

# Conferencia Interdisciplinaria de Avances en Investigación

## A Flipped Learning Approach Using Social Media. Study Case: Elemental Programming In Higher Education

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### Introduction

The technological advance has influenced in many fields, one of these is the educational sector in which causes a change in the teaching and learning environments characterized by the innovation and constant transformation.

In this paper we present a methodology to implement B-Learning courses, applying the pedagogical strategies of Inverted Classroom and Social Media. Social networks are spaces that reach a high percentage of people, especially young people, which makes them an effective strategy to maintain direct communication with them and to improve teaching and learning processes.

The use of virtual learning environments facilitates the application of flipped learning that changes the traditional learning in the classroom. Its approach proposes that students review theoretical concepts before attending class sessions and they will spend more time practicing exercises.

The objective was to impart the Basic Programming Course by applying the flipped learning mixed with social media. A virtual learning environment is used to access the self-study multimedia educational resources, which were shared by social networks.

### Methodology

The methodology used in this work is based on the instructional design called Technological Neuro Pedagogical Instructional System (TNPS). Integrated by eight stages: analysis, design, development, testing, implementation, documentation, maintenance and evaluation.

The main activities of the eight stages are described below:

- Analysis; in which retrieved information is performed.
- Design; which includes classification and organization of contents, consultation with experts, selection of tools for the construction of didactic resources and slides creation.
- Development; in which knowledge capsules are created, and learning activities are integrated.
- Tests; includes learning objects and iBook creation in which the knowledge capsules are tested.
- Implementation; here educational resources are incorporated in LMS platform.
- Documentation; learned lessons are recorded during the instructional design process.
- Evaluation of the process and results by the experts at the conclusion of the pilot group.
- Maintenance; it is carried out by the teacher at the conclusion of the course and based on the feedback received by the students.

### Results

It integrated by 61 multimedia educational resources that are incorporated into the LMS platform as established in the Technological Neuro Pedagogical Instructional System (TNPS), and obtaining encouraging results.

#### TNPS Application

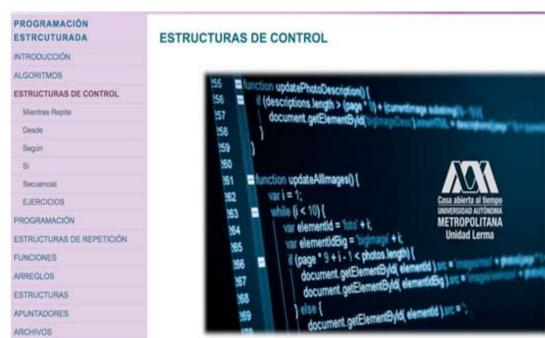
The main activities carried out in TNPS eight stages are described below.

1)Analysis. Research and compilation from several bibliographic sources were carried out. The experience of four teachers who have taught UEA from 3 to 10 quarter was incorporated.

1)Design. The information was classified and organized on the synthetic program basis of UEA and presentations are designed for each particular topic. The prepared presentations are reviewed by the teachers who are experts in the teaching subject to determine if they are appropriate or not. Once teacher approved subject content, animations are incorporated into the slides, so the explanation is clear and brief, and finally, the knowledge capsules are built. The following tools were used: power point, Camtasia, ExeLearning, SAKAI, Bright space of D2L and iTunes University with Course Manager.

1)Development. Knowledge capsules are constructed and reviewed by teachers who are experts in the subject. A YouTube channel is created to upload the learning capsules. The learning activities to be used in each topic are developed, as well as the self-assessments. They integrate games as problems to solve, looking for student motivation.

•Testing. The learning capsules are incorporated per unit into learning objects (OA), integrate the learning activities and the evaluation mechanisms by theme. Each sub-theme has a set of educational resources that allow students to perform their self-study of the conceptual part (Fig.1). An iBook is built that integrates knowledge capsules, learning activities, self-assessments, and supporting tools to program. The iBook has additional advantages since the student can emphasize all the concepts that he considers necessary, they can take notes to study later on.



### Analysis of results

Students who belong to the following courses formed the pilot group: Public Policy, Art and Digital Design and Engineering at the Metropolitan Autonomous University-Lerma. Results evaluation shows encouraging results. 44% of students deserted the course, some of them did not appear to any class, or they were discharged from the platform. Absenteeism occurs in 44% (all are men). It is observed that women have a higher level of commitment.

The grades are shown in Fig. 2, were obtained from 66% of students attending class. It is observed that 80% of students score MB (10) and B (8). Only 20% of students did not approve. These grades show a satisfactory result for our learning design.

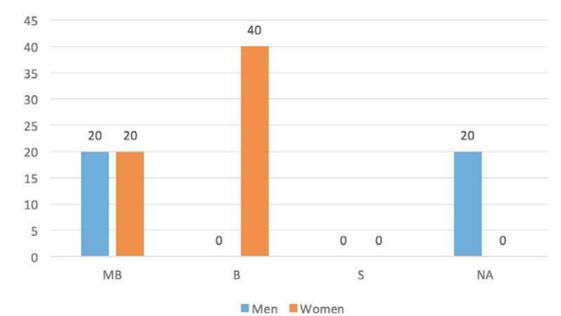


Figure 5. Percentages of grades.

### Conclusions

The teacher presents a summary of the subject by using a concept map to validate that shows that the student has the basic concepts, then proposes a topic for the game that later was analyzed. Students designed an algorithm that later was codified in a programming language.

Fun learning activities based on games were developed. These activities promoted the enthusiasm and interest of students. It was observed that the pedagogical strategy of the flipped learning promotes student self-study by encouraging their motivation and raising their self-esteem.

The Basic programming course based on the b-learning model with inverted classroom and the integration of social media delivery has an agile mechanism of communication, and presented desirable results; 80% of students approved with majors scores to 8 and only 20% did not approve the course. This implies an important advance in the academic results of the student.

### References

The content of this poster is a summary of the article:

R.B. Silva-López, M.I. Silva-López, J. Fallad Chávez (2017) A FLIPPED LEARNING APPROACH USING SOCIAL MEDIA. STUDY CASE: ELEMENTAL PROGRAMMING IN HIGHER EDUCATION, *EDULEARN17 Proceedings*, pp. 4342-4347.

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