



ADAPTING THE CONTENTS OF THE ENGLISH LANGUAGE COURSE TO THE LINGUISTIC NEEDS OF BEGINNER ENGINEERS

Simona Veronica Abrudan Caciara, Amalia Sturza

University of Oradea, Romania

ORCID iDs: Simona Veronica Abrudan Caciara  <https://orcid.org/0009-0006-9755-7359>
Amalia Sturza  <https://orcid.org/0000-0003-0616-4076>

Abstract. *This study evaluates the effectiveness of English courses taken by 45 undergraduate and graduate students from the University of Oradea's Faculty of Electrical Engineering and Information Technology, who are currently employed part-time or participating in internships in electrical engineering and IT. This is done by analyzing responses to a questionnaire filled in by the participants, aiming to determine how the topics and concepts covered in the University's ESP classes relate to their current work. Additionally, it attempts to assess how well the English language course can develop skills that are potentially helpful to future engineers in the fields of IT and electrical engineering. Finally, the study emphasizes the importance of including supplementary courses such as English language study and English for Specific Purposes in engineering faculty curricula.*

Key words: *language skills, professional English, English for engineering, curriculum improvement, improved job opportunities*

1. INTRODUCTION

In today's globalized world, intercultural communication has become a fundamental aspect of everyday life. Engineers now frequently rely on research and collaboration with colleagues from around the globe. Therefore, proficiency in English has become crucial for both engineering students and professionals, particularly for those working in multinational companies.

In the academic environment, the mastery of English is a key towards better understanding of topics, based on research, and a path opened to expressing ideas in a multicultural context.

However, there is little support provided to those who teach ESP in Universities, despite the importance of mastering English not only for one's professional development but also for the employees who might fruitfully contribute to the development of societies (Stojkovic & Nadežda & Piršl, 2018:87).

This paper aims to weigh the usefulness of learning English for specific purposes and the impact of proficiency in English on the professional activity of young engineers. This evaluation is based on a questionnaire addressed to a number of 45 undergraduates from the University of Oradea, Faculty of Electrical Engineering and Information Technology, who are currently working part-time or doing internship stages in multinational companies.

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Corresponding author: Amalia Sturza, University of Oradea, Romania

E-mail: asturza@uoradea.ro

Another objective of this paper is to draw the attention of engineering students on the importance of developing a certain level of specific English language skills, as these are often required by multinational companies and other job providers. It can also be used by the developers of the curriculum for engineering academic education, where English is generally a supplementary discipline, aimed at providing the context and the knowledge required for the development of good communication skills in the English language.

The paper is structured in five sections. It starts with a brief presentation of literature on the role of English for engineering studies, continuing with a description of the role of universities and economic agents to facilitate students' access to the latest knowledge and technology in the field. The paper also addresses the context of learning English at the Faculty of Electrical Engineering and Information Technology.

Furthermore, the paper outlines the methodology used to conduct a survey designed to provide feedback to the English instructors at the Faculty of Electrical Engineering and Information Technology in Oradea regarding the relevance of the topics, concepts, and grammatical issues covered in the English classes. More precisely, it looked at the correspondence between the content of the English course and the linguistic skills required by employers in the field of engineering with subsidiaries or headquarters in Oradea.

The final larger section is a description of responses given by participants to the nine items of a questionnaire.

The paper concludes with a summary of findings, derived from the evaluation of the questionnaire.

2. THE FUNCTION OF ACADEMIC INSTITUTIONS IN EQUIPPING UNDERGRADUATE ENGINEERING STUDENTS WITH THE ENGLISH LANGUAGE NEEDS REQUIRED BY THEIR PROFESSION

2.1. Brief literature survey on the role of English for engineers

Engineering is a field that relies extensively on the collaboration of specialists across the world. In this context, engineers' proficiency in English can greatly help them become part of a dynamic and diverse working environment. A good command of English can also give engineering students or professionals in the field access to updated scientific and technical literature, attend actively professional conferences, workshops and seminars that are conducted in English, write technical documentation, etc.

However, engineering students and developers of university study programs sometimes disregard the role of English in opening career paths in engineering.

In this context, several studies have been published, in order to emphasize the importance of fluency in English for students of engineering or professionals in this field, as English has become the accepted lingua franca of technology and commerce, but it is also a means of encoding information that is available on the Internet or presented during lectures in some academic institutions (Gaikwad 2022:12). Similar views were shared by Murali et al, who linked success in the engineering profession with a strong command of English in the context of a world marked by globalization. The authors also emphasized the role of English in providing students with access to relevant resources, stimulating professional self-development, ensuring international study opportunities, expanding possibilities for building friendships across the world (Murali et al, 2025:498-499).

The need for the so-called soft transferable skills, such as communication (in one's native language and in a foreign language) and relationship building, has been emphasized in studies that insist on the need to integrate, into the curriculum of engineering schools, disciplines that aim at developing communication abilities (Missingham 2006; Riemer, 2007:91; Yusoff & Samah 2013) in general and English language skills in particular (Rajprasit 2014). Considerations on the development of professional communicative competence through learning English for Specific Purposes are approached by other linguists (Fonanov 2008). An extensive study on the success of teaching English to engineering students has emphasized the importance of understanding students' needs whenever choosing the resources and methods applied for the study of English for Specific Purposes (Sasidharan 2012). The need for tasks adapted to students' interests and learning contexts, along with learning that simulates real-life experiences, which can be achieved by integrating activities based on video technology, has been discussed by Sandra Vieira Vasconcelos, Ana Balula, Nijolė Burkšaitienė and Nadezda Stojkovic (2021) in a study that also focuses on how project-based and technology supported activities can have a motivating effect on students.

Other pieces of research looked more particularly on the major problems related to the development of English language skills among engineering students and mentioned, as key issues, learners' inadequate attitudes, limitations in course contents and inappropriate teaching methods (Reimer 2002).

Attention is also drawn upon the need to support ESP as a discipline in universities, in the context of changes in societies, which often involve communication in a common language (Stojkovic, Nadežda & Piršl 2018:87). The challenges for teachers of English for Specific Purposes, who constantly need to adapt their course materials to the linguistic needs of their students, in a context where there are different levels of proficiency in English in each particular group, is also a main concern in research on ESP (Hutchinson & Waters, 1987, apud Stojkovic, 2017). However, the circumstances of teaching English for students from other academic domains than that of learning foreign languages presents many opportunities for teachers, who can manifest their creativity and experience while developing materials adapted to the needs of their students. (Stojkovic 2017:208)

2.2. Considerations on the partnership between the Faculty of Electrical Engineering and Information Technology with the business environment in the region

Universities play a crucial role in fostering progress globally. In order to enable graduates to contribute significantly to the activity in their chosen field, they are called to provide education at the highest standards. Academic institutions work to accomplish this goal by giving students access to state-of-the-art learning resources (devices, educational and instructional spaces), current course materials, and internship opportunities.

The development of the necessary facilities for instruction and the provision of practical experience—both crucial for engineering students—often rely on collaboration between universities and the business community.

Prominent companies such as Plexus, Comau, EBM PAPST, and Celestica have long been partners of the University of Oradea's Faculty of Electrical Engineering and Information Technology. The collaboration began with a shared understanding that training professionals to operate in a demanding, ever-evolving workplace is possible by giving students research opportunities and enriching learning experiences with exposure to real-world business challenges.

These partnerships typically include the provision of laboratories equipped with cutting-edge devices in addition to the development of educational curricula tailored to the actual demands of the economic environment. It guarantees networking opportunities for students, internship programs, company presentation tours (early in the undergraduate program), and part-time job opportunities.

Additionally, students have the opportunity to complete their graduation theses under the joint supervision of university professors and experts from the partnering companies.

In addition to helping students find employment, this process also helps employers ensure that they can hire qualified graduates who are up to date on the latest technological advancements and industrial practices.

The representatives of multinational companies in Oradea, who offer employment opportunities to engineering students, hold bi-annual meetings with the management of the Faculty of Electrical Engineering and Information Technology. During these meetings, they discuss the curriculum and the skills students should develop to become effective employees. In terms of required skills, candidates with a strong command of English are given an advantage (Abrudan & Sturza, & Supuran 2021).

2.3. The case of English classes at the University of Oradea, Faculty of Electrical Engineering and Information Technology

English instruction for engineering students is currently part of the curriculum at the Faculty of Electrical Engineering and Information Technology for one hour each week. According to the authors' earlier research, there are a few elements that, in our opinion, reduce the effectiveness of the English teaching and learning process at the University of Oradea's Faculty of Electrical Engineering and Information Technology (Abrudan & Sturza & Supuran 2021)

First of all, students are not given the possibility to select the foreign language they wish to study from a variety of options. It is also assumed that students should have at least an intermediate level of English proficiency because English is a part of the national curriculum that most Romanian schools have adopted. Additionally, the goal is to teach students English for Specific Purposes, in this case, engineering. Because they have no other option but to learn English as a foreign language, students join groups where varying proficiency levels in the language can be identified.

Secondly, it is not possible to assign students to groups based on their English proficiency level.

In this context, English for Specific Purposes (ESP) teachers developed strategies to accurately and fairly assess students and to determine the most effective ways to make the information conveyed to them as accessible as possible. Some of the successful tactics included: creating classroom materials of moderate difficulty that focus primarily on fundamental concepts related to the field of electrical engineering, and providing students with a variety of activities that simulate real-world contexts where English is used in the engineering domain. For instance, activities could include simulations based on:

(a) Vocabulary games, such as the definitions game, are one example (where concepts covered in class are described by their characteristics—such as dimensions, weight, appearance, quantity, etc.—and students are challenged to guess the corresponding word). Another similar exercise is the numbers and dimensions game, which can also be used to practice comparative degrees of adjectives and adverbs. For example, a student might ask a question about the weight

or length of an object, and the answers could include references to numbers or adjectives that indicate quantity, amount, or dimensions.

(b) The categories exercise involves presenting students with a series of concepts, which can either be read aloud by the teacher or provided on a card, and asking them to categorize them correctly.

(c) Role-playing activities are designed to help students find solutions to given problems. These exercises could involve tasks such as comparing devices, suggesting new design methods for specific products, giving instructions for use, making predictions, delivering presentations, explaining cause and effect when discussing product failures, offering advice, assigning blame for failures, or expressing safety requirements related to the use of a product.

(d) Encouraging students to give presentations on topics that interest them, while also relating to the field of engineering, helps them engage more deeply with the subject matter and develop their communication skills in a professional context.

(e) Fill-in exercises.

(f) Multiple choice exercises.

In addition to adapting course content to students' needs, we made efforts to understand what the primary employers in the area, particularly in the industrial parks of Oradea, expect from a novice engineer. It appears that a good command of the English language is essential rather than the knowledge of the technical jargon, since the words specific to a domain can be easily presented and learned if employees are able to communicate easily with customers, co-workers or people from outside the company (Abrudan & Sturza & Supuran 2021).

Based on our observation, even though there are many different engineering specialties and students may still be unsure of their career path during their first two years of school, everyone hoping to work in an engineering-related field may find it helpful to know and comprehend the following: expressing dimensions; knowing and understanding units of measurement; being able to express numbers and quantities in an appropriate way, and also to express calculations in English; expressing directions; recognizing and expressing shapes; being familiar with vocabulary relating to tools, devices and equipment; ability to describe production methods and processes; ability to compare and give advice; giving instructions for use; using vocabulary relating to planning activities; expressing consequences (cause and effect); making predictions; speak about probable causes; expressing hypotheses; making suggestions; understanding abbreviations and acronyms (that relate to the field of engineering); becoming familiar with words referring to ergonomics and safety requirements; being aware of the most common engineering materials and their properties; capacity to make effective presentations; ability to write reports.

As regards the grammatical aspects to be revised while discussing texts relating to the field of electrical engineering, we focus mainly on the revision of: countable and uncountable nouns, with an emphasis on aspects such as the Foreign plural; the degrees of comparison of adjectives and adverbs; the verbal forms (Present, Past, Present Perfect, Past Perfect); Conditional clauses; Clauses of result.

3. METHODOLOGY

To assess the effectiveness of the ESP course, we designed a survey to gather feedback from 45 undergraduates and Master's students who are currently working in the fields of electrical engineering and IT. The survey aimed to determine the relevance and impact of

the English language skills acquired during their studies at the University of Oradea, specifically focusing on the linguistic requirements of their current workplace.

To this end, we asked 45 undergraduates and Master's students, who are already working in the field of electrical engineering and IT, to express whether the English language skills they acquired at the University of Oradea proved helpful in relation to the (English) linguistic requirements at their current workplace. Specifically, we developed a questionnaire to determine how the English vocabulary and communication exercises we implemented may have helped students develop skills that are useful in their current job or in the internship programs they have participated in.

In designing the questionnaire, we drew primarily on our experience as English teachers and the studies referenced in the bibliographic list. At the beginning of the questionnaire, respondents were informed (in writing) of the main purpose of our research: to assess whether there is alignment between the content taught in university language courses and what is used in workplace communication within the engineering field. The survey began with an introductory section that explained the purpose of the research, which was to evaluate the alignment between the English language content taught in university courses and the language skills needed in the workplace. Respondents were informed that their participation was voluntary and their responses would remain confidential. The survey was distributed electronically via email to the 45 students, with a request for them to complete it within a specified time frame. Follow-up reminders were sent to ensure a sufficient response rate. Responses were evaluated to determine if the ESP course content effectively prepared students for the linguistic demands of their careers in electrical engineering and IT.

4. RESULTS AND DISCUSSIONS

4.1. Presentation of the questionnaire applied to graduates from the University of Oradea, Faculty of Electrical Engineering and Information Technology. Quantification of the answers

The first question of the survey asked interviewees to indicate whether: (1) they are students at the University of Oradea, Faculty of Electrical Engineering and Information Technology; (2) they are currently employed in the engineering domain; or (3) they are both students and employees in the field of engineering. All 45 respondents identified as both students and employees.

The second question aimed to determine whether respondents use English in their current job and, if so, what proportion of their work involves English communication. All respondents confirmed that they use English at work, with usage ranging from 30 percent (reported by 10 respondents) to 50 percent (reported by 32 respondents), depending on their job position. Three respondents indicated that they use English 40 percent of the time in their work.

A general yes/no question about the effectiveness of the English language courses taken by students at the University of Oradea's Faculty of Electrical Engineering and Information Technology made up the third item on the survey. We specifically wanted to know if the interviewees felt that the aforementioned course had given them the English language proficiency they needed as beginner engineers. In the case of question three, every respondent concurred that the ESP course helped them acquire the skills necessary for their jobs. The fourth question was also a close one, though respondents were encouraged to

give their opinion in case they identified a gap between what was taught at the university and the communication requirements (relating to English) at their workplace. 42 respondents identified no gap between what was taught and the English language skills used at their workplace. Three respondents identified a gap. Their answers are presented below:

“Not necessary a gap, but the engineering field is a large one, and there are many subdomains that are not particularly covered.”

“Yes, because I work as a software engineer and some of the subjects debated at the English courses referred also to concepts relating to hardware, electrical and mechanical engineering. However, I enjoyed learning the concepts.”

“There is a difference because in my workplace the terms I use define electronic components.”

The purpose of the fifth question was to determine the most important English language competency at the respondents' place of employment. Respondents were encouraged to arrange the following language skills: speaking/ writing/ listening / reading in the order in which they are used mostly at their workplace. It appears that most respondents use English at work for verbal interactions and listening, but also for writing documents and reading. 29 respondents indicated the following order of skills in relation to the way they use them at work: speaking/listening/writing/reading. 9 respondents chose the following order: speaking/writing/listening /reading. 4 respondents indicated the order: reading/writing/listening /speaking. 2 respondents chose the order: speaking, writing, reading, listening, 1 respondent chose the order reading, writing, speaking, listening.

Question six asked respondents to identify the types of written documents they are required to produce at work. The first four document types (a-d) listed as answer choices were directly related to content covered in the ESP course, where strategies for creating effective versions of these document types were introduced and discussed.

Based on the answers analysed, we found out that most often employees use their skills of writing in English to produce e-mails (36 respondents), make product presentations (33) and write reports (27 answers). Of the written documents in English that they must produce for work, only ten respondents mentioned letters; two others mentioned coding and log work as activities that may call for proficient English writing skills.

Question seven focused on forms of verbal communication in English in which respondents were involved at work. Most respondents suggested they use English verbally at work for requesting feedback (30), giving instructions and/or training (29), identifying clients' needs (29), making presentations (29), conducting meetings (27), informal conversations with co-workers (24), providing feedback (23), cooperating and communicating with engineers from all over the world (22), making notifications (13), stating needs and feelings (8), conducting job interviews (1), others (2 – asking for help and asking for clarifications).

Question eight asked respondents directly to identify, from among the themes that were tackled during the English classes at the University of Oradea, those that turned out to be relevant and useful at their current workplace. Based on the answers received, it appears that the following themes proved useful in helping students acquire vocabulary necessary at their workplace: ability to describe production methods and processes (32 answers), vocabulary relating to tools, devices and equipment (30 answers) and ability to compare and give advice (30 answers), followed by capacity to write efficient reports (29). Next come answer choices f and k (“being familiar with the most common engineering materials and their properties” and “vocabulary relating to planning activities”), both with 27 answers and

answer choices b and c (“knowing and understanding units of measurement” and “ability to express numbers and quantities in an appropriate way, and also to express calculations in English), both chosen by 25 of the interviewees. Being able to make suggestions (24 answers) and being able to make instructions for use (23 answers), express consequences (21 answers) and the capacity to make effective presentations (20 answers) proved useful for many of the participants to the survey. Almost half of the novice engineers agreed that language relating to expressing dimensions (18 answers) and directions (18 answers), or for expressing hypotheses (16 answers) and understanding abbreviations and acronyms that relate to the field of engineering (16 answers) is very useful at work. Recognizing and referring to shapes (14 answers) and familiarity with words referring to ergonomics and safety requirements (14 answers) can be helpful for employees in the field of electrical engineering and IT. Words employed when speaking about probable causes (12 answers) and making predictions (10 answers) were considered useful by about a third of the young engineers who answered the questionnaire questions.

In the final question, the respondents discussed the grammatical concepts they learned in the University of Oradea English courses, which helped them communicate more effectively in English at work. The most useful grammatical structures discussed proved to be those referring to expressing degrees of comparison (31 answers) and being familiar with countable and uncountable nouns (28 answers), followed by the ability to use correctly the verbal forms (26 answers), expressing clauses of result (22 answers) and using correctly conditional clauses.

4.2. Main findings

Based on the interpretation of the answers given to the questionnaire, the following findings emerge as essential:

First, all respondents participated in the English course at the Faculty of Electrical Engineering and Information Technology and are either currently employed as technicians or junior engineers in multinational companies, or have completed internships at such companies. As a result, they are able to compare the skills acquired during their English classes with the English language skills required in the engineering domain at their workplace. Based on the interpretation of the responses to the questionnaire, the following key findings emerge:

Secondly, English is used at the participants’ workplace in percentages ranging between 30% and 50%, depending on the position they occupy.

Thirdly, the topics discussed during the English classes they attended at the Faculty of Electrical Engineering and Information Technology proved useful for the development of English proficiency skills required by some multinational engineering companies in Oradea. Among the most useful topics, that gave students practice in anticipating work-related communication contexts were: describing production methods and processes, describing tools, devices and equipment, comparing and giving advice, understanding materials and their properties, expressing numbers, quantities, dimensions, shapes and calculations in English, giving, and giving instructions for use. Capacity to understand correctly abbreviations and acronyms relating to the engineering domain was mentioned by an important percentage of the respondents.

As regards the writing skill, most often young engineers need to demonstrate efficiency in written communication when formulating e-mails, presentations and reports. Orally, English is used for giving/requiring feedback, asking for/giving instructions and communicating with customers and co-workers.

5. CONCLUSION

The activity of engineers in today's globalized professional environment often involves the use of the same language in order to provide and receive information efficiently, without the need for translators and interpreters.

Since English has been adopted as the main language of communication across the world in many professional domains, and also in most institutions and companies in Oradea, where young engineers begin their career, we aimed to see whether there is a strong correlation between the concepts, grammatical issues and communication exercises presented during the English classes at the Faculty of Electrical Engineering and Information Technology and the linguistic needs of young employees in multinational companies with subsidiaries in Oradea.

According to the opinions of the 45 participants in the study described in this paper, there is a correlation between the English language proficiency needed by businesses hiring engineers in Oradea and the Bihor County area and what is taught in English classes.

The results indicate the importance of providing engineering students with opportunities to practice their English language skills. Thus, this study can be used as an argument in favour of giving more attention to the improvement of English language proficiency during the period of academic education, along with the acquisition of technical skills. The data can also be taken into account by the developers of the curriculum for engineering academic education, who must be made aware of both the struggles of teachers trying to provide valuable course materials to students, and of the need to give students opportunities to benefit from the ESP classes.

Teachers of English for Specific Purposes can also use the findings. They may be encouraged to continuously enhance and reassess the English language courses they teach to aspiring engineers by, first, improving communication with local employers and, second, applying the outcomes of this communication to the context of their language classes. We firmly believe that providing students with the chance to practice communication in a real-world workplace will aid in the development of skills that will be beneficial to their future employment.

However, the findings of this study may be strengthened by further research, which might involve more participants and more engineering companies.

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APPENDIX 1

QUESTIONNAIRE

1. Are you:

a. student at the University of Oradea	b. employee of a company in the field of engineering	c. Both a student at the University of Oradea and an employee in the field of engineering
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2. Do you use English as a form of communication at your current workplace? If your answer is positive, please indicate to what percentage to which you use English for communication purposes at work.

a. YES	b. NO
Please indicate percentage, if applicable	

3. Do you consider that the English language courses you attended at the University of Oradea, Faculty of Electrical Engineering and Information Technology provided the English language skills you need as novice engineer?

a. YES	b. NO
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4. Is there any gap between what is/was taught at the university (at the English classes) and the communication requirements (relating to English) at your current workplace? If your answer is affirmative, please explain the difference between the way you communicate in English at work and the communicative activities you were involved in during the English language seminars while being a student at the University of Oradea, Faculty of Electrical Engineering and Information Technology)

a. YES	b NO
Please explain if you answered affirmatively to the question above)	

6. If applicable, what kind of writing (in English) do you have to produce at work?

LETTERS	E-MAIL	REPORTS	PRODUCT PRESENTATIONS	OTHERS (PLEASE MENTION THEM)
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- Presentations
- Giving instructions and/or training
- Identifying clients' needs
- Making notifications
- Providing feedback
- Asking for feedback
- Conducting meetings
- Conducting job interviews
- Stating your needs or feelings
- Informal conversations with co-workers
- Cooperating with and communicating with engineers from all over the world
- Others (please mention them)

[illegible]

- a. Expressing dimensions
- b. Knowing and understanding units of measurement
- c. Being able to express numbers and quantities in an appropriate way, and also to express calculations in English
- d. Expressing directions
- e. Recognizing and expressing shapes
- f. Being familiar with the most common engineering materials and their properties
- g. Being familiar with vocabulary relating to tools, devices and equipment
- h. Ability to describe production methods and processes
- i. Ability to compare and give advice
- j. Giving instructions for use
- k. Using vocabulary relating to planning activities
- l. Expressing consequences (cause and effect)
- m. Making predictions
- n. Speak about probable causes
- o. Expressing hypotheses
- p. Making suggestions
- q. Understanding abbreviations and acronyms (that relate to the field of engineering)
- r. Familiarity with words referring to ergonomics and safety requirements.
- s. Capacity to make effective presentations
- t. Ability to write reports

A	b	C	d	e	f	g	h	I	j	k	l	m	n	o	p	q	r	s	t
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9. Which of the grammatical aspects approached during the English courses you attended at the University of Oradea help you in your communication at work (when using English):

- a. Countable and uncountable nouns
- b. Degrees of comparison of adjectives and adverbs
- c. Verbal forms (Present, Past, Present Perfect, Past Perfect)
- d. Conditional clauses
- e. Clauses of result

A	b	c	d	e