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*Original Paper*

## **Analytical tools of written tests for assessment of language competences of engineering degree students at the Faculty of Engineering of the Slovak University of Agriculture in Nitra**

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### **ABSTRACT**

The interest of university students to study foreign languages is associated with the opportunities to travel and work abroad or in multinational companies established in Slovakia. The study and professional internships require not only the acquisition of general communication in a foreign language but also the attainment of professional terminology in a particular specialization. The principal objective of the paper is the analysis of the language competences of the students at Engineering Degree of the Faculty of Engineering at the Slovak University of Agriculture (SUA) in Nitra in the subject of Business Communication. Via the analytic tools of the didactic written tests, the achieved level was evaluated in vocabulary, word formation, grammar, and reading comprehension in the English language. The collected data were evaluated by the selected methods for the quantitative research in pedagogy. The results indicated that the above-average score was achieved in the tasks of vocabulary and word formation (93%, 92%). The students reached the average score (72%, 81%) in the tasks of grammar and reading. The correlation relations between the individual types of tasks proved only a slight dependence. The development of language competences, including the reading of professional literature in English, constitutes the professional knowledge of the modern university graduate and it extends the opportunities for career growth.

**KEYWORDS:** language competences, business communication, written tests, descriptive statistic, correlation

**JEL CLASSIFICATION:** D20, D40, M10

### **INTRODUCTION**

The European Commission and national governments are working with to reach a progressive goal: enabling citizens to communicate in two languages other than their mother tongue. Communication competence in foreign languages is one of the most important aims defined

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by the European Reference Framework. The learners are becoming aware of cultural diversity and can be involved in intercultural communication. This will contribute to a mutual understanding of other countries and cultures. The acquisition of foreign languages is essential to ensuring that European citizens can move, work, and learn freely throughout Europe. Communication in foreign languages consists of the ability to understand spoken messages; participate in conversations; read, listen, and produce texts appropriate to individual needs [7].

According to Frydrychová Klímová (2012), the latest trends in foreign language teaching include student-centered teaching, where the teacher takes on the role of a classmate. This trend is based on pedagogy and psychology with a focus on the creative potential of each person and the ability to change. The driving force behind this trend is the theory of social constructivism, according to which students create knowledge from their own experiences, both positive and negative.

Students at the tertiary level of non-philological studies become confronted with reading skills when they must deal with technical literature and specific foreign language. Reading tests are more or less limited to short texts or adapted extracts with item tasks of general comprehension. It is important to construct reading tests from authentic materials, especially for students of technical specializations. Subsequently, certain test items will suit for testing comprehension of a specific text, open-ended questions, multiple-choice items, to understand relations within the sentence or parts of the text, etc. The main concern of reading tests should be extensive rather than intensive reading. Thus, we can say that a longer authentic reading extract with few items dealing with specific content is more appropriate to test the students' reading abilities.

The Centre of Languages at The Slovak University of Agriculture (SUA) in Nitra provides students with language courses for different levels of knowledge. The curriculum is based on the students' specializations. At the Faculty of Engineering of SUA, the students in the study field of Technology Operation Management enroll on the course of Business Communication in the English language. This subject is targeted at the development of communicative competence in the international business environment. The emphasis is placed on the acquisition of communication strategies needed for business negotiations with foreign business partners as well as on the presentation competences and business correspondence. At the end of the course, the students can analyze all the significant phases of the business negotiation targeted at the mutual agreement of business partners and completion of the contract, taking into consideration the acquisition of requirements of business correspondence. The students can also present themselves as well as their company.

Many university graduates participate in foreign internships or work in a foreign company, where they communicate in English. Self-confidence in communication in a foreign language improves the required professional competences and the willingness to respond to challenges. Ellis and Johnson (2009) state that most business learners need to acquire the following:

- *sufficient self-confidence and skills for fluency in speaking,*
- *abilities to organize and structure information,*
- *sufficient language accuracy to communicate ideas without ambiguity or stress for the listener,*

- *strategies for tracking down key points in rapid, complex, and incomplete speech; strategies for clarifying and confirming ambiguous information,*
- *speed of response to what others say,*
- *clear pronunciation, accent, and delivery,*
- *recognition of language and behavior appropriate to the culture and context in which they operate.*

## **MATERIAL AND METHODS**

When testing and making tests it is necessary to consider only structures that have already been discussed in the course. Before compiling the test, the teacher must determine which level and structures s/he is going to evaluate.

When writing vocabulary tests, the tester should decide on what s/he wants to focus the test on. Whether to concentrate on testing active or passive vocabulary more or to have a balanced portion of both. The test constructor's task is easy when s/he follows the syllabus, textbooks, and the materials students went on through in the course.

In the academic year 2022/2023 the pedagogical research was held within the subject "Business Communication". This subject is taught in the specialization Technology Operation Management at the Faculty of Engineering SUA in Nitra. The research sample was represented by the students of two study groups of the engineering degree in the fourth year of study. In the research, 44 students participated, out of them 43 men and 1 woman.

During the course, the students acquired and developed language competences. Through the analytic tools of the didactic written tests, the students' level of knowledge was evaluated, in vocabulary, word formation, grammar, and reading.

In the winter term of 2022, the written test included the tasks, which were divided into four groups with the particular score:

- Task group 1 - Vocabulary: Match the expressions with definitions (10 points).
- Task group 2 - Word formation: create the nouns from verbs (5 points).
- Task group 3 - Grammar - Passive forms: Complete the sentences with the correct forms of the verbs in appropriate verb tense (5 points).
- Task group 4 - Reading: Read the text and decide if the following statements are true or false (10 points).

The total score on the test was 30 points. The received score from the written test was important for awarding credit to the students to pass the subject of Business Communication. The condition for successfully taking the credit was to achieve a minimum of 19 points (64%) out of 30, which is in accordance with the study regulations.

The obtained data were evaluated by the selected methods of descriptive statistics in both quantitative and graphic forms. We used the correlation coefficient to determine the degree of dependence between the individual types of tasks. The correlation coefficient is defined as follows:

$$r = \frac{1}{\sigma_X \sigma_Y} \cdot \frac{1}{n} \cdot \sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y}),$$

where:  $X$  and  $Y$  indicate two quantitative signs,  $n$  is the scope of the statistical set,  $\sigma_X$  is the standard deviation of sign  $X$ ,  $\sigma_Y$  is the standard deviation of sign  $Y$ .

The correlation coefficient acquires values from  $-1$  (the highest negative correlation) to  $+1$  (the highest positive correlation). If the determined value is  $0$ , then no correlation exists between the data.

The graphs of type boxplots were created with the usage of the free available program Box-and-Whisker Plot Maker [1].

## RESULTS AND DISCUSSION

Many Slovak universities involve programs taught in English in their accredited study programs. This study enriches the students' vocabulary with many professional terms. The command of a foreign language provides university graduates with the advantages, including the opportunities to participate in internships abroad, or work abroad after graduation.

In the winter term of the academic year 2022/2023, the students completed the written test where the tasks were evaluated in the individual groups:

Group 1 - Vocabulary, Group 2 - Word formation, Group 3 - Grammar, and Group 4 - Reading.

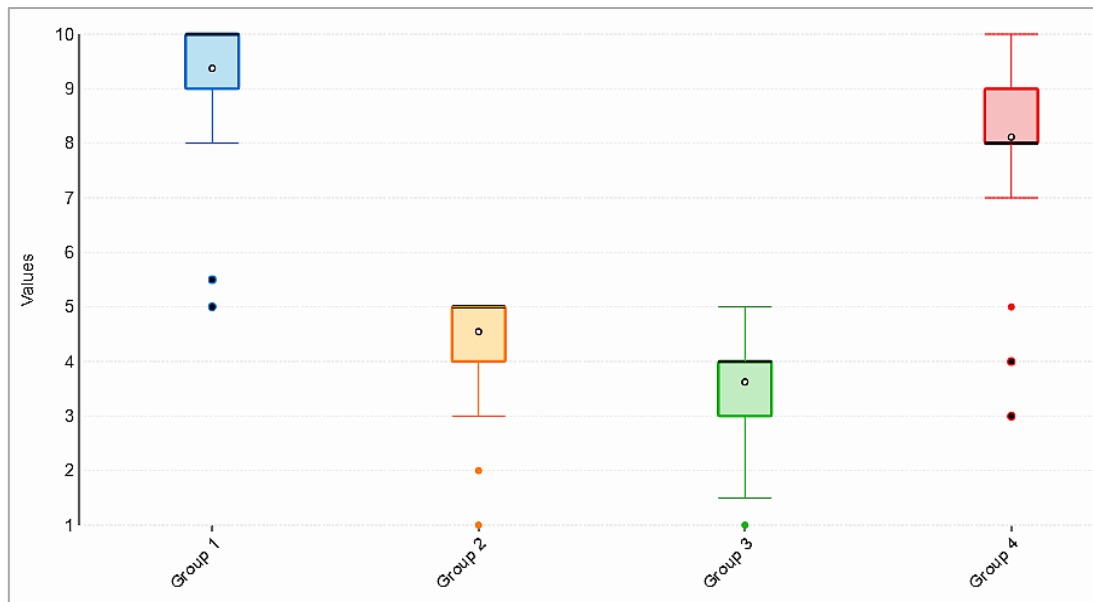
In Table 1, the basic statistical characteristics of the data file are indicated. That was created by the points in the individual tasks and the total score.

**Table 1** Basic statistical characteristics of data sample

	Vocabulary	Word formation	Grammar	Reading	Total
N	44	44	44	44	44
Minimum	5	1	1	3	15
Q1	9	4	3	8	25
Median	10	5	4	8	26
Mode	10	5	4	8	26
Q3	10	5	4	9	27.25
Maximum	10	8	5	10	29
Mean	9.3	4.6	3.6	8.1	25.7
Standard Error	0.20	0.15	0.16	0.20	0.44
Standard Deviation	1.36	1.02	1.06	1.35	2.92
Kurtosis	4.09	5.90	-0.23	5.74	3.52
Skewness	-2.15	-0.81	-0.69	-2.06	-1.64

Graphic interpretation of the data from Table 1 is given in the Figure 1. In the individual tasks, it is possible to observe also outliers. In the group of tasks 1, the modus is 10 (the point

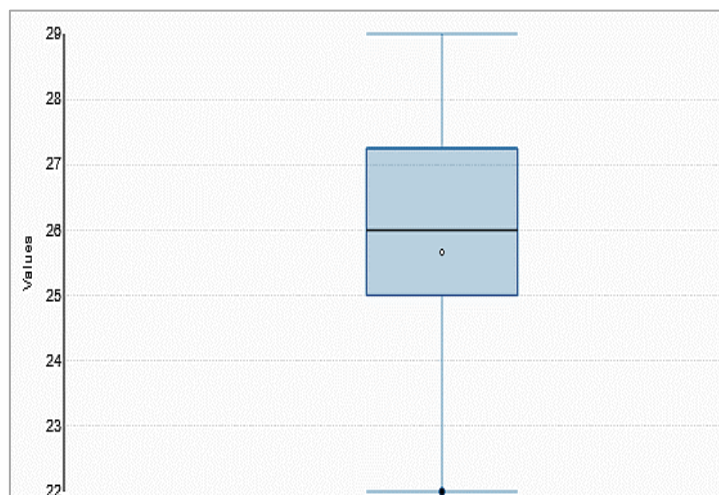
maximum per task was 10). In the group of tasks 2, the modus is 5 (the point maximum per task was 5). In the group of tasks 3, the modus is 4 (the point maximum per task was 5). In the group of tasks 4, the modus is 8 (the point maximum per task was 10). The graphic interpretation of the obtained score clearly confirms that the students demonstrated very good knowledge and language competence in the test.



Labels: Group 1: Vocabulary, Group 2: Word formation, Group 3: Grammar, Group 4: Reading.

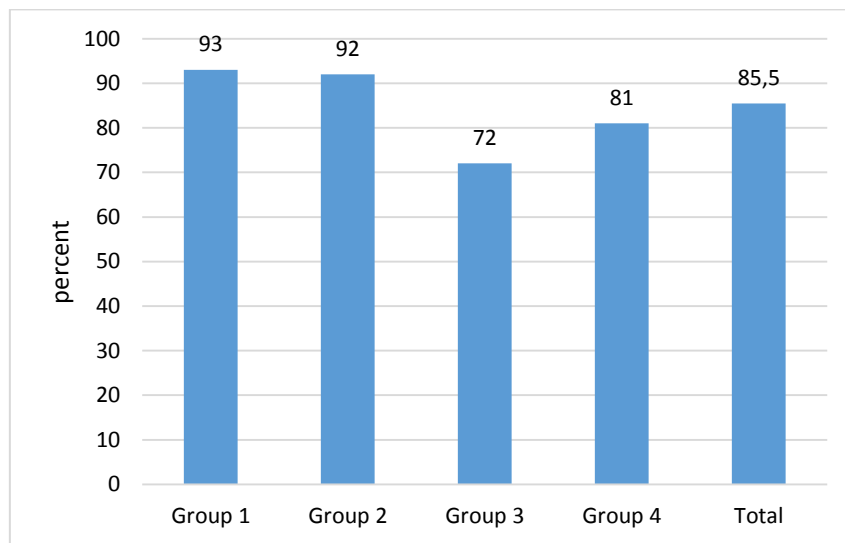
**Figure 1** Boxplots for point score in task groups

The linguistic competences belong to the obligatory equipment of students with technical specializations. In Figure 2, there is the graphic data interpretation of the total score of the whole test. The data file the modus is 26 (maximum was 30). The students demonstrated a high level of the achieved language competences.



**Figure 2** Boxplot for a total score for tasks

To compare the obtained scores from individual tasks and total points, we used the average percentage expression (Figure 3). Students from the research sample come from different types of secondary schools and they also had a different range of language knowledge. They managed the language competence in the studied subject very well, which is evidenced by the overall score on the test (85.5%).

**Figure 3** Average percentage achievement in solving tested tasks**Table 2** Correlation between points score for tasks

	Vocabulary	Word formation	Grammar	Reading	Total
Vocabulary	1				
Word formation	0.198	1			
Grammar	0.009	0.133	1		
Reading	0.044	0.253	0.340	1	
Total	0.558	0.606	0.571	0.695	1

Table 2 indicates the results of the correlation between the achieved points in the individual task types. The detected values of the correlation coefficient show that the correlations are in the scope from 0 (zero correlation) to the value of 0.695. In the interval (0.40; 0.69) there is a strong positive relationship. The correlation values in the interval (0.20; 0.29) mean a weak positive relationship.

## Discussion

Shafikova (2021) in her study emphasizes the significance of language competences, which are affected by the growth in a number of scientific and technical information, whereby the

highest share is represented by publications in English. Also, the teacher of the English language has to have a high command of English language competences, as well as teachers who use the foreign language in professional communication in science and research (Yacob et al., 2022). Starovoyt et al. (2020), deal with the models of the achievement of communicative competence and claim that this competence can be achieved through practice and performance motivation. In social communication, language is the means we use to interact with other people. According to Zelenková (2015), socio-professional communication is specific in the way that the participants dispose of the common knowledge and attainments in the non-linguistic area (specialization). The increase of professional communication competences targeted at the practice is the current necessity for all university graduates (Kissová and Bugárová, 2022).

## CONCLUSION

In the paper, we presented the results of research which was aimed at the language competences of the students of engineering degree at the Faculty of Engineering of SUA in Nitra. Via the written test the acquired students' knowledge was evaluated in the following four areas: (1) Vocabulary, (2) Word formation, (3) Grammar, and (4) Reading. The achieved score of students is at the level of average and above average. The students proved the lowest results in the tasks Grammar (72%). In other tasks, the students succeeded very well.

The output of tertiary education are students with the necessary attainments, that will be used in their further study and future career. The rapid changes in the working process and digitization of working activities require the professional profile of a university graduate to reflect the new needed competences, including language skills and communicative competences. Reading professional literature in English ranks among the professional abilities of a graduate and it is also a significant tool in the development of the reader's competence in a foreign language.

## ACKNOWLEDGEMENTS

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