

THE CREATION OF APPLETS BY THE STUDENTS OF MECHANICS IN THE E.T.S.I. MONTES (U.P.M.)

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SUMARY

During the last courses, the Mechanics students results had worsen significantly. They have important travels to go deeply into the fundamental concepts of the subject. In this situation, we decided to realize a new experience that let them to improve their results.

So, the course 2005-2006 they had the possibility of realize an Applet application with a Java tool. This tool has a simple interface that allows to go deeply into the concepts although the student dont have any knowledge about programming. This experience was a voluntary work for the sutudents.

The result of these works was very satisfactory, as the participant students recognize. In the planning of 2006-2007 academic year we have included a work with the described tool that it will be obligatory to do the partial exams.

INTRODUCTION

The continious changes in Secondary Education System have important effects on the formation of the University student. In this case, Mechanics, the principal trouble is the slim knowledges in Physic, Geometry and Mathematics. Since 2003-04 course we have detected a important fall in the students califications and wat's more a loss of interest in the subject. So we decided to look for a method that let them to over come the descrited difficulties.

MATERIAL AND METHODS

The objective is to find a educatinal method that let them to go more deeply in the Mechanics concepts. Besides, we think that it is very important that the students are able to create something by themselves. The selected tool to get this objeive is "Applet Descartes" (software in Java), an application of the Descartes Program (MEC). It is a formed applet, designed to present educational interactions with numbers, fuctions and graphs. This tool is very useful to understand the relations between the equations, their graphs and the elements that make up them and it does not need programming knowledges.

The work method is the next: 1. The students select a study theme; 2. The proffesor passes the study theme; 3. Mathematical analysis of the problem; 4. Transcription of the defined equations to the application; 5. Verification of the simulation work; 6. Feed back of this process. All this process is monitoring by the professor in tutorial class.

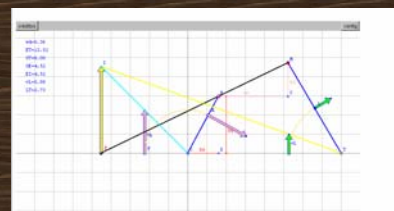
RESULTS AND CONCLUSIONS

The results of this tutorial work in the students are: better understand of the Mechanics concepts; higher interest in the subject; they seemed self-confident; improvement of the proffesor-student communication. So this method could be a good solution to the detected troubles. In the future we try to do a cuantitative evaluation of the results.

With the aid of the descrited method the University student will be able to face up to the problems resolution in general. This is very important in the engineer education. So, this course (2006-07) the tutorial work with applets is a part of the student assessment.



Example 1: Calculation of tension forces in a framework with the sections method



Example 2: Velocity analysis of a four-bar linkage