CAKRAWALA PENDIDIKAN

FORUM KOMUNIKASI ILMIAH DAN EKSPRESI KREATIF ILMU PENDIDIKAN

CAKRAWALA PENDIDIKAN
Forum Komunikasi Ilmiah dan Ekspresi Kreatif Ilmu Pendidikan

Terbit dua kali setahun pada bulan April dan Oktober
Terbit pertama kali April 1999

Penyunting menerima artikel yang belum pernah diterbitkan di media cetak yang lainnya. Syarat-syarat, format dan aturan tata tulis artikel dapat diperiksa pada *Petunjuk bagi Penulis* di sampul belakang dalam jurnal ini. Artikel yang masuk akan ditelaah oleh Tim Penyunting dan Mitra Bestari untuk dinilai kelayakannya. Tim akan melakukan perubahan tata letak dan tata bahasa yang diperlukan tanpa mengubah maksud dan isinya.

Petunjuk Penulisan Cakrawala Pendidikan

1. Artikel belum pernah diterbitkan di media cetak yang lainnya.
2. Artikel diketik dengan memperhatikan aturan tentang penggunaan tanda baca dan ejaan yang baik dan benar sesuai *Pedoman Umum Ejaan Bahasa Indonesia yang Disempurnakan (Depdikbud, 1987)*
3. Pengetikan Artikel dalam format Microsoft Word, ukuran kertas A4, spasi 1.5, jenis huruf *Times New Roman*; ukuran huruf 12. Dengan jumlah halaman; 10 – 20 halaman.
4. Artikel yang dimuat dalam Jurnal ini meliputi tulisan tentang hasil penelitian, gagasan konseptual, kajian dan aplikasi teori, tinjauan kepustakaan, dan tinjauan buku baru.
5. Artikel ditulis dalam bentuk esai, disertai judul sub bab (heading) masing-masing bagian, kecuali bagian pendahuluan yang disajikan tanpa judul sub bab. Peringkat judul sub bab dinyatakan dengan jenis huruf yang berbeda, letaknya rata tepi kiri halaman, dan tidak menggunakan nomor angka, sebagai berikut:

   PERINGKAT 1 (HURUF BESAR SEMUA TEBAL, RATA TEPI KIRI)
   Peringkat 2 (Huruf Besar-kecil Tebal, Rata Tepi Kiri)
   Peringkat 3 (*Huruf Besar-kecil Tebal, Miring, Rata Tepi Kiri*)

6. Artikel konseptual meliputi; (a) judul, (b) nama penulis, (c) abstrak dalam bahasa Indonesia dan Inggris (maksimal 200 kata), (d) kata kunci, (e) identitas penulis (tanpa gelar akademik), (f) pendahuluan yang berisi latar belakang dan tujuan atau ruang lingkup tulisan, (g) isi/pembahasan (terbagi atas sub-sub judul), (h) penutup, dan (i) daftar rujukan. Artikel hasil penelitian disajikan dengan sistematika: (a) judul, (b) nama-nama peneliti, (c) abstrak dalam bahasa Indonesia dan Inggris (maksimal 200 kata), (d) kata kunci, (e) identitas penulis (tanpa gelar akademik), (f) pendahuluan yang berisi pembahasan kepustakaan dan tujuan penelitian, (g) metode, (h) hasil, (i) pembahasan (j) kesimpulan dan saran, dan (k) daftar rujukan.
7. Daftar rujukan disajikan mengikuti tata cara seperti contoh berikut dan diurutkan secara alfabetis dan kronologis.

   Anderson, D.W., Vault, V.D., dan Dickson, C.E. 1993. *Problem and Prospects for the Decades*
   Ahead: Competency Based Teacher Education. Barkeley: McCutchan Publishing Co.
   Huda, N. 1991. *Penulisan Laporan Penelitian untuk Jurnal.* Makalah disajikan dalam Loka
   Karya Penelitian Tingkat Dasar bagi Dosen PTN dan PTS di Malang Angkatan XIV, Pusat Penelitian IKIP MALANG, Malang, 12 Juli.
   Prawoto, 1998. *Pengaruh Pengirformasian Tujuan Pembelajaran dalam Modul terhadap Hasil*
   Belajar Siswa SD PAMONG Kelas Jauh. Tesis tidak diterbitkan. Malang: FPS IKIP MALANG.
   Russel, T. 1993. An Alternative Conception: Representing Representation. Dalam P.J. Nlack & A. Lucas (Eds.) *Children's Informal Ideas in Science* (hlm. 62-84). London:Routledge.
   Sihombing, U. 2003. *Pendataan Pendidikan Berbasis Masyarakat.* http://www.puskur.or.id.Diakses pada 21 April 2006.
   Zainuddin, M.H. 1999. Meningkatkan Mutu Profesi Keguruan Indonesia. *Cakrawala Pendidikan.* 1 (1):45-52.

8. Pengiriman Artikel via email ke hudaferi@gmail.com paling lambat 3 bulan sebelum bulan penerbitan.

CAKRAWALA PENDIDIKAN

Forum Komunikasi Ilmiah dan Ekspresi Kreatif Ilmu Pendidikan

Daftar Isi

TYPES OF SENTENCE IN THE BOOK OF THE MATHEMATICAL THEORY OF RELATIVITY BY SIR ARTHUR STANLEY EDDINGTON

Dessy Ayu Ardini

dessyardini@gmail.com

Universitas PGRI Adi Buana Kampus Blitar

Abstrak: Dalam menulis, kita harus memperhatikan struktur konstruktif di dalamnya agar tulisan kita bagus, efektif dan dapat dipahami oleh pembaca. Namun, kita sering menjumpai tulisan tanpa struktur semestinya dan tulisan yang tidak efektif. Oleh karena itu, kita dapat mengefektifkannya dengan menggunakan kata penghubung dan tanda baca, penggunaan ini termasuk dalam jenis-jenis kalimat. Kita akan dapat menemukan jenis kalimat dalam buku. Peneliti khususnya menggunakan buku ilmiah berjudul The Mathematical Theory of Relativity karya Sir Arthur Stanley Eddington untuk dianalisis jenis-jenis kalimatnya. Penelitian ini menggunakan penelitian deskriptif kuantitatif. Dari 427 data yang diambil peneliti, 127 (29,7%) data tergolong kalimat sederhana, 180 (42,2%) data tergolong kalimat kompleks, 40 (9,4%) data tergolong kalimat majemuk, dan 80 (18,7%) data termasuk kalimat majemuk-kompleks. Jenis kalimat yang dominan dalam buku ini adalah kalimat kompleks.

Kata Kunci: *Kalimat, jenis kalimat*

Abstract: In writing, we must pay attention to the constructive structure in it so that our writing is good, effective and can be understood by the reader. However, we often encounter writing without a pre-existing structure and ineffective writing. Therefore, we can make it effective by using conjunctions and punctuation marks, this usage is included in the types of sentence. We will be able to find types of sentences in the books. The researcher uses especially the scientific book entitled The Mathematical Theory of Relativity by Sir Arthur Stanley Eddington to analyze the types of sentences. This research used descriptive quantitative research. From 427 data which are taken by the researcher, 127 (29,7%) data belongs to simple sentences, 180 (42,2%) data belongs to complex sentences, 40 (9,4%) data belongs to compound sentences, and 80 (18,7%) data belongs to compound-complex sentences. The dominant types of sentence of this book is complex sentences.

Keywords: *Sentence, types of sentence*
.

INTRODUCTION

Language is the way humans communicate. Humans can communicate by means of gestures, spoken and written. Sapir, Edward (1921) states that language is a purely human and noninstinctive method of communicating ideas, emotions, and desires by means of a system of voluntarily produced

symbols. Whereas, Fashold, Ralph W. (2006) (in Finegan, E. 1989) state that we might define language as a finite system of elements and principles that make it possible for speakers to construct sentences to do particular communicative jobs. In writing, every word has a meaning with its structural position, in contrast to spoken language, which sometimes people do not pay attention to grammatical and linguistic structures. The conventions of writing tend to be less flexible than those of conversation, and the language which is used tends to be standardized (Broughton G., Brumfit, *et.al.* 1978:116). There are five major components of the structure of language such as phonemes, morphemes, lexemes, syntax, and context. These pieces all work together to create meaningful communication among individuals.

This research specifically discusses syntax by paying attention to types of sentence from the textbook. Throughout our life, of course we have read many books, we often interpret books without knowing the structure of words in the book. By studying the syntax, we will know the position of words and even types of sentence in the book. Syntax is a set of rules for constructing full sentences out of words and phrases. Every language has a different set of syntactic rules, but all languages have some form of syntax. The fundamental aim in the syntactic structure analysis of a language is to study the structure of the grammatical sequences (Chomsky, 2005:19). Usually, in written sentences or conversations, we find syntax elements in words or clauses that are commonly referred to as subject, verb, and object. Syntactic structures can be one of the problems to learn English, because Indonesia language and English language have different element. It needs more attention, for it is the basic modal to learn English.

Sentences as constituents in writing have a very important structure for us to learn. Good writing will make readers know the contents of the writing and can show the author's inspiration in it. A good sentence structure will also make our writing interesting. Learning about sentences also helps a teacher, who according to the Department of English on our campus, teaches lessons on good and correct writing. Therefore, the researcher explores deeper information about the sentence that will help other writers or student to make their writing better. Demirezen, M. (2019) state that learning about the different types of sentences and punctuation in teaching writing help the students to become better writers by enabling them to convey various types of information and emotion in their writing. So, the researcher will present the types of sentence in this research. Furthermore, apart from teaching writing, learning a sentence also helps students speak fluently. This statement is the same as from Rausch, Pamela (2015) that if the

learners have skills to produce academic language in writing, they can transfer the argumentative skills to language speaking skills.

According Vespoor, Marjolijn and Sauter, Kim (2000) from their book entitled English Sentence Analysis states that there are 4 types of sentence such as, simple sentence, complex sentence, compound sentence, and compound-complex sentence. In another book, Longman English Grammar by Alexander L. G. (1988) states that there are 3 types of sentence such as, simple sentence, compound sentence, and complex sentence. Researcher takes 4 types of sentence to analysis the book of The Mathematical Theory of Relativity.

This research analyzes the types of sentence from books written by famous authors and is Plumian Professor of Astronomy and Experimental Philosophy in the University of Cambridge called A. S. Eddington, M.A., M.Sc., F. R. S. entitled The Mathematical Theory of Relativity. Eddington is a physicist who is very popular for his various theoretical findings on astronomy, relativity, and all about the theory of universe. Through the book The Mathematical Theory of Relativity, Eddington has convinced many people that they understand what relativity means.

Based on the explanation above, the researcher is interested to conduct this study under the title "Types of Sentence in the Book of The Mathematical Theory of Relativity by Sir Arthur Stanley Eddington".

REVIEW OF RELATE LITERATURE
Sentence

A sentence is a group of words that are put together to mean something. A sentence is a complete unit of meaning (Alexander L. G. 1988:12). A sentence is the basic unit of language which expresses a complete thought. It does this by following the grammatical basic rules of syntax. For example: "Jean is singing".

A complete sentence has at least a subject and a main verb to state a complete thought. Short example: She sings. In English and many other languages, the first word of a written sentence has a capital letter. At the end of the sentence there is a punctuation mark depending on whether it is a statement, a question, a command, a request or an exclamation.

A grammatically complete sentence expresses at least one complete whole event or situation with a subject and predicate. Some sentences consist of only one clause. According to Verspoor, Marjolijn and Sauter, Kim (2000) A clause expresses a whole event or situation with a subject and a predicate.

The subject of the sentence is the noun that is doing or being something. The subject contains the person, place, thing, or idea for example, *Mrs. Clair, the table, Surabaya, the football club, etc.*

There are three kinds of subject, there are: First, Simple subjects that refer to just the noun that is performing the action and no other words that are describing that noun, for example, *The girl played in the schoolyard*. Second, Complete Subjects that include the noun that is performing the action and any descriptors of that noun, for example, *Lana, a blonde-hair girl played in the schoolyard*. Third, Compound subjects are ones in which two nouns perform the action, for example, *Lana and Kana played in the schoolyard*.

According to Alexander L. G., (1988:11) "The predicate is what is said about the subject, i.e. it is all the words in a sentence except the subject". The predicate must contain a verb, and the verb requires or permits other elements to complete the predicate, or it precludes them from doing so. These elements are objects (direct, indirect, prepositional), predicative, and adjuncts, for example, *Carrie eat banana*, from this sentence *eat banana* is the predicate. A predicate may also include other modifiers such as expressions of time and place. For example, First, *An old man who wears sunglasses is sleeping on a park bench*. Second, *An old man wearing sunglasses slept on a park bench at 3 p.m. every Sunday*.

Types of Sentence

Sentence is divided into four major types; Simple Sentence, Compound Sentence, Complex Sentence, and Compound-Complex Sentence. Below are the explanations of each type of the sentence:

1. Simple Sentence

According to Oshima, Hogue (2007:164) A simple sentence is one independent clause and according Alexander L.G. (1988:4) the smallest sentence-unit is the simple sentence that normally has *one* finite verb and has a subject and a predicate. A simple sentence minimally contains one subject and one verb. The subject of the simple sentence is the noun that is doing or being something. The verb tells the action (run, speak, think, etc.) for example, *Nagata (S) run(V) two kilometers*. The verb can also tell about condition (is, am, are, were, was, etc.) for example, *Only the mediocre(S) are (V) always at their best*.

Every word in a sentence serves a specific purpose within the structure of that particular sentence. According to rules of grammar, sentence structure can sometimes be quite complicated. For the sake of simplicity, however, the basic parts of a sentence are discussed here. The two most basic parts of a sentence are the *subject* and *predicate*.

- Subject

The subject of a sentence is the person, place, or thing that is performing the action of the sentence. The subject represents what or whom the sentence is about. The simple subject usually

contains a noun or pronoun and can include modifying words, phrases, or clauses. *The man . . .*

- Predicate

The predicate expresses action or being within the sentence. The simple predicate contains the verb and can also contain modifying words, phrases, or clauses. *The man /buys a car.*

The subject and predicate make up the two basic structural parts of any complete sentence. In addition, there are other elements, contained within the subject or predicate, that add meaning or detail. These elements include the direct object, indirect object, and subject complement. All of these elements can be expanded and further combined into simple, compound, complex, or compound/complex sentences.

- Direct object

The direct object receives the action of the sentence. The direct object is usually a noun or pronoun.
The man buys a car.
The man buys it.

- Indirect object

The indirect object indicates to whom or for whom the action of the sentence is being done. The indirect object is usually a noun or pronoun.
The man buys his family a car.
The man buys them a car.

- Subject complement

A subject complement either renames or describes the subject, and therefore is usually a noun, pronoun, or adjective. Subject complements

occur when there is a *linking verb* within the sentence (often a linking verb is a form of the verb *to be*).
The man is a good friend. (*friend =* noun which renames the subject)
The man seems kind. (*kind =* adjective which describes the subject)
Note: As an example of the difference between parts of speech and parts of a sentence, a noun can function within a sentence as subject, direct object, indirect object, object of a preposition, or subject complement.

A simple sentence could have a compound subject and compound verb/predicate (i.e., a subject with two or more simple subjects and verb with two or more simple verb) For example, First*, Shima (S) and Ogue (S) are (V) the best authors in the history of literacy.* Second, *Tania(S) can sing(V) beautifully and dance(V) agile.* All the examples are simple sentences because they have only one clause.

2. Compound Sentence

A compound sentence joins two or more sentences that have related ideas of equal importance. The two sentences go together. Khodijah, Siti (2015) state that complex sentence is a developed simple sentence, in which consist of one independent clause and one or more dependent clauses (subordinate clause), and the relation between them is very tight. Each sentence or independent clause must still have a subject and a verb, for example:

- She wanted limo pizza; he wanted a hamburger.
- He went to the office, but she stayed home.

One way to create a compound sentence is with a semi-colon. Not a common practice, a semi-colon is used only where ideas are very closely related, for example:

- He loves me; he loves me not.

- They say it's your birthday; it's my birthday too! - Paul McCartney
- Management is doing things right; leadership is doing the right things.-Peter Drucker

Another way to create a compound sentence is with a coordinating conjunction. Coordinating conjunctions are sometimes referred to as FANBOYS (for, and, nor, but, or, yet, so).

The Use of Coordinating Conjunction

Coordinating Conjunction	The Use of Coordinating Conjunction
And, both…and, not only…but…(too/as well), not only…but also, and then.	Addition/sequence
But, yet.	Contrast
Either…or, neither…nor.	Alternatives
So	Result
For	Cause

Notice how a comma is used with a coordinating conjunction, for example:

➤ For – He couldn't go home, for he had no place to go.
➤ And – I took a online taxi, and he drove home.
➤ Nor – He didn't want help, nor did she offer it.
➤ But – Simon wants to buy the comic, but his money is not enough to pay for it.
➤ Or – He cooked dinner, or he went out to a restaurant.
➤ Yet – She owned a motorcycle, yet she didn't know how to drive it.

➤ So – She had to go, so she called a driver to drive her.

Common problems with compound sentences include commas splices. A comma alone is not enough to connect two sentences. For example:

Wrong – She was tired from taking care of the baby, she had to go to office anyway.

Right – She was tired from taking care of the baby; she had to go to office anyway.

Right – She was tired from taking care of the baby, but she had to go to office anyway.

Dual construction vs. the coordinating conjunction - or when

to use the comma. When combining sentences into a compound sentence, you need a comma before the coordinating conjunction (Alexander L. G. 1988). Another way to connect two main clauses and form a compound sentence is to put a semi-colon (;) between the main clauses. For example, *We can safely feed the sharks; we must wear protective clothing and stay in this cage.*

According to Verspoor and Sauter (2000:37) To make the logical connection clear between two main clauses separated with a semicolon, the semi-colon is often followed by a word like therefore, besides, or similarly called a conjunctive adverb.

Use a comma before a coordinating conjunction in compound sentence only. Do not use a comma to join two words or two phrases in simple sentence. Compound sentence (with comma) for example, *Yesterday, we visited a magician's house, but we did not find him in his house*. Simple sentence (no comma) for example, *Yesterday, we visited a magician's house but we did not find him in his house.*

3. Complex Sentence

According to Verspoor and Sauter (2000:37) A complex sentence is a sentence that contains at least one full dependent clause with its own subject and predicate. According to Warni, Danisa, Rozimela, Yenni, and Fitrawati (in Rozimela, 2005), written language is characterized by the fragment occurrences of big nominal groups and complex clauses. An independent clause (unlike a dependent clause) can stand alone as a sentence. Dependent clause is a clause that starts with a subordinator, a word like because, although, if, who, where, when, that and so on. The formula for complex sentence is Independent Clause + Conjunction + Dependent Clause or Conjunction + Dependent Clause + Independent Clause. For example, First, *The football match was cancelled (independent clause) because it was raining (dependent clause).* Second, *When the cake is brown (dependent clause), remove it from the oven(independent clause).VER* In the second examples of complex sentences, the dependent clause comes first. Notice that the dependent clause begins with a subordinating conjunction (words like since, because, when) and that the clauses are separated by a comma Oshima, Hogue (1936:101).

The Use of Conjunction

Conjunction	The Use of Conjunction
If, unless, as long as.	Condition/situation
When, before, after, since, until, while, now that, whenever, as soon as, as, once, by the time.	Time
Although, though, even though, despite, in	Contradiction

Conjunction	The Use of Conjunction
spite of.	
Because.	Cause and effect
That, who, when, which, where.	Adding information
who, whose, whoever, whom, whomever.	Adding information about a person
As.	Manner
So that, only if, even if, provided that.	Purpose

In addition to subordinating conjunctions, complex sentences can use three types of clauses, called subordinating clauses:

1. Adjective clause

Examples of adjective clauses working as dependent clauses in complex sentences might be:

- The thief who had taken the pony was found guilty by the jury.
- The apartment that felt drafty even in spring needed remodeling.

2. Noun Clause

Examples of noun clauses working as dependent clauses in complex sentences might be:

- Whoever added the eraser to a pencil was very clever.
- While on vacation, we can do whatever we like.

3. Adverb Clause

Examples of adverb clauses working as dependent clauses in complex sentences might be:

- Although we played well, we lost the baseball game.
- Whether we liked it or not, we lost by many runs.

4. Compound-complex sentences

According to Oshima, Hogue (1936:174) A Compound-complex sentence has at least three clauses, at least two of which are independent. We can use almost any combination of dependent and independent clauses. Just be sure that there is at least one independent clause. For example, *Obama, who works out three times a week, feels good about his body; therefore he is happy all the time.*

- dependent clause (adjective clause) = who works out three times a week
- independent clause = (1) Obama feels good about his body. (2) He is happy all the time.
- subjunctive adverb = therefore

Punctuate the compound part of a compound-complex sentence like a compound sentence. When using the coordinate conjunction (for, and, nor, etc), the punctuation comma is usually used right before the coordinate conjunction. When using a conjunctive adverb (e.g. furthermore, however, when) at the beginning of an independent clause, the semicolon punctuation (semicolon) is used immediately before the hyphen and the comma immediately after the conjunctive adverb.

Punctuate the complex part of compound-complex sentence like a complex sentence. With adverb clauses, put a comma after the dependent adverb clause but not before them. With noun clause use no commas.

The Book of The Mathematical Theory of Relativity by Sir Arthur Stanley Eddington

Description from Cambridge University Press, Sir Arthur Eddington here formulates mathematically his conception of the world of physics derived from the theory of relativity. The argument is developed in a form which throws light on the origin and significance of the great laws of physics; its consequences are followed to the full extent in the consideration of gravitation, relativity, mechanics, space-time, electromagnetic phenomena and world geometry.

This book was published in 1923 by Cambridge University press, and the author got the E-book from The Project Gutenberg which was released on April 11, 2019.

Article from Wikipedia states Eddington wrote a number of articles that announced and explained Einstein's theory of general relativity to the English-speaking world. World War I had severed many lines of scientific communication, and new developments in German science were not well known in England.

According to O'Connor and Robertson (2003) Eddington lectured on relativity at Cambridge, giving a beautiful mathematical treatment of the topic. He used these lectures as a basis for his book Mathematical Theory of Relativity which was published in 1923. Einstein said that this work was the finest presentation of the subject in any language. He conducted an expedition to observe the solar eclipse of 29 May 1919 that provided one of the earliest confirmations of general relativity, and he became known for his popular expositions and interpretations of the theory.

In addition to his work in relativity theory Eddington also did important work on the internal structure of stars. He discovered the mass-luminosity relationship for stars, he calculated the abundance of hydrogen, and he produced a theory to explain the pulsation of Cepheid variable stars. His early research on this is contained in the important work The Internal Constitution of Stars (1926).

Related Studies

First, a thesis from Siti Mamdatul Umiriyah 2018 entitled "The Types of Sentence Used In News Item Text" (A Study at the Third Semester Students of English Language Education of UIN Walisongo Semarang in the Academic Year 2016/2017). Umriyah, Siti Mamdudatul designed the research to find out types of sentences are found in news item text from student and to identify the frequency of occurrence of sentence types are found in news item text from student. The writer uses

descriptive quantitative research design, since it is aimed to describe the data as they are found in the field. Then the frequency of occurrence analysis is used to get the number of their frequency. The population is all sentences in news item text from student. Two sampling techniques are used to get the sample; they are random sampling technique and purposive sampling. The frequency occurrence of sentence types used in students' writing showed that the frequency of simple sentence was 49.59%, compound sentence is 6.50%, complex sentence is 36.59% and compound-complex sentence is 7.32%.

Second, a thesis entitled An Analysis of The Sentence Types Used in The Theses Written by English Department's Graduates of May 2016 Period in Universitas Negeri Padang by Siska Umi Sovia. The findings of this research show that there are 4 four sentence types written by the students. Based on the 213 data analyzed, only 208 can be categorized as sentences while the other 5 data are sentence fragments. The details are 92 simple sentences, 103 complex sentences, 5 compound sentences, and 8 compound-complex sentences. Based on the data found, the most used sentence types are complex sentence followed by simple sentence.

Third, The Syntactic of English Sentence Structure in Brad Bird' The Incredibles' by Diana in year 2017. This thesis was conducted by using descriptive qualitative design. The finding of this study concern sentence types has been calculated. Thus, the researcher has concluded that there are 106 sentences are identified, 64 sentences are simple sentence (60,37%), 15 sentences are compound sentence (14,15%), 22 sentences are complex sentence (20,75%), and 5 sentences are compound-complex sentence (4,71%). Nevertheless, the dominant sentences are simple sentence. Then, the lower occurrences of sentence types occurred in compound-complex sentence. This study also constructs devices to identify the sentence structure portrayed in tree diagram. Whereas, there are three patterns phrase structure rule that occurred in four sentence type such as: S NP-VP, S NP, Mod- VP, and S NP-Aux-VP. The upper occurrences occurred in first pattern and the lower occurrence occurred in the second pattern.

RESEARCH METHOD
Research Design

According to Ary (2010: 426) "The research design is the researcher's plan of how to proceed to gain an understanding of some group or some phenomenon in its context". This research used descriptive quantitative research because the researcher counted the number of sentences so that by using the quantitative approach, the frequency of sentence types that were used will be known and applied descriptive method because the

research describes what sentence types used in The Mathematical Theory of Relativity by Sir Arthur Stanley Eddington.

Data and Data Source

The research took the data in the form of a scientific book. The book titled The Mathematical Theory of Relativity by Sir Arthur Stanley Eddington. First draft from this book was written in 1921 and the book published in 1923. This book is an e-book released on April 11, 2019.

Data sources were from soft file downloaded in the https://www.gutenberg.org/ebooks/ websites, with access keyword "theory of relativity". This e-book was accessed on Wednesday, April 21, 2021, 2:43:35 AM.

Data Collection Procedures

The procedure of data collection was by searching the data from website and the data were in form of written texts scientific book of Sir Arthur Stanley Eddington. The researcher found many theoretical books on the window of internet. Finally, the researcher determined to take the book of The Mathematical Theory of Relativity by Sir Arthur Stanley Eddington. It was done on April 21th, 2021.

The researcher took 10% of the data taken from the book by dividing each chapter. This book has 413 pages with 7 chapters, so the data taken from 10% of the data that must be taken is 41 pages.

Coding

To make the data effective, the researcher abbreviates the technical terms to be a code, sign, or mark. The following list of codes used in analyzing the sentence type.

Table 3.1 Coding for Types of Sentence

No.	Types of Sentence	Code
1.	Simple Sentence	S.S
2.	Compound Sentence	Cd.S
3.	Complex Sentence	Cx.S
4.	Compound-Complex Sentence	Cd-Cx.S

A.   Data Analysis Procedures

Because this research is descriptive quantitative, the following are some steps required to collect the data:

1. Determine the meaning of the object of research and find out The Mathematical Theory of Relativity by Sir Arthur Stanley Eddington.

2. Establish the Google Chrome as the network service for internet access and then visiting the Project Gutenberg site to write down the key word "theory of relativity" and found this book.

3. Getting a scientific e-book, the next step is for the researcher to glance at the contents of the book. Then the researchers took

several samples to be analyzed, namely 10 percent of the number of pages per chapter. After that, the researcher immediately identified the types of sentence.

4. Put the results in the table. These are the examples of table that would be used to identify the types of sentence

Table to Identify the Types of Sentence

No.	Chapter	Page	Sentence	Types of Sentence	Conjunction

5. Then count the number of types of sentence in percentage using this formula:

$$P = (F \times \frac{100}{N})\%$$

Notes:
P = Percent
F = Frequency
N = Number of samples

6. Last, make some interpretations of the data in line with the themes.

FINDING AND DISCUSSIONS

In this study, sentence types are analyzed by paying attention to function and conjunctions contained in the sentences. There are four types of sentences analyzed, they are: simple sentence, compound sentence, complex sentence, and compound complex sentence. From table 4.1-4.7 about the analysis of types of sentences in Sir Arthur Stanley Eddington Scientific book with the title "The Mathematical Theory of Relativity", the totals of sentence used are four hundred twenty-seven. The types of sentence used include all types of sentence, simple, compound, complex, and compound complex sentence.

In The Mathematical Theory of Relativity's book the frequency of using types of sentence is dominated by complex sentence and followed by simple sentence, compound-complex sentence, and compound sentence. With the number of each sentence type are that complex sentences are one hundred eighty, simple sentences are one hundred twenty-seven, compound-complex sentences are eighty, and compound sentences are forty. Whereas, the percentages are complex sentences are 42,2%, simple sentences are 39,7%, compound complex

sentences are 18,7%, and compound sentences are 9,4%.

CONCLUSIONS

Having analyzed the data as stated in the previous chapter of this study, the researcher makes some conclusions based on the findings and the discussions as follows:

The data were classified into 4 types in sentence types which are simple sentence, compound sentence, complex sentence, and compound-complex sentence. From 427 data which are taken by the researcher, 127 (29,7%) data belongs to simple sentences, 180 (42,2%) data belongs to complex sentences, 40 (9,4%) data belongs to compound sentences, and 80 (18,7%) data belongs to compound-complex sentences. The dominant type of sentence of this scientific book is complex sentences. Sentence Types can be applied by teachers in teaching grammar. Teachers can use the example of sentence types In Sir Arthur Stanley Eddington Scientific book with the title "The Mathematical Theory of Relativity" to teach the student how to understand every sentence in learning grammar. So that, the student can make a sentence if students can understand the structure of sentence correctly.

SUGGESTIONS

Based on the conclusion above, the researcher proposes the suggestions as follows:

Suggestions for Teacher

Teachers must be a creative method in learning process. Using scientific book, teacher can make learning process is interesting. This research can help them in teaching English grammar especially in sentence types.

Suggestions for Student

Student must learn a new thing, which is a sentence type after reading this research. By understanding the concept of sentence types, the researcher hopes that students can understand of English grammar especially sentence types. The most types that the students must understand first is complex sentence because it makes their writing well.

Suggestions for Next Researcher

The next researcher, the researcher should there will be another research conducted by another researcher who learn more about sentence and can make a sentence correctly.

Suggestions for Reader

The reader will have a deeper understanding about the sentence types, English grammar and the context where the conversation occurs.

REFERENCES

Alexander L. G. 1988. *Longman English Grammar*. New York, Longman publishing.

Andersen, Sarah. 2014. *Sentence Types and Functions.* San José State University Writing Center.

Arthur Eddington. Wikipedia. Free Encyclopedia . Wikipedia. Free Encyclopedia. https://en.wikipedia.org/wiki/Arthur_Eddington, accessed on April 2, 2021.

Ary. 1976. "*Introduction to Research*". USA: Wadsworth.

Broughton, G.; Brumfit, C.; Flavell R.; Hill, P.; and Pincas, A. 1978. *Teaching English as A Foreign Language (2nd ed)*. London, New York: Routledge.

Chomsky, Noam. 2005. *Language and Mind*. New York, Published in the United States of America by Cambridge University Press.

Demirezen, M. 2019. Identification of sentence types for writing skill in teacher education. Journal of Language and Linguistic Studies.

Diana. 2017. *The Syntactic Of English Sentence Structure In Brad Bird' The Incredibles*. Bachelor thesis, IAIN Syekh Nurjati Cirebon.

Eddington A.S.1923. The Mathematical Theory of Relativity. Cambridge at the University Press.

Fashold, Ralph W. 2006. *An Introduction to Language and Linguistics.* New York, Cambridge University Press.

Finegan, Edward.1989. *Language: It's structure and use(4th ed)*.USA: Thomson Wadsworth.

J.J. O'Connor and E.F. Robertson. 2003. *Arthur Stanley Eddington.* Mac Tutor:

MacTutor History of Mathematics Archive. University of St Andrews. https://mathshistory.st-andrews.ac.uk/Biographies/Eddington/, accessed on July 10, 2021.

Khodijah, Siti. 2015. *An Analysis of Complex Sentences Translation in Novel Of Mirror Image from English into Indonesian.* English Letters Department Adab And Humanities Faculty State Islamic University Of Syarif Hidayatullah. Jakarta.https://repository.uinjkt.ac.id/dspace/bitstream/123456789/29401/1/SITI%20KHODIJAH-FAH.pdf, accessed on July 10, 2021.

Oshima A., Hogue, A.2007. *The Longman Introduction to Academic Writing-(3rd ed).* America:Pearson Education, Inc.

Rausch, Pamela. 2015. *The Relationship between English Speaking and Writing Proficiency and Its Implications for Instruction.* Culminating Projects in English. 34.https://repository.stcloudstate.edu/engl_etds/34, accessed on July,10 2021.

Rozimela, Warni, D., and Fitrawati. *An Analysis Of The Complex Sentences Used In The Theses Written By English Department Graduates Of March 2017 Period In Universitas Negeri Padang.* English Department Faculty of Languages and Arts State University of Padang. Padang.

http://ejournal.unp.ac.id/index.php/jelt/article/download/9772/7293, accessed on July 10, 2021.

Sapir, Edward. 1921. Language: An *Introduction to Study of Speech.* New York: Harcourt, Brace.

Schumaker, J. B. & Sheldon, J. (1985). *The Sentence Writing Strategy: Instructor's Manual*. Lawrence, KS: The University of Kansas. United States of America by Cambridge University Press.

Sovia, S.M. 2016. An Analysis of The Sentence Types Used in The Theses Written By English Department's

Graduates of May 2016 Period in Universitas Negeri Padang. Padang:Universitas Negeri Padang.

Umriyah, Siti Mamdudatul (2018) The types of sentence used in news item text : a study at the third semester students of English Language Department of UIN Walisongo Semarang in the academic year 2016/2017. Undergraduate (S1) thesis, UIN Walisongo.

Vespoor, Marjolijn and Sauter, Kim.2000. *English Sentence Analysis.* Amsterdam: Arts Faculty of Groningen University and John Benjamins Publishing Company.