INTRODUCTION TO KNOWLEDGE AND DESIGN OF CARS MECHANIC PARTS IN EARLY STAGES OF MECHANICAL ENGINEERING DEGREE

Fuertes Laura1, Gavino Sergio2, Lopresti Laura2, Speroni Lucas4, Defranco Gabriel5

[1] UIDET GIGA, Facultad de Ingeniería UNLP, lfuertes@.ing.unlp.edu.ar
[2] UIDET GIGA, Facultad de Ingeniería UNLP, Sergio.gavino@.ing.unlp.edu.ar
[3] UIDET GIGA, Facultad de Ingeniería UNLP, laura.lopesti@.ing.unlp.edu.ar
[4] UIDET GIGA, Facultad de Ingeniería UNLP, lucas.speroni@.ing.unlp.edu.ar
[5] UIDET GIGA, Facultad de Ingeniería UNLP, ghdefran@.ing.unlp.edu.ar

Most of the students who arrive each year to study mechanical engineering at the National University of La Plata (UNLP), Argentina, do so motivated by an innate passion for cars. Many of them dream of being part of competition teams like chassis designers or engine builders. Others aim to develop their careers in companies producers of vehicles or their parts. But none of them does find theoretical and practical content that satisfies their expectations during the first third part of the degree experiencing some grade of frustration and leading some of them even to the abandonment of the university. The reason for that is that the studies plan is organized around a strong starting block of basic sciences knowledge like mathematics and physics but no specific content of mechanics is developed in this period. One exception to that is given by the technical drawing which is the only one subject treating contents directly referred to engineering. Being technical drawing a discipline which needs real cases to be developed in a formal system of representation using real models like parts of machines, an intrinsic difficulty is present because of the lack of management of concepts about them by the students. In an attempt to overcome part of this situation the chair of Gráfica para Ingeniería at Facultad de Ingeniería, UNLP, has implemented a special practical work to be developed in teams of students into which they have to analyse a real mechanism belonging to a car or in general to a machine. The aim of this work is not only its representation through engineering drawings but make a previous analysis of each part, their role in the whole, the materials present and the building processes. This proposal has shown being capable of give meaningful learning to the activity. Otherwise the models only have geometrical meaning but not an identified function. The work involves the representation of each part first as a sketch, then in CAD and a technical report of the main aspects of the mechanism. This work explains the complete experience and the results are presented.

Keywords: technical drawing, engineering teaching, meaningful learning, mechanisms.