

Effects of Teaching Lexical Bundles on EFL Students' Abstract Genre Academic Writing Skills Improvement: Corpus-Based Research Design

Amare Tesfie Birhan

Bahir Dar Institute of Technology, Bahir Dar University, Ethiopia

Email: amaretiefie@gmail.com

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Abstract

Lexical bundles are two or more string of words that co-occur frequently in a corpus. Hence, this corpus-based research design study examines the effects of lexical bundles on English as a foreign language learner's abstract genre academic writing skills, and it also investigates students' perception towards lexical bundles instruction to enhance their academic writing skills. Hence, frequent lexical bundles were selected from 70 computer science articles. These articles were selected from 7 journals that were published in reputable, indexed, and through representative criteria. Accordingly, sixteen frequent lexical bundles were selected through corpus analysis software (Laurence Anthony's Antconc software) for the purpose of classroom instruction. The bundles are intended to help computer science students to develop their abstract genre academic writing skills. Students have instructed their academic writing through corpus informed instruction for two months, and the data were gathered through pre and post-tests and questionnaire. The findings indicated that lexical bundles have a positive effect on students' academic writing skills, particularly abstract genre writing. Besides, the students have a positive perception of the lexical bundle and the instruction to enhance their academic writing skills. Finally, this research calls attention to discipline-oriented lexical bundles since they are crucial for academic writing.

Keywords: Lexical bundles, abstract, academic writing, Computer science, Corpus Linguistics

Introduction

Writing is one of the major language skills in language teaching and learning. It is recognized as one of the important skills especially for higher education students (Kazemi, Katiraei & Rasekh, 2014). Students write articles, critics, reviews, and argumentative proeses for the course fulfillment and to have communication between experts in their discipline (Abdulwahed & Hasna, 2017). They transfer their thoughts, ideas, and feelings through writing. Accordingly, learners are required to master the writing skills to have effective written communication in their disciplines (Birhan, 2018). Consequently, the importance of authentic linguistic elements and rhetorical features are crucial to have effective academic writing communication (Chang & Kuo, 2011) in learners' discipline. These help students to participate actively in the international academic discourse community.

In this regard, computer technology plays a great role by providing authentic and genuine linguistic elements through corpus analysis software. Learners' can read electronic texts on a

computer, access massive data which can be used in writing assignments, correct grammatical and spelling mistakes, calculate and compare the frequency of words and translate written texts (Hyland, 2003; Alshaar & Abuseileek, 2013; Lee, Warschauer & Lee, 2017). Corpus also provides authentic linguistic elements that can satisfy the communicative language needs of the learners (Yoon & Hirvela, 2004).

The learners can access the authentic language data through computer software, concordance program. For instance, with the help of digital language corpora, researchers could uncover the formulaic nature of language use (Salazar, 2014). These enable students' linguistic competence (Millan, 2010) that they require to write effective and efficient academic text (Paquot, 2010). Among these linguistic competences, lexical bundles are the one that helps writers to develop academic writing fluently and accurately (Esfandiari & Barbary, 2017). They occur more frequently in academic discourses.

Literature review

Lexical bundles in academic writing

Lexical bundles are defined as “the most frequently recurring sequence of words” (Biber & Barbieri, 2007, p. 264). They are chunks or clusters (Hyland, 2008) that are recurrent sequences of words which are extracted from a given corpus using a computer program (Salazar, 2014). They are a part of a large family of formulaic language (Jalali & Moini, 2014; Jalali, Moini & Arani, 2015) that occurs together (Allan, 2016; Salazar, 2014; Wright, 2019) with certain words.

According to Cortes (2015, p.205), lexical bundles are “uninterrupted strings of three or more words that frequently recur in a register; they are identified empirically by running a computer program in a corpus of language texts.” They are neither idiomatic nor complete linguistic structural units (Biber, et al., 1999; Cortes, 2006). Lexical bundles are three or more words that frequently occur in a particular register. These combinations of words must re-occur repeatedly in order to be considered as lexical bundles. Researchers such as (Biber, et al 2004; Hyland, 2008) mentioned that a string of words is considered as lexical bundles if they recur at least ten times per millions of words in a register

Functionally, lexical bundles are categorized into three: stance markers, discourse organizers, and referential expressions (Biber, Conrad & Cortes, 2004; Kashiha & Heng, 2014). Stance bundles (for instance, *it is possible to, it can be used to, the fact that, it should be noted that, as can be seen, I don't know if, I think it was, you know what I, I do not think so,* etc.) are used to express the writers' positions, arguments and attitudes towards the proposition in their academic writing (Biber, Conrad & Leech, 2002; Dontcheva-Navratilova, 2012). According to Biber et al., (2004), these lexical bundles are used to express the certainty or doubts of the writer.

Discourse organizer bundles, on the other hand, are used to link ideas that are mentioned prior and the idea that are being mentioned. Biber et al., (2004) mention that discourse organizers use as a topic introduction and topic clarification and elaboration. These bundles include, *on the other hand, in addition to the, in the present study, as shown in figure,* and lexical bundles that use to elaborate ideas and bundles are such as *in this chapter, if you look at, what do you think,* etc, that use to introduce topics or ideas in writing.

Similarly, Referential expression bundles are used to make direct reference to physical or abstract entities (Biber, et al., 2004). These include identification/focus (*this one of the, of the thing that, one of the most, and this is,* etc. imprecision indicators (or *something like that,* and *things like that*) specification attributes (*there is a lot of, the rest of the, percent of the, etc* and time/place/text references (*at the same time, shown in figure X, at the end of, in the united states, etc.,*).

They occur differently in different genres (Samraj, 2005). Corpus related researches explore that writers use different linguistic structures such as bundles in different genres and registers. For instance, researchers (Adel and Erman, 2012; Biber, 2016; Cortes, 2004; Qin, 2014; Pan, Reppen, and Biber, 2016 and Hyland, 2008) investigated lexical bundle usage among native and non-native speakers and between articles from different disciplines. These researchers mentioned that there was a considerable difference between non-native and native academic writings and between articles in different disciplines. Similarly, genre-based lexical bundle usages were discussed by (Wright, 2019; Niu, 2015; Jalali & Moini, 2014). They stated that there were lexical bundle differences between academic writing genres.

Similarly, some researchers explore the effects of lexical bundles instruction on students' language learning. To mention, Crossley and Salsbury (2011) studied the lexical bundles' effect on English second language speakers and reported that lexical bundles increase students' accuracy in their speaking. Cortes (2006) studied the effects of teaching lexical bundles on students' writing in intensive history classes. Cortes reported that no difference was observed between pre-and post instruction production of lexical bundles. However, the researcher reported that the students increase their awareness and interests in the lexical bundles. Kazemi, Katiraei and Rasekh (2014) also studied the impact of lexical bundles on students writing skills. They reported that the instruction helped students with their writing skills. Petrovska (2012) also studied teaching lexical bundles and Macedonian tourism discourse, and the researcher recommended that tourism students need to have lexical bundles knowledge as they are important to develop their competence in language learning. Accordingly, lexical bundles instruction regarded as a crucial linguistic content in language teaching in general and teaching academic writing skills in particular.

Lexical bundles in abstract genre writing

An abstract is one of the most important academic writing genres that play a great role in academic writing (Khedri, Heng & Ebrahimi, 2013). Jiang and Hyland (2017, p. 2) also mention that "it becomes an important genre in all knowledge fields, playing a crucial role in persuading readers, and reviewers to take the time to go further into the paper itself." It gives a general understanding of the subject matter.

In an abstract, the writer explains in short and precise through a problem-solution framework (Samraj, 2005) in order to attract and convince the readers to continue their reading. Accordingly, it is expected to employ research-oriented, text-oriented, and participant-oriented lexical bundles (Salazar, 2014) in order to transfer the writer's ideas successfully. According to Belyakova (2017, p. 29), "research article has mainly been preoccupied with its rhetorical organization and linguistic features such as tense, voice and authorial stance." Therefore, according to Hyland (2008, p. 5), "lexical bundles help to shape text meanings and contributing to our sense of distinctiveness in a register." Thus, the writer uses different lexical bundles in different registers and academic genres. There are lexical bundles variability among genres (Hyland, 2012). Consequently, this research focuses on two or more string of words the recure words or lexical bundles that occur frequently in the selected research article abstracts.

According to Vo (2019), the writer's lexical knowledge is considered as a significant development stage of the writing ability. They are fundamental for language production in general and academic writing in particular (Allan, 2016); They facilitate communication (Schmitt & Carter, 2004), or social interaction (Jalali & Moini, 2014), to gaining a communicative competence (Hyland, 2012), and second language academic literacy acquisition (Shin, Cortes & Yoo, 2018); "they are crucial for fluent linguistic production and a key factor in successful language learning"

(Hyland, 2008, p.4). They serve as specific spoken and written discourses purposes (Chen & Bakar, 2010); lexical bundles help to construct the writer's identity and indicate the disciplinary conventions.

The context.

Bahir Dar Institute of Technology is one of the institutes of Bahir Dar University, Ethiopia. The students who learn in this institute take writing courses to instruct them on how to write different kinds of academic writing and to raise their awareness about the linguistic structures and rhetoric features that are used in different disciplines. However, the students use the same teaching material though their field of study is different. Researchers such as Aklilu (2015), complained that the teaching material used by the institute of technology, Bahir Dar university did not contain authentic academic writing vocabulary that satisfies their academic writing needs. According to the researcher, this hampers students to have effective academic writing communication.

Consequently, I conducted a preliminary study by selecting computer science students. The preliminary study aimed to explore the presentation of phraseology units such as lexical bundles in the teaching material, the students' usage of these lexical bundles in their project report and compared with articles published by international reputable and journals. The students' project reports and the teaching material were collected and analyzed the coverage of lexical bundles through Laurence Anthony's Antconc software. Thus, the finding indicated that students rarely used lexical bundles in their project reports, and the material rarely includes lexical bundles

Corpus oriented researches revealed that the teaching materials that are used by EFL and ESL students does not accurately reflect the authentic linguistic structures and rhetoric features that frequently occur in students' profession. For instance, Biber (2006) reported that classroom teaching uses lexical bundles about four times as many as textbooks. Barbieri and Eckhardt (2007) also mentioned that most of the teaching materials that are prepared are not based on empirical data and empirical evidence in a way that can satisfy the students' communicative needs. Accordingly, researchers concluded that there is a mismatch between the authentic language and the textbook (Gilmore, 2007; Biber & Reppen, 2002).

In the mentioned institute, though students need to learn academic writing norms within their profession, the teaching material excluded the authentic linguistic elements such as lexical bundles. The material included general vocabulary that doesn't commonly use in specific academic and professional contexts or may not be sufficient enough to address and satisfy their academic communicative needs. Although the importance of students' discipline-specific writing skills in science, engineering, and technology has long been recognized, English language instructors have not implemented discipline-specific writing instruction (Boyd & Hassett, 2000).

Consequently, studies have indicated that computer science students do not have a clear understanding of the function and structure of lexical bundles. Researchers for instance, (Cortes, 2006; Wright, 2019; Jalali and Moini, 2014) also confirmed that non-native writers rarely use lexical bundles in academic writing; they are not familiar with the recurrent sequence of words (Kazemi, Katiraei & Rasekh, 2014); little attention is paid about lexical bundles (Grabowski, 2015). This is the reason that lack of awareness about the structure and function of lexical bundles. The instructors also have not paid enough attention to the role of lexical bundles in academic writing. Accordingly, it is observed that students faced difficulty in using bundles in their academic writing.

Therefore, this research aims to examine the effects of instructing lexical bundles on computer science students' abstract academic writing skills. Though early studies by Cortes

(2006), Kazemi, Katiraei & Rasekh (2014) and Kazemi, Kohandani and Farzaneh, (2014) investigated the effects of lexical bundles of history students' academic writing, EFL students' writing and instructors article evaluation skills respectively; they did not address the effects of lexical bundles on computer science students. Besides, they did not focus on academic writing, particularly abstract genre writing. Hence, the above-mentioned researches have a scope and focus limitation. Besides, no study has been investigated the effects of lexical bundles on computer science students' academic writing skills. Besides, researchers such as Jalali and Zarei (2016) recommend for pedagogical intervention on lexical bundles that students use in their target genre. Hence, this research assumed that lexical bundles have an effect on students' academic writing skills.

This research is believed to contribute to the theoretical and practical application of lexical bundles in teaching academic writing skills. Particularly, this researcher helps students to improve their fluency and accuracy while they write their academic writing. Researchers such as (Moynie, 2018; Pang, 2010; Allen, 2010) assert that instructing lexical bundles could facilitate students' fluency and accuracy in their academic writing. Moreover, this research benefits EFL teachers, students, and material writers by indicating the importance of considering lexical bundles in the teaching material, in the syllabus and in classroom instruction.

Based on the above research objective and purposes of research the following research questions were formulated.

1. Would students abstract writing difference observe before and after Lexical bundles instruction?
2. How do computer science students perceive via lexical bundles to enhance their academic writing skills?.

Research method

Research design and samplings

The main purpose of this research was to explore the effects of teaching lexical bundles on computer science students' abstract genre academic genre writing. The research used a quantitative data approach. It was designed through quasi-experimental research design particularly, pretest-posttest quasi-experimental design was employed (Creswell, 2012). The pre-test was administered before the intervention. Then, the intervention was held for two months. Finally, the post-test was administered.

Participants and sampling techniques

Hence, in the computing faculty of Bahir Dar Institute of Technology, Bahir Dar University, there are four departments (Software Engineering, Information Technology, Information System and Computer Science). Among these departments, the researcher selected Computer Science Department randomly through the lottery method because the researcher assumed it is difficult to include all students who take a technical report writing course in that semester. Therefore, 40 students who took the writing skill course were selected purposively since the intervention was held in the intact group.

Data gathering instruments

To address the above proposed research questions, the researcher employed tests (pre and posttest) and the questionnaire. Particularly, pre and posttest academic writing tests were gap filling and abstract writing activities; abstract paragraph activities (tests) were marked through selected rubrics such as cohesion, ideas, organization, and conventions. These rubrics were

adapted from researchers such as Razi, (2015) and Brooks (2012) and checked its validity by English language instructors who have 10 years experiences in higher education. The reliability of the students' academic writing tests, particularly, the paragraph type tests were checked through inter-rater reliability by the kappa coefficient and it was found .75 which was substantial to check the consistency of students' responses.

The other instrument was a questionnaire. The items were adapted from Kazemi, Katiraei and Rasekh (2014). The aim of the questionnaire was aimed to assess the perception of students towards the new (corpus-informed instruction). The questionnaire consists of 10 items which include students' perception regarding lexical bundles, the importance of lexical bundles to their academic writing, the contribution of the intervention, and their perception regarding lexical bundles in their academic writing. The items were prepared through a Likert scale 1-5 (1- strongly disagree, 2- agree, 3- neither agree nor disagree, 4-agree and 5- strongly disagree). Before the questionnaire was administered, the researcher briefed the respondents to avoid any confusion. Its reliability was checked through Cronbach alpha and it was found 0.74, which indicates the questionnaire was reliable.

Corpora and its procedure

The researcher compiled small corpora for this project's purpose from the selected articles. According to Koester (2006) and Szudarski (2018), small corpora are more appropriate to use for specific purposes. Koester mentions that smaller corpora allow a closer link between the corpus and the context in which the text was produced. Accordingly, research articles were selected from Computers and Geoscience, Computer Science and Information Systems, Electronic Notes in Theoretical Computer Science, Journal of Computer and System Science, Procedia Computer Science, Science of Computer Programming and Theoretical Computer Science based on Gilmore and Millar (2018) assumptions.

1. Articles are peer-reviewed and published in influential journals cited in Science Citation Index Expanded, Social Science Citation Index or Scopus. Exceptions are made for specific journals considered to be key or desired outlet for academic work in the Department of Computer Science, and Computer Science Department instructor's suggestions were also considered to select the journals.
2. Articles are representative in terms of research topic, author (based on geographical location).
3. Journals that have open access policies were also considered.

Accordingly, seven (7) journals were selected, 10 articles each. From these journals, the researcher selected 70 articles. These articles abstracts contain 2,911 word types and 14,242 tokens. The selected articles were downloaded as Pdf format, and these were changed into plain text with *Ant file converter* (Windows. 64-bit (1.2.1) version software).

The converted plain text files were cleaned of headers, footers, abbreviations, references, diagrams, and capitalizations, and they were coded to identify easily the article and to check the function in which the bundles are used. Besides, other contents other than abstract were cleaned. These processes help to ensure smooth and accurate data processing (Salazar, 2014). Then, the lexical coverage of the selected abstracts was analyzed by Laurence Anthony's Antconc (window 64-bit, 3.5.8) software. Accordingly, 16 (in this paper, however, may /may not, in the presence of, as well as that, to determine the, in addition, one of the most, the results of which, the purpose of this, our results suggest that, in the form of, at the same time, in the context of, the results obtained) frequently occurring lexical bundles were selected and instructed.

Intervention

The main purpose of this research is to explore the effects of lexical bundles on students' abstract genre academic writing skills. Thus, the students were instructed through lexical bundles informed activities (gap filling, freewriting, and guided writing) for two months. Also, the teacher taught them how to use the lexical bundles and their functions. The teacher gave them model texts that contain lexical bundles. After the clear instruction, the students were given sample abstracts, and they were instructed to identify the lexical bundles and their functions in the given abstract. They also wrote sample abstracts by using the lexical bundles they learned. Besides, they revise their project abstract with the bundles they learned. The student's abstracts were commented by their peers and by the teacher. Lastly, they revised based on the comments given and submitted.

Data Analysis

As mentioned above, the main tools of this research were quantitative data tools. Accordingly, students' academic pre and post-test data were analyzed through paired sample t-test, since the data distributed normally. The students' questionnaire data was analyzed through descriptive statistics such as percentage and mean.

Result and discussion

Students academic writing skills

As mentioned above, students' tests were analyzed. Accordingly, Table 1 shows the descriptive statistics of students writing skills in the pretest.

Table 1. Mean difference between the pre-test and the post-test of the students writing test

		Mean	N	SD	SEM
Pair 1	pretest	6.93	40	2.859	.452
	posttest	9.28	40	2.909	.460

Thus, the descriptive statistics in Table 1, indicated that students pre-test result mean was 6.93, but, after the intervention, their post-test result mean was improved into 9.28. Accordingly, a considerable difference is observed between the pre-test and the post-test means.

Table 2. Students' academic writing result difference between the pre-test and the post-test

		Mean.	SD	SMD	Sig.
Pair 1	pretest - posttest	-2.350	2.225	-6.679	.000

The inferential statistics also show that there was a significant statistical difference ($t_{39}=-6.679$, $P<.05$) between the pre and post-tests. The above data revealed that the students who engaged in the invention perform better in their academic writing; students who learned their technical report writing improved their academic writing. They are able to write coherent abstracts. Although the duration of the interventions varied, the finding of this study has similar results with researchers such as (Kazemi, Katirae & Rasekh, 2014). In addition, Rashtchi and Ali Mohammadi (2017) also found similar results that they concluded the intervention was effective in improving the learners' academic writing skills.

The researcher observed that students' awareness about lexical bundles was raised after eight weeks of intervention and they started to use them in their academic writing. Using a variety of lexical bundles indicates that students writing ability is in the developing stage (Engber, 1995). Similarly, this research has similar findings with Kazemi, Kohandani, and Farzaneh (2014) research. These researchers reported that the intervention of lexical bundles enhances the instructor's/reviewer's evaluation of research articles. Rahimi, Momeni and Nejati (2012) also concluded in their research that lexical-based language teaching enhances language skills such as vocabulary and reading.

Accordingly, the students used lexical bundles such as *in this paper*, *at the same time*, *our results suggests that*, *to determine the*, *as well as that*, *may/may not* and *however* more frequently than before. However, this research finding contrasted with Cortes's (2014) finding that the reported no difference between pre-and post-test instruction production of lexical bundles.

Hence, this research indicated that the students should learn lexical bundles that are frequently used in their discipline. According to usage-based theory, language is confined in a specific context in which it is used, and the user shapes language features (meaning and structure) according to the context. Thus, the linguistics types and their meaning are varied according to the context they are used. Baybee and Beckner (2010) and Ibbotson (2013) mention that language is developed with social interaction and the meaning depends on in the context it is used.

Students' perception

The Students' perception of lexical bundles instruction was computed through mean and percentage. The percentage indicates to what extent the students have a positive or negative perception towards the proposition.

Table 3 Students' questionnaire response on their perceptions towards lexical bundles instruction

Items	Mean	%
I had difficulties with the lexical bundles	4.03	80
I did not know about the use of lexical bundles before.	4.25	85
I believe I have got some experience in this program	3.5	70
I have some difficulty in using lexical bundles in academic writing	3.15	63
Lexical bundle instruction gives me experience on how to use them in my future academic writing	3.8	76
The instruction process that I had given for me a great exposure on how to use different lexical bundles	3.7	74
I believe lexical bundles help me produce coherent and organized academic writing	4.28	85
The instruction helps to identify the use of different lexical bundles	4.4	88
I think the instruction enhances my academic writing interest	4.3	86
I think lexical bundles are very important to improve my academic writing skills	4.47	87

As shown in Table 3, the majority (85%) of the respondents mentioned that they did not know how to use lexical bundles in their academic writing. Simultaneously, 80 % of the respondents stated that they faced difficulty to incorporate lexical bundles in their academic writing. More importantly, 85 % of respondents perceived that lexical bundles help them produce coherent and organized academic writing; similarly, 87 % of respondents mentioned that lexical bundles are crucial to improve their academic writing.

According to the intervention, 88 % of the respondents believed that the intervention that students had for two months helped them to raise their awareness regarding the different functions

of lexical bundles. Though respondents believed with its importance to enhance their academic writing, 63 % of the respondents mentioned that still, they have some gaps regarding lexical bundles. This indicated that students require further assistance regarding using lexical bundles for academic writing. The finding of this research agreed with previous researchers such as (Kazemi, Kohandani & Farzaneh, 2014; Kazemi, Katirael, Rasekh, 2014) findings. They reported that lexical bundles instructions help learners and instructors in their academic writing.

Conclusion and implication

Writing is considered as one of the most crucial skills in territory education, and it is suggested that writers use lexical bundles for effective academic writing skills, and enhance communication among members of academic discipline (Abdollahpour & Gholami, 2018; Ahmadi, Ghonsoly & Fatemi, 2013; Wright, 2019). Community members in a profession use common formulaic language in their academic writing (Durrant & Mathews-Aydinli, 2011). Accordingly, the findings of the present study reveal that computer science students were unfamiliar with the concept and usage of lexical bundles. However, after the intervention, it was observed that students' started to identify the use of different lexical. Moreover, the instruction has a positive effect on students' academic writing skills; they can write organized ideas. Besides, the students can use various lexical bundles to transfer their ideas effectively.

Hence, the findings of this study have several implications for enhancing EFL student's academic writing skills. First, it is important to note that students who do not use authentic and discipline-oriented linguistics structure and rhetorical features cannot effectively communicate in their discipline. It seems promising to use corpus linguistics to consider a student's academic writing needs. Therefore, corpus linguistics analysis gives genuine and authentic linguistic structures such as lexical bundles that frequently occur.

Thus, first, EFL instructors should analyze the authenticity of the teaching material and design academic writing content that satisfies the academic writing needs of their students. Foreign and second language teachers should use corpora to satisfy the communicative needs of students. In academic writing, corpus mediates language learners by raising their awareness about the frequent lexical items used in specific academic writing genre, their structures, collocations, linguistic variations, etc. that are used in the actual communicative environment/contexts/ (Biber, 2009).

Second, they must select the most frequent and pedagogically relevant lexical bundles and instruct them about their use in different contexts. Students should be given more detailed information on the frequent lexical bundles about their use in context (Salazar, 2014). Besides, teachers need to give attention to lexical bundles in order to help students integrate them into their academic writing; the teacher may also focus on specific, professional and contextual lexical bundles that facilitate their level of awareness and understanding.

Finally, this research has some limitations. First, the number of participants in the research was small, and the researcher focused on a single sample study. Second, the researcher selected small numbers of lexical bundles as a case study in one genre. Therefore, this research calls for further study by including an additional number of EFL students. Besides, this research recommends other researchers to conduct a further study by including more than one sample. This shows the extent to which students who participate in the experiment enhances their academic writing because of the intervention. Moreover, further research is needed by considering additional lexical bundles which occur frequently in computer science published articles.

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References

- Abdulwahed, M. & Hasna, M. O. (2017). The role of engineering design in technological and 21st century competencies capacity building: comparative case study in the Middle, Asia, and Europe. *Sustainability* 9, 1-23, doi: 10.3390/su9040520.
- Abdollahpour, Z., Gholami, J. (2018). Building blocks of medical abstracts: frequency, functions and structures of lexical bundles. *The Asian ESP Journal*, 14(1)83-111.
- Adel, A., & Erman, B. (2012). Recurrent word combinations in academic writing by native and non-native speakers of English: A lexical bundles approach. *English for Specific Purposes*, 31, 81-92.
- Ahmadi, H., Ghonsooly, B., & Fatemi, A. (2013). An analysis of lexical bundles in research article abstracts by Iranian and Native English-Speaking authors of applied linguistics. *The Asian ESP Journal*, 9(1), 5-25.
- Allen, D. (2010). Lexical bundles in learner writing: An analysis of formulaic language in the ALESS learner corpus. *Komaba Journal of English Education*, 105-127.
- Allan, R. (2016). Lexical bundles in graded readers: To what extent does language restriction affect lexical patterning? *System*, 59, 61-72.
- Alshaar, A., & AbuSeileek, A. F. (2013). Using concordancing and word processing to improve EFL graduate students' written English. *Jaltcall Journal* 9(1), 59-77.
- Aklilu G. (2015). An investigation of the present situation communicative needs in an ESP context: Civil Engineering Students in focus. *English for Specific Purpose World* 48(16) 1-19.
- Barbieri, F., & Eckhardt, S. E. (2007). Applying corpus-based findings to form-focused instruction: The case of reported speech. *Language Teaching Research*, 11(3), 319-346.
- Baybee, J. & Beckner, C. (2010) Usage-Based Theory. Retrieved on October 11, 2018 from <https://www.unm.edu/~jbybee/downloads/BybeeBeckner2010UsageBasedTheory.pdf>
- Belyakova, M. (2017). English –Russian Cross linguistic comparison of research article abstracts in geoscience. *ELUA* 31, 27-45.
- Biber, D. (2006). *University language: A corpus-based study of spoken and written registers*. Johns Benjamins Publishing Company.
- Biber D. (2009). A corpus-driven approach to formulaic language in English. *International Journal of Corpus Linguistic*, 14(3) 275-311.
- Biber, D. & Barbieri, F. (2007). Lexical bundles in university spoken and written register. *English for specific purposes*, 26(3), 263-286.
- Biber, D., & Reppen, R. (2002). What does frequency have to do with grammar teaching? *Studies in Second Language Acquisition*, 24, 199-208.
- Biber, D., Conrad, S., & Cortes, V. (2004). If you look at.... Lexical bundles in university teaching and textbooks. *Applied Linguistics*, 25(3) 371-405.
- Biber, D., Conrad, S., & Leech, G. (2002), *Longman Grammar of Spoken and Written English*. England: Pearson Education.
- Biber, D., Johnsson, S., Leech, G., Conrad, S., & Finegan, E. (1999). *Longman Grammar of Spoken and Written English*. Harlow: Pearson Education.

- Birhan, A. (2018). Effects of Mastery learning instruction on Engineering Students' Writing Skills development and motivation. *Journal of Language and Education*, 4(4), 20-30.
- Boyd, G., & Hassett, M. (2000). Developing critical writing skills in engineering and technology students. *Journal of Engineering Education*, 89 (4), 409-412.
- Brooks, G. (2012). Assessment and academic writing: a look at the use of rubrics in the second language writing classroom. *Kwansei Gakuin University Humanities Review*, 17, 228-240.
- Chen, Y., & Baker, P. (2010). Lexical bundles in L1 and L2 academic writing. *Language and Learning and Technology*, 14 (2), 30-49.
- Chang, C., Kuo, C. (2011). A corpus-based approach to online materials development for writing articles. *English for Specific Purposes*, 30, 222-234.
- Creswell, J., & Creswell, J. D. & (2018). *Research design: Qualitative and quantitative, and mixed methods approach* (5th Eds.). SAGE Publication, Inc.
- Crossley, S., & Salsbury, T. (2011). The development of lexical bundle accuracy and production in English second language speakers. *IRAL*, 49 1-26.
- Cortes, V. (2004). Lexical bundles in published and student disciplinary writing: Examples from history and biology. *English for Specific Purposes*, 23, 397-423.
- Cortes, V. (2006). Teaching lexical bundles in the disciplines: An example from a writing intensive history class. *Linguistics and Education*, 17, 391-406.
- Cortes, V. (2015). Situating lexical bundles in the formulaic language spectrum: origins and functional analysis development. In V. Cortes and E. Csomay (eds) *Corpus-based research in Applied Linguistics*” Studies in Honor of Doug Biber, (pp. 197-216). Amsterdam: John Benjamins.
- Dontcheva-Navratilova, O. (2012). Lexical bundles in academic texts by non-native speakers. *Brno Studies in English*, 38(2) 37-58.
- Durrant, P., Mathews-Aydinli, J. (2011). A function-first approach to identify formulaic language in academic writing. *English For Specific Purposes*, 30, 58-72.
- Engber, C. A. (1995). The relationship of lexical proficiency to the quality of ESL compositions. *Journal of Second Language Writing*, 4(2) 139-155.
- Esfandiari, R., Barbary, F. (2017). A contrastive corpus-driven study of lexical bundles between English writers and Persian writers in psychology research articles. *Journal of English for Academic Purpose*, 29, 21-42.
- Glimore, A. (2007). Authentic materials and authenticity in foreign language learning. *Language Teaching*, 40(2) 97-118.
- Gilmore, A., Millar, N. (2018). The language of civil engineering research articles: A corpus-based approach, *English for Specific Purposes*. 51, 1-17.
- Grabowski, L. (2015). Keywords and lexical bundles within English pharmaceutical discourse: A corpus-driven description. *English for Specific Purpose*, 38, 23-33.
- Hyland, K. (2003). *Second language writing*: Cambridge. Cambridge University Press.
- Hyland, K. (2008). As can be seen: Lexical bundles and disciplinary variation. *English for Specific Purposes*, 27, 4-21.
- Hyland, K. (2012). Bundles in academic discourse. *Annual Review of Applied Linguistics*, 32, 150-169.
- Ibbotson, P. (2013). The scope of usage-based theory. *Frontiers in Psychology*, 4, 1-15. <http://www.frontiersin.org/Psychology/editorialboard>.
- Jalali, Z., & Moini, M. (2014). Structure of Lexical bundles in the introduction section of medical research articles. *Procedia-Social and Behavioral Sciences* 98, 719-726.

- Jalali, Z., Moini, M., Arani, M. (2015). Structural and Functional Analysis of lexical bundles in medical research articles: a corpus-based study. *International Journal of Information Science and Management*, 13(1), 51-69.
- Jalali, H., Zarei, G. (2016). Academic writing revisited: A phraseological analysis of applied linguistics high-stake genres from the perspective of lexical bundles. *The Journal of Teaching Language Skills*, 7(4) 87-114.
- Jiang, F., Hyland, K. (2017). Metadiscursive nouns: interaction and cohesion in abstract moves. *English for Specific Purposes*, 45, 1-14.
- Kazemi, M., Katirael, S., & Rasekh, A. (2014). The Impact of teaching lexical bundles on improving Iranian EFL students' writing skill. *Procedia-Social Behavioral Sciences* 98, 864-869.
- Kazemi, M., Kohandani, M., & Farzaneh, N., (2014). The impact of lexical bundles on how applied linguistics articles are evaluated. *Procedia-Social and Behavioral Sciences* 98, 890-875.
- Khedri, M., Heng, C., & Ebrahimi, S. (2013). An exploration of interactive metadiscourse markers in academic research article abstracts in two disciplines. *Discourse Studies*, 15(3), 319-331.
- Koester, A. (2006). *Investigating Workplace Discourse*. London: Routledge.
- Lee, H., Warschauer, M., & Lee, J. H. (2017). The effects of concordance -based electronic glosses on L2 vocabulary learning. *Language Learning & Technology*, 21 (2), 32–51.
- Millan, E. (2010). Writer's presence in research articles from different disciplines. *Iberica*, 20, 35-56.
- Moynie, J. (2018). Lexical bundles within English for academic purposes written teaching materials: A canadian context. (MA thesis) Carleton University, Ottawa, Ontario.
- Niu, G. (2015). *A corpus-based analysis of lexical bundles in English introductions of Chinese and international students' theses*. Springer International Publishing Switzerland, 486-493.
- Pan, F., Reppen, R., Biber, D. (2016). Comparing patterns of L1 versus L2 English academic professionals: lexical bundles in Telecommunications research journals. *Journal of English for Academic Purposes*, 21, 60-71.
- Qin, J. (2014). Use of formulaic bundles by non-native English graduate writers and published authors in applied linguistics. *System*, 42, 220-231.
- Pang, W. (2010). Lexical bundles and the construction of an academic voice: a pedagogical perspective. *Asian EFL Journal*, 47, 2-13.
- Paquot, M., (2010). *Academic vocabulary in learning writing: from extraction to analysis*. Continuum.
- Petrovska, I. (2012). Teaching Lexical bundles patterns in English and Macedonian tourism discourse. *Procedia-Social and Behavioral Sciences* 44, 228-235.
- Rahimi, M., Momeni, G., & Nejati, R. (2012). The impact of lexically-based language teaching on students' achievement in learning English as a foreign language. *Procedia-Social and Behavioral Sciences* 31, 31-36.
- Rashtchi, M., Ali Mohammadi, M. (2017). Teaching lexical bundles to improve academic writing via tasks: Does the type of input matter? *Electronic Journal of Foreign Language Teaching*, 14 (2) 201-219.
- Razi, S. (2015). Development of a rubric to assess academic writing incorporating plagiarism detectors. *SAGE Open*, 5(2)1-13
- Salazar, D. (2014). *Lexical bundles in native and non-native scientific writing*. Benjamins Publishing.

- Samraj, B. (2005). An exploration of a genre set: Research article abstracts and introductions in two disciplines. *English for Specific Purposes*, 24, 141-151.
- Schmitt, N., & Carter, R. (2004). Formulaic sequences in action: An introduction. In N. Schmitt (Ed.), *Formulaic sequences: Acquisition, processing, and use* (pp. 1-22). Philadelphia: John Benjamins.
- Shin, Y., Cortes, V., Yoo, I. (2018). Using lexical bundles as tools to analyze definite articles use in L2 academic writing: An exploratory study. *Journal of Second Language Writing*. 39, 29-41.
- Szudarski, P. (2018). *Corpus Linguistics for Vocabulary*. Routledge: Taylor & Francis.
- Vo, S. (2019). Use of lexical features in non-native academic writing. *Journal of Second Language Writing*, 44-1-12.
- Wright, H. (2019). Lexical bundles in stand-alone literature reviews: sections, frequencies, and functions. *English for Specific Purpose*, 54, 1-14.
- Yoon, H. & Hirvela, A. (2004). ESL Student attitudes toward corpus use in L2 writing. *Journal of Second Language Writing*, 13, 257-283

Appendix 'A'

Students' questionnaire

The following questions are regarding your opinion on lexical bundles instruction in your writing skills classes. Please use the scale below and put (x) mark in your response.

5= strongly agree

2= disagree

4=agree

1= strongly disagree

3 = neither agree nor disagree

No	Item	Scale				
		5	4	3	2	1
1	I had difficulties with the lexical bundles					
2	I did not know about the use of lexical bundles before					
3	I believe I have got some experience in this program					
4	I have some difficulty in using lexical bundles in academic writing					
5	Lexical bundles instruction gives me experience how to use them in my future academic writing					
6	The instruction process that I had given me a great exposure on how to use different lexical bundles in my writing					
7	I believe lexical bundles help me to produce coherent and organized academic writing					
8	The instruction helps to identify the use of different lexical bundles					
9	I think the instruction enhances my academic writing interest					
10	I think lexical bundles are very important to improve my academic writing skills					