

PRESENTATION IN A FOREIGN LANGUAGE OF BASIC RULES FOR WORKING IN A SPECIALISED LABORATORY WHILE TRAINING ELECTRICAL SPECIALISTS

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ABSTRACT. Globalisation requires knowledge of a foreign language at a high level. Communication with different cultures not only increases soft skills and the level of knowledge, but also the cognitive abilities of the individual. In this sense, education in a foreign language has blurred boundaries, but still a certain level of language proficiency requires covering certain standards. In strictly specific work, such as mining, medicine, or production, it is mandatory that rules and standards be observed. For this purpose, basic areas of work in electrical, chemical, physical, and other laboratories are considered. To protect university students and their lecturers from risks, it is necessary to set and follow certain rules. Examples of different ways of expressing them are proposed, including the imperative mood, the passive voice, modal verbs, and others.

Ключови думи: mobility, specialised laboratory, electrical equipment, instructions, foreign language teaching.

ПРЕДСТАВЯНЕ НА ЧУЖД ЕЗИК НА ОСНОВНИ ПРАВИЛА ЗА РАБОТА В СПЕЦИАЛИЗИРАНА ЛАБОРАТОРИЯ ПРИ ПОДГОТОВКА НА ЕЛЕКТРОСПЕЦИАЛИСТИ

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РЕЗЮМЕ. Глобализацията изисква знание на чужд език на високо ниво. Общуването с различни култури не само повишава меките умения и нивото на знания, но и когнитивните способности на индивида. В такъв смисъл образованието по чужд език е с размити граници, но все пак определено ниво на владение на език изисква покриване на дадени стандарти. При строго специфична работа като минно дело, медицина, производство се изисква да се спазват правила и стандарти. За целта са разгледани базови области при работа в електротехническа, химическа, физическа и други лаборатории. За предпазване на студентите и техните преподаватели от рискове е необходимо да се задават и да се спазват определени правила. Предложени са примери за различни начини за изразяването им. Това може да стане чрез повелително наклонение, с пасив, модален глагол и други.

Ключови думи: мобилност, специализирана лаборатория, електротехника, инструкции, чуждозиково обучение.

Introduction

The multicultural development of humanity is evidenced by the way of life in recent years, which has led to the need for teaching and learning in various languages. The diversification of young people in cultural and linguistic significance is at different levels. A 2002 study established that universities were significantly lagging behind in catching up with global trends (Gogolin, 2002).

To raise the level of communication and modernisation of education, programmes like "Erasmus+" are introduced, giving young students and their teachers the opportunity to travel (Užpalienė & Vaičiūnienė, 2012). The participation of university students is subject to language level requirements of at least B1 and a minimum of one year of study at the sending university. Another possibility is the participation in educational associations of multilingual and multicultural training centres, e.g. Alliance of the Multilingual and Multicultural Training Centres (M&M) (Kjellgren et al., 2022).

Due to its simple structure and easy grammar, English is one of the official languages of the world. It is also the preferred language for participation in international programs (Užpalienė & Vaičiūnienė, 2012; Kjellgren et al., 2022). In a study of attitudes towards travel and language learning, respondents complained that Spanish, Italian, Polish and Bulgarian were unpopular languages, with scarce preferences of only 4% for each of the above (Užpalienė & Vaičiūnienė, 2012). Languages like English, German, and Russian were declared popular.

This is the reason for initiating English language training in the relevant profiling course units. It is proven to serve not only at the university level, but also for communication, joint projects,

defences of students' theses at the master and doctoral levels, negotiations, and many others throughout the individuals' lives. English is extensively used by managers, lawyers, project managers, designers, university students, their lecturers, representatives in the production area or of companies, and others. They all can participate as third parties in communication. Depending on the roles of those involved in communication, the topics and the manner of participation are distinguished, too.

Benefits of studying a foreign language at university

Learning a foreign language provides various advantages to its speaking users. In the field of education, these are as follows:

- Access to specialised information and a large amount of knowledge;
- Education in specialised, reputable educational institutions of high rating;
- The right to career development and advantages when applying for a job and subsequent employment or professional negotiations;
- The opportunity for free communication and orientation when traveling around the world;
- Understanding when visiting cultural events, museums natural landmarks, etc;
- Free communication when participating in international scientific, cultural, financial, sports, and other communities;

- Improvement of cognitive abilities, memory, comprehension, and development of intellectual abilities.

Depending on the level of knowledge, an individual's role in society, and the purpose of communication, the context of the conversation can be assumed. Blurred boundaries and an increase in soft skills are reported.

When working in a specialised laboratory, however, there are specifics in the use of a foreign language. Certain rules need to be applied and understood. This is necessary in order to comply not only with safety precautions, but also with the prescribed procedures for production using a certain technology, as well as to achieve the goals set.

The main reasons are to protect human life and to provide students and lecturers with the right to free communication. Among the others are the compliance with the technological process, the protection of product quality, of the company name, etc.

The aim of the article is to provide basic rules for introducing scientists, students, and third parties to working with specialised equipment in laboratories and protecting them from hazardous substances. This would raise their interest, motivation for and effectiveness in studying in a multicultural environment. In addition, it would lead to an increase in the rating of the respective higher school.

Cases of using a foreign language in education

The cases of using a foreign language in education are varied, but generally depend on the roles. On the one hand are the students who use knowledge and laboratory facilities. On the other hand are the university lecturers who attend various events, conferences, databases for data exchange, literature research and new publications, etc. Most recommendations by the European Union put an emphasis on the use of open resources with free access by the Alliance (Kjellgren et al., 2022).

Typically, the activities are as follows:

- Using libraries, specialised literature and online resources;
- Studying in a university abroad. This is possible when enrolling for or taking part in international programmes, such as “Erasmus+”, or participating in associations, projects, etc.;
- Visits of foreign lecturers to the university;
- Mutual work with foreign partners;
- Attending conferences, seminars, training sessions, workshops, and others;
- Promoting the results of scientific work at conferences, at foreign-language universities, or in scientific publications;
- Publishing scientific results and articles in various publications in a foreign language;
- Conducting research or fieldwork abroad by scientists;
- Creating, maintaining, and/or participating in interest groups;
- Developing new products in this country or abroad;
- Protecting the rights of universities and companies through the results of measurements and field expertise;

- Visiting industrial sites, developed practices, etc.;
- Visiting various sites for the purposes of experimentation, collaboration, and achieving new scientific results.

Special cases

Contrary to the study by Hladik and Jadama (2016), there are cases where boundaries in teaching a foreign language cannot be blurred. It is all very good to mix habits and cultural features, but learning and applying regulations requires rigour and precision.

This is the case of work in electrical, chemical or safety laboratories, requiring compliance with standards. Rules are also introduced in the manufacturing area, in hospitals, in establishments, and many other sites. Depending on the risk of injuries or damage, these procedures vary. They are especially strict in the mining industry, medicine, the chemical industry, etc. All of them are created on the grounds of basic standards and regulations, or the so-called regulatory framework.

The safety standards for Bulgaria are about observing the rules at work and reducing the damage caused by spills of hazardous liquids and gases, by fire, or by electric shock (BDS 14299:1989; BDS EN 12259-1:1999+A1:2001/A3:2006; BDS EN 50160:2023). Some of the main ones that apply to students in engineering specialties are:

- Protection of a person when working near a high-voltage network (Petrov et al., 2023);
- Assessment of the impact and damage of electric current when passing through the human body (Petrov et al., 2022);
- Fire prevention and increasing the level of safety in the operation of buildings and machines (Vladkova, 2020; Makedonska et al., 2025);
- Proper operation of various equipment, such as photovoltaics, motors, energy production installations, and others (Mitkov et al, 2022; Varbov et al., 2023);
- Influence of electromagnetic compatibility in the control of lighting fixtures and determining the possibilities for increasing the safety of workers according to the standards of the country (Ivanov et al., 2020);
- Assessment of the risk of fire when operating a gas transmission network or when injecting gas into the heat pipeline network (Vlaykova et al. 2024);
- Introduction of safe methods for operating oil and gas transmission networks for the transmission and production of energy (Mitkov et al, 2022);
- Determining the safe composition of mixtures when transporting gas, hydrogen, oil, etc. (Vlaykova et al. 2024);
- Determining the benefits of oil and gas transportation for the economic conditions of regions or for the increase of people's well-being (Radev & Boyadzhiev, 2023).

The examples are numerous and a differentiated approach should be taken when training for proper behaviour and operation of specific equipment. The overview points to the conclusion that the topics concern electricity, fire, oil and gas facilities, energy production, gas transportation, hydrogen operation, and others. Therefore, we recommend that the rules be taught according to the students' specialty.



Fig 1. Short circuit on the human body

Training procedures

Regardless of the method of training in engineering courses of study (online, in a virtual laboratory, or introducing the rules on site), a sufficiently good level of English proficiency is required (Hristova et al., 2021; Evstatiev et al., 2022).

Depending on the method of training, feedback on the level of mastery and understanding of the basic instructions is also received.

In case of misunderstanding on the part of students or third parties, a lecturer has the right to apply other teaching methods. The use of open resources is a new method which should not be ignored. Such is the Lilac Project, or OERs LILAC (Online Language Learning and Teaching) wherein learning is divided into micro and macro learning (Nicora et al., 2022). In this aspect, “micro” means acquiring basic knowledge and skills, and “macro” is in-depth learning with complex phrases.

The stages are:

- Online face-to-face learning;
- Acquisition of digital and organisational skills;
- Increasing the pedagogical role by introducing new teaching techniques, such as “ping-pong” training, interviewing, and others;
- Using asynchronous or synchronous training to establish a strong and reliable connection between educator and learner;
- The final step is the assessment of the learners; an open circle of mutual assessment can also be organised in the group.

The observance of the stages and the adjustment of the methods depend on the university lecturer and on the level of language proficiency of the students or third parties. The objective is for students to comply with the rules and regulations and acquire routine habits. In this case, intercultural peculiarities should not be taken into account either.

The connection between rules and English language teaching

In English language textbooks and manuals, rules are taught and exercises are offered to reinforce these rules as a statement. They are compatible with the laboratory rules, regardless of the type of laboratory. Here, we share experience from foreign language safety training for students in electrical engineering specialties and those taking a degree in oil and gas drilling and extraction. Through planned exercises, on their own, students can consolidate knowledge not only in a foreign language, but also memorise the rules necessary for visiting laboratories, companies, industrial enterprises or when doing field work.

At the **elementary level** of English language acquisition, safety rules when working with electricity are introduced by studying the modal verbs *must*, *must not (mustn't)*, *have to*, *ought to*, *should*, *need*, *can*, *can't* in their combination with the infinitive of the verb (Abbs and Freebairn, 1992; Frendo and Bonamy, 2011, 2012).

The following section offers basic examples of sentences to be translated from Bulgarian into English. Those can be paraphrased according to the students' specialties and their level of English proficiency. The examples include variations that require the use of grammar structures mastered in **higher levels** of foreign language learning, such as:

- the Passive Voice;
- a complex sentence with a subordinate part in its manifestation as Subjunctive Mood in personal and impersonal constructions;
- the modal verb *should* + the Perfect Infinitive for expressing criticism on past actions.

Here is a list of 11 training sentences and their translation into Bulgarian:

1. *Настоявам да пишете протоколите си редовно.*

This sentence is translated as follows:

→ I insist that you write your minutes regularly.

A possible variant could be the change of the verbal form with a phrasal verb when phrasal verbs are introduced at level A2–B1, as in:

- 1.a. *Настоявам да попълвате протоколите си редовно.*

→ I insist that you fill in your minutes regularly.

or

- 1.b. *Настоявам да предавате протоколите си редовно.*

→ I insist that you hand in your minutes regularly.

2. *Наредиха ни да тръгнем навреме.*

English proficiency level A1-A2 implies a possible literal translation which is the closest to the source language:

→ They ordered us to leave on time.

English proficiency level B1-B2 implies two other possible ways of translating:

- 2.a. through passivisation

→ We were ordered to leave on time.

or

- 2.b. by means of the Subjunctive Mood

→ They ordered that we leave on time.

3. *Желателно е да се консултирате предварително относно изискванията.*

- It is desirable that you consult beforehand regarding the rules.
4. *Естествено е да се интересувате от правилата за работа в електротехническа лаборатория.*
 - It is natural that you be interested in the rules for working in an electrical laboratory.
 - It is natural for you to be interested in the rules for working in an electrical laboratory.
 5. *Необходимо е да се направят тестове, за да се провери изправността на апаратурата.*
 - It is necessary that you do tests to check the faultless work of the apparatus.
 - The faultless work of the apparatus should be checked through tests.
 - You should check the faultless work of the apparatus.
 6. *Изисквам да спазвате правилата за безопасност в химическа лаборатория.*
 - I insist that you observe the safety rules when working in a chemistry laboratory.
 - You should observe the safety rules when working in a chemistry laboratory.
 - The safety rules must be observed when working in a chemistry laboratory.
 7. *Предлагам да не обсъждате подробностите от срещата.*
 - I suggest that you not discuss the details of the meeting.
 - It is not needed to discuss the details of the meeting.
 8. *Препоръчаха ни да се запознаем с правилника за провеждане на експерименти с опасни материали.*
 - It was recommended that we get acquainted with the Regulations for Conducting Experiments with Hazardous Materials.
 - We were recommended to get acquainted with the Regulations for Conducting Experiments with Hazardous Materials.
 9. *Уговорихме се те да получат правилника разпечатан.*
 - We arranged that they receive the Regulations printed.
 - We arranged that they be handed out the Regulations printed.
 - The printed Regulations were handed out to them.
 10. *Тя се съгласи да се преведе правилника, за да им се раздаде той в разпечатан вид.*
 - She agreed that the Regulations be translated so that they should be handed out printed.
 11. *Работникът на платформата е трябвало да използва функцията против люлеене, за да има контрол над товара.*
 - The roustabout should have used an anti-sway system to control the load.

[Meaning: but they did not and the load swung to the left and right and posed a serious threat].
This example is specifically from the field of English language training for drilling engineers (Frendo and Bonamy, 2011, 2012).

Conclusion

The article examines the latest trends in globalisation and diversification of youth communication in Europe. To avoid the

observed slowdown of these processes in the field of education, programmes such as "Erasmus+" have been introduced and the Alliance of European Universities for Foreign Language Training has been created. Various experiments show that there are cases in which rigour is necessary in teaching English, in order to comply with established rules. Such cases are work in the production area, or in electrical, chemical, gas, and other technical laboratories. They are typical of the training of engineers at a university, for example at the University of Mining and Geology "St. Ivan Rilski". In these cases, the management of soft skills and intercultural features should not apply.

For this purpose, foreign language teaching techniques have been proposed. Recommendations have been given for diversifying the examples according to the students' specialties. We believe that the latter is a prerequisite for quality preparation and education of students not only at UMG "St. Ivan Rilski", but in other technical universities likewise.

The authors' subsequent scientific interest is the research aimed at improving students' soft skills and their ability to express conditions.

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