

Dedication

This Thesis is dedicated to my father

Erwin Witt
1929 – 2001

Declaration

I herewith declare that this thesis work was designed and executed by myself with the help of the individuals mentioned in the acknowledgements. The research work has been presented as it appeared and the data reflects reality. No distortion of any data or outcome took place. Wherever other sources of research and intelligence were used or referenced, they have been marked as such.

Hans-Joerg Witt
July 2005

Acknowledgments

It is impossible to list all the individuals who have contributed to this work. I would like to express my gratitude and thankfulness to all of those.

I take a deliberate and subjective choice by particularly referencing a number of people which have been key to the completion of this project. First, to my two mentors and sponsors: Professor Francesc Giralt and Doctor Steve Constantin. From the School of Chemical Engineering (ETSEQ) I owe thanks to Professor Joan Ramon Alabart, Professor Azael Fabregat, Professor Joan Herrero, Professor Robert manuel Gilabert, and to the staff of the ETSEQ. Also it would have not been possible to create this work without the editorial and logistic support from Laura Abraham and Tatiana Winter.

Executive Summary

This research project deals with the design and evaluation of social competency building in an academic organization. This topic is especially relevant, as the workforce of the future must possess a very different competency-set contrary to the past generations. In an ever-changing environment the academic organizations must provide the human resources capable of managing current and future challenges.

The hypothesis of this research proposes social competency building as an enabler to improving technical capabilities. As the curricula in academic organizations are already exhausted, if not overloaded, innovative ways have to be found in order to enhance the technical knowledge through social skills. By means of integrated project work, empowered teams and social interventions, higher levels of performance can be obtained. A survey process was developed to validate the hypothesis and to obtain data to support the development of a new model for engineering education. As a result, a new competency-based educational model was designed and partially implemented at the ETSEQ with a clear client orientation profile. To facilitate the implementation of the model a partnership between the ETSEQ and Dow Chemical Ibérica was established with the purpose of providing support to the change process that the new model implied and expertise and educational materials to facilitate the development of key competencies starting from client orientation.

After nearly a decade of intense research it can be concluded that the hypothesis stands the test. Already the application of selected team work competencies shows considerable tangible improvement compared to traditional ways of engineering education. The implementation of the proposed improvements would lead to greater productivity gains and ultimately represent a step forward towards the human resource needs of today's and tomorrow's manufacturing work environment.