
5. Problems
6. Tutorials.
  - a) On-site,
  - b) Through the discussion forums enabled on the platform for each of the topics.
  - c) Through the teacher's email.
7. Evaluations.
  - a) Testing of tests carried out throughout the course in a synchronized manner.
  - b) Evaluation of proposed activities in practices and seminars.

c) Examination of practical exercises, such as partial exams.

#### 4. Presentation and discussion of results

In this research, the arithmetic means of the ratings were calculated, the interaction between the inverted class and the use of the platform was carried out, as well as the statistical analysis ANOVA

	NO EDUCATIONAL PLATFORM	WITH EDUCATIONAL PLATFORM
NO INVERTED CLASS	10,6	11,9
WITH INVERTED CLASS	14	15,2

Table 1. Arithmetic means of the courses

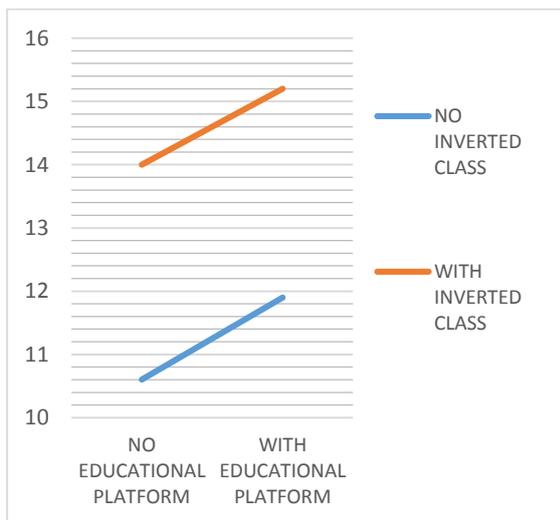


Figure 1: Interaction between inverted class and educational platform

ANOVA Summary					
Source	SS	df	MS	F	P
Rows	394.46	1	394.46	35.31	<.0001
Columns	56.58	1	56.58	5.06	0.0261
r x c	0.18	1	0.18	0.02	0.8877
Error	1519.43	136	11.17		
Total	1970.65	139			

Table 2. Anova statistical analysis

#### 5. Conclusion

In this research we have gathered the results of the implementation of the inverted class

model in the subject of Physics. The purpose has helped to appreciate the different resources and skills for the improvement of learning. The redemptions have been effective from this perspective, there has been an increase in the number of passages, it has also served to train teachers in the use of new ICT methodologies and tools that can work in other subjects.

With the unification of the concept of the MOOC and the inverted class, we will benefit from the importance of virtual teaching and the preponderance of face-to-face teaching. Inverted teaching can be taken into account as one of the techniques that are revolutionizing the classroom and is marking the future preference in learning.

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