

# Chapter 25

## Content– and Language– Integrated Learning: A New Approach to Teaching Engineering

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### ABSTRACT

*Content- and language-integrated learning (CLIL) has been considered from the perspective of communicative competence development in the context of teaching professionally oriented English language in a technical university. The chapter outlines the main aspects underlying CLIL and describes the experience of teaching English to students majoring in Photonics in the format of “binary” classes involving two teachers: of English and of physics of lasers. Classes have been designed for 3rd- to 4th-year students who had mastered basic linguistic-cultural communicative competences and went on to continue using English in professionally oriented situations. This way of team teaching contributes to the development of communication skills in the students’ professional area and facilitates the assimilation of curricular material by students.*

### INTRODUCTION

The role of languages in education has never been as important as it is now. According to A Guide to Languages in the European Union, the European Union actively encourages its citizens to learn other European languages, both for reasons of professional and personal mobility within its single market, and as a force for cross-cultural contacts and mutual understanding (“EUBusiness,” 2008).

The Federal Educational Standard (FES) for bachelor’s studies in Physics introduced in 2014 requires that a graduate should possess speaking and writing competences in both Russian and foreign languages for efficient interpersonal and intercultural interaction; should be able to use his or her knowledge of a foreign language in their professional activities and carry out research in theoretical and fundamental

DOI: 10.4018/978-1-5225-3395-5.ch025

physics using state-of-the-art instruments and information technologies based on domestic and foreign experience (Ministry of Education and Science of the Russian Federation, 2014). Without a doubt, any person wishing to improve his or her social standing, expand their cultural horizons and improve their career opportunities should possess a good level of foreign language skills. The knowledge of a foreign language is indispensable for an engineering student considering the processes of globalization and academic mobility. Without a good command of English, an engineering university graduate might have difficulty in gaining full-fledged access to professional information as most scientific papers are published in English and the working language of most international workshops and conferences is English.

The Russian Federation State Programme on the Development of Education for the period of 2013-2020 prioritizes the internationalization of Russian higher education. It points out the necessity to take measures to significantly increase Russian teachers and students' academic mobility and supports innovative projects of teaching English in Russian universities. One of the ways to cope with this task is 'the development and implementation of educational programmes in foreign languages, primarily in English' (Ministry of Education and Science of the Russian Federation, 2013)

At the same time, with the introduction of FES the amount of teaching hours at Russian technical universities allocated for foreign language instruction has decreased leaving English teachers with just two academic hours (90 minutes) per week for 1st to 3rd-year students. Under existing conditions, it is necessary to use new approaches to language teaching. Using CLIL (content and language integrated learning) methodology at an engineering university might be a good way to address the task of teaching professionally oriented English, as it does not require additional hours on the curriculum. David Marsh, who introduced this 'umbrella' term to incorporate various methods of bilingual education more than two decades ago, in his interview on CLIL says, 'People in languages education say that something needs to change'.

The purpose of this paper is two-fold: to look at CLIL as an innovative, at least for Russia, method of teaching English and a non-English subject simultaneously and describe the experience of using CLIL in the English classroom for Bauman university students majoring in Photonics.

## **BACKGROUND**

CLIL is a method, which on the one hand allows teaching a foreign language using the concepts and terminology typical of a student's professional area, on the other hand using a foreign language as a tool for teaching a subject a student is majoring in. According to David Marsh, CLIL refers to situations where subjects, or parts of subjects, are taught through a foreign language with dual-focused aims, namely the learning of content and the simultaneous learning of a foreign language (Marsh, 1994).

There are CLIL schools in Europe, where school subjects are taught in German, Russian, French, English and Swedish. The variety of languages of instruction justifies the use of the letter L for 'language' in the abbreviation while according to (Dalton-Puffer, 2011) it would be more preferable to substitute it for the letter E to mean English as the dominant language. As Christiane Dalton-Puffer puts it, 'CLIL languages tend to be recruited from a small group of prestigious languages, and outside the English-speaking countries, the prevalence of English as CLIL medium is overwhelming' (Dalton-Puffer, 2011). A good command of English makes it possible for a graduate of a technical university to communicate efficiently with his or her peers abroad taking part in international scientific conferences, to read scientific articles, most of which are published in English.

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