
The Role of Lexical Chunks in Learning ESP Terms among Iranian Computer Engineering Students

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Abstract: The present study was carried out to investigate the effects of lexical chunks on improving Iranian computer engineering students' ESP terms. To reach this objective, firstly 60 homogeneous computer engineering students from Azad University of Ramhormoz were chosen for the target participants. They were divided into two equal groups of 30 members: experimental and control groups. Then the researcher employed a researcher-made pretest for tapping their present status of ESP terms. After the pretest, the researchers started to teach the experimental group by using lexical chunks during 10 sessions. The control group received no treatment. At the end, the researcher administered the posttest. After collecting the data, they were analyzed by using Independent and Paired Samples T-tests. The results revealed that experimental group outperformed the control group in the post-test. It was proved that lexical chunks teaching helped the computer students to learn ESP terms more efficiently.

Key words: lexical approach, lexical chunks, ESP terms.

1. Introduction

Vocabulary knowledge is considered the key ingredient in successful language learning. There is a direct link between vocabulary learning and techniques used by teachers. It is incumbent upon the teachers to employ useful techniques to solve the big problem of vocabulary shortage. Vocabulary of a language is considered to be the bricks of its building. These bricks are vital components of its meaningful structure. According to lexical approach the primary focus is helping students acquire vocabulary (Lewis, 2000).

As mentioned above, vocabulary of a language is just like bricks of a high building. Despite quite small pieces, they are vital to the great structure. Vocabulary is a very important means to express our thoughts and feeling, either in spoken or written form. Indeed, neither literature nor language exists without vocabulary. Words are the bricks with which the poetry and the literature of the world have been built. It is mainly through using words that we compose and express our thoughts

to others. We can tackle our own task through words. It shows words are powerful tools. Words are considered the most powerful drug used by mankind. Those who are rich in vocabulary can speak and write English correctly. English being a second language or foreign language, one needs to learn vocabulary in the systematic way. Without grammar very little can be conveyed, but without vocabulary nothing can be conveyed (as cited in Lewis, 2000). Therefore, the study of vocabulary is at the center while learning a new language. English being a second language or foreign language, one needs to learn vocabulary in the systematic way. This movement away from a grammar-based syllabus largely began in 1993 with the publication of "The Lexical Approach" (LA) by Lewis (1997). Lexical approach is a good way which has encouraged language learners to pay attention to larger units of the language and concentrate on naturally occurring expressions rather than rule-governed sentences.

As Lewis (1997) comments, a lexical approach needs a much more principled system of introducing and searching lexis. In fact, lexical approach suggests a basically divergent attitude to the treatment of text. The basic pedagogical principle of the LA is the dichotomy between vocabulary and grammar which is invalid. The lexical approach proposes that more time must be devoted to multi-words items and to conscious-raising receptive activities and useful or sufficient recording of new language. LA suggests that first; most of the attention should be paid on lexis or vocabulary and larger chunks of language. Second, activities must be integrated the teaching of lexis, grammar and pronunciation. Lewis states that what is implicit in the LA is significant reordering of the learning program and change to the content of grammar teaching. LA was called an approach not a method. In English language teaching, methods are systems for structuring lessons while approaches are concerned with the general focus of instruction. Teachers should be aware of this as there is some reluctance to adopt a more lexical approach. In reality, teachers can use their own methodology with a lexical approach from grammar translation to task-based learning. The changes are just on the linguistic features of lessons.

Based on this view, the linguistic focus of lexical approach is on the structural nature of language. Structures made up of words, meaning that the actual individual words to clusters of words, or lexical chunks. This new idea about the structural nature of the language does not exclude grammatical structures but instead suggests that the language has far more structures than those that occur in the grammatical syllabus. The main focus of Lexical Approach is on teaching vocabulary and actually without learning vocabulary learning a new language is impossible. So, this study wants to investigate the effects of vocabulary chunks as a technique of Lexical Approach on improving ESP terms among Iranian engineering computer students. The lexical approach to second language teaching has received interest in recent years as an alternative to grammar based approaches. The lexical approach concentrates on developing learners' proficiency with lexis, or words and word combinations. It is based on the idea that an important part of language acquisition is the ability to comprehend and produce lexical phrases as unanalyzed wholes, or "chunks," and that these chunks become the raw data by which learners perceive patterns of language traditionally thought of as grammar (Lewis, 1993, p. 95).

Although, learning new vocabularies depends on the ability of the students (Hunt & Beglar, 2005; Lyn, 2002), many teachers don't pay attention to the approach and method which they use in the classrooms. Teachers are considered as the most crucial factor in implementing all instructional purposes and students' achievement is tied into the teachers' capability and his teaching strategies. Teachers, therefore, need to be aware that their approaches have a paramount role in improving students' learning. Since determining the relationship between teachers' approaches and students' learning is imperative to any educational system and on other hand, there has been little research with regard to the link between teachers' approaches and learners' vocabulary learning; the researcher conducted this study in this area and he hoped that the findings of such a study significantly contribute to inform teachers to know that the approaches which they apply in the classrooms can impact the achievement of the students at learning vocabulary.

This study is significant since in the lexical approach, instruction focuses on fixed expressions that occur frequently in dialogues, which Lewis claims make up a larger part of discourse than unique phrases and sentences. Vocabulary is prized over grammar per se in this approach. The teaching of chunks and set phrases has become common in English as a second or foreign language, though this is not necessarily primarily due to the Lexical approach. This approach provides opportu-

nities to experience lexical chunks in authentic texts encouraging students to analyze, generalize research and experiment with lexical chunks providing students with opportunities to discover chunks for themselves. The present study was an attempt to enrich vocabulary knowledge of the students at the university level. The main objective of the study was to investigate the effects of lexical chunks on improving Iranian computer engineering students' ESP terms. This study attempted to answer the following question:

RQ. Do lexical chunks improve Iranian computer engineering students' ESP terms?

Based on the above question, the following null hypothesis was formed:

H0. Lexical chunks do not improve Iranian computer engineering students' ESP terms.

2. Review of the Related Literature

2.1 The History of Vocabulary Teaching

Grammar Translation method applied to teach classical languages to the teaching of modern languages, dominated foreign language teaching from 1840 to 1940. The main goal of this approach is that language learners to be able learn the grammatical rules and vocabulary of the target language using bilingual word lists. Chastain (1988) comments that this approach had selected the principles of faculty psychology as the foundation for their learning theory. Advocates of this approach believed that memorizing vocabulary items, grammatical rules, and translation could provide useful mental exercise for language learners, so their intellectual growth could enhance. A typical exercise and a familiar part of the lesson in this approach is vocabulary list which must be translated into their mother tongue by using dictionaries. In another exercise, learners must find antonyms or synonyms of the list of vocabulary which are given to them. The main shortcoming or objection to this approach was that it suffers from realistic oral language and learners unable to use that language for communication, so objections and oppositions towards this approach lead to the development of new ways of language teaching (Richards & Rodgers, 2003). By the end of the nineteenth century and during the first quarter of the twenty century, two distinct methods namely Direct Method and Audio-lingual Method gradually emerged as a reaction to the Grammar Translation method and its shortcomings to provide remedy for learners who were unable to produce or communicate in the foreign language which they were studying. The main goal of the Direct Method was to teach or train students to communicate in the target language. This method was based on inductive rather than deductive learning. Language learners learn a new language through direct association of words and phrases with objects and actions. The use of mother language and translation were forbidden in the classroom and learners must able to think in the target language. But this method had its own problems because it required proficient teachers and mimicked first language (L1) learning and differences between L1 and L2 acquisition did not consider. As (Richards & Rodgers, 2003; Rivers, 1981; Schmitt, 2002) alluded American Structuralism granted vocabulary its lowest status in the literature of language teaching. Indeed, vocabulary was kept to its minimum and systematic attention was concentrated to the learning and teaching pronunciation and sentences patterns through intensive oral drills. On the other hand, during Second World War in the United States, the Audio-lingual Method emerged. According to (Chastain, 1976; Newton, 1979), this approach focused extensively on listening and speaking skills. The main techniques which used in this approach were oral imitation, memorization and drills that learners can produce correct language habits so again vocabulary teaching was kept to a useful minimum because learners must focused on establishing a firm control of structures. This approach originated from the Army Specialist Training Program (ASTP) and possessed basic elements from both American Structuralism and Behaviorists Psychology. Scholars such as Rivers (1981) and Richards and Rodgers (2003) asserted that it was taught that exposure to language itself could lead to vocabulary learning, so no clear method of vocabulary teaching was illustrated. In the 1950s, Chomsky criticized the underlying theories of about American Structuralism and Behaviorists Psychology made a revolutionary change in linguistic theory. As Stern (1983) points out, he introduced language as a rule governed system in his transformational generative approach; subsequently learning language initialed internalizing the rules (Saporta, 1966). According to Celce-Murcia (2001), vocabulary was still

held secondary because the concentration was on rule acquisition.

2.2 Lexical Approach

A few decades ago, there was a predominant view in the linguistic circles that vocabulary was subservient to grammar. Linguists at that time strongly supported the dichotomy of grammar and vocabulary and they preferred to lay emphasis on the structures of language rather than the words. Also, they were of the view that acquisition of a language is dependent on the mastery of grammatical rules of the language and vocabulary is of secondary importance. But during the 1990's there was an increased interest in vocabulary teaching and learning. The book *Teaching and Learning Vocabulary* (1990) by Paul Nation provided useful insights into vocabulary acquisition and it extended guidance on classroom pedagogy. At the same time, the advent of corpus linguistics and the COBUILD project of Sinclair (1987) gave new impetus to theories on language acquisition. Sinclair's book *Corpus, Concordance, Collocation* (1991) and other corpus based studies shed new light on how language works and this led to a new understanding and description of language. Also, these studies revealed the widespread occurrence of multi-word units or lexical chunks in native speakers' language. The studies then put forward a theory that is almost contrary to Chomskyan theory of language which holds that native speakers have a capacity of creating and interpreting unique sentences which they have never heard or produced previously. Moreover, Chomskyan theory believed that: linguistic competence consists solely in the ability to deploy an innate rule- governed sentence-making capacity (Thornbury, 1998). But with the advent of corpus based analyses, many linguists departed from the Chomskyan view to uphold the new theory of language. With the publication of the book *The Lexical Approach: The State of ELT and a way forward* in 1993, there was a shift from the traditional approaches to a lexis based approach which holds that: the building blocks of language learning and communication are not grammar, function, notions, or some other unit of planning and teaching but lexis, that is, word and word combinations (Richards & Rodgers, 2003). To quote Lewis (1993), this approach focuses on developing learner's proficiency with lexis, or word and word combinations, He states: "Fluency is based on acquisition of a large store of fixed and semi-fixed prefabricated items, which are available as the foundation for any linguistic novelty or creativity" (1997, p.15). He holds that native speakers store chunks in their mental lexicon to retrieve and use them in their language. Also, he states that the ability to chunk language successfully is central to an understanding of how language works. For this reason, Lewis suggests that language teaching should include the teaching of lexical phrases or chunks.

As Harwood (2002) mentions, lexical approach is an approach which has emerged against the dichotomy of grammar and vocabulary that former concentrating structure and the latter emphasizing on single words. As Nattinger (1988) asserts the notion of a large vocabulary is extended from word to lexis in lexical approach. The fundamental idea in lexical approach is that fluency is based on the acquisition of huge store of fixed and semi-fixed prefabricated items, indeed collocations, fixed phrases, idiom, and phrasal verbs provide a real bar to understanding. Harwood (2002) comments that lexical approach emphasizes on teaching real English based on a number of corpus studies providing teachers and learners with frequencies of lexical items, lexical phrases, collocations and predominant grammatical patterns of the lexis. Consequently, lexical approach concentrates on the requirement of using corpora to notify pedagogical materials and the significance of Recycle and Revisit strategy (R&R) which is the focus of lexical approach.

2.2.1 Lexical Chunks

Language consists not of traditional grammar and vocabulary but often of multi-word prefabricated chunks (Lewis, 1997). Different types of chunks (based on Thornbury, 2007) are as follow:

1. Collocations (widely travelled, rich and famous, set the table)
2. Phrasal verbs (get up, log on, and run out of)

3. Idioms, catchphrases and sayings (get cold feet, as old as the hills, mind your own business, and take one to know one)
4. Sentence frames (Would you mind if...? The thing is...)
5. Social formulae (see you later, have a nice day, yours sincerely)
6. Discourse markers (frankly speaking, on the other hand, I see your point).

The lexical approach makes a distinction between vocabulary—traditionally understood as a stock of individual words with fixed meanings—and lexis, which includes not only the single words but also the word combinations that we store in our mental lexicons. Lexical approach advocates argue that language consists of meaningful chunks that, when combined, produce continuous coherent text, and only a minority of spoken sentences are entirely novel creations. The role of formulaic, many-word lexical units has been stressed in both first and second language acquisition research (See Richards & Rodgers, 2003, for further discussion.) They have been referred to by many different labels, including “gambits” (Mackay, 1980), “speech formulae” (Peters, 1983), “lexicalized stems” (Pawley & Syder, 1983), and “lexical phrases” (Nattinger & DeCarrico, 1992). The existence and importance of these lexical units has been discussed by a number of linguists. For example, Cowie (1988) argues that the existence of lexical units in a language such as English serves the needs of both native English speakers and English language learners, who are as predisposed to store and reuse them as they are to generate them from scratch. The widespread “fusion of such expressions, which appear to satisfy the individual’s communicative needs at a given moment and are later reused, is one means by which the public stock of formulae and composites is continuously enriched” (p. 136). Lewis (1997) suggested the following taxonomy of lexical items:

- Words (e.g., book, pen)
- Polywords (e.g., by the way, upside down)
- Collocations, or word partnerships (e.g., community service, absolutely convinced)
- institutionalized utterances (e.g., I’ll get it; We’ll see; That’ll do; If I were you . . . ; Would you like a cup of coffee?)
- Sentence frames and heads (e.g., That is not as . . . as you think; The fact/suggestion/problem/danger was . . .) and even text frames (e.g., In this paper we explore . . . ; Firstly . . . ; Secondly . . . ; Finally . . .)

Within the lexical approach, special attention is directed to collocations and expressions that include institutionalized utterances and sentence frames and heads. As Lewis maintains, “instead of words, we consciously try to think of collocations, and to present these in expressions. Rather than trying to break things into ever smaller pieces, there is a conscious effort to see things in larger, more holistic, ways” (Lewis, 1997, p. 204). Collocation is “the readily observable phenomenon whereby certain words co-occur in natural text with greater than random frequency” (Lewis, 1997, p. 8). Furthermore, collocation is not determined by logic or frequency, but is arbitrary, decided only by linguistic convention. Some collocations are fully fixed, such as “to catch a cold,” “rancid butter,” and “drug addict,” while others are more or less fixed and can be completed in a relatively small number of ways, as in the following examples:

- Blood/close/distant/near (est) relative
- Learn by doing/by heart/by observation/by rote/from experience
- Badly/bitterly/deeply/seriously/severely hurt.

2.2.2 Lexis

Though the terms lexis and vocabulary are often stated in the same context and mostly treated as synonyms, there exists a difference in meaning between these two terms and they are not one and the same. The distinction will be made clear by making a note of these definitions put forward by two advocates: The entire store of lexical items in a language is called its lexis (Richards & Rodgers, 2003).

Lexis refers to strings of words which go together (Lewis, 1997). Lexis is a more general word than common vocabulary. Vocabulary is often used to talk of the individual words of language; lexis covers single words and multi-word objects which have the same status in the language as simple words; the items we store in our mental lexicons ready for use (Lewis, 1997, p. 217). Lexis includes not only the single words but also the word combinations that people store in their mental

lexicons (Burnard, 1995).

2.3 Experimental Background

There are a few studies on collocations. The first was done by Tajalli (1994) who worked on translatability of English and Persian collocations. He found out that first the main source of difficulty was that students were not familiar with English collocations owing to inadequate exposure. Second, non-congruent grammatical structures of English and Persian collocations were not responsible for possible constraints. Third, some problems may be related to the insufficient proficiency of the full semantic potential of simple lexical items when united to form collocations. Fourth, the experiment showed that the use of collocations was affected by the presence or absence of direct translational equivalence which significantly influences translatability. Finally, it was noticed that some problems were related to lack of sufficient familiarity with Persian collocations.

Unlike Tajalli, Morshali (1995) performed comprehensive research on the learning of English lexical collocations by Iranian EFL learners. Her study found out that first, the Iranian EFL learners' proficiency of collocations was far behind their proficiency of vocabulary. Second, there was no significant relationship between the level of language proficiency and that of the proficiency of English collocations. Third, the Iranian learners did not normally learn collocations without formal teaching. Finally, the number of collocational errors made by the Iranian EFL learners highlighted the need for formal teaching of collocations (1995). Hasan Abadi's study (2003) was different from Morshali (1995) because he performed a research on both grammatical and lexical collocations. His subjects were 80 Iranian EFL learners at Shiraz University. The Test of collocations consisted of forty items. He found out that there was a significant relationship between the performance of the learners on lexical and grammatical collocations. There was also a significant difference between the performances of the learners on different subcategories of collocations.

Faghih and Sharafi (2006) focused on the another aspect of collocations because they worked on the impact of collocations on Iranian EFL learners' inter-language and an error pattern in the vocabulary of Iranian EFL learners, namely the confusion of collocations. Their results showed that collocation confusion was really a common error in the inter-language of Iranian EFL learners. There was also a positive correlation between students' overall proficiency and their proficiency of collocations; they did not have difficulties with all kinds of collocations, but adjective-noun collocations caused the most problem for them. Unlike Faghih and Sharafi' (2006), Koosha and Jafarpour (2006) used concordancing materials through data-driven learning (DDL) to observe its effect on the teaching or the learning of collocation of prepositions, to discover whether collocational proficiency of prepositions could be examined at the different levels of EFL students' proficiency, and to find out how much Iranian EFL collocational proficiency of prepositions is influenced by their mother tongue. To reach this aim, they selected two hundred senior English major students from three universities in Sharkord. Subjects were given a Michigan Test of English Language Proficiency to determine the subjects' level of language proficiency. There were two completion tests on collocations of prepositions as the pre-test and post-test to check the effects of the treatments. The results indicated that the DDL approach was extremely useful in the learning and teaching, and subjects' performance in the test of collocation preposition was proved to be positively related to their level of language proficiency. Finally, error analysis of collocations showed that Iranian EFL learners transferred their L1 collocational patterns to their L2 production. Bagherzadeh Hosseini and Akbarian's (2007) study is different from the above mentioned studies because they investigated the relationship between collocational competence and general language proficiency and examined the go-togetherness of quantitative and qualitative characteristics of lexical proficiency. The subjects were selected from thirty senior students in two Iranian universities through a tailored TOEFL test. An MC test of noun-verb collocations was administered to the subjects. The results indicated that there was a relationship between the collocation test and TOEFL and between the vocabulary section of TOEFL and the collocation test. Moreover, subjects' qualitative proficiency went with their quantitative proficiency. It can be concluded that collocation had to be taught at the right time through explicit teaching to make students aware of collocations. Keshavarz and Salimi's (2007) instruments were different from Bagherzadeh Hosseini and Akbarian (2007) as they employed open-ended, multiple choice cloze tests, and TOEFL to measure colloca-

tional competence and language proficiency of one hundred Iranian students. A TOEFL test evaluated the subjects' language proficiency and a fifty item test comprising lexical and grammatical collocations examined their collocational proficiency. They found out that there existed a significant relationship between performance on cloze tests and collocational competence. The results also pointed out that collocational competence was very important to increase language proficiency of Iranian EFL learners in the target language. Unlike Keshavarz and Salimi's study (2007), Ghonsooli, Pishghadam, and Mohaghegh Mahjoobi (2008) performed research on the effect of teaching collocations on Iranian EFL learners' English writing. They employed quantitative and qualitative methods in two stages, a product phase and a process phase. To this end, thirty subjects from the English Department of the College of Ferdowsi University in Iran were selected. They were taught their course materials in twenty one sessions. The experimental group was seventeen students to whom collocations were taught by different techniques. However, the control group was taught through the conventional slot and filter approach. The results showed that the experimental group had a higher mean score in their collocation test and English Writing Test at the product stage because of collocation teaching. Their mean scores for different writing section demonstrated that subjects' vocabulary and fluency increased considerably as a result of collocation teaching at the process stage.

Sadeghi (2009) studied the collocational differences between L1 and L2 and its implications for EFL learners and teachers. His study was different from Ghonsooli, Pishghadam, and Mohaghegh Mahjoobi's (2008) study since he used a comparative method and compared collocations between Persian and English. There were seventy six students who participated in a sixty item Persian and English Test of Collocations. The results showed students might have a lot of problems in using collocations where they negatively transferred their linguistic proficiency of Persian to English. Shokouhi and Mirsalari (2010) also performed research on the relationship between collocational proficiency and general linguistic proficiency among EFL learners. There were thirty five subjects who were chosen by a proficiency test and were administered a 90-item multiple-choice test which had lexical collocations: noun-noun, noun-verb, and adjective-noun, and grammatical collocations: noun-preposition, and preposition-noun. The results demonstrated that there was no significant correlation between the general linguistic proficiency and collocational proficiency of EFL learners, and lexical collocations are easier than grammatical collocations for the students and from among all subcategories, noun-preposition was the most difficult and noun-verb was the easiest. Unlike the mentioned studies, Bazzaz and Samad (2011) discussed the relationship between collocational proficiency and the use of verb-noun collocations in writing stories since collocational proficiency differentiates native speakers and foreign or second language learners and is a major issue in productive skills especially writing. To this end, twenty seven Iranian PhD students in a Malaysian university were selected. The students' proficiency was measured by a special constructed C-Test and the use of collocations was calculated by the number of collocations that was used by the students in their essays. To reach this end, students wrote six different stories in six weeks based on a written task in which verb-noun were elicited. The results indicated that there was a large positive relationship between proficiency of collocations and the use of verb-noun collocations in the stories. Bahardoust (2012) also performed a research on the rate of lexical collocations in Iranian EFL learners' writing production between L1 and L2, and the influence of L1 on L2 collocational use. To reach this aim, two hundred subjects were chosen. The data was collected from midterm, final tests, and assignments of the students. The data was analyzed by chi-square, and the rate of lexical collocations was estimated. Moreover, the rate of different groups of lexical collocations was compared. The results showed that the rates of verb-noun and adjective-noun were the highest, and the rate of noun-verb was the lowest. The rate and the frequency of collocations were compared in L1 and L2 paragraphs. The results discerned that L1 collocations had higher rate and frequency than L2, and L1 produced both positive and negative influence on collocations. Ganji (2012) went one step further from aforementioned research and studied the relationship between gender and academic years of Iranian EFL learners' collocational proficiency. He discussed the collocational proficiency of students at the three academic levels of freshman, sophomores, and junior. To this end, forty three English major subjects were selected from English Translation studies in Chahbahar Maritime University.

Lin (2002) surveyed the impact of collocation instructions on receptive and productive collocation competence of high-achievers and low-achievers in a group of EFL high school students. The results indicated that all students made more progress in receptive collocation tests than productive ones, but low-achievers performed better in productive tests after collocation teaching. Both groups held positive attitudes toward collocation teaching activities. Tseng (2002) divided 94 high school participants into an experimental group, who received 12 weeks of explicit collocation instruction, and a control group, who did not receive any training. After collocation instruction, the experimental group far exceeded the control group in the post-test regardless of their prior collocation levels. Sung (2003) looked at the knowledge and use of English lexical collocations in relation to speaking proficiency of international students enrolled in a university in Pittsburgh area. A total of 72 non-native English speakers and 24 native English speakers participated in her study. Her results showed that there was a significant correlation between the knowledge of lexical collocations and the subjects' speaking proficiency. Rahimi and Momeni (2012) examined the effects of teaching vocabulary through collocation and concordance techniques on language proficiency. The results showed that teaching vocabulary has an effect on the improvement of language proficiency and vocabulary teaching, be traditional methods such as translation, explanation and definition or new trend of collocation teaching of the words, can bring about a significant growth in language proficiency.

3. Method

3.1 Participants

To provide sufficient data for answering the question of this study, 120 computer engineering students from Azad University of Ramhormoz were selected. Both male and female students were included in the population of the study. Then Oxford Placement Test (OPT) was distributed to make them homogeneous; finally 60 of them were chosen for the target participants. They were divided into two equal groups of experimental and control. Each group was comprised of 30 members. The experimental group received a treatment related to lexical chunks and computer engineering ESP terms but control group was taught without any treatment.

3.2 Instruments

The first instrument that was used in this study was the Oxford Placement Test (OPT) to make the respondents homogeneous. Then a researcher-made pretest was employed for tapping their present status of ESP terms. The researcher measured the reliability and validity of the pre-test. After construction of the test, the researcher gave it to three English experts to confirm its face and content validity. That is, to get sure about the Content Validity Index (CVI) of the test items, three English experts examined the test and made some changes regarding the clarity and simplicity of the items. Subsequently, some of the test items were modified and then a similar group was given this test to pilot it. The final version of the test was constructed and then the target population received it. It should be noted that KR-21 formula was used to compute the reliability of pre-test. The results of computation indicated that the reliability of pre-test was 0.73. As the treatment, the researcher taught the participants 10 sessions using vocabulary chunks to teach technical vocabulary and expressions. Finally, for measuring the effects of lexical chunks on learning ESP terms among Iranian computer engineering students, a posttest was given to the participant which was the modified version of the pretest.

3.3 Procedure

In order to get the data, firstly 60 homogeneous computer engineering students were chosen for the target participants. They were divided into two equal groups, experimental and control. Each group was comprised of 30 members. Then the researcher employed a pretest for tapping their present status of ESP terms. After the pretest, the researcher started to teach the experimental group by using vocabulary chunks for 10 sessions. The control group received no treatment. At the end, the researcher administered the posttest. After collecting the data, they were analyzed by following the next section.

3.4 Data Analysis

After collecting the needed data, the researcher used the mean and standard deviation to point out the differences between the performances of the two groups during the pretest. In order to analyze the data quantitatively, after the post test, Independent and Paired Samples T-tests were used to determine the differences between the two groups. Finally, SPSS (Statistical Package for Social Sciences), which is a computer software, was used to analyze the data in the present and post-test of the control group and experimental group.

4. Results

4.1 Descriptive Statistics

Table 1 presents basic information about the pre-test of both control and experimental groups.

Table 1

Descriptive Statistics of the Pretest Scores

	Groups	N	Mean	SD	Std. Error Mean
Pretest	Control	30	13.65	2.32	.42
	experimental	30	13.61	2.23	.40

Based on Table 1, there is not a significant difference between the mean scores of both control and experimental groups. In fact, they performed similarly in the pre-test. The mean score of control group in the pre-test is 13.65 and the mean score of experimental group in the pre-test is 13.61.

Table 2

Independent Samples T-test (Pre-test of the Groups)

		Levene's Test for Equality of Variances		t-test for Equality of Means				
Pre-test Control vs. Experi- mental		F	Sig.	t	Df	Sig. (2-tailed)	Mean Dif- ference	Std. Error Dif- ference
Equal variances as- sumed		.000	.985	.057	58	.955	.03	.58
Equal variances not assumed				.057	7.9	.955	.03	.58

Table 2 shows the observed t (.057) is less than the critical t (2.044) with $df = 58$; therefore, the difference between the groups is not significant at ($p < 0.05$). According to the critical t (2.044) with ($df = 58$), the observed t among the two groups was less than the critical t. Therefore, Table 4.2 shows that there are no significant differences between the pre-test of the two groups ($p < 0.05$).

Table 3

Descriptive Statistics (Post-test of the Groups)

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Post-test	Control	30	13.3917	2.60361	.47535
	Experimental	30	15.0500	2.57424	.46999

Table 3 reports the descriptive statistics of control and experimental groups in the post-test. The mean of the experimental group in the post-test is 15.0500 and the mean of the control group is 13.3917. The means of the two groups are different. The experimental group outperformed than the control group; in fact, the treatment had positive effects on the experimental group. However, there is a need to calculate the means through Independent Samples T-test to arrive at the significant level. The results are presented in Table 4.

Table 4

Independent Samples T-test (Post-test of the Groups)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pretest	Equal variances assumed	.047	.830	-2.48	58	.016	1.6	.6	2.9	.35
	Equal variances not assumed			-2.48	57.9	.016	1.6	.6	2.9	.34

Table 4 shows that the observed t (2.481) is greater than the critical t (2.044) with $df = 58$. Therefore, there is a significant difference among the participants of the control and experimental groups ($p < 0.05$).

Table 5

Descriptive Statistics (Control and Experimental Pre and Post-Tests)

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test control	13.6500	30	2.32546	.42457
	Post-test control	13.3917	30	2.60361	.47535
Pair 2	Pre-test experimental	13.6167	30	2.23774	.40855
	Post-test experimental	15.0500	30	2.57424	.46999

Table 5 shows the descriptive statistics on the two tests of pre and post-tests in both groups. The results showed that there is a difference between pre-test and post-test of control and experimental groups. Experimental group had development

in their post-test.

Table 6
Paired Samples Test (Control and Experimental Pre and Post-Tests)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Experimental	Pretest – Post-test	.25	1.16	.21	.17	.69	1.219	29	.233
Control	Pretest – Post-test	-1.43	1.10	.20	1.84	-1.02	-7.096	29	.000

Table 6 shows the differences between the pre-test and post-test of the two groups. Results show that the observed t (1.219) is less than the critical t (2.660) with $df=29$, the difference between the pre-test and post-test of the control group is not significant ($p<0.05$). Moreover, since the observed t (7.069) is greater than the critical t (2.660) with $df=29$, the difference between pre-test and posttest of experimental groups is significant. Therefore, the results show a significant development in the performance of the participants in the experimental group.

5. Discussion

This section elaborates on the results and findings presented in the previous chapter. To discuss the results of the research, the research question is raised again:

RQ. Do lexical chunks improve Iranian computer engineering students' ESP terms?

This study examined the effects of lexical chunks on improving Iranian computer engineering students' ESP terms. After analyzing the data, the results indicated that there was not a significant difference among experimental and control groups' performance in pre-test, but in contrast there was a significant difference between the results of pre-test and post-test of the two groups. It could be also observed that experimental participants got better scores and had better performance after the treatment. The findings indicated that lexical chunks helped Iranian computer engineering students' to increase their technical terms. As mentioned in literature review, second language acquisition researchers believe that vocabulary learning is the most important aspect of second language teaching; therefore it is essential for teachers to assist learners in learning strategies to expand their knowledge of collocation and help them use the collocations in their speaking and writing. This study is in line with some other scholars such as Hunt and Beglar (2005) who believed that the main element of language comprehension and use is the lexicon. Smith (2005) stated collocation must be included in the curriculum.

According to Durrant (2008), using collocations is almost certainly the most significant component of turning passive words into active ones; hence, collocation is a vital part in the acquisition of a creative language system. The results of this study confirm the outcomes of Kun-huei (2015) who investigated the effect of teaching collocations on the students' perceptions toward language learning. The results indicated that the participants hold positive attitudes toward the explicit teaching of collocations. The analyzed data revealed that the participants' language performance had been significantly affected by the instruction of collocations. The results of this study also are compatible with Allami's (2013) findings; he investigated the effect of teaching collocations on the speaking ability of EFL Iranian learners. He selected 40 intermediate L2 learners out of 80, and assigned to two experimental and control groups. For pretests, collocation test and collocation

interview were run. Then, collocation in Use was taught to the experimental group as a treatment. After collocation instruction, another collocation test and interview were conducted on both experimental and control group. The result of paired sample t-test showed that the participants' speaking ability in the experimental group significantly improved in posttest. The analyzed data also revealed that after the collocation instruction in experimental group the participants' performance in interview increased too. Moreover, the result of ANCOVA displayed that the participants had positive attitudes towards explicit instruction of collocations. In another study, Tseng (2002) compared an experimental group, received 12 weeks of explicit collocation instruction, and a control group who was not under the treatment procedure. The results of that study like the present study showed that the experimental group outperformed the control group on participants' collocation use.

6. Conclusion

As mentioned earlier, lexical chunks were taught to the experimental group to see whether teaching them would influence Iranian computer engineering students' way of learning ESP terms. After collecting the data and analyzing them, statistical analysis indicated that there was a significant positive correlation between students' use of lexical chunks and learning technical terms. The researcher came to the conclusion that teaching lexical chunks to the students can help them to increase their ESP terms. Non-English students are usually incompetent in learning vocabularies; therefore, they need to use collocations and chunks lexical in order to learn the words more efficiently. As indicated in the results of this empirical research teaching English lexical chunks to Iranian computer engineering students would enhance their vocabulary knowledge and raise their collocational competence.

Explicit instruction of lexical chunks has to be involved in English teaching curricula where the focus is on raising learners' awareness of word combinations. In addition, the use of lexical chunks dictionaries must be emphasized. Moreover, vocabulary would be better acquired if it is taught as a separate module, not through other modules because this is not sufficient. Our proof is that although vocabulary is taught through other modules like oral expression and literature or civilization, the majority of students do not know collocations and lexical chunks. The findings of this study are beneficial for those students who cannot learn words separately. As a result, learners would memorize the words successfully by using lexical chunks. In this study the researcher faced some limitations so he offered some suggestions for the next researches to cover these limitations.

1. This research was conducted on computer engineering students' ESP terms. It can be carried out on different learners for example high school students, intermediate and also elementary learners in order to supplement the findings from the current study.
2. The study was limited to Iranian EFL learners; it can be conducted in other countries.
3. The present research was carried out on ESP terms only, the general terms were neglected so the forthcoming studies can cover general terms.
4. The present study was carried out with a small number of Iranian EFL students. The future studies can include more participants from across the country.
5. This study investigated the impacts of lexical chunks vocabularies; other skills and sub skills like grammar and writing were not included.

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