

ESP AS A MEDIUM FOR OPENING NEW HORIZONS IN ENGINEERING EDUCATION

Marina Katić¹

¹ University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia

¹mare@uns.ac.rs

Abstract: The current education systems of many European countries provide students with insufficient preparation for the labor market, and this concern was one of the driving forces behind the Bologna Process. The main causes are the lack of broad education in a variety of fields and the absence of practical knowledge. To find an adequate solution for this problem, multidisciplinary work development should be supported in different spheres of education. In fact, it is necessary to refresh the old education system with new ideas for practical work, motivating students to obtain qualifications applicable in the real world. English for Specific Purposes (ESP) in contemporary engineering education, in light of the Bologna Process, provides a good opportunity for multidisciplinary work applications by combining different disciplines into a whole. The model presented in this paper shows how it is possible to acquire knowledge of different fields of education simultaneously, encouraging multi-disciplinarity based on the idea that the best quality lies in the intersection of different professions, resulting in practical achievements. After such training, knowledge about immediate participation in complex operations is acquired. Consequently, there is no waste of time to adjust to the new business environment at the beginning of a career. Thanks to such an approach, engineering students will be prepared for the world of work and the labour market, fulfilling the main request of the Bologna Process.

Key Words: ESP, model of engineering education, multidisciplinary endeavor, the Bologna Process..

1. INTRODUCTION

ESP or English for Specific Purposes is usually referred to as applied English language training or specialized training, in which content and aims are determined by the demands of a specific group of learners. In fact, it is designed to meet the particular language needs of students or adults who want to learn a foreign language for specific academic or workplace tasks, such as dissertation writing for academic purposes, writing technical documentation for engineering purposes, or making a business plan for management purposes, which are mostly unfamiliar to the average speaker. Since English for Specific Purposes (ESP) stands in line with other professionally significant areas, it is appropriate to use its advantages to create a contemporary model of engineering education that will satisfy the high standards of the Bologna Process.

In this paper, the author reveals the involvement of practical engineering knowledge, creative business ideas, and developed language skills in the creation of the 21st-century engineering education model. By combining "applied English language training" with other sciences, the newly created model is supposed to help students master the skills they need for academic success and professional achievements.

2. THE PROPOSED MODEL

As an illustration of a multidisciplinary endeavor, the proposed model is a combination of several different disciplines that aim to cross the boundaries between different subject areas, bringing together disciplines from the humanities and natural and technical sciences. The inspiration came from ESP methodologies based on similar principles such as problem-based learning (PBL) [8], task-based language teaching (TBLT) [3,11,12], content-based learning (CBL) [5,7], and project-based learning (PBL) [1,4]. Generally, the role of the teacher in these approaches differs from that of the traditional one, that is, the dominant approach language teaching method, in which the teacher is a central figure. For example, in TBLT, the teacher acts as a mediator of students' language development, contributing to the effectiveness of TBLT as a pedagogical approach to second language education" [3]. Briefly, the teacher is someone who supports, organises, gives instructions, mediates, or supervises the teaching process.

In this paper, the main idea was to develop the model opposed to the pattern of isolated professions which resulted from the scientific trend of late fifties and sixties known as "specialization". Briefly, the intention was to design the contemporary one that should encompass different areas of education. For this purpose, the author came up with an idea of combining different types of knowledge for specific **task (TBLT)** – some goods or services exchange among students /partners from different countries – involving international E-contracts formation via Internet with standardized business terminology application, which is a rather complex, but challenging assignment for most of the students. In that way the reality of business operation may be brought into the classroom, due to

exposition to rich academic and professional learning context. In this paper, the main idea was to develop the model as opposed to the pattern of isolated professions which resulted from the scientific trend of the late fifties and sixties known as "specialization". Briefly, the intention was to design a contemporary system that should encompass different areas of education. For this purpose, the author came up with the idea of combining different types of knowledge for a specific task (TBLT) – some goods or services exchange among students/partners from different countries – involving international e-contract formation via the Internet with standardized business terminology application, which is a rather complex but challenging assignment for most students. In this way, the reality of business operations may be brought into the classroom due to exposure to the rich academic and professional learning context. Different disciplines are involved in the realization of this task. Namely, the following specific areas are trained: Computer Engineering, Computer Science, E-Commerce, E-Business, International Business Management, International Law, Academic English, and English for Specific Purposes. All these disciplines may be roughly divided into three fields – business, engineering, and language – making a practical multidisciplinary model of engineering education supervised by the teacher, as presented in Fig.1.

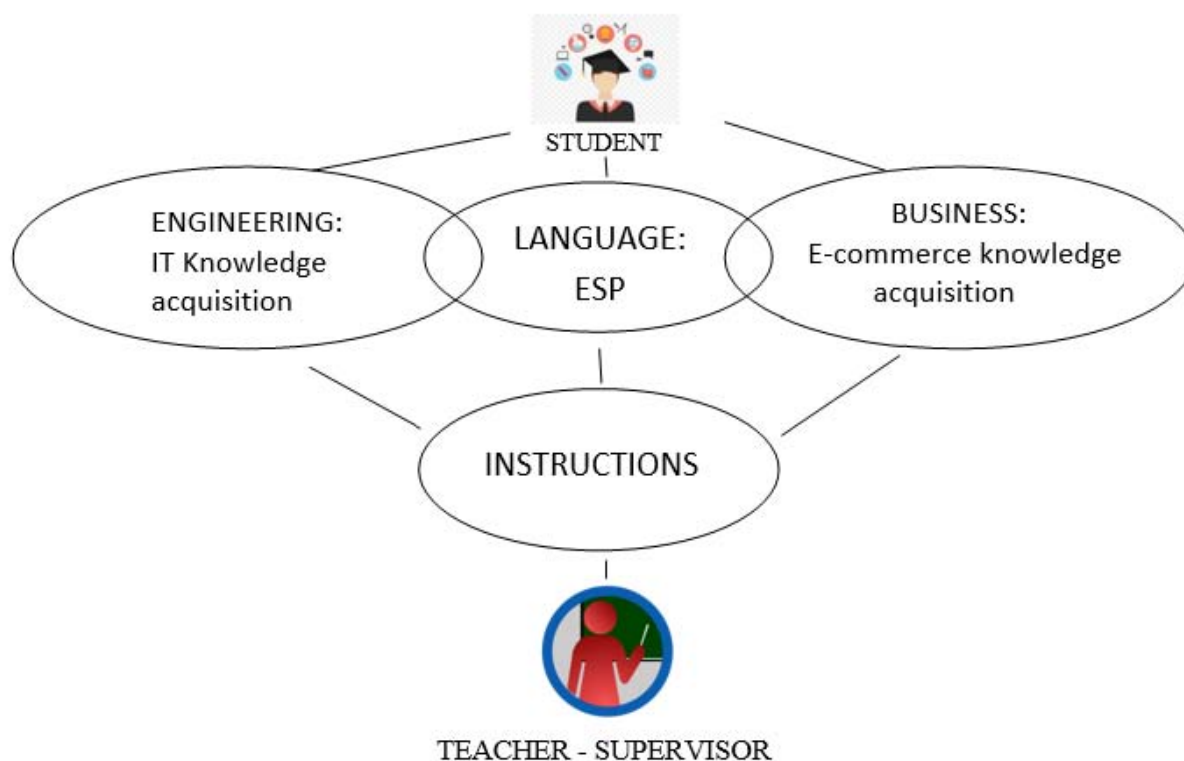


Fig. 1 – Multidisciplinary model: Business, Engineering and Language over teacher supervision

The need for updated teaching and learning materials has been a topic of discussion in many papers because engineering education has failed to meet the market demand in many countries. In this respect, Nguyen stressed seven generic engineering skills and attributes necessary for an engineer's success in the global market.

- “Technical knowledge and skills: practical ability e.g. use of modern technology.
- Intellectual skills: ability to learn and understand new information.
- Attitudes: behaviour, thoughts and actions.
- Standards of engineering practice: awareness and observance of engineering codes of practice and ethics; understanding of the role of an engineer; and general knowledge of the working legislation and regulations.
- Business practices: understanding of economic and financial issues, and ability to work within a business-orientated environment.
- International/national history and culture: understanding of other cultures and customs.
- Proficiency in languages: understanding other languages and familiarity with technical language.” [9]

A high degree of technical knowledge and skills, with an emphasis on business and language skills integration into engineering education, has been reported as very important-to-necessary. Considering this, this model shows how ESP may serve as a medium for a multidisciplinary approach in education, providing students with the broad practical knowledge necessary for both employability and mobility purposes, as requested by the Bologna Process. In this particular case, engineering students should learn how to use contract management software to easily create, negotiate, maintain, and renew contracts, making deals with students or partners from other countries. They are also required to

employ their business knowledge in the field of e-commerce, together with language competence, for the purpose of communication and additional knowledge acquisition.

3. PRACTICING E-CONTRACTS USING THE ADVANTAGES OF ESP

In the world of business and trade, contracts are the most important instrument for conducting legal commercial operations between parties. Until recently, the contracting process had been based on face-to-face negotiations and traditional written document exchanges. However, the development of information and communication technology has improved the way of interaction, and e-contracting (with no personal contact or pre-existing business relationships) turned out to be the most popular manner of conducting business transactions all around the globe due to the absence of limits to territorial boundaries. The EU adopted the Distance Selling Directive in 1997 and the Electronic Commerce Directive in 2000, aiming to enhance the confidence of consumers in online transactions [10].

Being aware of the global nature of e-contracts, engineering students may put them into practice through ESP to exchange goods, ideas, and services. For example, they may sell old books or digital products, offer technical services, or buy parts of equipment necessary for the needs of their laboratory. To achieve this goal, they should apply their knowledge in different fields of education, applying the suggested model of engineering education that will enable them to communicate and deal with other students or partners from the European Union, as foreseen by the Bologna Process [6].

In this respect, business, engineering, and language skills can be developed within the framework of a multidisciplinary approach. The following are the suggested procedures:

Procedure 1: Let the students master the system for e-contract formation (EDI) via the Internet with the help of IT knowledge, additionally using English language skills to facilitate knowledge extension by adequate literature (primarily written in English). Students need to be able to install the required software application on their computers, tablets, or smart-phones; configure additional devices (cameras, PDAs, etc.); verify the identity of the customer with whom they are dealing; and correctly use digital signature technology to establish that the integrity of the electronic document has been preserved.

Aim: Knowledge acquisition and application in the information technology field.

Procedure 2: Obtain students to refresh their knowledge of e-commerce. Let them now analyze and choose the e-contract model. Encourage them to apply their knowledge of English to explore how the established contractual and legal principles can be applied to electronically signed contracts.

Having analyzed different models of e-contracts (see Figure 2), students should choose the model they wish to exploit depending on the type of transaction they wish to perform [2]. There should be a mechanism that allows the comparison of different types of contracts. It should provide a comparative table, listing the common characteristics and the specific features that differentiate them from other contracts, especially with regard to the application (e.g. one type of contract for B2C and the other for B2B). In addition, each student should have a repository of created contracts that may be searched for when creating a new contract.

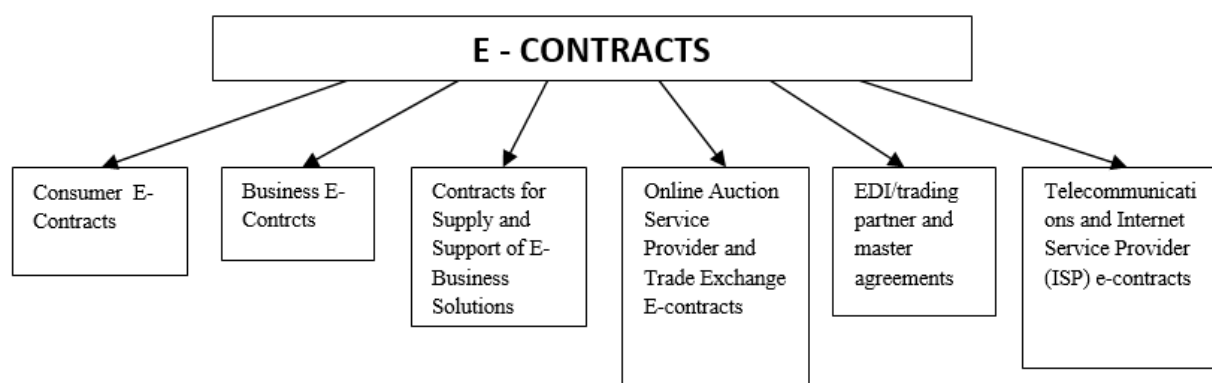


Fig. 2 - E-contracts influenced by E-commerce categories

Aim: Knowledge acquisition in the field of e-contracting.

Procedure 3: Get students to produce a template for their „Personal learning dictionary“ (PLD) which should include the following items:

- spelling
- pronunciation (phonetic transcript and stress and stress)
- part of speech
- grammar information(for example countable or uncountable)
- definition in English
- use in an example sentence
- translation into the first language

- related words from the same root (include prefixes or suffixes)
- related words from the same topic/lexical area or (and collocations)

In other words, the third step is related to language matters which aim to combine and unify engineering, business, and language skills. This step includes working with a knowledge base consisting of standardized contract terms.

Aim: Knowledge acquisition in technical and business terminology.

By performing business operations in a real work environment, students will be encouraged and highly motivated to increase their achievements, making the classroom unique and special. As soon as they experience this type of transaction, they will be better prepared for the European Labor Market.

4. CONCLUSION

ESP as a multidisciplinary approach in engineering education seems to be an acceptable approach for refreshing the old educational system because of its practical and multidisciplinary nature. Owing to mentioned advantages, students are motivated and encouraged to participate in a real-world environment, achieving the goals of the Bologna process with regard to employability and mobility purposes. They are allowed to utilize all appropriate resources offered by IT, perform authentic communication and trade exchange, and use their practical technical knowledge as well as business and language skills. Thus, ESP is not taught in a vacuum but rather prepares students for the content and tasks to which they will be exposed in a real-life environment. They should use their knowledge of several disciplines: computer science and engineering for the approach and generation of basic Internet tools, knowledge of business and law for the creation of e-contracts, and knowledge of academic English as a lingua franca of engineering and business transactions for the purpose of applying standardized terminology.

In this way, a spirit of practical work appears in the classroom, making it alive. As a combination of different fields (engineering, business, and language), the above-mentioned method of education may be recommended as a functional model for training 21st-century engineers. It also teaches students how to collaborate with others and develop teamwork skills. This method is flexible, multimodal, constantly changing, and connected to real-life needs.

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