

Subtheme 4. Students discovering the power of mathematics.

#### EVERYDAY LIFE MODELS GENERATED BY SOCIAL SCIENCES STUDENTS

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#### Abstract

To involve students from social sciences programs in the use of mathematical models we designed four didactic activities that asked them to develop different kind of mathematical models. Students had to use linear, quadratic, cubic, exponential, logarithmic and trigonometric models. To solve the last activity students had to observe any daily phenomena and take data for a week. In this work we present some remarks of the use of those didactic activities. Some students analysed their gas consumption, electricity use and even the number of passengers in a bus company. Students could learn and apply mathematics to their daily life.

#### Introduction

In many Mexican universities students choose their courses avoiding mathematics. Social sciences programs usually do not include calculus courses or even algebra courses. At Instituto Tecnológico de Estudios Superiores de Monterrey (ITESM) in Mexico, Accounting, Management, Psychology and other academic programs do include trigonometry, algebra, and differential and integral calculus.

Students' rejection is very common and they do not want to learn formulas and definitions that will be useless in their jobs (that is what they say). Our challenge was to design a series of activities that motivate our students to study functions and mathematical models. To involve our students in the course we decided to use data from daily news and home activities like driving, cooking and others.

Mathematics I is the first course for students of Psychology, Management, International Affairs, Marketing and Graphic Design. The course starts with definitions and properties of functions. It also includes the study of polynomial, trigonometric, exponential and logarithmic functions; students have to learn the properties, to draw the graphics and to solve problems of every kind of functions.

#### Methodology

Every activity was designed with the Project Based Learning approach. The activities were synchronized with the topic of the week and students had one week to solve and report their results.

The four activities have a global goal and a particular goal. The chronological sequence was intended to develop the concept of function, the need of mathematical models, the way to adjust real data with different kind of models, to