

# **Development, Implementation and Evaluation of Different Strategies of Teaching Industrial Chemistry Case Studies in Israeli High Schools**

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## **Abstract**

This study deals with the development, implementation and evaluation of industrial chemistry learned by high school chemistry majors in Israel. Two case studies were developed using the same approach, focusing on the interdisciplinary nature of the chemical industry and its relevance to practical problems. Two different types of in-service teacher training courses were performed as part of the implementation activities: a regular in-service course and an intensive in-service workshop which exposed teachers to a wide spectrum of instructional techniques. The latter enabled them to vary their classroom procedures and to plan new strategies for the implementation of the industrial chemistry case studies. A three year study referring to chemistry teachers and 12th grade chemistry majors was conducted. Background knowledge and attitudes of teachers were assessed in order to build appropriate training courses. The influence of both industrial chemistry studies as well as different teacher training models was also investigated to determine students' attitudes and achievements. A combination of quantitative and qualitative research methods was used, focusing on the cognitive and affective characteristics of students. The main findings of this study are:

1. It was found that most teachers lack background in industrial chemistry, thus there is a great need for specialized teacher training courses.
2. Industrial chemistry case studies helped to provide students with a relevant picture of chemistry as an applied science in general, as well as their chemistry studies, in particular. It also has important implications to the student's everyday life and to the society in which he lives.
3. The type of teacher training has a significant influence on students' attitudes towards industrial chemistry.

The findings have important implications on the decision to make industrial chemistry case studies a compulsory unit for students who major in chemistry. We suggest that teachers' in-service training courses should be offered to larger populations of teachers.