

Foreign Languages Vocabulary Acquisition: A continuum of Knowledge

Silvana KOSANOVIĆ

University of Split

Petra BAKARIĆ GRGIČEVIĆ

University of Split

Abstract

This paper aims to analyse formal vocabulary teaching strategies employed in the EFL classroom context as well as process of students' reception and production of vocabulary. The underlying intention is to measure the success rate of students' retrieval of lexical items through three types of testing, having previously conducted and carried out a series of vocabulary teaching strategies including contextualization of lexical knowledge. Theoretical contributions adopted for practical employment in this study mainly include Nation's (2001) idea of four strands of vocabulary teaching, as well as Schmitt's (2008) forms of intentional and incidental teaching. The study was carried in intermediate Business English courses among students of three different study programs. In trying to better understand the process of acquiring lexis, linguistic, psycholinguistic and semantic theoretical explanations are examined in the first section of the paper, followed by the study itself. Results of the study confirm that the most beneficial approach to long-term vocabulary retention needs to include an explicit approach which focuses directly on establishing the form-meaning link followed by the frequent exposure approach and recurrent incidental learning. Finally, the efficiency of this approach should be reinforced by an increased amount of engagement students should have with vocabulary acquisition.

Keywords

foreign language vocabulary acquisition, teaching strategies, retrieval, vocabulary production.

1. Introduction

Teaching and learning vocabulary is an important part in foreign language development and acquisition, and being able to process, acquire and productively use lexis is a crucial component in achieving proficiency in proper proportion to other aspects of learning a language. The course of vocabulary acquisition is a broad one encompassing many different factors ranging from student's individual differences and cognitive capacity, learning strategies and self-involvement, his/her previous knowledge, psychological, societal and background factors. From teacher's perspective a vocabulary needs analysis indicating the type of vocabulary knowledge students should acquire and consequently influencing the choice of

textbooks and tailoring the course itself, together with teaching strategies effectively used in practice by language instructors, are the main elements in vocabulary development. Precisely because of this plethora of factors that take place in the acquisition process there is still no generally accepted theory of foreign language acquisition (Pavičić Takač, 2008: 4) despite the abundance of research on vocabulary acquisition conducted by linguists, psychologists, and L2 acquisition theoreticians. Nonetheless, it is generally agreed that the process requires an extensive coverage of vocabulary which encompasses diverse contexts and a mix of activities.

In this paper we concentrate on a range of formal teaching strategies employed in classroom context aiming at students' successful retrieval of the concerned vocabulary. The strategies used mainly follow Nation's (2001) idea of four strands of vocabulary teaching, as well as Schmitt's (2008) forms of intentional and incidental teaching. Since the methods used in vocabulary teaching will largely depend on the content, we have previously conducted a vocabulary needs analysis and decided on Business English programme as the type of specialised language that we assumed would be the most beneficial to our students irrespective of the type of their academic course of studies. We believe that a language course that reflects a world of business and covers wide variety of texts in general business context and business situations will help increase students' knowledge of business practice and skills once they enter the world of labour market, regardless of their academic discipline.

So, once we tailored the Business English course and designed its content, learning goals regarding vocabulary acquisition were set. A balanced portion of the course involved the use of explicit focus on vocabulary teaching modelled around acquiring essential business lexis, followed by implicit acquisition and assessment as the final stage of measurement of vocabulary attainment.

Given the fact that there are considerable linguistic differences between the first language (L1) (Croatian) and the second language (English, L2), and also due to the relatively low occurrence and use of the corpus of lexis in consideration we assumed that our students language acquisition was heavy. Therefore, bearing in mind Nation's notion of "learning burden" (Nation, 1990, 2001: 23) in our treatment of the lexis we adapted some strategies to fit the profile of our students and our learning goals.

We conducted the case study among the first year undergraduate students of Information Technology (IT) Mechanical Engineering (ME) and Business Trade (BT). The survey focused on the short-term achievement test of the content-carrier vocabulary as to obtain new information and insights into the amount of vocabulary acquisition and to assess whether there were any statistically significant differences among the students of the three study programmes in their ability to successfully complete the gap-filling exercise, the translation into L1 and English definition exercises. We also observed particular problems that arose inside each group of students. The utilized methodology focused around descriptive statistics on vocabulary acquisition. The expected results of the study show similar results among the ME, and IT groups and a higher success in the BT group. In addition, the

results are supposed to be in accordance with Schmitt's (2008) theoretical findings which indicate that strengthening the form-meaning link, especially with students whose proficiency level is low, is necessary. The findings serve as practical guidance for corrections and reconsiderations in the use of the formal teaching strategies applied in the classroom and also for possible applications of new methods and approaches that will hopefully help our students become more proficient users of specialised vocabulary.

In the subsequent sections of the paper we will provide a brief theoretical framework and background on vocabulary, the role of lexis in learning foreign languages and explanations of vocabulary acquisition. An overview of the formal teaching strategies employed in our classrooms including an explanation and results of the case-study will follow. The final part of the paper will concentrate on discussion, and will offer some guidelines for future examinations in the field of vocabulary teaching.

2. Vocabulary acquisition and why is vocabulary important

In an effort to define the term "vocabulary" using an adequate and interdisciplinary approach attempts should be made at finding the appropriate definition of a 'word'. Its linguistic definitions are numerous and suggest the mere complexity of the problem. To name just a few, they range from an orthographic definition, (Carter, 1992:4), to a semantic elaboration (Carter, 1992) and a morphological explanation (Škiljan, 1994).

According to Carter a 'word' is "...any sequence of letters bounded by on either side by a space or punctuation mark" (Carter, 1992:4). Carter further provides the semantic definition explaining that a 'word' is the smallest meaningful unit of language. Furthermore, Škiljan (1994) claims that 'a 'word' could be defined as a combination of morphemes that comprise a firm unit suitable for the formation of higher level units.

Since none of the abovementioned definitions gives a satisfactory and reliable word definition either for their limitation to the written language, the semantics-based focus or overlapping of semantic and morphological categories, a neutral term lexeme or lexical item has been introduced, and will be exploited throughout this paper as well. It is an abstract unit that includes various orthographic, phonological, grammatical and semantic features of a 'word'. This term covers inflections, polysemy, as well as multi-word items with different degree of fixedness, such as compounds, phrasal verbs and idioms (Pavičić Takač, 2008:6). The latter two will prove to be the most difficult to acquire, partly because of being the least highlighted in the process of L2 acquisition, and partly due to its syntactical and semantic peculiarity.

Thus, due to the lack of a generally accepted definition of a word, many linguists and theorists of L2 acquisition agree on the following: vocabulary of any language is comprised of a wide range of lexical forms including/encompassing morphemes, both free and bound, their combinations, such as derivatives, compounds, idioms, binominals, trinominals, catchphrases, prefabricated routines or prefabs, greetings and proverbs. The listed formal categories are by no means

homogenous, strictly divided and isolated. On the contrary, their overlap is significant and inevitable, especially in terms of semantics. Consequently, the total of vocabulary items could be regarded as being placed on the boundaries between morphology, syntax and semantics.

On the other hand, psycholinguistics, for instance, defines knowledge of an L2 lexical item as a combination of both linguistic and psychological components. The latter include conceptual foundations that affect the lexical item and its positioning in our conceptual system, affective learner differences, the role of memory in vocabulary learning and acquisition and the ability of productive use, i.e. "efficient retrieval of the lexical items for active use" (Pavičić Takač, 2008:10). The cognitive theory of learning, as an integral theoretical framework of psycholinguistics, defines L2 acquisition as a complex cognitive skill, which, like other such skills, engages cognitive systems (such as perception, memory, and information processing) to overcome limitations in human mental capacity which may inhibit performance (Ellis, 2000:175). One of the key notions of the cognitive account of L2 acquisition is that of learning strategies that are essential for clarifying how the L2 knowledge system is developed and used in communication. While psycholinguists are specifically interested in vocabulary development and formal models of vocabulary acquisition and often disregard the L2 vocabulary literature, referring to it as being model-free, applied linguists mainly focus on descriptive aspects of vocabulary and do not exploit the existing psycholinguistics models of bilingual lexicon even when this bears significant pedagogical significance. Different research focuses used in the two fields have led to differing development rates of the two respected fields and widened an already big gap between them. It is extremely difficult to label all the factors influencing vocabulary acquisition, so only those factors bearing relevance to our case study and providing an insight into the scope of vocabulary acquisition will be emphasized here.

The first factor that has already been mentioned comprises the complexity of the linguistic features of lexical items. According to Laufer (1997), the factors that affect the learnability of lexical items include pronounceability (phonological features), orthography, length, morphology including both inflectional and derivational complexity that increase the vocabulary learning load, similarity of lexical forms (e.g. synonyms, homonyms), grammar, i.e. part of speech, and semantic features (e.g. abstractness, specificity, and register restriction, multiple meaning). A third of them is categorized as facilitating factors (e.g. familiar phonemes, morphological transparency), another third as difficulty-inducing factors (e.g. presence of foreign phonemes, idiomaticity); while the remaining third is considered to be factors with no clear effect (e.g. word length, part of speech).

This wide range of linguistic features should be considered in terms of vocabulary size and its depth. A variety of recent studies suggests that the percentage of lexical items in both written and spoken discourse acting as a prerequisite for learners to understand it is between 90-98% (Schmitt 2008:331), whereas Laufer (1989, in Schmitt, 2008) claims that around 95% coverage is sufficient. Schmitt calls attention to other findings, where (Hu & Nation, 2000)

indicate that the figure is closer to 98-99%, at least for written discourse. Also, Bonk (2000) found that learners who knew 80-89% achieved moderate comprehension results in spoken discourse, while those who knew more than 90% of the lexical items had quite good comprehension outcome. It should be emphasized that the coverage figures did not include all the lexical words, more specifically, the remaining high-frequency content words (e.g. house, wife etc.) or the function words. This leads to a higher overall calculation of the coverage figures for all the emerging running words, meaning that 80% of lexical target words would translate to about 90% of all the running words (Schmitt, 2008: 330). The bottom line is that learners must acquire an extremely large number of lexical items in order to be able to understand spoken and written discourse and become productive users of the two discourse types, respectively. Learners' engagement and willingness to be actively involved in vocabulary acquisition are expected to play a crucial role in achieving this goal, constantly aided and guided by teachers, researchers and materials writers' expertise and experience.

Besides the extent of vocabulary Schmitt (2008) points out that an additional type of knowledge is also required for an efficient L2 use. This knowledge is referred to as the quality, 'depth' of vocabulary knowledge or the incremental nature of vocabulary learning and is equally important as vocabulary size. Establishing the form-meaning link (learning the spoken/written form and meaning) of a lexeme, which is without doubt, the most important lexical aspect to be acquired, is by no means sufficient for the efficient use of the regarded lexical item. A learner needs to know a great deal about its additional meanings or connotations, concepts, associations, grammatical functions, constraints on its use (register, frequency etc.) in order to use it proficiently and show a native-like competence. He or she has to acquire memorised language patterns serving as a pattern on whose basis they could create new sentences. It could be stressed here that the above mentioned lexical aspect is to be presented and learned through intentional and formal learning based on an explicit approach and awareness learning, while other more contextualized aspects pertaining to collocations, idioms, and phrasal verbs are to be taught through massive and repeated exposure to L2, particularly through extensive reading. Pavičić Takač (2008) claims that incremental nature of vocabulary acquisition refers to its concept of being perceived as a continuum of knowledge, as opposed to 'all-or-nothing' proposition, at whose ends, according to some theoreticians, the receptive and productive knowledge is placed. Initial degree of knowledge, such as visual recognition, would be attributed to receptive knowledge, while the 'deeper' or productive knowledge would involve the knowledge of the above-mentioned more contextualized aspects of lexical knowledge. The latter can be tested through a variety of unaided and aided recall tasks.

The second factor would be the influence of first/native language and other languages. Since L2 vocabulary acquisition succeeds L1 vocabulary acquisition linked with the already developed conceptual and semantic systems, the former will inevitably, at least in initial stages, involve a mapping of the new lexical form onto an already existing conceptual meaning or transitional equivalent in L1. The

role of L1 may thus be facilitating or difficulty inducing, depending on the degree of equivalency between the languages. The latter is synonymous with Nation's idea of 'language burden'. This is particularly reflected through the consistently high usage of bilingual dictionaries (Schmitt, 1997) and translation into L1 while acquiring English language skills such as reading, writing, and particularly vocabulary words, idioms and phrases by L2 learners (Liao, 2006). Further studies show that L1 is still very active even in more advanced learners as opposed to its expected use merely by beginning learners. Given the cognitive restraints in L2 acquisition, its exploitation is of little disadvantage, as beginning learners are unlikely to absorb much contextualized knowledge. However, in more proficient learners it becomes less important and needed, as contextualized aspects of word knowledge are acquired and enhanced by meeting new lexical items in context. Therefore, it is suggested that the use of L1 could be appropriate in the early stages of L2 learning process, whereas in others L2 vocabulary acquisition process should resemble L1 acquisition with learners being exposed to large amounts of contextual target language input.

The role of memory, as the third factor shaping vocabulary acquisition, is crucial to any kind of learning and, consequently, to vocabulary learning, too. According to the cognitive theory of learning, it is guided by the same principles as other types of learning. Due to its incremental nature, language learning is not linear, and both long-term and short-term memory forgetting happens in a similar way as learners are prone to forgetting some aspects of knowledge immediately upon retrieval of information. There are several principles facilitating the transfer of the learning items into long-term mental storage and they "include multiple encounters with a lexical item, preferably at speed intervals, retrieval and use of lexical items, cognitive depth (cf. Schneider *et al.* 2002), affective depth, image, use of mnemonics and conscious attention that is necessary to remember a lexical item" (in Pavičić Takač, 2008:10). The aforementioned principles also emphasize the need for a planned and principled language teaching methodology, since enhancing long-term memory generates a practical pedagogical impact.

Next, the fourth factor comprises a host of variables defining areas in which individual differences exist. According to Ellis (1995), there are three sets of variables. The first one encompasses beliefs about language learning, affective states (e.g. presence or lack of self-confidence) and some general factors (language aptitude, motivation). The second set includes various strategies learners employ in L2 learning, whereas the third set involves language learning outcomes in terms of proficiency, achievement and rate of acquisition. The former will be expanded on in the fourth section of our paper.

Finally, the fifth factor encompasses the role of the teacher and vocabulary teaching strategies. In the framework of formal instruction and its outcome we should first point out that the latter has always been influenced by trends in linguistics and psycholinguistics, and quite often constrained by the course content and other aforementioned factors. The naturalistic approach to language teaching favouring implicit incidental rather than intentional vocabulary learning, which was frequently practised in the past, has recently been challenged by more intensive,

explicit vocabulary teaching. The emphasis on guessing the meaning from context and using monolingual dictionaries has mostly proven to be ineffective for the struggling students, since inferencing from context requires a sufficient level of knowledge and inference skills. In such cases inferencing may result in incorrect guessing and implicit incidental learning may be conceived as a slow and inefficient process implying only a short-term retention. Subsequently the impact of explicit vocabulary teaching is disputable because learners do not learn everything that has been explicitly taught. Pavičić Takač confirms that “the contemporary approach to vocabulary teaching (sic) recognises the importance of both implicit and explicit teaching, taking into account the results of scientific research, with the aim to increase the efficiency of teaching and learning of target language vocabulary” (2008:19). The authors of this paper used strategic activities and task types that comprised implicit and explicit teaching of vocabulary, as described in the following sections.

3. Vocabulary teaching strategies

“Teaching strategies refer to everything teachers do or should do in order to help their learners learn” (Hatch and Brown, 2000: 401). These include the following procedures: presenting the meaning and form of a lexical item, stimulating learners to revise vocabulary through various tasks, as well as other procedures referring to vocabulary teaching, e.g. giving advice to learners on how to memorise lexical items, monitoring learners’ progress.

Choosing a particular teaching strategy depends on a variety of factors, in addition to the earlier discussed factors affecting general vocabulary acquisition process, such as the time available, the linguistic and communicative content to be acquired and the expected benefit of the teaching strategy in question for learners. There are several theoretical approaches to vocabulary teaching.

Nation (2001: 390) names the four strands of vocabulary teaching that encompass meaning-focused input, meaning-focused output, language-focused learning and fluency development. Meaning-focused output stresses the benefits of teaching vocabulary through reading and listening in meaningful contexts. This kind of teaching is based around the effectiveness of incidental learning from reading and listening, respectively, maximizing repeated exposure to target lexical items, inferencing from context and glossing. All of the aforementioned meaning-focused activities except glossing were used in our case study. The second strand, meaning-focused output, involving learners trying to communicate messages to other people was as well encouraged, guided and practiced within the framework of the study. The third strand, language-focused learning, also employed in our survey as the basic set of formal vocabulary teaching strategies, includes direct, explicit teaching and appropriate teacher focus on words, through intensive reading, direct learning and practicing. Our study proved that the abovementioned items are worth the effort of teaching and learning explicitly, because, as already stated, intentional or formal learning has proven to be more effective for struggling students than incidental learning, particularly in terms of productive mastery of vocabulary. The fourth strand, fluency development, focuses on students’ language

fluency which is to be achieved through reading easy graded readers, repeated reading, speed reading, rehearsal tasks, etc. Given the time constraints of our case study and the size and depth of our students' lexical knowledge, fluency development could not be considered and assessed to a considerable level.

Schmitt (2008) distinguishes between intentional and incidental learning of vocabulary and accordingly intentional and incidental teaching. Intentional learning is a meaning-and form-based learning where vocabulary items are explicitly taught. Explicit focus on vocabulary items, rather than relying on their presumably implicit acquisition, has been justified in various recently conducted studies by its effectiveness both in terms of the learners' receptive and especially productive knowledge. Intentional learning strategies should, according to Schmitt (2008), comprise activities that maximize learner engagement with target lexical items (e.g. using an interactive on-line database, or seeing words in a reading text and then retelling the passage using those words), activities involving repeated exposures to target lexical items (e.g. recycling and repeating target lexical items over time in a principled way) and considering which aspects of vocabulary knowledge to focus upon (e.g. refocusing teachers and material writers' attention on introducing both the meaning and form of new words) and the abovementioned four-strand approach to vocabulary teaching.

Coady, introduces strategic teaching as one of the four basic approaches to vocabulary teaching (in PavičićTakač, 2008: 76). In line with his findings, Nation also points out the teacher's role in modelling strategy for learners who should take control of their learning. (Nation, 2001: 222). The other strategies developed by Coady include learning from context (i.e. without explicit instruction), development plus explicit instruction (explicit teaching stressed at beginning levels and development towards contextualised learning) and teaching through practical classroom activities. Long-term retention of vocabulary requires strategic support learners should always be provided with. Only through constant instruction on vocabulary learning strategies will the learners be encouraged to make a systematic use of the already acquired vocabulary learning strategies inventory.

Finally, a review of literature (Hatch & Brown, 2000; Nation, 2001; Sokmen, 1997; Thornbury, 2002) has produced a list of teaching strategies that could be classified under two major categories: (1) presentation of meaning and form of new lexical items and (2) review and consolidation of presented lexical items. Regarding the scope and content of our paper, only the teaching strategies bearing relevance to our survey will be stressed here.

The following teaching strategies are considered as ways of presentation:

- *Preteaching.* This activity allows the teacher to introduce the vocabulary to be taught in depth in the subsequent activities. During this phase the aim is to familiarize learners with lexical items. There are no elaborate explanations.
- *Presentation through context.* Here the teacher is involved in creating a situation in which the lexical item is contextualized. The context can be

comprised of only one sentence, a few sentences and/or texts in which the lexical items appear.

- *Defining the meaning.* Definitions are provided by way of conceptual units comprising of grammar, orthography, inflected and variant forms such as synonyms, antonyms, etc. They can include word definitions taken from monolingual or bilingual dictionaries
- *Directly connecting the meanings to real objects or phenomena.* This includes the use of realia and visual aids, mostly accompanied by a verbal definition to enhance their effectiveness.
- *Connecting an L2 item with its equivalent in L1.* This teaching strategy is often used in comprehension checks or when it is necessary to clarify differences or similarities between L2 and L1, especially when working with low level proficiency students.
- *Active learners' involvement.* Learners are encouraged to classify the word's meaning among the word parts, to elicit the word's definition through personalisation or to provide synonym for the selected word.

The next several steps encompass the review and consolidation phase:

- *Repeated spaced encounters with the word.* Enrichment and depth of vocabulary knowledge at a productive level are obtained only through a cumulative and well-timed repetition of the word in various contexts. This includes further vocabulary practice such as replacing the word with its synonym or antonym, providing definitions, translation, cross-word puzzles etc.
- *Productive use of the lexical items.* This encompasses all speaking and writing activities that enable the learners to independently use words in new, meaningful contexts.
- *Assessment of efficacy of the teaching vocabulary.* Short and long-term tests are used over a time span to evaluate learner's vocabulary retention.

4. Research and methodology

4.1. Respondents' profile and the course material

The participants in this study were 85 first-year undergraduate students of Professional study of Information Technology (47), Mechanical Engineering (25) and Business Trade (13) at the Department of Professional Study, University of Split, Croatia. All the students are native speakers of Croatian and have had previous background knowledge of general English earned through an average of 10-12 years of study of English in elementary and high schools in the Republic of Croatia. All passed at least a basic level of general English at the state graduation exam as the enrolment criteria in university and professional study. Total of 21 female (25%) and 64 male students (75%) participated in the survey. A short-term achievement test was conducted in December of 2014 in English Business course classes.

The textbook used was *Intermediate Market Leader*, by David Cotton, David Falvey and Simon Kent, 3rd edition, published by Pearson Longman in 2010. The focus of our study was to test the short-term acquisition of carrier vocabulary covered in Unit 4 of the textbook, entitled *Advertising*. The textbook in general is grounded on a task-based approach, where developing vocabulary occurs through a series of reading, writing, listening and speaking tasks, by using incidental strategies (inductive and deductive inferencing from reading and listening), formal strategies involving learning words out of context, repetition, pronunciation and learning synonyms and sometimes antonyms, collocations, rote learning (translation) and extra practice through either written tasks or oral activities supporting practicing of the targeted vocabulary.

4.1.2. Instruments

A short-term achievement test

The first stage in duration of eight 45-minute sessions included teaching target vocabulary by using abovementioned teaching strategies. The students involved in the study were exposed to pre-teaching of content-carrier vocabulary, followed by reading of an adapted authentic excerpt from Financial Times on advertising. The four subsequent lessons in duration of an hour and a half included listening to marketing and advertising experts, watching pictures and short video clips of the related lexis. Another formal strategy involved written tasks: providing definitions in L2, learning collocations, translating, where necessary, into L1, matching the words, finding word pairs, completing gap-filling in context. The final stage involved productive conversing by using the words in new situations.

Having worked on the carrier lexis acquisition through a series of vocabulary teaching strategies, a short-term achievement test of key vocabulary was conducted. Authors of this paper were involved in the testing process during regular English language classes. Students were assessed by means of three forms of vocabulary testing. The first part of the test comprised of fifteen nouns and noun combinations to be completed in a sentence context, with the first letter of each noun and noun combination provided; the second involved providing Croatian translations of the five noun combinations and the third type of questions asked for the definitions of the nouns and noun combinations in English. The results were used to evaluate the level of vocabulary retention after a recent study of the words.

4.1.3. Methods

Data obtained was then collected and processed by using Analysis of variance (ANOVA) and post-hoc Tukey test in order to find out exactly in what groups and in what assignments do these differences occur. The descriptive statistics is expressed in the calculation of average, mean, median and standard deviation and followed by a comparative analysis of the data. The analysis included the comparison of the three vocabulary acquisition activities among the groups and success of the individual groups. One of the main aims of this survey was to compare the three groups of students in their ability to apply the specialized, low-frequency vocabulary previously covered in the unit.

5. Results

Below are the results obtained by means of a short-achievement test that included three types of vocabulary reinforcing: gap-filling, providing translations and offering English definitions of the given terms. Finally, overall results per each group of students are given.

5.1. Gap-filling exercise

In this exercise students were asked to fill in the missing nouns and noun combinations according to the given context. The first word was supplied and there were 15 gaps to fill in.

Table no 1. Gap-filling exercise

	Mechanical Engineering	Information Technology	Business Trade
No.	25	47	13
Average	36%	40%	76%
Standard deviation	22.39	24.12	20.82
Mean	35.84	40.02	76.07
Median	31	38	81

One-way Anova was used to test significant difference in the success of this exercise among the three groups of students.

ANOVA Summary

Source	SS	df	MS	F	p-value
bg	7602.6108	2	3801.31	12.55	<.0001**
wg	24832.3775	82	302.83		
Total	32434.9882	84			

bg = between groups; wg = within groups (error)

*p<0.05

**p<0.01

The null and alternative hypotheses are:

H0: there is no significant difference between three groups of students

H1: there is at least one group with mean significantly different than others

Tukey HSD test showed that the mean difference is significant at the <0.01 level among the group of students of Business Trade and the two groups (Mechanical Engineering and Information Technology).

5.2. Translations from English into Croatian

The second task included providing translations from L2 into L1 of eight lexical items, out of which some from the first exercise reappeared.

Table no 2. Translation equivalents

	Mechanical Engineering	Information Technology	Business Trade
No.	25	47	13
Average	36%	40%	76%
Standard deviation	22.39	24.12	20.82
Mean	35.84	40.02	76.07
Median	31	38	81

One-way Anova was used to test significant difference in the success of this exercise among the three groups of students.

ANOVA Summary

Source	SS	df	MS	F	p-value
bg	15776.7853	2	7888.39	14.69	<.0001**
wg	44027.2618	82	536.92		
Total	59804.0471	84			

bg = between groups; wg = within groups (error)

*p<0.05; **p<0.01

The null and alternative hypotheses are:

H0: there is no significant difference between three groups of students

H1: there is at least one group with mean significantly different than others

Tukey HSD test showed a statistically significant difference at the <0.1 level among the group of students of Business trade and the other two groups.

5.3. Providing definitions in English

The third exercise involved simple definitions in L2.

Table no. 3. Definitions in English

	Mechanical Engineering	Information Technology	Business Trade
No.	25	47	13
Average	37%	44%	42%
Standard deviation	22.08	29.76	24.44
Mean	37.2	44.25	41.53
Median	40	50	40

One-way Anova was used to test significant difference in the success of this exercise among the three groups of students.

ANOVA Summary

Source	SS	df	MS	F	p-value
bg	813.1272	2	406.56	0.56	0.573378
wg	59622.1669	82	727.1		
Total	60435.2941	84			

bg = between groups; wg = within groups (error)
 *p<0.05; **p<0.01

The test showed no significant difference among the three groups of students for this exercise.

5.4.Overall results per groups

All activities were tested per a specific group of students.

Table no.4.Mechanical Engineering

	Gap-filling	Translations into L1	English definitions
No.	25	25	25
Average	45%	36%	37%
Standard deviation	15.86	22.39	22.08
Mean	45.48	35.84	37.2
Median	47	31	40

ANOVA Summary

Source	SS	df	MS	F	p-value
bg	1361.1467	2	680.57	1.65	0.199228
wg	29787.6	72	413.72		
Total	31148.7467	74			

bg = between groups; wg = within groups (error)
 *p<0.05; **p<0.01

The test showed no significant difference among the three activities in this group.
 All the activities were solved below average.

Table no.5. Information Technology

	Gap-filling	Translations into L1	English definitions
No.	47	47	47
Average	45%	40%	44%
Standard deviation	16.92	24.12	29.76
Mean	44.70	40.02	44.25
Median	40	38	50

ANOVA Summary

Source	SS	df	MS	F	p-value
bg	627.2482	2	313.62	0.54	0.583975
wg	80699.7447	138	584.78		
Total	81326.9929	140			

bg = between groups; wg = within groups (error)
 *p<0.05; **p<0.01

The test showed no significant difference among the three activities in this group. All the activities were solved below average.

Table no. 6. Business Trade

	Gap-filling	Translations into L1	English definitions
No.	13	13	13
Average	71%	76%	42%
Standard deviation	21.6	20.0	24.4
Mean	71.2	75.1	41.5
Median	79	81	40

ANOVA Summary

Source	SS	df	MS	F	p-value
bg	9091.4359	2	4545.72	9.09	0.000637**
wg	17994.4615	36	499.85		
Total	27085.8974	38			

bg = between groups; wg = within groups (error)

*p<0.05; **p<0.01

The null and alternative hypotheses are:

H0: there is no significant difference between three groups of students

H1: there is at least one group with mean significantly different than others

The test showed significant difference between the Gap-filling exercise and English definitions at the <0.1 level, as well as a significant difference between Translations into Croatian and English definitions at the <0.1 level. There is no significant difference between the first two exercises.

6. Interpretation

The survey findings directus to several significant differencesreferring to the groups' performance figures in fulfilling each of tested tasks and distinctions among the groups' overall results.

As shown above, the gap-filling exercise was the most successfully completed task of the three tested exercise. The exercise was equally successfully completed by the Mechanical Engineering and Information Technology students, whereas the Business Trade students achieved significantly higher performance scores. Given the fact that the concerned activity tested the acquired level of productive knowledge, the achieved success of all the groups in fulfilling this task can be explained through the difference of the tested tasks in relation to the context. The gap-filling exercise tests context-based students' vocabulary acquisition, as opposed to the other two tasks assessing the acquired lexis out of context, which could be identified a difficulty inducing factor.

The tested task involving providing translation yielded a slightly worse overall result than the previous task, with the Information Technology students Mechanical Engineering students performing faintly better than Mechanical Engineering students and Business Trade students achieving again by far the best

results. The obtained result indicates the level of the productive retention of the acquired lexis out of context and can be elaborated by the fact that the students were involved in translation processes from L2 into L1, and thus making use of their native-speaker competence.

The third exercise was the least successfully completed of all the assessed assignments, with the Information Technology students achieving the best results, the Business Trade students performing slightly worse and the Mechanical Engineering students generating the lowest performance figures. The low success in completing this task can be ascribed to its being one of the most difficult activities of productive L2 uses. To be able to produce a meaningful and grammatically correct definition of a lexical item belongs to the already discussed Nation's theoretical notion: fluency development. A closer look at the success of the three activities in the BT group confirms that the productive retrieval and fluency attainment are the most difficult to achieve. BT's group significant difference in the third activity, providing English definition, as well as the other two groups' results go hand in hand with the theoretical explanations placing extensive language production at the very top of the language mastery.

Overall, students of Business Trade produced better results, especially in providing answers in the gap-filling exercise and Croatian translation. This result goes along the same vein as Ellis's findings mentioned in section two of the paper. The vocabulary tested pertains to business English, an area of studies more closely linked to the students' profession, generating a high level of positive affective attitude towards learning and, as a result, probably causing more motivation and engagement in successfully recalling the lexis.

When considering the overall results of the vocabulary acquisition in the three groups we encounter partial or receptive knowledge referring to orthography, grammar, syntax and absence of the accurate L1 translation and L2 equivalent. Efficient L2 acquisition requires, as Schmitt has repeatedly stressed out, the depth and quality of knowledge. Our results concord with Schmitt's findings that the beginners will hardly use contextualized knowledge. In order to attain proficiency levels more time and extra hours of formal, non-formal, explicit and incidental learning needs to take place. Learning vocabulary is a cumulative process which involves a long-term course of study, multiple encounters over spaced intervals in many different contexts and an active use inside and outside the classroom context. The results are also congruent with the employed teaching strategies as the activities enhancing receptive knowledge were more practiced in the classroom. With intermediate to proficient L2 students curriculum design and, consequently, teaching strategies should be modelled around mastering productive, more contextualized levels of knowledge, while, with beginners to pre-intermediate explicit teaching establishing form-meaning link is recommended.

The results of students of Mechanical Engineering and those of Information Technology are at lower levels of knowledge spectrum, similar and statistically not different. The concern here is their lack of motivation for learning the given lexis and not finding relevance in the taught vocabulary. The results might indicate a need for reconsideration of our students' needs, our perceived

goals and, lastly, but equally important, the teaching materials used. Following Nation's suggestion that "the choice of content can be a major factor stimulating interest" (Nation, 2001: 62), this results of this study may be an indicator in opting for a related content-based material, more appropriate to the students' course of studies. Another key element involves the already mentioned individual student differences towards learning L2, and also students' willingness to make deliberate attempts at learning lexical items (Pavičić Takač, 2008: 16), without which any further teachers' attempts might prove ineffective.

7. Conclusion

This study tested short-term vocabulary retention and proved that for most students the ability to acquire specialized vocabulary lies in the receptive spectrum of knowledge rather than the productive level. Partial knowledge of form and meaning indicates that the learning goals set for the short-term vocabulary retention were only partially met in some groups. The reasons for remaining at the visual recognition level and not acquiring deeper, more contextualized aspects of lexical knowledge were found mainly in the lack of teaching time for multiple encounters with the lexical items in different situations and contexts. Only after having gone through a much longer implicit and explicit teaching process, a more thorough analysis of a long-term vocabulary acquisition including a continuous assessment is needed to find out whether retrieval of vocabulary is efficient and whether it appears at a cognitively deeper level.

Even though it wasn't the primary goal of this study, it also revealed the importance of correlation between relevant instructional content and the degree of student engagement, as there seems to be higher motivation to study the lexis more closely tied to the students' field of study. Therefore, subsequent investigation should clarify the problems arising around new curriculum design, needs analysis, choice of instructional materials and its content.

The results also draw attention to two additional factors that need further investigation. First, we wrongly presumed that our students' level of high-frequency words was well known, and that the acquisition of a more specialized, lower frequency level of vocabulary was a logical continuation of their progress. The study outcomes point toward the necessity of including Nation's word lists in our future needs analyses before setting our teaching and learning goals. High and low-frequency words interlock but students must have "critical strategic knowledge" (Pavičić Takač, 2008:17) before venturing into the 5-9% of the running words in a text (Nation, 2001: 12).

Another drawback of this type of approach to vocabulary learning and testing is the washback effect. Instead of focusing on increasing useable vocabulary data base teachers tailor vocabulary teaching strategies towards students' better performance during assessment and students respectively focus on passing the tests, as the key element to rising up in the academic studies. Unfortunately, the stress is not on proficiency in the real-world context but on the level of proficiency required to meet the rating scale on the tests; a common disadvantage of formal, classroom-based instruction.

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