

THE STRUCTURES AND FUNCTIONS OF LEXICAL BUNDLES IN PAKISTANI BIOLOGY TEXTBOOKS

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ABSTRACT

This study investigated and explored the structures and functions of 100 common lexical bundles of four-word, considering the structural and functional classification of lexical bundles, defined by (Biber, 2004, p. 381 - 384), which was used as the theoretical framework also. This study is a corpus-based study of the four-word lexical bundles taken from biology textbooks which are being taught at the Pakistani Higher Secondary School Certificate level (HSSC) in KPK. The specified corpus of these textbooks was run in the AntConc software to perceive and detached LBs in the corpus. The bundles were then analyzed and classified according to (Biber et al., 2004) structural and functional taxonomy of lexical bundles. Structural analysis showed that lexical bundles incorporating dependent clause fragments, verb phrase with passive verb and preposition phrase were the most corporate type of bundles produced by biology textbooks. In terms of the functions, the majority of the bundles served as discourse organizers and referential expressions. These discoveries have educational endeavors and can be utilized in English for academic and special purposes.

Keywords: Lexical bundles, Corpus-based study, Pakistani academic textbooks, English language teaching, English for academic purpose.

INTRODUCTION

Lexical bundles, as a distinct apt category of word combinations such as, *the fact that is, is considered to be*, apparently the case with formulaic sequence (Biber and Barbieri, 2007), coined and defined by (Biber et al., 1999) as "recurrent expressions, regardless of their idiomaticity, and regardless of their structural status" essential sequence of words that usually occur in the use of usual language. One of the earliest research on lexical bundles argued by (Altenberg, 1998) who analyzed "recurrent word combinations" in English that suggests that such combos are "evident at all steps of linguistic organization". The fact that they are as large as lexical units, even if their grammatical structure is incomplete, covering the barriers between word references and language. Various words expressions are important components in language use. Scott (1996:31) refers to such expressions as clusters. On a fundamental level, these are words that follow each other to help with framing suggestions in a particular text and help sense coherence in the text (Hyland, 2008). According to (Bieber et al., 2004), these multi-word expressions in academic work often encounter to bridge two phrases, either two noun or phrases and a verb phrases. They can also introduce a dependent clause. Instead, (Biber et al., 1999) and Holland (2008:5) agrees that multi-word expressions indicate that three or more words show a statistical trend towards collaboration in a register.

Corpus analysis assumes a massive part in exploratory valuations of lexical bundles, wherein experts as a rule from existing corpora or make on the own to count the reuse of the carried lexical bundles. Of these experimental analyses in lexical bundles, the valuation of lexical bundles places of interest has drawn in a great deal of thought. These analyses truly parts of lexical bundles utilized by

locality speakers and non-local speakers, study and inquiry the use of lexical bundles in various registers, the differentiation between the uses of lexical bundles by students at various levels has been done (Pan et al., 2016).

As a general rule, research on the corpus has seen standard models that mainly occur more at the academic other than non-academic records (Biber et al. 1999, Simpson-Vlach and Ellis 2010). For instance, educational making draws a huge blend of pre-accumulated explanations and hence attracts news or stories to the BNC Baby collection, with in excess of 450 bundles of 4 new words occur in excess of various times in a million words (Hyland) even as (Biber et al.) show that four-word bundles are made in excess on different occasions per million words in subject matter expert made worked with assisted arranged specialists. In a pedagogic terms, these bundles in this way different in various modes (Biber 2006, Biber, Conrad and Cortes 2004), so that the expansion of pedagogic circumstances shows totally various things for its spoken and made corpora (Simpson-Vlach and Ellis, 2010). It is nothing more than pivotal in the classroom, and class setting in a more comprehensive view – so different mixtures of bundles can be based on the clarity of academic and textbooks culture (Biber, Conrad and Cortes 2004, Biber and Barbieri 2007) and discourse for example, educational activities besides, class discussions using absolutely novel Bundles and twice more monologue genres like lectures (Simpson, 2004). Lexical bundles have also been studied in academic discourse across different disciplines. For instance, Hyland (2008a) studied LBs in master's perspectives, doctoral dissertations and in research articles in the field of business studies, electrical engineering, biology and applied linguistics. His research study apart from the variations and frequencies of preferred lexical bundles used in these diverse fields.

Regarding the structure of lexical bundles, earlier study has examined that lexical bundles are structurally complex, generally incomplete and no longer stable (Biber, and Conrad, 1999). Analysis of lexical bundles in the registers examined that the grammatical structure of the lexical bundles are the one of a vary attribute of the stability (Biber, and Conrad, 1999). Most of the lexical bundles in conversation have a personal pronoun pattern + verb phrase (clause fragment), for example , at the same time, as in tutorial world there are two required patters; noun phrase expressions and prepositional phrase expressions, for example, *one of the most*. Structural variations of lexical bundles have been in addition analyzed by (Biber et al., 2004). Previous research has in addition addressed the discourse features of lexical bundles with the development of a framework classification of LBs, (Biber et al., 2004), referred to that there are three lexical bundles serve in the discourse, inclusive of stance expression, discourse organizing, and references, for example, expresses attributes, time, and place.

The ability to write in English has improved into a huge strength in the connected world, and a massive number of associations and institutions have been viewed as in hiring graduates as the vital requirements (Geng, 2018). It becomes convincing and more central for making students ability to shape (Chi and Zhang, 2017, Liu and Zhang, 2018). They are lexical bundles particularly enormous for ELF students who don't have extraordinary responsibility from fair materials. Lexical bundles, an obviously of multi-word phrases, has drawn interpretation from linguistic made knowledgeable experts. The discoveries show that there are lexical bundles particularly standard both in dialogue and in academic discourse, yet lexical bundles in the two types are truly different. For instance, *I don't know what* utilized discussion is doing 44% while not save in academic considers data at al. In contrast, vocabulary of nature and therefore in academic experts find many things. This clearly shows that some lexical bundles are common to a particular genre. Readers and writers who regularly participate in a particular genre would acquainted with bundles that are commonly used in the genre. Therefore, the presence of these bundles can be used as an indicator of personal competence in a given genre, and the trouble of these bundles may indicate someone proficiency in the genre (Hyland, 2008).

Academic discourse includes textbooks which are valid and authentic. Textbooks utilize a central feature in the students' understanding and experience of a subject by providing a map of the disciplinary landscape. They also convey the particular norms, ideological assumptions, and values of a specific academic culture (Hyland, 1999). One the one hand, teachers depend on textbooks to establish their teaching and to transmit the core and basic concepts to the learners. On the other hand, learners spend their precious time and energy absorbing knowledge from the textbooks. Thus, the use of textbooks play a vital and undeniable occupation to disseminate academic knowledge. By utilizing particular linguistic features, textbooks' authors present conventions, norms, and propositional facts in order to make meaning clearer to the students (Hyland, 1999).

In Pakistani context, a corpus-based study has been carried out by Yousaf and Shehzad (2018) in which they looked out for the convection of pre-gathered structures (lexical bundles) in academic discourse. The data taken for their advantage study was Ph.D. dissertations from three different disciplines to make it cross disciplinary. It was found that LBs vary from discipline to discipline in terms of frequencies and structures. Therefore, the present study, to help in pedagogy, examined lexical and of bundles and their structural and functional taxonomies used in Biology textbooks at the Higher Secondary School Certificate level. This research study will be significantly utilized in order to enhance the performance of students in academic discourse. Summing up, the present study attempted to investigate four words common LBs used/employed in Pakistani textbooks Biology. The purpose of this study is to focus in four- word LBs written in tutorial discourse. Its principal concern is to give stability to the investigators of applied linguistics with structure and practical explanations to make their grammatical features and discourse overall perspicuous. This will be useful for language pedagogy, comparative analysis, registers variations evaluation, and crossed discipline analysis for contemporary and future assessment endeavors.

REVIEW OF LITERATURE

The studies relate as one with LBs work on their suitable use for native like consistency on register-ideal academic discourse. Lexical Bundles don't exceptionally relate with proposed syntactic units rather; occasionally join phrasal or clausal units. They arrange for idiomaticity to the educational talk that is deal to get in any case, for non- native assessment specialists and how they are purely discipline and register made. With the help of Corpora, essential teaching materials can be expected to teach English, for instance, showing guides, direction books like the Touchstone (McCarthy, McCarten and Sandiford, 2005), Vocabulary Books, diagram of Common Phrases, Grammar Books and some more. Observably, when language is taught in real life use, students improve, genuinely. Corpora gives students sensible instances of language use from real life use. Moreover, with the assistance of the corpora, the gap between what students find out in and out-of-school experiences, expecting that course books readings and material coordinators are asked to the Corpora through outline made evaluations to seeing material fittingly can be assured.

Profoundly, in the field of business studies, electrical engineering, biology and applied linguistics, Hyland (2008a) studied lexical bundles in master's alleged, doctoral dissertation and research articles. His research study discovered the variations and frequencies of preferred lexical bundles used in the various above mentioned fields. Hyland's results showed contrasts with the results of (Simpson - Vlach and Ellis, 2010) which used an contemporary combo of quantitative and qualitative measure, corpus and linguistics tests, psychological service extents and information for teachers (41), to provide a pedagogical instant, a list of conventional successions for scientific writing and speech discourse. They titled this list; 'Academic Formulas List' (AFL). By establishing this AFL, Simpson - Vlach and Ellis got the chance to notice combinations of words that to cover different academic genres. Classification of the structure of the lexical bundles of (Biber et al. , 1999) has been taken on number of concentrates in this like Biber et al. (2004), in Cortis (2002 and 2004), in the Hyland (2008a and 2008b), in Allen (2009), in Byrd and Coxhead (2010), in (Chen and Baker , 2010) and in Cosay (2013). (Biber e al., 1999) Structural classification of the lexical bundles has been modified in (Biber et al., 2004) which has been used as a theoretical explanation for the present study. They have updated and expanded their former taxonomies devised for conversation and systematic virtuosos in (Biber et al., 2004). On the one hand, a single lexical bundle works for a number of works to be sure, even in a single occurrence. For example, a lexical bundle like '*would be ideal for*' and '*take a look at*', both are subject identification and performance directive. On the other hand, depending on the context, a single lexical bundle is used for different functions. For example, a lexical bundle like '*at the end of*' and '*beginning at the*' may go probably as a place reference, time reference or deictic reference (3834). Anyway, most lexical bundles have the necessary functions, they are divided into three min groups in (Biber et al., 2004) which has been used as a theoretical purpose for this study. Moreover, the (Beng and Keong , 2017) analysis about sighted texts contributed a few additional features in the structural and functional classifications of LBs classified by (Biber et al., 2004), (Hyland, 2008) exclusively. They in addition, studied their structural and functional classifications which are the central focus of the study and are considered for the dimension of discourse of structural and functional factors of lexical bundles. (Ahmadi, Ghonsooly and Fatemi, 2013) confirm the use and features of the four-word LBs from the

corpus of abstracts of linguistic articles. The four-word bundles perceived as a description of the structural and functional than the five-word bundles (Hyland, 2008).

Furthermore, Jalali and Moini (2014) conducted a study on LBs in clinical research articles. They emphasized that teachers should construct and implement activities that raise awareness of LBs among the students. Furthermore, Kazemi, Katiraei and Rasekh (2014) conducted an experimental study on LBs to parody Iranian students' writing skills. Their findings showed positive results in writing students; they concluded that all written courses should be included importantly to LBs. In addition, Jalilifar, Ghoreishi and Emam Roodband (2016) created a list of LBs in English multidisciplinary research articles and suggested that these useful LBs could be transformed to test and learning materials. Hajizadeh, Sahragard and Ahmadi (2018) investigated the use of LBs by EFL teachers to promote English L2. They stated that LBs-based written tasks increase student participation in the text and encourage students to further study the text.

Lastly, a summary of all the studies mentioned above shed lights on the importance of the pedagogic significance of LBs in academic discourse. The study focuses on summarizing the LBs here to summarize the lexical bundles that can be used when choosing EAP/ESAP. Thusly, the present investigation looked to investigate four-word common LBs used in Pakistani biology textbooks in Khyber-Pakhtunkhwa at HSSC level (parts I and II) to know the structural and functional classifications of LBs used in these textbooks. This study works on these objectives:

- To investigate the core frequently occurring lexical bundles in Pakistani HSSC level textbooks of biology
- To identify the structural features and functional taxonomies of lexical bundles in Pakistani HSSC level textbooks of biology.

THEORETICAL FRAMEWORK

The study takes on limit for the identification of LBs proposed by (Biber, 2004) which was used as a theoretical clarification. (Biber et al., 2004) investigated LBs in university lectures and textbooks. For this study, the structural and functional taxonomies of LBs with the recommended valuable useful resource of (Biber et al., 2004) communicated of being the most functional, this framework applied and estimated to be an excessive use. Consequently, the present study has taken on the structural and functional taxonomies of lexical bundles of the usage by (Biber et al. , 2004) and these taxonomies (structural and functional) have been raised enquiring about new conclusions of structural and functional taxonomies.

(Biber et al. , 2004) significant clarification of lexical bundles establishes the groundwork for checking out in systematically lexical bundles by an essential point of view (Li and Liu, 2016). In particular, (Biber et al.) figured out the framework for discussing the lexical bundles. A pedagogic differ of attentions on lexical bundles in academic making have been carried out questioning about Biber et al. classification (e.g., Cortes, 2004; Chen and Baker, 2010; Xu, 2012; Du, 2016; Hu et al., 2017). As per made analyzed with the use of way of their classification, lexical bundles serve three essential discourse components in registers: *stance bundles* precise overall performance or assessment, *discourse organizers* contend with the affiliation between explicit factors of texts, and *referential expressions* direct bodily or dynamic substances, or to one of a created parts. These most prototypical classifications have a couple of sub-bases which are related with one of a discourse functions. The predominant discourse elements with their sub- classes, as developed by means of potential of the use of way by (Biber et al., 2004), are viewed in the following table 1.

Table No.1: Functional Taxonomies of the lexical Bundles used in Biber et al. (2004)

Functional Categories of LBs	Sub – Categories	Examples
1. Stance Expressions	<ul style="list-style-type: none"> • Epistemic Stance <ul style="list-style-type: none"> ▪ Personal ▪ Impersonal • Modality/attitudinal/ Stance <ul style="list-style-type: none"> ➤ Desire <ul style="list-style-type: none"> ▪ Personal 	<p>I think it was the way that the</p> <p>I don't want to</p>

	➤ Obligation / directive	I want you to
	▪ Personal	it is important to
	▪ Impersonal	
	➤ Intentions / predictions	I'm going to
	▪ Personal	it's going to be
	▪ Impersonal	
	➤ Ability	to be able to
	▪ Personal	can be used to
	▪ Impersonal	
2. Discourse Organizers	• Topic Introduction /focus	what to do is
	• Topic elaboration/Clarification	on the other hand
3. Referential Expressions	• Identification / focus	it is one of
	• Imprecision	something like that
	• Specifications of attributes	
	➤ Quantity Specifications	have a lot of
	➤ Tangible framing	the size of the
	attributes	in the terms of
	➤ Intangible framing	
	attributes	in the United States
	• Reference place / time / text	at the same time
	➤ place reference	as shown in figure
	➤ time reference	in the middle of
	➤ text Dixie's	
	➤ multi-functional	
	reference	
4. Special conversational Functions	Politeness	Thank you very much
	Simple request	What are you doing
	Reporting	I told him/her

RESEARCH METHODOLOGY

Due to the view of the research, the mixed-method research approach was followed. Although the corpus-based approach was used to extract LBs, a qualitative approach was adopted to explore and classify their structural and functional characteristics. On a central level, corpus-based tools are used for quantitative analysis. This research study is the analysis of the structural and functional utilization of lexical bundles in Pakistani textbooks. Textbooks at the Higher Secondary School level have been chosen for this study. In Higher Secondary School level, biology textbooks at an intermediate level (part I and II) has been chosen. This sample is published by KPK board.

Construction and Composition of the Corpus

Different steps had been accompanied to accumulate the objectives of the analysis. The collection was explored from two corpora of the textbooks of biology used at an intermediate level. However, to facilitate the process of identifying structural and functional classifications of lexical bundles and to limit the scope of this study, the below mentioned steps had been adopted. For the corpus compilation, a specialized corpora called Pakistani Corps of Textbooks (PCT) had been developed in this study. For corpus collection, chosen textbooks had been scanned to make them digitize. The corpus chosen for this study combines two textbooks: Biology (part I and II). After scanning these textbooks, free OCR software was used and scanned pages were passed through the OCR programming to recognize their unique/editable version. After this sequence, the text passed through the programming of the text-fixer

to change the data to clear out unnecessary spaces, for example lines and passage spaces. Afterward this, Microsoft text records have been changed over totally to text files and moved to AntConc software to get lexical bundles from textual archives for study. Clearly following by using AntConc software, manual bundles were truly checked to keep lexical bundles indeed associated with a specific topic. Subsequently, the N-gram option was chosen in AntConc software, then, depicted on the minimum and maximum file size at 4. Along these lines, the minimal frequency was set to 4 and the maximum to 4, overlapping bundles were also taken out from the list to avoid oversize parts of lexical bundles. The additional bundles were analyzed and classified as shown by (Bieber et al., 2004) structural and functional classifications of lexical bundles.

The corpus combination was selected paying essence to text from required textbooks. The corpus for this study included (195366) words. This corpus has two text records: Biology part I (100889 words), Biology part II (94477 words). The detailed in the corpora are illustrated in Table 2.

Table No. 2: Composition of the Corpus: Pakistani Corpus of Textbooks

Textbooks	No. of Texts	No. of Words
Biology part I	1	100889
Biology part II	1	94477
Total	2	195366

FINDING AND DISCUSSION

Resulting to driving precisely true to sorting out computational analysis using AntConc software, a quick list of 100 four-word bundles was created. After the genuinely proposed processes, four-word LBs was produced. The n-grams results show an immense number of four-word bundles coordinated by frequency. The analysis integrates both; structural and functional grounds. The classifications of lexical bundles offered by (Biber et al., 2004) falls into four huge classes: lexical bundles sorting out noun phrase, lexical bundles mixing prepositional phrase fragments, lexical bundles sorting out verb phrase fragments, and lexical bundles joining dependent clause fragments. Each of these groups further elaborated into several sub-groups. The following table 3 shows the details of the structural classification of the lexical bundles.

Table No. 3: Structural Features of lexical bundles used in Textbooks Structural

Types	Sub-types	Examples
LBs incorporating	Connector + Ist/Second	
Verb fragments	Person Pronoun VP fragments	
	Connector + Third Person Pronoun VP fragments	
	Discourse marker + VP fragments	
	VP fragments (with a non-passive verb)	is one of the, is a type of are two types of, are present in the
	VP fragments with passive verb	is composed of three, is based on the
	Yes - no question fragment	
	Wh-question fragment	which of the following, which one of the

LBs incorporating Dependent clause Fragment	<p>First/second personal pronoun + Dependent clause fragments</p> <p>Wh-clause fragment</p> <p>If -clause fragment</p> <p>(Verb/Adjective +) clause fragments</p>	
LBs incorporating The Noun Phrase and Prepositional Phrase Fragment	<p>That clause fragments Connector + a Noun Phrase an of –phrase</p>	<p>a large number of, a small amount of with as a result of, a number of different in the process of, in the absence of a twice range of, in the cells of</p>
	<p>Noun Phrase with other post-modified fragment</p>	<p>a major role in, parts of the body</p>
	<p>Expressions of other Noun Phrase</p>	<p>due to the presence</p>
Comparative Expressions Adverbial clause Adjectival Phrase	<p>Expressions of Prepositional Phrases</p> <p>Adverb (as)/article + noun Adj/determiners + Prepositions fragments</p>	<p>at the base of, at the select of, of the body in, to the end of one of the most of the most important as a result of, as a source of the central nervous system in the small intestine</p>
Determiner with Prepositional Fragment Pronoun + VP Other expressions	<p>Determiner + Preposition of fragments</p>	<p>which of the following which one of the</p>
		<p>give rise to the</p>

According to the structural classifications, there are three main structural types arranged by (Biber et al., 2004). *First*, that is lexical bundles represent verb phrase fragments are divided into seven sub-categories; opening with a subject pronoun accompanied by a verb phrase (e.g., *I'm no longer going to*), beginning with a discussion marker accompanied by a verb phrase (e.g., *and this is a*), beginning with verb phrase (e.g., *is depended on the*), as well as beginning with a Wh-question segment (e.g., *what is your take*). *Secondly*, structural type which incorporates dependent clause fragments are sub-classified as beginning with a pronoun followed by dependent clause fragment (e.g., *I preference you to*), introducing with a Wh- clause (e.g., *when we get to*) if clause (e.g., *if we look at*), as well as beginning with a complementizer or subordinate (e.g., *have the choice to*). *Finally*, the third type of structural bundles overall have casual parts: containing a noun phrase (e.g., *one of the things, the way in which*), consisting of prepositional phrases (e.g., *a little bit more*), incorporating with a comparative expression (e.g., *as well as the*).

As this study is the investigation of lexical bundles, 100 common LBs had been found and analyzed structurally. Biber et al. (2004) had been used as a theoretical and analytical framework for structural and functional classification LBs. On the one hand, there are some missing categories (presented in Biber et al. (2004), but not existing in textbooks) in the textbooks such as *if clause fragments and yes/no question fragments* (see. the above mentioned tables). The missing structures can cause no questions in these textbooks, as it often happens in daily conversations. Thus, textbooks of biology part (I and II) don't consist of conversation or dialogue. Scientific writing is concrete in nature that can happen that *if clause fragments* are also absent in the textbooks. *Personal pronouns First/Second person pronouns + VP fragments* are also missing in the scientific books because textbooks of science don't use personal pronouns and they are purely objective and descriptive. Same is the case with *Wh-questions fragments* that are also missed in the textbooks as it often happens in the conversation. On the other hand, the data contributed somewhat to the structural segments devised by (Biber et al., 2004) such as *adverbial phrases and adverbial clause phrase*. The three structural categories prevail in the textbooks such as *verbs phrase with a passive verb, prepositional phrase expression and a noun phrase with an of phrase fragments*.

Table No. 4: Functional Taxonomies of the lexical Bundles used in (Biber et al., 2004) in Textbooks

Functional Categories of LBs	Sub – Categories	Examples
Stance Expressions	<ul style="list-style-type: none"> • Epistemic Stance <ul style="list-style-type: none"> ▪ Personal ▪ Impersonal • Modality/ attitudinal/ Stance <ul style="list-style-type: none"> ➤ Desire <ul style="list-style-type: none"> ▪ Personal ➤ Obligation/ directive <ul style="list-style-type: none"> ▪ Personal ▪ Impersonal ➤ Intentions / predictions <ul style="list-style-type: none"> ▪ Personal ▪ Impersonal ➤ Ability <ul style="list-style-type: none"> ▪ Personal ▪ Impersonal 	can be used to
	<ul style="list-style-type: none"> • Topic Introduction /focus • Topic elaboration/Clarification 	body is composed of on the other hand is caused by a formed by the body

	<ul style="list-style-type: none"> • Cause/effect • Process/Procedure • Description 	describe the mechanism
Referential Expressions	<ul style="list-style-type: none"> • Identification / focus • Imprecision 	one of the following or the something like
	<ul style="list-style-type: none"> • Specifications of attributes <ul style="list-style-type: none"> ➤ Quantity Specifications ➤ Tangible framing attributes ➤ Intangible framing attributes 	a large number of in the formation of in this way the
Special conversational Functions	<ul style="list-style-type: none"> • Reference place / time / text 	the surface of the for the moment in consists of a fair to the comfort of
	place reference	
	time reference	
	text Dixie's	
	multi-functional reference	
	Politeness	
	Simple request	
	Reporting	

According to (Biber et al., 2004), lexical bundles can be set up into three types functionally: stance bundles, discourse organizers, and referential bundles. Firstly, 'stance bundles' may additionally be described as groups of words identifying attitude, judgment, and perspective of speaker, or writer's certainty or uncertainty. The bundles could be classified as both personal and impersonal. As cited in the study of Biber et al. (2004) 'stance bundles' may additionally extent into two most essential categories; epistemic stance and attitudinal/ modality stance. Epistemic stance provides the information framework interpreting certain, uncertain, or possible. Attitudinal/ modality stance bundle is highly likely to deliver the speakers' outlooks towards the activities or events (for instance, *I want you to, I'm now no longer going to*). Four main subcategories could be defined as need desire bundles, obligation/demand bundles, dedication / prediction/question bundles, and ability bundles. Then, 'discourse organizer' tends to help composing its structure as a topic show (for instance, *what do you think, do you know what*). Two main functions could be seen as topic introduction and topic clarification. As referred to in the study of (Biber et al. , 2004), topic focus is highly likely to provide a signal when a topic is introduced in which the bundles tend to occur with first and second pronouns. For topic elaboration, the bundles, (for instance, *you know, on the other hand*), are used for more clarification. Likewise, 'referential expressions' are highly inclined to relate to number, amount, size, (for instance, *at the same time, at the end of*). Four main sub-categories could be identified as identification, imprecision markers, specification of attributes as well as time and place reference (Biber et al., 2004). The recommended table 4 shows an outline of the strategy of different functional types of lexical bundles regarded in our corpus.

As this study made analyses concerning LBs in textbooks, therefore, this study did not find a special conversation function. In other words, this finding did not consist of special polite conversation functions, simple requests and reporting. After with the functional assessment of LBs, the findings reproduced that there are no magnificent conversational function, beside them; there is only one function of attitude expression; Modality/attitudinal position/Ability: impersonal, (for example, *can be used as*). Above and beyond, Discourse Organizers and Referential Expressions are splendidly utilized in textbooks. In Discourse Organizers limits; topic introduction/focus, (for example, *the valuation of the*), and topic elaboration/clarification, for example, (*is described as the, on the other hand*), are there. Noticeably, the findings of the study contributed a broad range of functional approaches of discourse organizers. New features that have been delivered to the (Biber et al., 2004) functional taxonomy into discourse organizers are: cause are effect, (for example, *due to the presence, is caused by a*), procedure /process (for example, *is shown by the, is formed by the*), and description, (for example, *is one of the*). The study found no constraints there of implicit about LBs (limits) across the textbooks. The reason may be that textbooks of science (part I and II) are close to comparable subjects rather interrelated. Each lexical bundle has been used for related elements all through the textbooks. Furthermore, the

findings focus on (Biber et al., 2004) provoked orders for functional taxonomy. Exclusively, the referential explanations in (Biber et al., 2004) like identification/focus, specification of attributes, and time/place/ text references are produced in the textbooks apart from imprecision.

CONCLUSION

After the successful achievement of this corpus based study, it has been discovered that there are many common LBs that occur in both of the biology textbooks. The study found 100 common four-word LBs occurring in selected Pakistani textbooks of biology. These LBs have been classified structurally and functionally. According to the results, in the structural category, on the one hand, there are some structural categories that are missing in the textbook, rather present in (Biber et al., 2004) such as *if clause fragments* and *yes/no questions fragments*. On the other hand, the data/discoveries made some contributions to the structural classes devised by (Biber et al., 2004) such as *adverbial phrases sentences* and *adverbial clause fragments*. Three structural categories are dominant in textbooks across the textbooks of biology such as the *adverbial phrase with passive verb*, *prepositional phrase expressions* and *a noun phrase with an of-phrase fragments*. As inquiries were made into the biology course books, a functional analysis of LBs revealed that there are no bundle related to special conversation functions analysis which are *politeness*, *simple inquiry* and *reporting*. On the other hand, there is only one *stance expression function* that is *modality/attitudinal stance/ability: impersonal*. Besides, discourse organizers and referential expressions (functions) have mostly been used in the textbooks.

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