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LEARNING SEMI TECHNICAL VOCABULARY IN ENGLISH FOR POLICE PURPOSES: A CASE STUDY

DRAGOSLAVA MIĆOVIĆ

University of Criminal Investigation and Police Studies, Belgrade, Serbia LIDIJA BEKO

Faculty of Mining and Geology, University of Belgrade

NAILE MALA MAMI

Faculty of Philology, University of Belgrade

Abstract: This paper will present the results of a case study carried out with the students of Forensic Engineering at the University of Criminal Investigation and Police Studies in Belgrade for two consecutive academic years. The goal of the study was to determine if and to what extent the receptive vocabulary size acquired during previous education will influence the acquision of semi-technical vocabulary covered by two one-semester English courses. The data have been gathered using both a questionnare and relevant tests. The statistical processing of data has enabled better interpretation of the results obtained.

Key words: case study, English for Specific purposes, semi-technical vocabulary, vocabulary size (test)

1. Introduction

As words make an integral part of any language, it is quite clear that without knowing words we would not be able to express anything, or to understand either a written or oral message. The size of our vocabulary knowledge, both in our mother's tongue and a foreign language, allows to express our thoughts precisely or to understand and interpret what we have read correctly.

Vocabulary teaching and learning have been in focus of many a research, particularly in the recent decades. Not all researchers agree on whether the English for Specific Purposes is or is not different from other forms of language teaching/learning. For instance, Hutchinson and Waters (1987:18) argue that "ESP is not different in kind from any other form of language teaching, in that it should be based in the first instance on principles of effective and efficient learning". On the other hand, Rahman (2015:24, 30), for example, states that "English for Specific Purposes (ESP) is not General English (GE) teaching and learning, but it is specialized English, and the teaching environment, methods and contents used in ESP are not the same as in General English". However, they all agree when it comes to the importance of vocabulary in foreign language teaching/learning, and especially in ESP (Coxhead 2013, 2018).

According to Thornbury (2002: vi), a revival of interest in vocabulary teaching in recent years is partly due to the recent availability of computerised databases of words (or *corpora*), and partly due to the development of new approaches to language teaching which are more 'word-centred', such as the 'lexical approach'. The role of vocabulary in language teaching/learning is highlighted also because, as Thornbury (2002: 1) argues, "the coining of new words never stops. Nor does the acquisition of words. Even in our first language we are continually learning new words, and learning new meanings for old words".

Vocabulary learning is also important because it enables successful communication to learners. The importance of vocabulary learning is also summed up by the linguist David Wilkins, who said that 'without grammar very little can be conveyed, without vocabulary *nothing* can be conveyed' (cited in: Thornbury 2008: 13).

Regardless of a huge number of researches focusing on vocabulary teaching/learning, there is just a few focusing on semi-technical vocabulary, such as Baker (1988), Lam Kam-Mei (2001), Greavu (2005), Menon and Mukundan (2010), Nagano (2010), Alireza Mohammadzadeh et al. (2012), or Coxhead (2018) to name some of them. This is one of the reasons why we have decided to do this research and try to find out to what extent semi-technical vocabulary is learnt as a part of General English courses and if and how much explicit ESP course vocabulary teaching influences the knowledge of semi-technical vocabulary.

2. What is semi-technical vocabulary?

Given that there are a limited number of studies of semi-technical vocabulary, let us first try to establish what the term semi-technical vocabulary actually refers to. There are several classifications which mention this category of words.

Discussing the design of EFL reading materials, Cowan (1974:391) focused on the question what kind of vocabulary ought to be taught. He was of the opinion that technical words such as *duodenum*, *aorta*, *sickle-cell anemia*, *myocardium*, *cellulose*, *molecule*, *carbo- hydrate*, etc. could be excluded, as their meaning will be learnt as an automatic consequence of studying the discipline which uses them. He was of the opinion that focus should be on sub-technical vocabulary. Cowan (ibid.) defines sub-technical vocabulary as context independent words which occur with high frequency across disciplines. Examples would be items like *function*, *inference*, *isolate*, *relation*, *basis*, *presuppose*, *simulate*, *approximately*, etc. noting that some of what he was calling sub-technical vocabulary would be encompassed in the existing word frequency counts like Thorndike Lorge, Michael West's General Service List and the recent one million word computer analysis by Henry Kucera and Nelson Francis (ibid.).

Trimble (1985) is of the opinion that non-native learners do not usually have a problem with highly technical vocabulary as it is taught explicitly by content or core subject teachers. However, learners would face difficulty in comprehending semi-technical vocabulary as these words tend to take on extended meanings in technical contexts. Trimble shows the different meanings the word 'fast' (1985:130) assumes in two different scientific fields. In the medical field, 'fast' means 'resistant to' while in the mining field it means 'a hard stratum under poorly consolidated ground'. Due to this nature of acquiring extended meanings, Trimble (ibid.) feels that semi-technical vocabulary has to be given more focus especially for second language learners (non-native) learning science in English.

Baker (1988) is yet another author who draws attention to the classification of vocabulary. She states that many ESP teachers and applied linguists pointed out that the division of vocabulary in technical register into specialised and general items was both simplistic and inadequate for the purposes of EFL learning, and that the real difficulty with understanding scientific/technical text for learners or foreign specialists lied in the area of vocabulary generally referred to as "sub-technical". She further indicates that the term "sub-technical" covers a whole range of items which are neither highly technical and specific to a certain field of knowledge nor obviously general in the sense of being everyday words which are not used in a distinctive way in specialised texts (Baker 1988:91).

Nation (2001) divides the vocabulary into four levels: high frequency words; academic vocabulary (this vocabulary is also called semi-technical, non-technical or sub-technical by various authors); technical vocabulary; and low frequency words. High frequency words include the most frequent 2,000 words of English and these words typically cover around 80% of the running words of academic texts and newspapers, and around 90% of conversation and novels. In addition to them, there is academic vocabulary (Martin 1976), sub-technical vocabulary (Cowan 1974) or semi-technical vocabulary (Farrell 1990). The characteristic feature of this vocabulary is that it is common to a wide range of academic fields but is not what is known as

high frequency vocabulary and is not technical in that it is not typically associated with just one field. It is however more closely related to high frequency vocabulary than to technical vocabulary (Chung and Nation 2003:104). There has also been a lot of discussion and some research on academic vocabulary (Nation and Coxhead 2001). When it comes to technical vocabulary, it is largely of interest and use to people working in specialised fields (Chung and Nation 2003:104). It was thought that technical words covered about 5% of the running words in specialised texts, and that it was made up of words that occurred frequently in a specialised text or subject area but did not occur or were of very low frequency in other fields (Nation 2001: 18-19). The fourth level of vocabulary consists of all the remaining words of English, the low frequency words. There are thousands of these words (Goulden, Nation and Read 1990) and they typically cover around 5% of the running words in texts (Chung and Nation 2003:104).

There is a well-known distinction and a three-tier model made by Beck, McKeown and Kucan (2013:9-10), in which there is basic vocabulary (or Tier One), then high frequency/utility words that are cross-curricular (Tier Two), and finally low frequency, domain-/area-specific lexis (Tier Three).

Coxhead (2018:1) uses the term specialised vocabulary for what is known as Tier Two and Tier Three according to Beck, McKeown and Kucan.

So, what is the problem with semi-technical words? Both teachers and students assume that they know these words, the former thus rarely teaching them explicitly and the latter almost never asking for the explanation of such a word in a given context, since the word seems familiar. Also, these words are mainly abstract which makes them even more difficult to learn.

No matter what term we choose to call them, these words are obviously worth further research, particularly within ESP context.

3. Present research

Our research is actually a case study. According to the definition, a case study is a type of research design and analysis, which Gall, Gall, and Borg (2003:433) characterize as the "most widely used approach to qualitative research in education". The most comprehensive description is given by Duff (2012), according to whom case study is a very common approach to research in applied linguistics, which is often qualitative and interpretive, and generally involves a deep, inductive analysis of data from a small set of participants, sites or events in order to understand aspects of language learning or use.

Therefore, "the individual case is usually selected for study on the basis of specific psychological, biological, sociocultural, institutional, or linguistic attributes, representing a particular age group, a combination of first and second languages, an ability level (e.g., basic or advanced), a skill area such as writing, a linguistic domain such as morphology and syntax, or a mode or medium of learning such as an online computer-mediated environment" (Duff 2008:32).

The cases may confirm, disconfirm, complicate, illustrate, describe, explain, or extend existing knowledge in a variety of ways, and one common feature regardless of the type or purpose of a case study is that they provide concrete instances of a phenomenon of interest (Duff 2012).

3.1 The aim of the research

The aim of the present research has been to determine if there is, and which is the relationship between the number of years of learning English language and the vocabulary size in general, and if there are differences regarding the previous education (type of secondary school). We also wanted to find out if it is the vocabulary size or the explicit teaching combined with the relevant vocabulary exercises that influence learning of semi-technical vocabulary.

3.2 Sample

The research was conducted at the University of Criminal Investigation and Police Studies in Belgrade with the students of the I year of undergraduate studies of Forensic Engineering, who volunteered to participate in the research. It lasted for two consecutive academic years, from October 2018 to June 2019, and from October 2019 to June 2020. In both cases the students attended the courses English Language 1 and English Language 2, which are held during the winter and summer semesters respectively (of the same academic year). The total number of students was 22, 12 during 2018/2019 academic year and 10 during 2019/2020 school year, 2 males and 20 females. The studies of Forensic Engineering were chosen because it is the curriculum where the two English Language courses are attended by the same group of students during one year, which is not the case with other curricula at the University.

3.3 Questionnaire and tests used in the study

The collection of the data for this study was carried out in three stages and includes three elements. The first stage was to gather the basic details on the respondents with a questionnaire. It consisted of open-ended questions and included the question what type of school they completed before enrolling at the University (grammar school or vocational secondary school), how long they had been learning English, if they had heard of the term "semi-technical vocabulary", and if yes, if they knew what it meant (they were not required to give a definition, simply to explain in their own words what they thought it was).

These data are presented in Table 1 below.

Table 1. The general data on the respondents

Respondent	Number	Type of	Familiar with the term
no.	of years	secondary	"semi-technical
	of	school	vocabulary"
	learning		-
	English		
1	13	Grammar school	no
2	12	Grammar school	no
3	12	Grammar school	no
4	12	Grammar school	no
5	12	Grammar school	no
6	12	Music school	no
7	12	Medical school	no
8	12	Chemical school	no
9	9	Chemical school	no
10	9	Medical school	no
11	4	Medical school	no
12	12	Vocational	no
		school	
13	12	Vocational	Thinks that this is non-
		school	technical vocabulary
14	12	Medical school	Thinks that semi-
			technical vocabulary
			includes other terms in
			addition to technical.
15	12	Grammar school	Yes. Thinks that these
			are the words used in
			everyday

			communication.
16	10	Grammar school	no
17	12	Medical school	no
18	12	Grammar school	no
19	12	Grammar school	Yes. Thinks that these are the words which are used by certain professions, but can also be used by other professions as well.
20	12	Medical school	no
21	13	Grammar school	Haven't heard of the term but thinks that these are the words used in both a certain profession and in everyday language.
22	12	Grammar school	no

As it can be seen from Table 1, all the respondents did learn English during their previous education, the period ranging from four to thirteen years. Ten female students and one student attended some vocational secondary school (mostly medical, chemical, school for dental technicians or some other school with the focus on natural sciences), and ten female students and one male students attended the grammar school. As for the familiarity with the term "semi-technical vocabulary", 17 students have not heard of the term, and five said they had. Out of 5 explanations offered for the term "semi-technical vocabulary", two were actually quite close to the definition (answers by respondents 19 and 21).

The second stage included testing of vocabulary size and the initial semi-technical vocabulary test. The vocabulary size was tested using Paul Nation's Vocabulary Size Test, which is designed to measure both first language and second language learners' written receptive vocabulary size in English (Nation 2012). The test measures knowledge of written word form, the form-meaning connection, and to a smaller degree concept knowledge. The test measures largely decontextualised knowledge of the word although the tested word appears in a single non-defining context in the test (Nation & Beglar 2007; Nation 2012). This test is available in several versions, and we used the 14,000-word multiple-choice monolingual version.

The items in the test have been selected to represent the various frequency levels of the language without a bias towards any particular frequency level. The frequency levels are based on word families occurring in the British National Corpus according to Bauer and Nation's (1993) levels up to Level 6.

The time required for the 140-item test is 40 minutes. The score is calculated by multiplying a learner's total score by 100 to find the learner's total vocabulary size. Therefore, a score of 35 out of 140 means that the learner's vocabulary size is 3,500 word families (Nation & Beglar 2007; Nation 2012).

The initial semi-technical vocabulary test included 10 items given in sentences illustrating both their general meaning and one or two of the semi-techical meanings. The respondents were asked to give a precise translation of just the term given in italics. Here is an example of one item in the test:

power

- 1. After eight years in *power*, the government can no longer use the previous government's policy as an alibi for its own failure.
 - Posle osam godina na ______, vlada više ne može da koristi politiku prethodne vlasti kao alibi za sopstveni neuspeh.
- 2. Scientists are working to harness the *power* of the atom.
 - Naučnici rade na tome da upravljaju atoma
- 3. You were acting beyond your *powers* when you agreed to give her a pay rise.
 - Postupao si izvan svojih kada si dao saglasnost da joj se poveća plata.

The examples were taken from online Cambridge Dictionary, as well as the explanations we use in the following text. As it can be seen, in the first example the word *power* refers to "the amount of political control a person or group has in a country". In the second example, the word *power* is equivalent to "strength", and in the third example the word *power* refers to "an official or legal right to do something". It has to be said that the word power as used in the above examples has three different translations into Serbian.

The questionnaire and these two tests are given to the students at the beginning of the winter semester, when they start their English Language 1 course.

The aim of the first two stages was to test the knowledge of general vocabulary with Paul Nation's Vocabulary Size Test and the knowledge of semi-technical vocabulary at the beginning of the course, and to establish if there was any significant correlation between the word families a student knows and the result on the semi-technical vocabulary test. Then, the two semesters followed, or two courses of English Language 1 and English Language 2, in the course of which the students covered the lessons which included both technical (police-related or forensics-related) and semi-technical vocabulary and were gradually and explicitly taught them.

The third stage of the study included the final semi-technical vocabulary test and was carried out at the end of the summer semester when the students completed their English Language 2 course. The aim of this stage of the study was to establish if there were any improvements in their knowledge of semi-technical vocabulary after completing both English Language courses. To find that out, the final semi-technical vocabulary test included ten sentences selected from the lessons covered during the two courses, and only in their semi-technical meaning relevant for police and forensic profession.

3.4 Results and discussion

Table 2. The data gathered for analysis

(1) (1) sars ars (2)		size test		emi-technical test (out of	of correct	Final Semi-technical vocabulary test (out of 10) (6)		of correct
Respondent no.	Number of learning Eng	Vocabulary results (3)	Correct answers (4a)	Incorrect answers (4b)	Percentage answers (5)	Correct answers (6a)	Incorrect answers (6b)	Percentage answers (7)
1	13	8600	19	5	79,16	6	4	60
2	12	7900	18	6	75	4	6	40
3	12	7200	19	5	79,16	9	1	90
4	12	6600	16	8	66,66	5	5	50
5	12	6100	14	10	58,33	6	4	60

6	12	7300	11	13	45,83	6	4	60
7	12	6500	19	5	79,16	5	5	50
8	12	6100	21	3	87,5	8	2	80
9	9	5500	18	6	75	6	4	60
10	9	5100	18	6	75	6	4	60
11	4	2900	14	10	58,33	6	4	60
12	12	2000	13	11	54,16	5	5	50
13	12	3200	14	10	58,33	4	6	40
14	12	3300	14	10	58,33	4	6	40
15	12	4200	14	10	58,33	2	8	20
16	10	5200	17	7	70,83	6	4	60
17	12	5500	17	7	70,83	4	6	40
18	12	6100	14	10	58,33	7	3	70
19	12	6100	18	6	75	7	3	70
20	12	7400	19	5	79,16	7	3	70
21	13	8700	18	6	75	6	4	60
22	12	10100	21	3	87,5	7	3	70

As it can be seen from Table 2, the results of the initial vocabulary size test have shown that the number of word families acquired by our respondents ranges from 2,000 to 10,100. This suggests that the students vary considerably in their respective knowledge, although the number of years of learning English language is almost the same.

The results of the initial semi-technical vocabulary test range from 11 to 21 correct answers (out of 24 examples for 10 words), or 45.83% to 87.5%.

The results of the final semi-technical vocabulary test range from 2 to 9 correct answers, or 20% to 90%.

These results were used to analyse if there is a correlation between the number of years of learning and the results of the Vocabulary Size Test (columns 2 and 3); if there is a correlation between the results of Vocabulary Size Test and the results of the Initial Semi-Technical Vocabulary Test (columns 3 and 4a), and finally, if there is a correlation between the results of the Initial and Final Semi-Technical Vocabulary Test (columns 4a and 6a). The results were processed using R, a free software environment for statistical computing and graphics, version 3.6.1, and they are shown in Figure 1.

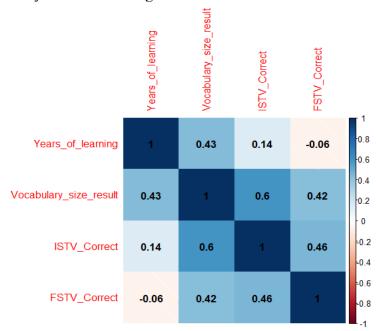


Figure 1. The results of statistical analysis

As it can be seen from Figure 1, the analysis has shown the following:

- 1. The correlation between the years of learning English language and the results of the Vocabulary Size Test, expressed by coefficient r=0.43, is moderatly positive.
- 2. The correlation between the results of the Vocabulary Size Test and the Initial Semi-Technical Vocabulary Test, expressed by coefficient r=0.6, is bordering between moderatly and significantly positive (because the coefficient 0.3 < r < 0.6 suggests moderatly positive correlation, and 0.6 < r < 0.8 suggests significantly positive correlation
- 3. The correlation between the results of the Initial Semi-Technical Vocabulary Test and the Final Semi-Technical Vocabulary Test, expressed by coefficient r = 0.46, is moderately positive.

Figure 1 also shows that the correlation between the Vocabulary Size Test and the Final Semi-Technical Vocabulary Test is r=0.42, also moderately positive. We can also say that there is higher correlation between the results of the Vocabulary Size Test and the Initial Semi-Technical Vocabulary Test and the Final Semi-Technical Vocabulary Test. One of the resons for such a correlation between the Initial and Final Semi-Technical Vocabulary Test may be in a fact that during the summer semester of 2019/2020 the classes went online from mid-March to the end of May. No matter how hard we try, online classes are just not the same as face-to-face classes. The other reason may be found in the claim of some researchers (which we concur with) that semi-technical vocabulary is often neglected by both teachers and students and that it may actually be the part of vocabulary that is the hardest to learn.

4. Conclusion

The aim of our research was to explore the extent to which semi-technical vocabulary is learnt as a part of General English courses, or General English vocabulary for that matter, as well as to establish if and how much explicit vocabulary teaching combined with relevant vocabulary exercises during an ESP course (here this is actually English for Police and Forensic Purposes) influences the knowledge of semi-technical vocabulary. Therefore, we have conducted a case study which differs in that we have made an attempt to cover a part of vocabulary which is often neglected by students and teachers alike, and yet the part of vocabulary which together with technical vocabulary is more than often a great obstacle to good understanding of technical texts. As Alireza Mohammadzadeh et al. (2012: 10717) notice "the common misconception prevalent amongst ESP students is that in order for one to master a particular specialized language she should, primarily and necessarily, focus on technical vocabulary". According to Hutchinson & Waters (1987) this is a myth and reflects a contrast between *objective* and *subjective* needs. By emphasizing the role of semi-technical vocabulary we can, to some extent, dispel this myth (Alireza Mohammadzadeh et al. 2012: 10717).

The results we have obtained suggest that the most significant correlation is between the vocabulary size and the knowledge of semi-technical vocabulary, which means that the number of word families a student has learnt influences the knowledge of semi-technical vocabulary. On the other hand, the results have shown that the correlation between the semi-technical vocabulary knowledge at the initial test and the knowledge at the final test, following gradual and explicit semi-technical vocabulary teaching is only moderately positive. Although we have anticipated this correlation to be higher, it only confirms that this part of vocabulary represents a particular challenge for both teaching and learning.

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About the authors

Dragoslava Mićović, PhD, is an associate professor at the University of Criminal Investigation and Police Studies in Belgrade, Serbia. She has been teaching English for Police Purposes for more than 20 years, and she has been a translator and sworn-to-court interpreter for more than 30 years. Her research interests include EFL/ESP methodology, sociolinguistics and translation.

Lidija Beko, PhD, is an associate professor of English at the Faculty of Mining and Geology, University of Belgrade. Her main research interests are CLIL teaching, autonomy in language learning, culture and intercultural approaches to foreign language teaching and learning, and language technologies. At the moment she works on CLIL pilot courses.

Naile Mala Imami, PhD, is an associate professor of the Faculty of Philology of the Belgrade University, Department for Albanian Language and Literature. She has published a number of academic papers and the university textbook "Modern Albanian Language Grammar: Phonetics and Morphology". She is a member of the Serbian Association of Scientific and Technical Interpreters and court interpreter for Albanian language.