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Author : Deliana and Meidi Anggita  
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# English Collocations of The Verb ‘Explored’ on The Corpus of Contemporary American English (COCA): a Corpus-Based Analysis

Deliana, Meidi Anggita

Universitas Sumatera Utara, Medan 20155, Indonesia

deliana@usu.ac.id, meidianggita0905@gmail.com

## Abstract

This research discusses about English collocation, type of collocations and the most frequent collocation that occurs with the verb ‘explored’ shown in COCA based on the frequency in academic texts and in the magazine. This research uses a descriptive qualitative method. The theory used to complete this research for analyzing the type of collocation is Benson and Ilson’s (1997) classified the collocation into two types there are grammatical collocation and lexical collocation. The finding shows that there is no grammatical collocation that collocates with the verb ‘explored’ and most likely appears in lexical collocation. There are only 2 types of lexical collocation that occur with the verb explored, there are verb + noun and verb + adverb collocation. The findings show that in both types of lexical collocation, the verb collocation of explored + noun and explored + adverb appear more often in academic text than magazine. The most frequent word that occurs with the verb ‘explored’ in academic writing is differences (noun) and how (adverb) and in the magazine the most frequent word is issues (noun) and how (adverb). The researchers conclude that the use of English collocation of the verb ‘explored’ is often followed by adverbs rather than nouns.

Keywords: collocation types; grammatical collocation; lexical collocation; corpus; COCA

## Abstrak

Penelitian ini membahas tentang kolokasi bahasa Inggris, jenis kolokasi dan kolokasi yang paling sering muncul dengan kata kerja ‘explored’ yang ditampilkan dalam COCA berdasarkan frekuensi dalam teks akademik dan majalah. Penelitian ini menggunakan metode deskriptif kualitatif. Konsep yang digunakan untuk melengkapi penelitian ini untuk menganalisis jenis kolokasi adalah konsep Benson dan Ilson (1997). Kolokasi diklasifikasikan menjadi dua jenis yaitu kolokasi gramatikal dan kolokasi leksikal. Temuan menunjukkan bahwa tidak ada kolokasi gramatikal yang berkolokasi dengan kata kerja ‘explored’ dan kemungkinan besar muncul dalam kolokasi leksikal. Hanya ada 2 jenis kolokasi leksikal yang terjadi dengan kata kerja ‘explored’, yaitu kata kerja + kata benda dan kolokasi kata kerja + kata keterangan. Temuan menunjukkan bahwa pada kedua tipe leksikal kolokasi, kolokasi verba explored + nomina dan explored + adverb lebih sering muncul dalam teks akademik dibandingkan dalam majalah. Kata yang paling sering muncul dengan kata kerja ‘explored’ dalam penulisan akademik adalah differences (kata benda) dan how (kata keterangan) dan di majalah kata yang paling sering muncul adalah issues (kata benda) dan how (kata keterangan). Peneliti menyimpulkan bahwa penggunaan kolokasi bahasa Inggris dari kata kerja ‘explored’ lebih sering diikuti oleh kata keterangan daripada kata benda.

Kata Kunci: tipe kolokasi; kolokasi gramatikal; kolokasi leksikal; korpus; COCA

## 1. Introduction

Nowadays, the development of technology rapidly reaches into parts of life including language. In communication, language is the main role in conveying ideas and expressing thoughts and feelings. We can also say that language cannot separate from human beings. Due to the significance of language, several linguists have attempted to define the term, which may be found in dictionaries and some textbooks (Makoni & Mashiri, 2006). Being human is to use language, to speak is to be human.

English is a language that is widely used to encourage individuals to study it as a second language for a variety of reasons. Compared to native English speakers, there are many more non-native English speakers. In 53 nations, English is the official language, and 400 million people worldwide speak it as their first language (Crystal, 2008).

In this research, the writers choose the word ‘explored’ as one of the examples of past participle that are usually used in academic writing, blog, magazine, newspaper, etc., and collocates with a particular combination of words that create the context of meaning that co-occurs. The word ‘explored’ is a form of past simple and past participle of explore that means to act of exploring, examination, or investigation, especially for the purpose of discovery.

Ismani, and Simamora (2021) investigates the difficulties faced by the students in using Participle in sentences showing that 63,73 % of the students tested in this research find difficulties in using past participle which is the most difficult among the use of present participle and perfect participle.

## **2. Literature Review**

Corpus is a collection of varieties of words, written and spoken text that contains linguistic forms and information. Since corpus-based research give them criteria for their effectiveness and convenience, corpora have grown in popularity among linguistics analysts (Leel, 2011). Corpus linguistics is the study that stored and collects language data digitally (i.e., spoken, and written texts) (McEnery & Hardie, 2012, p.164). McCarthy (2004) also described a corpus as a collection of written or spoken texts, typically stored in a computer database. It accurately provides evidence of how language is used in real situations by lexicographers and meaningful dictionary entries.

Collocation can be classified into several classifications or groups. Benson, Benson, and Ilson (1997) classify collocation into two classifications. They are grammatical collocation and lexical collocation. Grammatical collocation is the combination of a dominant word such as a noun, adjective, or verb with a preposition or grammatical structure such as an infinitive or clause. Meanwhile, lexical collocation consists of nouns, adjectives, verbs, and adverbs.

The Corpus of Contemporary American English (COCA) is a one-billion-word corpus of contemporary American English. It was created by Mark Davies in 2008, retired professor of corpus linguistics at Brigham Young University (BYU). The Corpus of Contemporary American English (COCA) is the largest freely available corpus of English, and the only large and balanced corpus of American English. COCA is now used by tens of thousands of users every month (linguists, teachers, translators, and other researchers).

The Corpus of Contemporary American English (COCA) is the only large and "representative" corpus of American English. COCA is probably the most widely-used corpus of English. The corpus contains more than one billion words of data, including 20 million words each year from 1990-2019 (with the same genre balance year by year). This makes COCA the only corpus of English that is large, recent, and has a wide range of genres.

## **3. Method**

The source of the data in this research are phrases found in the COCA that consist of several genres, but the writer focuses on two different genres, which are academic texts and magazines that shown in COCA with each link of academic texts and blogs as detailed information provided in concordance lines of the collocations of 'explored'.

The instrument used to help the writer complete this research is COCA (Corpus of Contemporary American English). COCA is the largest freely-available corpus of English, and related to many other corpora of English that has been created which offer the insight into variation in English. The writer used COCA in this research because it consists of 520 million words and is freely searchable online. It is a rich corpus that can be used, covering a wide range of texts in various genres. It can be used effectively to propose solutions to many of the educational challenges that language teachers and learners face regarding English collocations. COCA contains an authentic collection of American English text taken from five different registers/types. The five registers are spoken, fiction, newspaper, magazine, and academic. COCA can be accessed freely in English-Corpora: COCA.

According to Miles, Huberman, Saldana (2014) in qualitative research methods, the data are usually collected by several qualitative data collection techniques, such as interviews, observation, and documentation. In this research, the writer observes the data shown in Corpus of Contemporary American English (COCA). Observation in action involves watching, observing, and recording a behavior, situation, or circumstances. In this research the observation means that the writer observes each of the data shown in COCA. The writer observes what types of verb collocations occurs with 'explored' by looking for the theory of collocation by Benson and Ilson (1997). The writer analyses 200 words that collocate with the verb 'explored' shown in COCA. Then, to answer the second problem about the most frequent word that occurs with the verb 'explored' in a different genre, the writer collects the data from 100 words that collocate in the academic texts and 100 words in the magazine that occur with 'explored' as the data analysis. The data will be organized in the form of tables.

Data display is generally organized, compressed assembly of information that allows conclusion drawing and action. Visual displays provide a multidimensional space to organize data and show connections between different pieces of relevant data (Dey, 1993). In this research, the data display will be presented in table form followed by analysis, and the description of analysis will be displayed in the form of sentences.

4. Results

Table 1. Collocation of 'explored' (verb) + noun type.

Rank	Nouns collocates)	(right	Frequency	Context
1	Gender		8	have <b>explored gender</b>
2	Issues		6	has <b>explored issues</b>
3	Differences		4	has <b>explored differences</b>
4	Factors		4	has <b>explored factors</b>
5	Relationship		4	This study <b>explored relationships</b>
6	Student		4	Past research has <b>explored student</b>
7	Parts		3	I had <b>explored parts</b> of the palace
8	Students		3	This study <b>explored students'</b> levels
9	Associations		3	This study <b>explored associations</b>
10	Opportunities		3	He <b>explored opportunities</b> in the packaging
11	Perceptions		3	Little research has <b>explored perceptions</b> of the Internet
12	Aspects		3	multiple researchers have <b>explored aspects</b>
13	Attitudes		1	This study <b>explored attitudes</b> toward issues related to IT
14	Patterns		1	has <b>explored patterns</b> in academic grades
15	Strategies		1	commercial projects have <b>explored strategies</b> for parallel programming
	Total		51	

Based on the table above, the word 'explored' mostly appears as a participle in perfect tense by adding 'have' or 'has' and also appears in the past tense form. It shows that 'explored' used as a verb emphasizes the context that the investigation or the research in discovering something is already finished and happened in the past with a noun accompanying the verb 'explored' to make sense or give meaning to the sentences. It shows that the verb 'explored' is a transitive verb that requires an object to follow it, and in this case the verb 'explored' needs to collocate with noun to emphasize the context and meaning in the sentence.

Table 2. Collocation of verb + adverb type.

Rank	Adverbs collocates)	(left	Frequency	Context
1	How		20	Some scholarship has <b>explored how</b>
2	Before		15	this topic has been <b>explored before</b>
3	Here		14	these issues have not been <b>explored here</b>
4	Below		8	Further implications are <b>explored below</b>

5	Further	6	This concept is <b>explored further</b>
6	More	6	this being <b>explored more</b>
7	Only	6	The First Landers had <b>explored only</b> a tiny fraction of this continent
8	Sufficiently	4	These dimensions have not been <b>explored sufficiently</b>
9	Extensively	3	The United States has been <b>explored extensively</b>
10	Previously	2	that was not <b>explored previously</b>
11	Again	2	Economic hardship is <b>explored again</b>
12	Theoretically	1	various aspects of the gravitational lens effect were explored <b>theoretically</b>
13	Separately	1	These items were also explored <b>separately</b> for each branch of service
Total		88	

The data above illustrate that, in COCA the adverb 'how' had the highest frequency among the other adverbs with 20 frequency and at this point, the number of frequencies explains that the word how frequently and strongly collocate with explored as the type of verb + adverb collocation.

From the rank in the table represent above, the collocation of verb + adverb type found in COCA in various types of adverbs. According to the frequency shown in COCA, there are 10 adverbs that frequently occur with explored, such as how, before, here, below, further, more, only, sufficiently, extensively, and previously.

Table 3. Collocation of 'explored' + noun found in Academic Texts

Rank	Nouns (right collocates)	Frequency	Context
1	Differences	5	No studies have <b>explored differences</b> in people's perceptions
2	Genders	5	The present study <b>explored gender</b> differences
3	Relationships	5	Other studies have <b>explored relationships</b> between nitrogen dioxide and specific diseases
4	Student	4	Past research has <b>explored student</b> motivations
5	Factors	4	Researchers have <b>explored factors</b> in adolescents with visual disabilities

6	Issues	3	Researchers have <b>explored issues</b> of procedural fairness
7	Aspects	3	We <b>explored aspects</b> of each work
8	Students	3	Several researchers have <b>explored students'</b> responses
9	Perceptions	3	Research has <b>explored perceptions</b> of the internet
10	Associations	1	Only one other study has <b>explored associations</b> between
11	Attitudes	1	we <b>explored attitudes</b> toward women's work in general
12	Strategies	1	Commercial projects have <b>explored strategies</b> for parallel programming
	Total	38	

The table shows that there are varieties of nouns in the table and most of the type of noun that collocate with explored is in the plural, means that the nouns that follow the verb explored are refer to more than one person, place, things, or idea. It is noticeable that most nouns in the table are the type of concrete noun, which is noun as the things that can be perceived with the five senses, e.g., student, teacher, college, basins, family, children, art, region, etc. It can also be inferred that in academic texts the verb explored frequently used in something that can be seen and tested and not only to think or to talk about one thing, however, noun followed by explored cover a wide range of topics given the context it provides.

Table 4. Collocation of 'explored' + adverb found in Academic Texts

Rank	Adverbs collocates)	(left	Frequency	Context
1	How		15	Marcia Pointon has <b>explored how</b> this clothing.
2	Here		11	These issues have not been <b>explored here</b>
3	Below		7	Further implications are <b>explored below</b>
4	Further		5	These interaction terms were <b>explored further</b>
5	Only		5	have <b>explored only</b> a limited number
6	More		4	should be <b>explored more</b>
7	Before		4	have not been <b>explored before</b>
8	Sufficiently		4	has not been <b>explored sufficiently</b>
9	Extensively		3	have been <b>explored extensively</b> in the literature

10	Again	2	His leg is <b>explored again</b>
11	Previously	1	has not been <b>explored previously</b>
	Total	61	

This reveals that the word explored has various adverbs following it, especially in the context of academic texts. In the table can be seen that based on the frequency, the most frequent verb collocations of the word explored in academic texts is how with 15 as the total frequency shown in COCA which is one of the large numbers, showing how strong the collocation explored with how. Then, the next frequent verb collocation of explored + adverbs are here, below, further, only, more, before, above, both and only.

Table 5. Type of Lexical Collocation of 'Explored' in Magazine in COCA.

Rank	Nouns (right collocates)	Frequency	Context
1	Issues	3	Rankine has <b>explored issues</b> such as motherhood
2	Parts	1	I had <b>explored parts</b> of the palace
3	Space	1	NASA has <b>explored space</b>
4	Volcanoes	1	has <b>explored volcanoes</b> around the world
5	Pieces	1	reporters have <b>explored pieces</b> of Lindner's influence
6	Pastel	1	one of his contemporaries had <b>explored pastel</b>
7	Alternatives	1	Your novels have <b>explored alternatives</b>
8	Advertising	1	He has <b>explored advertising's</b> history
9	Lava	1	We <b>explored lava</b> tubes
10	Technologies	1	they <b>explored technologies</b>
11	Mission	1	We've <b>explored mission</b> concepts
12	Belief	1	He had <b>explored belief</b>
13	Babies	1	has <b>explored babies'</b> sense of pitch
14	Autism	1	Grinker <b>explored autism</b> in different cultures
15	Aspects	1	papers have <b>explored aspects</b> of this scenario
16	Student	1	library studies have <b>explored student</b> perceptions
	Total	18	

The verb explored considered as a transitive verb that need an object to make sense the sentence. The collocation of explored occurs with each noun in the table above helps the sentence to be completed and make sense also can be understood by the reader. Each noun of the text shows that it follows the word explored to help the sentence complete what was going to be discovered and talk about. This means the verb collocation of explored in magazine focuses on discovering a particular subject or area that is being discussed and illustrated by the verb collocation of explored + noun.

Table 6. Collocation of 'explored' + adverb found in Magazine.

Rank	Adverbs (left collocates)	Frequency	Context
1	How	6	It <b>explored how</b> prone human experience
2	Only	5	has <b>explored only</b> 15 percent of its territory
3	Here	4	that wasn't <b>explored here</b>
4	Before	4	that have been <b>explored before</b>
5	Further	4	We <b>explored further</b>
6	Today	3	being <b>explored today</b>
7	More	2	have been <b>explored more</b>
8	Extensively	1	has been <b>explored extensively</b>
9	Nearly	1	he has <b>explored nearly</b>
10	There	1	has been <b>explored there</b>
	Total	31	

It reveals that adverbs are commonly used that follow the verb explored in the magazine. From the above 10 adverbs show from the highest until the lowest frequency, the verb explored is considered as a verb that generally refers to widely discover something in any way, the collocation of explored + adverb in magazine helps the context of each topic to complete the information to the reader of how, why, where, when the publication of some issues are talked about. The context provided by the verb explored in the magazine are focuses on several topics related to some articles that may increase the interest of many people, that is showing the collocation of explored + adverb complete the discussion on the sentence excavate an issue and better information with recent news or publication that contains some illustrations.

## 5. Conclusion

From the above results, we can from seven combinations of lexical collocation by Benson and Ilson (1997), there are only two types of lexical collocations used in American English that are shown in COCA. There is verb + noun and verb + adverb collocations. In the use of the verb collocation of explored + noun COCA shows Collocation of 'explored' (verb) + noun type has 51 total in frequency. The second type of lexical collocation of the verb explored (verb) + adverb type shown in COCA has 88 total frequencies. At this point, the number of frequencies explains that adverb frequently and strongly collocates with explored as the type of and commonly used as reporting verbs and transitive verbs.

The result in the most frequent collocation of explored + noun in academic texts and magazine genre found in COCA shows that the collocation of 'explored' is commonly use in academic writing according to the highest frequency. From the collocation of the verb explored + noun in academic texts, there are 38 frequencies and in magazine, there are 18 frequencies. Meanwhile, the most frequent collocation of the verb explored noun+ adverb in academic texts is 61 total frequencies, and in the magazine, there are 31 frequencies. The findings show that in both types of lexical collocation, the verb collocation of explored + noun and explored + adverb appear more often in academic text than magazines. The most frequent word that occurs with the verb 'explored' in academic writing is differences (noun) and how (adverb) and in the magazine the most frequent word is issues (noun) and how (adverb). The writers conclude that the use of English collocation of the verb 'explored' is often followed by adverbs rather than nouns.



From all the collocations found in COCA, the researcher found that all nouns included in this research are used as the middle range frequency, which means that the use of the collocation of 'explored' + noun in academic texts and in magazines shows the characteristic of explored in academic writing as neutral reporting verbs that used to report the topic discussion to describe the information as fact and classified as research acts verbs that indicate experimental activity carried out in the real world by Hyland (1999).

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