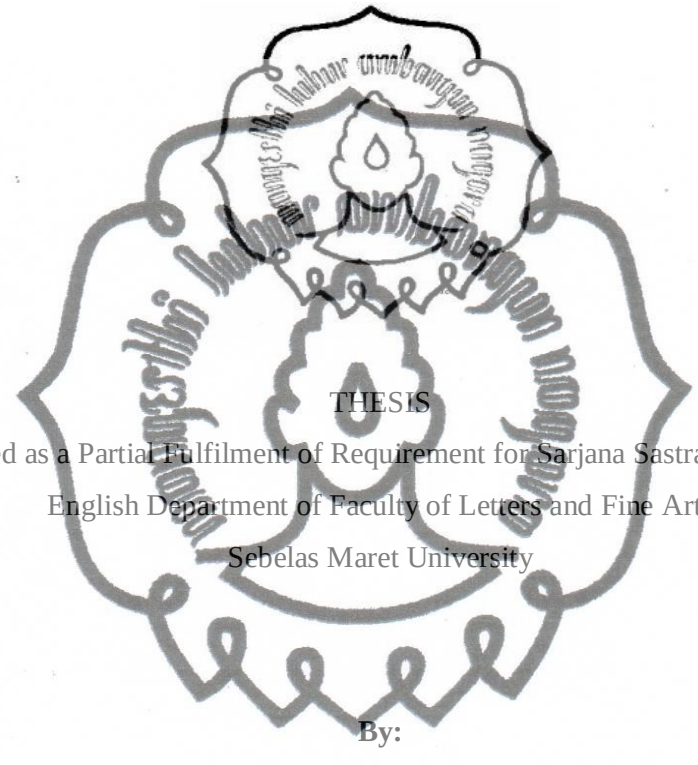
AN ANALYSIS OF TRANSLATION TECHNIQUES AND QUALITY ON SCIENTIFIC TERMS RELATED TO WEATHER AND CLIMATE



THESIS

Submitted as a Partial Fulfilment of Requirement for Sarjana Sastra Degree from
English Department of Faculty of Letters and Fine Arts
Sebelas Maret University

By:

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ENGLISH DEPARTMENT

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SEBELAS MARET UNIVERSITY

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THESIS APPROVAL

AN ANALYSIS OF TRANSLATION TECHNIQUES AND QUALITY ON SCIENTIFIC TERMS RELATED TO WEATHER AND CLIMATE

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Stated whole-heartedly that this thesis entitled An Analysis of Translation Techniques and Quality on Scientific Terms Related to Weather and Climate is originally made by the researcher. It is neither a plagiarism, nor made by others. The things related to other people's work are written in quotation and included within the bibliography.

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Surakarta, December 2011

Niken Retno Rahayu

MOTTOS

"Blessed are the merciful, for they shall receive mercy"

(Matthew 5:7)

"What you sow is what you reap"

(Grand Master Choa Kok Sui)

"Do not do unto others what you do not want others to do unto you"

"Do unto others what you want others to do unto you"

(Grand Master Choa Kok Sui)

DEDICATION

This thesis is dedicated with respect and gratitude to:

My beloved father and mother

My incredible brothers and sister

My lovely friends

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First of all, I would like to thank to the Supreme God, for the blessing and the guidance and to Jesus Christ and mother Marie, Holy angels, spiritual helpers, and to all the great ones, thank you for the great blessing, for illumination, divine guidance, help, protection, good health and happiness. Finally, I can finish this thesis as a partial fulfillment of graduating requirement of the Sarjana Degree.

In finishing this thesis, I got support and helps from the people surrounding me. Therefore, I would like to give my special thank to all of them who have given me valuable contributions. My gratitude goes to:

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At last, I do realize that this thesis is far from being perfect. Any supporting, criticism and suggestions are welcomed to make this thesis better.

Surakarta, December 2011

Niken Retno Rahayu

TABLES OF CONTENTS

LIST OF TABLE

ABSTRACT

Niken Retno Rahayu. C 1308509. An analysis of translation techniques and quality on scientific terms related to weather and climate. Thesis: English Program, Faculty of Letters and Fine Arts. Sebelas Maret University. 2011.

This research focuses on analysis of translation techniques applied by the translator in translating the scientific terms related to weather and climate of scientific book for children entitled "Science Activities Weather and Climate" into Indonesian. Besides, this research is also confined to the quality of its translation in terms of accuracy and acceptability. The purposes of this research are (1) to find out the translation techniques applied by the translator in translating the scientific terms related to weather and climate in scientific book for children entitled "Science Activities: Weather and Climate" into Indonesian (2) To know the impact of the techniques to the quality of translation in terms of accuracy and acceptability.

This research is descriptive qualitative. The purposive sampling technique was employed in this research. The data are all the scientific terms related to weather and climate in scientific book for children entitled "science activities: weather and climate" and its translation. The other data are information taken from the questionnaires assessed by three raters. The total data of the scientific terms related to weather and climate in the scientific book are 62 data.

The analysis on the translation techniques shows that there are ten translation techniques applied by the translator in translating the scientific terms related to weather and climate in the scientific book for children entitled "Science Activities: Weather and Climate" into Indonesian. They are Established equivalent translation technique (20 data or 32, 25 %), Naturalized borrowing translation technique (14 data or 22, 58 %), Calque translation technique (5 data or 8, 06 %), Pure borrowing translation technique (4 data or 6, 45 %), Calque & naturalized borrowing translation techniques (7 data or 11, 29 %), Calque & pure borrowing translation techniques (3 data or 4, 83 %), Amplification & pure borrowing translation techniques (3 data or 4, 83 %), Amplification & established equivalent translation techniques (1 datum or 1, 61 %), Amplification, pure borrowing, & transposition translation techniques (3 data or 4, 83 %), Pure borrowing & naturalized borrowing translation techniques (1 datum or 1, 61 %). The translation technique frequently used by the translator in translating the scientific terms related to weather and climate is established equivalent translation technique. There are 20 data (32, 25 %) of 62 data using this technique.

The analysis on the translation accuracy shows that 61 data or 98, 39 % from the total data are accurate, 1 datum or 1, 61 % is less accurate and no datum is inaccurate. The analysis on the acceptability shows that 50 data or 80, 64 % are acceptable, 12 data or 19, 35 % are less acceptable, no datum is unacceptable.

The technique resulting translation with the high level of accuracy is established equivalent translation technique while the technique resulting translation with the low level of accuracy is amplification & pure borrowing translation techniques. The technique which results in translations with high level

of acceptability is established equivalent translation technique. Meanwhile, the technique which results in translations with low level of acceptability is naturalized borrowing translation technique.

CHAPTER I

INTRODUCTION

A. Reasearch Background

Nowadays, there are many kinds of books, comics, magazines, and movies coming from abroad published in Indonesia. They are normally imported and written in English. Unfortunetly, not all Indonesians master English or other foreign language well. They still find some difficulties in understanding the message of those books or television program expressed in foreign language.

Scientific book is one of the sources of knowledge and entertainment. People can write their ideas on the book. Moreover, they can read to get some information to increase their knowledge. There are several kinds of books from fiction and non fiction books such as historical book, scientific book, literature book, etc. From those books we can get many information, fact, and knowledge. Scientific book is one of interesting books to read. In this book we can get many information about interesting fact around us for example how the occurrence of rainbows, rain, snow, thunder, lightning, hail, ice, cloud, etc.

There is a tendency for scientific books to impart information in a didactic way. While this approach is useful for the reader who needs to search out facts, it does little to teach the process of scientific activities. A good scientific book gives more than inform us about facts. They also have written in a way that helps children to develop their language skill. Many scientific books published in series. The aim is to provide a broad framework for catching the imagination of a variety

of children and for developing their interest. There is a link between translation and science. It is related to Sarukkai's statement below:

> "The philosophical foundations of science are also related to the ideas of translation. Science attempt to write the text of the 'original' world. The notion of 'original' is central to both translation and science". (2001: 648).

Scientific book for children entitled "Science Activities: Weather and Climate" originally written in English. In this case the role of a translator is very important. It is needed to transfer the message from source language to the target language in order that message can be easily understood by children. Moreover, to educate children the translator introduces the foreign terms to children. Besides, it will add their knowledge of science. The translator usually uses some techniques in translating her/ his translation in order that their translation can be accurate, acceptable and readable for the target readers.

Generally, Translation is transferring message from the Source Language to the Target Language. (Nababan, 2003: 18). In translation, translating an original message is important. The ideas of equivalence between the translated and original text arise naturally. Furthermore, translation can be categorized as a hard job. A translator must have good and wide knowledge about many kinds of subject matter, and social culture background between Source Text and Target Text.

Based on these premises, this research will be focused on scientific book for children translation. The study is confined to the analysis of the translation techniques applied by the translator in translating the scientific terms related to weather and climate of scientific book for children. Translating scientific book for

children is different from translating other books, because scientific book has some parts such as scientific terms, facts and events of history that make a translator difficult to find out the appropriate words for the equivalence word from source language to the target language.

This research also focuses on quality translation of scientific terms related to weather and climate translated by the translator in scientific book for children seen from the accuracy and acceptability.

The following are some examples of translation techniques applied by the translator to translate scientific book for children entitled "Science Activities: Weather and Climate".

Example 1:

Datum number: (1/ P.46/Pr.2/L.3)

ST: Earth's ***atmosphere*** is divided into a number of different layers.

TT: ***Atmosfer*** *bumi terbagi atas sejumlah lapisan yang berbeda*.

In example above the term of ***atmosphere*** is translated into ***atmosfer*** in target text. The word ***"atmosphere"*** is accurately translated in target text. The translation sounds natural in target text and accepted by the target reader. In this case, the translator applied naturalized borrowing technique in his translation. ***Atmosphere*** is layer of gas that surrounds a planet. (Basset, 2002:62).

Example 2:

Datum number: (22/ P.46/Pr.2/L.3)

ST: The heat of the Sun at the ***equator*** causes the warm air in that area to rise

TT: *Panas dari Matahari di **katulistiwa** menyebabkan udara panas di daerah tersebut naik.*

The term of **"*equator*"** in source text is translated into ***"katulistiwa"*** in target text. It is accurately translated in target text. It also makes the translation more natural in target text and easily accepted by the target reader. In this case, the translator applied established equivalent as the technique in translating the term (Molina and Albir, 2002: 510). *Equator* is an imaginary line that forms a great circle around Earth halfway between North Pole and South Pole. (Basset, 2002:62).

By applying an appropriate technique of translation the translator can produce a good translation. It makes his translation can easily accepted by children. Thus, it can be concluded that by applying an appropriate technique of translation the translator can produce a qualified translation.

Based on these premises, the researcher is interested in conducting a research about an analysis of the translation techniques applied by the translator in translating the scientific terms related to weather and climate on scientific book for children entitled "Science Activities: Weather and Climate" into Indonesian. On the other hand, the researcher is also interested in analyzing the impact of translation techniques to the quality of translation in terms of accuracy and acceptability.

B. Research Limitation

The researcher makes limitations concerning the data and the analysis. This research focuses on analysis of translation techniques applied by the translator in translating scientific terms related to weather and climate on scientific book for children entitled "Science Activities: Weather and Climate" into Indonesian. Besides, this research is also confined to the quality of its translation in terms of accuracy and acceptability.

C. Problem Statements

Based on the research background, the researcher formulates the problems of the research as follows:

1) What are the translation techniques applied by the translator in translating the scientific terms related to weather and climate in the scientific book for children entitled "Science Activities: Weather and Climate" into Indonesian?
2) What are the impacts of the techniques to the quality of translation in terms of accuracy and acceptability?

D. Research Objectives

Based on the problem statements, the research objectives are:

1) To find out the translation techniques applied by the translator in translating the scientific terms related to weather and climate on scientific book for children entitled "Science Activities: Weather and Climate" into Indonesian?

2) To know the impacts of the techniques to the quality of translation in terms of accuracy and acceptability.

E. Research Benefits

This research may have some benefits for:

1) The translator.

The result of this research can give information about what kind of the translation techniques should be applied well by the translator in translating other scientific books for children in order to produce a good translation which is accurate and acceptable.

2) The English Department Students.

The result of this research can be used as an additional reference for the English Department students in studying translation studies as their subject matter.

3) Other researchers.

The result of this research can be used as an additional reference in conducting the similar researches.

4) The readers.

The result of this research can give more information and it is expected to be used as a reference for the readers about the understanding of the translation techniques applied by the translator in translating scientific terms of the scientific book for children entitled “Science Activities: Weather and Climate”.

F. Thesis Organization

This reseach consist of five chapters. Each chapter is divided futher and arranged as follows:

1) CHAPTER I : INTRODUCTION, consists of research Background, Research Limitation, Problem Statements, Research Objectives, Research Benefits, and Thesis Organization.
2) CHAPTER II : LITERATURE REVIEW, consists of definition of Translation, Translation Technique, Translation Quality Assessment, and Definition of Science related to Weather & Climate.
3) CHAPTER III : RESEARCH METHODOLOGY, explains the Reseach Type & Design, Data & Source Data, Sampling Technique, Method of Data Collection, Technique of Data Analysis and Research Procedure.
4) CHAPTER IV : DATA ANALYSIS AND CONCLUSION, explains the Analysis of Translation Techniques applied and The Quality of Translation.
5) CHAPTER V : CONCLUSION AND RECOMENDATION

An analysis of translation techniques and quality on scientific terms related to weather and climate

Niken Retno Rahayu [1]
Dyah Ayu Nila K, S.S, M. Hum [2]

ABSTRACT

2011. This research focuses on analysis of translation techniques applied by the translator in translating the scientific terms related to weather and climate of scientific book for children entitled "Science Activities Weather and Climate" into Indonesian. Besides, this research is also confined to the quality of its translation in terms of accuracy and acceptability. The purposes of this research are (1) to find out the translation techniques applied by the translator in translating the scientific terms related to weather and climate in scientific book for children entitled "Science Activities: Weather and Climate" into Indonesian (2) To know the impact of the techniques to the quality of translation in terms of accuracy and acceptability.

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An analysis of translation techniques and quality on scientific terms related to weather and climate

Niken Retno Rahayu [1]
Dyah Ayu Nila K, S.S, M. Hum [2]

ABSTRAK

2011. Penelitian ini fokus mengenai analisis teknik penerjemahan yang diterapkan oleh penerjemah dalam menerjemahkan istilah-istilah ilmiah yang berhubungan dengan iklim dan cuaca dari buku ilmiah untuk anak-anak yang berjudul "Kegiatan Sains: Iklim dan Cuaca" ke dalam Bahasa Indonesia. Disamping itu, Penelitian ini juga di batasi untuk mengalisa tentang kualitas terjemahan dari tingkat keakuratan dan kebertrimaan. Tujuan dari penelitian ini adalah: (1) Untuk menemukan teknik penerjemahan yang diterapkan oleh penerjemah dalam menerjemahkan istilah-istilah ilmiah yang berhubungan dengan dengan iklim dan cuaca dalam buku ilmiah untuk anak-anak yang berjudul "Kegiatan Sains: Iklim dan Cuaca" ke dalam Bahasa Indonesia.

Penelitian ini adalah penelitian deskriptif kualitatif. Datanya adalah semua istilah-istilah ilmiah yang berhubungan dengan dengan iklim dan cuaca dalam buku ilmiah untuk anak-anak yang berjudul "Kegiatan Sains: Iklim dan Cuaca" dan terjemahannya. Data lainnya adalah informasi yang diambil dari kuesioner yang dinilai oleh 3 orang rater. Total data dari istilah-istilah ilmiah yang berhubungan dengan dengan iklim dan cuaca dalam buku ilmiah untuk anak-anak tersebut adalah 62 data.

Analisis tentang teknik penerjemahan menunjukkan ada 10 teknik penerjemahan yang diterapkan oleh penerjemah dalam menerjemahkan istilah-istilah ilmiah yang berhubungan dengan dengan iklim dan cuaca dalam buku ilmiah untuk anak-anak yang berjudul "Kegiatan Sains: Iklim dan Cuaca" ke dalam Bahasa Indonesia. Teknik-teknik penerjemahan tersebut adalah: Established equivalent (20 data atau 32, 25 %), Naturalized borrowing (14 data atau 22, 58 %), Calque (5 data atau 8, 06 %), Pure borrowing (4 data atau 6, 45 %), Calque & naturalized borrowing (7 data atau 11, 29 %), Calque & pure borrowing (3 data atau 4, 83 %), Amplification & pure borrowing (3 data atau 4, 83 %), Amplification & established equivalent (1 data atau 1, 61 %), Amplification, pure borrowing, & transposisi (3 data atau 4, 83 %), dan Pure borrowing & naturalized borrowing (1 data atau 1, 61 %). Teknik . penerjemahan yang paling sering digunakan oleh penerjemah dalam menerjemahkan istilah-istilah ilmiah yang berhubungan dengan dengan iklim dan cuaca adalah teknik penerjemahan established equivalent. Ada 20 data (32, 25 %) dari 62 data yang menggunakan teknik ini.

Analisa tentang keakuratan terjemahan menunjukkan bahwa 61 data atau 98, 39 % dari total data adalah akurat, 1 data atau 1, 61 % kurang akurat dan tidak ada data yang tidak akurat. Analisa tentang kebertrimaan terjemahan menunjukkan bahwa 50 data atau 80, 64 % adalah bertrima, 12 data atau 19, 35 % kurang bertrima, dan tidak ada data yang tidak bertrima.

Teknik yang menghasilkan terjemahan dengan tingkat keakuratan tertinggi adalah teknik penerjemahan established equivalent sedangkan teknik yang menghasilkan terjemahan dengan tingkat keakuratan yang rendah adalah amplification dan pure borrowing. Teknik yang menghasilkan terjemahan dengan tingkat kebertrimaan tertinggi adalah teknik penerjemahan established equivalent. Sedangkan, teknik yang menghasilkan terjemahan dengan tingkat kebertrimaan yang rendah adalah teknik terjemahan naturalized borrowing.

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CHAPTER II

LITERATURE REVIEW

A. Definition of Translation

Generally, definition of translation is transferring the message from source language (SL) to the target language (TL). There are various definitions of translation proposed by several experts or linguists. They define translation from different points of view. Brislin states:

> Translation is a general term referring to the transfer of thoughts and ideas from one language (source) to another (target), whether the languages are in written or oral forms; whether the languages have established orthographies or do not have standardization or whether one or both languages are based on sings, as with language of the deaf. (Brislin,1976:1).

In this definition, Brislin explains that the form of source language that will be translated into target language may vary in both written and oral form.

Another definition is described by Bell. He states that "Translation is the expression in another language (or target language) of what has been expressed in another, source language, preserving semantic and stylistic equivalences" (Bell, 1991: 5). This definition points out that translation deals not only with expressing the meaning or message of the source text but also with producing similar style used in the source text.

Another linguist who defines translation is Nida. She states that "Translating consists in producing in the receptor language the closest natural equivalent to the message of the source language, first in meaning and secondly in style" (Nida, 1975: 33). Nida focuses on the equivalent message from source

language (SL) into target language (TL) naturally. She mentions that there are two kinds of equivalence: meaning equivalence and style equivalence.

Based on the three definitions of translation above, it can be concluded that translation is a process of transferring message from one language (Source Language) into another language (Target Language). The message of the source language is transferred to be natural and equivalent translation. It is also transferred into the target language easily, so it can be understood and read by the target readers.

B. Translation Technique

Molina & Albir define that "translation technique as procedures to analyze and classify how translation equivalence works" (Molina & Albir, 2002:508). They also state that "translation technique…to describe the actual steps taken by the translators in each textual micro-unit and obtain clear data about the general methodological option chosen" (Molina & Albir, 2002). Translation technique is often used by the researchers studying on translation products or translation as are-observation. Technique describes the translation product and it can be used to clarify the types of translation solution (Nababan, 2007:8). There are some techniques used by the translator to observe the real steps applied in each micro-text and produce a quality of translation by Molina & Albir, they are:

1. Adaptation technique

   Adaptation technique is a technique of translation to replace a source language cultural element with one from the target culture (Molina & Albir, 2002).

Example: ST : As white as snow.

TT : *Seputih kapas.*

2. Amplification technique

Molina & Albir define amplification technique as the technique to introduce details that are not formulated in the Source Language. It explicates or paraphrases information into target language (Molina & Albir, 2002).

Example: ST: Ramadan.

TT: Ramadan, *bulan puasa kaum muslim.*

3. Borrowing technique

In this technique the translator transfers the words from the source language into the target language without any modification. This technique is usually used to translate spesific terms, names and scientific terms. The translator can borrow the SL words and sometimes gives some explanation to that loan words. There are two kinds of borrowing techniques, they are *'pure borrowing'* and *'naturalized borrowing'* (Molina & Albir, 2002). *'Pure borrowing'* can be pure from source language without any change, example: Anemometer – *anemometer*.*'Naturalized borrowing'* used to fit the spelling rules in the target language, example: spectrum – *spektrum*.

4. Calque technique

Calque technique is a technique that is used by a translator to translate a foreign word or phrase literally; it can be lexical or structural (Molina & Albir, 2002)

Example: ST: interest rate.

TT: *tingkat suku bunga* (Nababan, 2009:7).

5. Compensation technique

In Compensation technique the translator introduces a source text element of information or stylistic effect in another place in the target text (Molina & Albir, 2002).

Example: ST: Never did she visit her aunt.

TT: *Wanita itu benar-benar tega tidak menemui bibinya.*

Example above SL 'Never did she visit her aunt' translated into '*Wanita itu benar-benar tega tidak menemui bibinya*' in target text. In this case, target text is influenced by source language stylistic. It can be translated into '*dia benar-benar tega tidak menemui bibinya'* in target text.

6. Description technique

Description technique is a technique of translation to replace a term or expression with a description of its form and function (Molina & Albir, 2002).

Example: ST: Panettone.

TT: *Kue tradisional Italia yang dimakan pada saat Tahun Baru.*

7. Discursive creation technique

This technique used to establish a temporary equivalence that is totally unpredictable out of context. It is usually applied in translating book title or movie title (Molina & Albir, 2002).

Example: Book title of *'Si Malinkundang'* is translated into 'a betrayed son si Malinkundang'.

8. Established equivalent

Established equivalent is a technique of translation by using a term or expression recognized (by dictionaries or language in use) as an equivalent in the target language (Molina & Albir, 2002).

Example: ST: Lightning.

TT: *Kilat.*

9. Generalization technique

Generalization technique is a technique of translation by using a more general or neutral term. It is in opposition to particularization. (Molina & Albir, 2002).

Example: ST: Penthouse.

TT: *Tempat tinggal.*

10. Linguistic amplification technique

In this technique the translator adds linguistic elements in target text. It is often used in consecutive interpreting and dubbing. It is in opposition to linguistic compression technique (Molina & Albir, 2002).

Example:

ST: Compared with Malaysia, Singapore has beautiful view.

TT: *Jika dibandingkan dengan Malaysia, Singapura mempunyai pemandangan yang indah.*

In example above, the translator adds the word *'jika'* in target text, but it does not change the meaning.

11. Linguistic compression technique

Linguistic compression technique is used to synthesize linguistic elements of source text into target text. This is often used in simultaneous interpreting and in sub-titling. It is in opposition to linguistic amplification technique (Molina & Albir, 2002).

Example: ST: A: Do you like orange?

B: *Yes*, I do.

TT: A: *Apakah kamu suka jeruk?*

B: *Ya*.

In example above the word 'yes, I do' in source text is translated into *'ya'* in target text. The translator does not translate into *'Ya', saya suka'* in target text.

12. Literal technique

Literal translation technique is a technique to translate a word or expression word for word. A literal translation is begun from word for word translation and then makes change to the conformity of source languge grammar with target language

grammar. In literal translation the translator still maintains its original form in the source language (Molina & Albir, 2002).

Example: ST: I will ring you.

TT: *Saya akan menelpon anda*.

13. Modulation technique

In modulation technique the translator changes the point of view, focus, or cognitive category in relation to the source text. It can be lexical or structural. This technique is usually used when literal translation cannot produce a natural faithful translation (Molina & Albir, 2002).

Example: ST: I cut my finger.

TT: *Jariku teriris.*

14. Particularization technique

Particularization technique is a technique of translation by using a more precise or concrete term. It is in opposition to generalization (Molina & Albir, 2002).

Example: ST: Air transportation.

TT: Helicopter.

15. Reduction technique

Reduction technique is to suppress a source text information item in the target text. It is in opposition to amplification. It is used to stuff information in source text to be a simple word and more familiar in target text (Molina & Albir, 2002).

Example: ST: Ramadan, the month of fasting.

TT: Ramadan.

16. Substitution technique

Substitution technique is to change linguistic elements and paralinguistic elements (intonation or gesture), for example to translate the Arab gesture of putting your hand on your heart as Thank you (Molina & Albir, 2002). Another example can be seen below:

ST: He cried when his father is dead.

TT: *Dia menanggis saat ayahnya meninggal.*

The second example above shows that he cries because he is sad.

17. Transposition technique

Transposition technique is a technique of translation involving changing a grammatical category. In this technique the translator changes the category, structure, or unit, for example the adverb in source text changed into verb in target text (Molina & Albir, 2002).

Another example: ST: We had a very long *talk.*

TT: *Kami berbicara lama sekali.*

(Maurits D.S. Simatupang,2000:91)

The example above the word 'talk' is noun in source text. It is translated into *'berbicara'* (verb) in target text.

18. Variation technique

Variation technique is a technique to change linguistic or paralinguistic elements (intonation or gesture) that affect aspects or linguistic variation: changes of textual tone, style, social dialect, geographical dialect, etc. As the example to introduce or change dialectal indicators for characters when translating for the theater, changes in tone when adapting novels for children, etc (Molina & Albir, 2002).

C. Translation Quality Assessment

To asses the quality of translation, firstly, the translator has to compare the translation between the source language text and the target language text. Secondly, the translator must to reconstruct the psycholinguistic process leading to the target language text and thirdly, the translator must try to work out a formula for measuring inter textual adequacy (Wills, 1982: 220).

According to Nababan (2003:86) there are three main points in translation quality assessment: 1) the accuracy of transffering the message. It means the original message cannot be changed, added or deducted. 2) The accuracy of expressing the message into the target language. It concerns about the way the original message is composed in target language structurally, and 3) the naturalness of language into the target language. In transferring the original message, the translator should give attention intensively to the naturalness of the target language. The translation result can be categorized as a good translation if

it has three aspects as the quality of the translation, they are accuracy, acceptability and readability.

Baker says that "accuracy is no doubt an important aim in translation but it is also important to bear in mind that the use of common target-language patters which are familiar to the target reader plays an important role in keeping the communication channels open" (Baker, 1992: 5). From that statement, it can be seen that accurate means reproducing as exactly as possible the meaning or message of the source text. The accuracy in content of translation concerns about the accuracy in content of the original source text into the target text.

Based on the Oxford English Dictionary (1989:5), acceptability is defined as the quality of being acceptable. Acceptability is used in order to evaluate whether the translation is acceptable or not. It refers to the nature of the translation. A translator should be able to produce a natural translation according to the target language system. Its purpose is to produce a comprehensible translation, so it will be served in a natural way and in good language structure because every language has its own language structure. A translator has to restructure the translation text according to the TT language system in order to make it sounds natural, not as a product of translation. Toury in Shuttle Worth and Cowie states that "a translation which is considered to be acceptable is the one fulfilling the requirement of 'reading as an original' written in the target language (TL) and sound natural for the target reader rather that of 'reading as the original' in the source language (SL)" (1997:2) Acceptability refers to those of the target system. This aspect of acceptability has to be taken into consideration in order to

make the readers "reading as an original" in their own language. Acceptability is not only related to language structure only, but also related to cultural aspect, as stated by Toury (in Soemarno, 2003: 16) that "translation is a kind of activity which inevitably involves at least two languages and two cultural traditions". In other words, a translation has to be acceptable for the TT readers.

Readability refers to the quality of writtern language and how easily a translation can be read and understood by the target readers. Richard et al in Nababan states that "readibility is how easily written materials can be read and understood (2003:62). Readability is affected by the average length of sentence, amount of new words and grammatical complexity of the language used.

A qualified translation is determined by three aspects: accuracy, acceptability, and readability. However, the accuracy and acceptability in transferring the message are the important aspects to determine whether that translation is qualified or not. It means that the message or content of source language transferred accurately into target language. Besides, that translation transferred appropriately in norm and culture of target readers.

D. Definition of Scientific Terms Related to Weather and Climate

1) Definition of weather.

There are various definitions of weather stated by several scientists. World meteorological organization described weather as "short-term atmospheric conditions" (World meteorological organization, 1978:152). Claiborne states that "Weather is what happen in the

atmosphere yesterday, or is happening today, or will happen next week (Claiborne,1970:25). Weather is usually well marked daily and seasonal changes in weather pattern. It can be used to know the today's temperature.

Handoko states that "weather is the temporary value of atmosphere, it is a short term atmospheric change (less than 1 hour until 24 hours) in a certain place on Earth (Handoko, 1994: 2). He also points out that the value of weather element such as wind direction, wind speed, clouds, temperature, humidity, and air pressure during 24 hours in a certain place indicates a cycle pattern called diurnal weather change (00.00-24.00). The weather of any place is the sum total of the atmospheric variables for a brief period of time. The average from values of each weather elements can produce the today's weather. Routinely, weather is recorded constantly in a certain hour. It produces the series data of weather that can be used to determine climate. Rain, hot, snow, storm are the kinds of weather. The several kinds of weather are caused by the conditions of the atmosphere.

The science that study of weather named meteorology. The word meteorology comes from Greek *meteoros*, it means over space, which is atmosphere, and *logos* means science (Handoko, 1994: 5). Meteorology is the science discusses about the formation and symptom of weather change with physics occurs in atmosphere. The physics process occurs dynamic, complex, and constant. As the consequence, weather is always change

based on place and time. Science related to weather is used based on the science of physics and mathematics to analyze the atmospheric change.

2) Definition of climate

In every place the weather changes every day. After 1 year the weather change formed a certain cycle pattern. After several years, for example 30 years or more, from the average of weather elements can be reflected the characteristic of atmosphere called as climate. Climate refers to a more enduring regime of the atmosphere. It represents a composite of the day-to-day weather conditions and of the atmospheric elements for a long period of time (Trewartha, 1968: 2). Tropical, dry and polar climate are kinds of climate. Climate is a weather patterns during a certain period of time. It is not just "average weather" but the variations from the average are important.

Handoko defines "Climate is the synthesis or the conclusion from the change of weather elements value (day-to-day, month-to-month) for long term in a certain place (Handoko,1994:3). The synthesis of weather elements value is the statistics value of the average, maximum, minimum, the frequency of occurrence, or the opportunity occurrence of the certain weather elements value. Therefore, climate is known as the statistics value of long term weather in a certain place or region. It means climate refers to the weather characteristic in a certain place or region. In principle, climate data are formed from the weather data that represent the atmospheric conditions in a wide place and in a period of time as far as possible.

Another definition also stated by Claiborne. He states that "Climate is what has happened and can be expected to happen over reasonably long run – weather averaged out over fifty or a hundred years" (Claiborne,1970:25). Climate can be defined as the sum total of weather in a locality over several years and can be expressed in terms of average and extreme values (World meteorological organization, 1978:152). It is the seasonal pattern of heat and cold of sun, wind and rain. That is characteristic of a particular place or region.

The science study of climate is climatology. Climatology is a science discusses about the synthesis or the statistics of weather elements from day to day in period of time or several years in a certain place or region. Climatology is also related to physiographic (science related to Earth system). The science of physiographic has the important influence to weather characteristics in long period of time. Moreover, science related to climate is the science related to science of physics, statistics, and geography.

Climate is classified into several classifications based on the characteristics of place or region. Classification is a process basic to all sciences. It consists of recognizing individuals having certain important characteristics in common and of grouping these individual into certain classes or types (Trewartha, 1954:238). Climate classification shows the climate conditions in each place or region. It aims is to get the efficiency of general and simple information (Handoko, 1993:161).

According to Handoko (1993:162) climate is classified into two classifications. They are genetic and empiric climate classifications.

1. Genetic climate classification.

   The basic criterion of genetic climate classifications is the climate factors such as air-mass, wind, pressure system, continent, sea, or the differentiate of solar radiation acceptance. Generally, genetic climate classification produces the classification for the wide area (Handoko, 1993:162). Genetic climate classification is divided into two; they are:

   a. Climate classification based on solar radiation acceptance.

      According to ancient Greek in climate classification based on solar radiation acceptance the Earth is divided into five regions, they are tropical climate located in 23.5^{o} of north latitude and 23. 5^{o} of south latitude, two subtropical climates (north and south latitudes are located in 30^{o}-66^{o} of north and south latitudes), two polar climates (north pole – arctic is located in 66.5^{o} of north latitude and south pole – antarctic is located in 66.5^{o} of south latitude), (Handoko, 1993:163).

   b. Climate classification based on air circulation.

      Classification based on air circulation is the classification to determine the macro climate based on the air circulation (Handoko, 1993:162). In this classification

the air circulation can be connected to region climate based on wind or air mass zone. Flohn in Handoko (1993:164) proposes a classification system used the criteria based on the global air current and rain characteristic. The classifications are as follows:

Table 2.1

Climate classification based on solar radiation acceptance

Zone	Precipitation
Equatorial Westerly Zone	Constantly wet, mostly heavy rains
Tropical Winter Trade Zone	Summer rain
Sub Tropical Dry Zone	Dry
Subtropical Winter Rain Zone	Winter rain
Extra Tropical Westerly Zone	Rain in all seasons
Sub – Polar Zone	Limited of rain all seasons
Boreal Zone	Rainfall predominantly in summer, limited winter snow
Polar Zone	Rainfall predominantly in summer, limited winter snow

(Handoko, 1993: 164)

2. Empiric climate classifications.

The basic criterion of empiric climate classification is the result of observation from climate elements regularly. It produces

the classification for the limited area (Handoko, 1993: 162). Empiric climate classification is divided into two; they are:

a. Climate classification based on rational moisture budget.

This classification is developed by Thornthwaite in 1948. The basic concept used is the potential evaporation – transpiration and moisture budget. The potential evaporation – transpiration is calculated from monthly temperature average. Meanwhile, in moisture budget surplus or deficit of monthly moisture shows the availability of soil moisture (Handoko, 1993: 165).

b. Climate classification based on vegetation growth.

In this classification there are two classification systems, they are:

1) Koppen classification system.

This classification is a principal classification based on the relation of climate and vegetation growth. Koppen classification system is the most popular classification system and it is internationally used from its first publication in 1901 (Handoko, 1993: 166). Base of this classification is the temperature and monthly/ yearly moisture average that connected to the natural vegetation condition. Koppen in Handoko (1993:

166) states “the vegetation that naturally grows shows the climate of place grows”. The vegetation grows based on the effectiveness of rain, which is the balance among the rain, moisture, and evaporation-transpiration. The Koppen classification identifies five main groups of climate, they are:

A. Tropical rainy climate, temperature of the coldest month is > 18^{o} C.
B. Dry climate, the evaporation is > precipitation.
C. Mild temperate rainy climate, temperature of the coldest month range from – 3^{o} C until 18^{o} C and temperature of the hottest month is > 10^{o} C.
D. Cold-snow climate (Boreal climate), temperature of the coldest month is < - 3^{o} C and temperature of the hottest month is > 10^{o} C.
E. Polar climate, temperature of the hottest month is < 10^{o} C (Koppen in Handoko,1993: 167)

2) Schmidth – Ferguson classification systems.

This system is famous in Indonesia. It is used in forestry and agricultural sectors. The determination of this type based on rain elements climate and it also needs the monthly data minimum of rain for 10 years. This type is classified into three classifications, they are: dry month, humid month, and wet month. Dry month is the month with the rainfall < 60 mm. Humid month is the month with the rainfall between 60 – 100 mm. Whereas, wet month is the month with the rainfall > 100 mm (Handoko,1993: 168).

3) Definition of science.

Hungerford & Volk define science as "the process whereby verifiable information is gained through empirical method" (Hungerford & Volk, 1990:9). Basically, science is really a philosophy about the truth and knowledge or a way of knowing something. In fact that what we believe to be the knowledge in science must be somehow observed. They also define that science is "information provided by the process involved in logically arranged investigations" (Hungerford & Volk, 1990:9). It searches for truth/ evidence/ knowledge. Other definition of science is "the systematic study of the nature and behaviour of the material and physical universe, based on observation, experiment, and measurement, and the formulation of laws to describe these facts in general terms." (http://dictionary.reference.com/browse/science). Based on the Oxford

English dictionary (2008:393) science is “knowledge about the structure and behavior of the natural & physical world, based on facts than you can prove, for example by experiments”.

It can be concluded that science is the observation, identification, investigation, and theoretical explanation about phenomena. It is a methodological activity, discipline or study. Science is also a knowledge that is gained through experiments.

4) Definition of science term related to weather and climate.

Terminology and translation are, at bottom, two sides of the same epistemological coin. The translation has many kinds of terminology, such as: medical terminology, court terminology, science terminology, legal terminology, etc.

Terminology is a systematic arrangement within a special language. It is a collection of terms in specific field of knowledge (Claiborne 1970:651). Based on the Oxford English dictionary "terminology is the special words and expressions used in a particular subject" (Oxford, 2008: 393). "Concepts, terms and definitions are the fundamental components of any terminology. Terminology signifies the collection of terms, or technical words, with belongs to the science. Term is the word or phrase used as the name of special subject. Almost every step in the progress of science is marked by formation or an appropriation of a technical term. It can be concluded that science terms are the collection of terms or technical words in science field.

Scientific terms related to weather and climate are all the words or phrases related to the atmospheric phenomena or facts of weather and climate. All of the atmospheric phenomena are the factors most often used to represent weather and climatic conditions.

CHAPTER III

RESEARCH METHODOLOGY

A. Research Type and Design

In this research, the researcher applies a descriptive qualitative method. By using this method, the researcher only collects the data, analysis the data, then draws a conclusion as a research (Sutrisno Hadi, 1983: 8). Creswell defines the definition of qualitative research as follow:

> "Qualitative research is an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting" (Creswell, 1998: 15).

The data that emerge from this research are descriptive. That is, the data are reported in words or pictures, rather than in numbers. Bogdan and Biklen (in Creswell, 1994: 171) state that "Descriptive method is collecting the qualitative data, analyzing them, and writing the result". Merriam (in Creswell, 1994: 145) also states that "Qualitative research is descriptive in that the researcher is interested in process, meaning, and understanding gained through words or pictures". It means that descriptive method has purpose to describe the facts concerning the object of the analysis.

This research has two main purposes. Firstly, to describe the translation techniques applied by the translator in translating scientific terms translation related to weather and climate in scientific book for children entitled "Science

Activities: Weather and Climate" into Indonesian. Secondly, to describe the impact of the translation techniques on the accuracy and acceptability levels of the translated text.

B. Data and Source of data

Source of data are the subject from the data obtained. (Arikunto, 2002: 107). The data are all the scientific terms related to weather and climate taken from a scientific book for children entitled "Science Activities: Weather and Climate" and its Indonesian translation. The other data are the scores obtained from the raters measuring the quality of the translation in terms of accuracy and acceptability in form of questionnaire. The researcher distributed questionnaire to collect data from the raters.

The other sources of data are informants. In this research the researcher involved three raters. The researcher involved three raters to measure the quality of translation in terms of accuracy and acceptability levels of scientific terms translation related to weather and climate in the scientific book for children entitled "Science Activities: Weather and Climate".

C. Sampling Technique

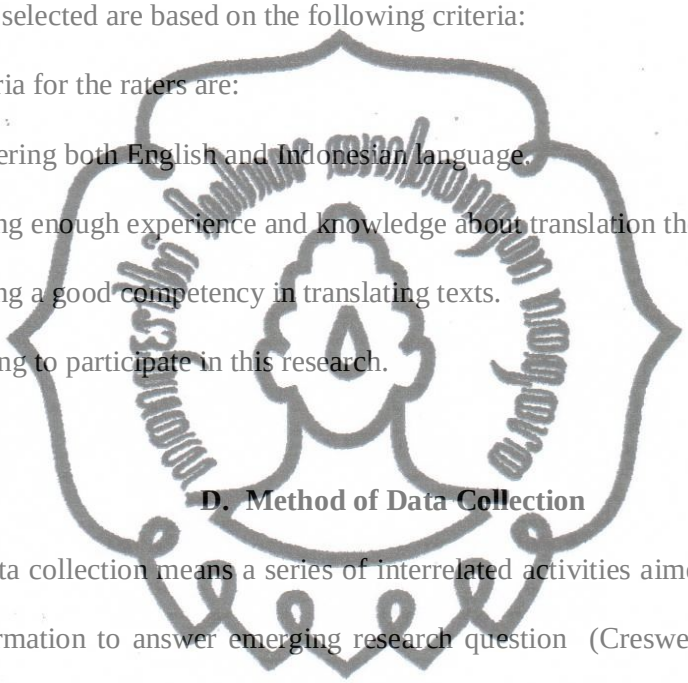
The sampling technique is the technique of choosing the sample. (Arikunto, 2002: 111). In this research, the researcher uses total sampling, which analysis the total data. It means that all of data are scientific terms translation related to weather and climate taken from the scientific book for children entitled "Science Activities: Weather and Climate" as the source of main data. The

researcher chooses the data based on the population and the information that is needed from the informants. The technique used in this research is criterion-based selection technique, in which the informants were selected based on the criteria set by the researcher.

The raters selected are based on the following criteria:

The criteria for the raters are:

1. Mastering both English and Indonesian language.
2. Having enough experience and knowledge about translation theory.
3. Having a good competency in translating texts.
4. Willing to participate in this research.



D. Method of Data Collection

Data collection means a series of interrelated activities aimed at gathering good information to answer emerging research question (Creswell, 1998: 110). To collect the data, the researcher applies two methods of data collection, namely content analysis and questionnaires.

1. Content Analysis

   Content analysis means that the content of English text and its translation is analyzed to find out data relevant to the objective of the research. It is used to collect the primary data. According Yin (in Sutopo, 2002: 70), Content analysis is also called *'teknik simak dan catat'*. Yin explains that this technique starts from writing down some important things explicitly written within the documents, also the meaning beyond

the words. Weber (in Moleong, 1989: 220) states that "content analysis is research methodology that uses a set of procedures to draw valid conclusions from a book or document."

In this research, the researcher carried out the content of analysis by several techniques. The researcher read and compared the scientific terms related to weather and climate from the original text and its Indonesian translation, underlined and made notes the text which contains of scientific terms translation related to weather and climate to know the techniques used by the translator, and gave the number of each datum. Finally, analyzing the techniques used by the translator.

2. Questionnaire

Questionnaire is used to obtain responses from the raters with regards to the quality of the translation in term of accuracy and acceptability. It is used to collect the secondary data. This is an close and open format questionnaire. Close format questionnaire form is used to asses the accuracy and acceptability of translation by giving the scale based on the certain criteria. Open format questionnaire is a questionnaire where the raters are allowed to give comments, opinions, suggestions, or reasons why they chose that answer. The researcher used two kind of questionnaire. The first questionnaire is to gather the data about the accuracy. The researcher distributed questionnaire that contains scale for the translation's accuracy to the raters. The scale for the accuracy is from 1-3, it can be seen in the following table:

Table 3.1 The scale of translation accuracy

Scale	Level	Description
1.	Accurate	The translation is considered accurate if the content/ message of the original source text is accurately conveyed to the target text.
2.	Less Accurate	There are certain problems in meaning, or the translation raises multiple or ambiguous meaning.
3.	Inaccurate	The message is translated completely different or not translated at all i.e. it is omitted or deleted.

The second questionnaire is to explore information about acceptability of the target text. The range of the scale of acceptability is from 1-3, as it is shown in the table below:

Table 3.2 The scale of translation acceptability

Scale	Level	Description
1.	Acceptable	The translation has natural form of target text. The translation sounds natural, almost does not feel like translation. There is no grammatical error.
2.	Less acceptable	The translation is closely natural, but there are still some uncommon terms in target text. There are some grammatical errors.
3.	Unacceptable	The message is not translated naturally into the target language. There are many foreign terms and grammatical errors.

E. Technique of Data Analysis

In analyzing the data, the researcher applied these following techniques:

1. Analyzing the scientific terms related to weather and climate.

   The primary data were classified based on the scientific terms related to weather and climate. The researcher observed the scientific book for children entitled "Science Activities: Weather and Climate" in the original text (English) and its Indonesian translation. Then, the researcher conducted the first analysis that is analyzing the scientific terms related to weather and climate.

2. Analyzing the translation techniques.

   After classifying the data based on the scientific terms related to weather and climate, the researcher analyzed the translation techniques applied by the translator in translating the original text of scientific book for children entitled "Science Activities: Weather and Climate" into Indonesian. After the analysis is complete, the researcher made a classification based on the translation technique.

3. Analyzing the accuracy and acceptability.

   For analyzing the accuracy and acceptability, the researcher classified the data based on the accuracy and acceptability according to the scores gained from the raters and calculated the total score and mean of the score.

4. Counting the percentage of each classification.

   The next step is counting the overall quality of the translation by

calculating the scores obtained from the raters. The number of data in each classification was calculated to get the percentage. Afterwards, the result of the analysis was put in tables.

5. Drawing the conclusion.

The researcher drew the conclusion of the result of the analysis as follows:

a) The data taken from the scientific book for children entitled "Scientific Activities: Weather and Climate" are all of scientific terms related to weather and climate in form of a word or phrase. From the analysis 2, it can be concluded that the translator only analyze the translation techniques applied by the translator in translating the scientific terms related to weather and climate in scientific book for children entitled "Science Activities: Weather and Climate".

b) In analysis 3, analysis the quality of translation in terms of accuracy and acceptability of scientific terms translation related to weather and climate in science book for children entitled "Science Activities: Weather and Climate".

The accuracy is divided into three classifications, they are:

- Classification A : Accurate, the mean score of the data included in this classification must cover 1.00-1.50.
- Classification B : Less accurate, will cover the data which have the mean score between 1.60-2.50.
- Classification C : Inaccurate, the data must cover 2.60-3.00

as the main score.

The acceptability is divided into three classifications, they are:

- Classification A : Acceptable, covers the data with the mean score from 1.00-1.50.
- Classification B : Less acceptable, included the data with the mean score 1.60-2.50.
- Classification C : Unacceptable, the data must cover 2.60-3.00 as the mean score.

F. Research Procedure

In conducting this research, the researcher arranged the procedures into the following steps:

1. Collecting data

   The researcher started this research by reading the original text of scientific book for children entitled "Science Activities: Weather and Climate" and its Indonesian translation. All data were collected from scientific terms translation related to weather and climate in scientific book for children entitled "Science Activities: Weather and Climate".

2. Giving code for the each datum

   After collecting the data, the researcher gave a number and code for each datum in this research in order to make it easier to be analyzed.

   Here is the example:

   ST/ P. 28/ Pr.3/ L. 3 – TT/ P. 28/ Pr. 3/ L. 3

Notes:

ST : Source Text.

P. 28 : The page of taken datum.

Pr. 3 : The paragraph of taken datum.

L. 3 : Line of the datum in the ST.

ST/ P. 28/ Pr. 3/ L. 3 : The datum was taken on page 28 paragraph 3 in line 3 in Source Text.

TT : Target Tanguage.

P. 28 : The page of taken datum.

Pr. 3 : The paragraph of taken datum.

L. 3 : Line of the datum in the Target Text.

TT/ P. 28/ Pr. 3/ L.3 : The datum was taken on page 28 paragraph 3 in line 3 in the Target Text.

3. Collecting the data gained from the results of the questionnaires.

The data were collected from the questionnaires distributed to the raters. The questionnaires were to measure the quality of the translation in terms of accuracy and acceptability. The scale of accuracy and acceptability was obtained from the questionnaire distributed to the raters.

4. Analyzing the data.
5. Drawing the conclusion.

CHAPTER IV

DATA ANALYSIS AND DISCUSSION

A. Data Analysis

a. The Analysis of Translation Techniques.

This section presents the translation techniques applied by the translator in translating the scientific terms related to weather and climate into Indonesian version. There are ten kinds of translation techniques found in translating the scientific terms related to weather and climate in science book for children entitled "Science Activities: Weather and Climate" into Indonesian namely: Established equivalent translation technique, Naturalized borrowing translation technique, Calque translation technique, Pure borrowing translation technique, Calque & naturalized borrowing translation techniques, Calque & pure borrowing translation techniques, Amplification & pure borrowing translation techniques, Amplification & established equivalent translation techniques, Amplification, pure borrowing, & transposition translation techniques, Pure borrowing & naturalized borrowing translation techniques. The analyzing of the translation techniques applied by the translator can be seen below:

a. 1 Established equivalent translation technique.

In translating the scientific terms related to weather and climate in scientific book for children entitled "Science Activities: Weather and Climate" into Indonesian, the first technique used by the translator is established equivalent translation technique. Established equivalent is a technique of translation by using a term or expression recognized (by

dictionaries or language in use) as an equivalent in the target language (Molina & Albir, 2002). There are 20 data (32, 25 %) of 62 data using this technique. The examples of established translation technique are as follows:

Example 1:

ST: ***Thunder*** is the sound shock wave caused by the lightning heating and expanding the surrounding air.

TT: ***Guntur*** *adalah suatu gelombang kejut bunyi yang disebabkan oleh kilat yang memanaskan dan mengembangkan udara di sekitarnya.*

(datum number 17)

Example 2:

ST: ***Dew*** and frost are both caused by water in the air.

TT: ***Embun*** *dan embun beku juga disebabkan oleh air di udara.*

(datum number 7)

From the 2 examples above, it shows that the translator used established equivalent translation technique in his translation. In example 1, the term of *thunder* is translated into *guntur* in target text. The term of *guntur* is the term recognized by dictionary in target language, but in fact the word *thunder* will be more acceptable in target language if it is translated into *petir* in target text. *Thunder* is the noise of the shock wave made when lightning heats and expands the surrounding air (Basset, 2002:63). *Thunder* is produced by the violent expansion of the air caused by the tremendous heat of the lightning flash (Trewartha, 1954: 212).

In example 2, the term of *dew* is translated into *embun* in target text. In this case the translator translates the term of *dew* into *embun*. The term of *embun* is the term recognized by language in use in target text. *Dew* is a layer of small drops of water that settles on cool surfaces in early morning (Basset, 2002:62). It forms of condensation which develops at or near the ground. Dew results from radiational cooling at night, usually with clear skies and little or no wind (Trewartha, 1968:132). The data numbers of this technique can be seen below:

Table 4.1

The data translated using established equivalent translation technique

Translation technique	Data number	Total
Established equivalent translation technique	2, 5, 7, 8, 16, 17, 18, 19, 20, 22, 27 28, 31, 32, 35, 36, 48, 51, 57, 62	20

a. 2 Naturalized borrowing translation technique.

The second translation technique used by the translator is naturalized borrowing. Naturalized borrowing translation technique used to fit the spelling rules in the target language (Molina & Albir, 2002). There are 14 data (22, 58 %) of 62 data using this technique. The examples of naturalized borrowing translation technique are as follows:

Example 1:

ST: It is measured using an instrument called a ***hygrometer.***

TT: *Kelembapan nisbi diukur dengan menggunakan suatu alat yang disebut* ***higrometer.***

(datum number 4)

Example 2:

ST: Large black clouds in the sky are called ***cumulonimbus.***

TT: *Awan hitam yang besar di langit disebut* ***kumulonimbus.***

(datum number 61)

From the two examples above, the translator used naturalized translation to find the equivalence of meaning between the texts from the source language to the target language. In example 1, the translator changes the spelling of *hygrometer* into *higrometer* in target text. It is done to make the term of *hygrometer* in source text easier to be pronounced into *higrometer* by target reader. *Hygrometer* is an instrument that measures the amount of moisture in the air (Basset, 2002:62). The same case happens in example 2, the translator changes the term of *cumulonimbus* into *kumulonimbus* in order to make that term more natural and suitable to Indonesian culture. *Cumulonimbus* is a thick, dense cloud with vertical development. The upper surface is dome-shaped with a cauliflower structure, while the base is nearly horizontal. *Cumulonimbus* is categorized as low cloud; it is about 2 kilometers above the ground (Trewartha, 1968:143). They are accompanied by sharp shower, squalls, thunderstorm, and sometime hail (Trewartha, 1954:134). The data numbers of this technique can be seen as follows:

Table 4.2

The data translated using naturalized borrowing translation technique

Translation technique	Data number	Total
Naturalized borrowing translation technique	1, 4, 15, 12, 21, 23, 24, 26, 40, 41, 42, 49, 60, 61	14

a. 3 Calque translation technique.

The third technique used by the translator is calque translation technique. Calque technique is a literal translation of a foreign word or phrase; it can be lexical or structural (Molina & Albir, 2002). In this analysis, there are 5 data (8, 06 %) of 62 data found using calque translation technique. The examples of this technique can be seen below:

Example 1:

ST: ***Prevailing winds*** that blow from west to east are called west-erlies.

TT: ***Angin umum*** *yang bertiup dari barat ke timur disebut* ***angin barat.***

(Datum number 30)

Example 2:

ST: A flat expanse of ground area near a river is called a ***flood plain***.

TT: *Sebentang tanah datar yang luas di dekat sungai disebut* ***dataran banjir***.

(Datum number 37)

The translator uses calque translation technique in his translation. It can be seen from the phrase *prevailing winds* in example 1 is translated into *angin umum* in target text. It is literally translated from source text

into the target text. In example 2, the term of *flood plain* is translated into *dataran banjir* in target text. In this case the phrase *flood plain* in source text is literally translated into the target text. *Prevailing winds* are the main wind at a certain place (Basset, 2002:62). *Prevailing winds* are the world wind system or pattern. It caused by winds related to the change of pressure system and local conditions (Trewartha, 1968:150). Meanwhile, *flood plain* is a flat area of ground around a river over which the river sometimes floods (Basset, 2002:62). The data numbers of this technique can be seen below:

Table 4.3

The data translated using calque translation techniques

Translation technique	Data number	Total
Calque translation technique	3, 30, 37, 50, 59	5

a. 4 Pure borrowing translation technique.

The forth technique used by the translator is pure borrowing translation technique. Pure borrowing translation technique can be pure from source language without any change (Molina & Albir, 2002). There are 4 data (6, 45 %) of 62 data using this technique. The examples of pure borrowing translation technique are as follows:

Example 1:

ST: Tornadoes, or ***twister***, are also specific to certain times of the year.

TT: *Tornado**,** atau **twister**, juga khas untuk tempat-tempat tertentu dan waktu-waktu tertentu dalam satu tahun.*

(Datum number 43)

Example 2:

ST: In 1846 the Irish astronomer Thomas R. Robinson (1792-1882) invented a device, the ***anemometer***, for accurately measuring wind speed.

TT: *Pada tahun 1846, astronom Irlandia, Thomas R. Robinson (1792-1882), menciptakan sebuah alat,* ***anemometer,*** *untuk mengukur kecepatan angin secara akurat.*

(Datum number 39)

From the two examples above, it can be seen that the translator only borrows from the source text into the target text. In example 1 and example 2 the translator only takes English word as the source language such as *twister* and *anemometer* without any change. The translator only borrows those terms from source text into the target text. The term of *twister* is translated into *twister* in target text. Then, the term of *anemometer* is translated into *anemometer* into target text. *Twister* is another name for tornado. Meanwhile, *anemometer* is a device for measuring wind speed (Basset, 2002:62). The translator uses this technique based on the consideration that there is no equivalent word for the term of twister. Moreover, the term of *anemometer* is a standard word and familiar term in target text. The data numbers of pure borrowing translation technique can be seen in the table below:

Table 4.4

The data translated using pure borrowing translation technique

Translation technique	Data number	Total
Pure borrowing translation technique	39, 43, 47, 56	4

a. 5 Calque and naturalized borrowing translation techniques.

The fifth technique is calque and naturalized borrowing translation techniques. There are 7 data (11, 29 %) of 62 data using this technique. Here are the examples of Calque and naturalized borrowing translation techniques:

Example 1:

ST: However, the highest clouds in the sky are ***cirrus clouds***, wispy clouds that form between 5 miles (8 km) and 8 miles (13 km) above the ground.

TT: *Namun, awan yang paling tinggi di langit adalah* ***awan sirus****, awan tipis yang terbentuk antara 8 km hingga 13 km di atas permukaan tanah.*

(datum number 11)

Example 2:

ST: ***Radiation fog*** forms at night.

TT: ***Kabut radiasi*** *terbentuk pada malam hari.*

(datum number 58)

From examples above it can be seen that the translator applied calque and naturalized borrowing translation techniques. In example 1, the term of *cirrus clouds* are translated into *awan sirus* in target text. In this case, the phrase of *cirrus clouds* in source text is literally translated into *awan sirus* in target text. On the other hand, the translator also used naturalized borrowing in his translation. It can be seen from the term *cirrus* in source text is translated into *sirus* in target text. It shows naturalized borrowing technique because the spelling rule in source text is changed in target text. *Cirrus cloud* is wispy high clouds, sometimes called mare's tale. Cirrus clouds are sign of nice weather (Basset, 2002:62). *Cirrus clouds* are thin featherlike clouds with a fibrous structure and a delicate, silky appearance. When detached and arranged irregularly in the sky, they are harbingers of fair weather. On the other hand, when they systematically arranged as in bands, or connected with cirrostratus or altostratus, they usually foretell bad weather. They are always composed of ice crystals. It is about 5-14 kilometers above the ground (Trewartha, 1968:132)

In example 2, the term of *radiation fog* in source text is literally translated into *kabut radiasi* in target text. It is called as calque technique because it is literally translated into the target text. Besides, the term of *radiation* in source text is translated into *radiasi* in target text. In this case the translator applied naturalized borrowing technique in his translation. *Radiation fog* is a type of fog formed at night in cool areas near the ground

(Basset, 2002:63). Radiation fog is a very common type of land fog. It also known as ground- inversion fog, it is produced by radiation cooling of relatively shallow layers of quiet, humid air overlying a chilled land surface. Nighttime conditions which favor radiation fogs are a surface inversion of temperature, a cloudless sky and slight air movement (but not an absolute calm). Cloudless skies promote fogs because a low cloud cover absorbs a large part of the earth's surface, where it is absorbed and consequently acts to reduce the net loss of heat (Trewartha, 1968:132). The data numbers of this technique can be seen below:

Table 4.5

The data translated using calque and naturalized translation techniques

Translation technique	Data number	Total
Calque & naturalized Borrowing techniques	6, 9, 10, 11 , 38, 46, 58	7

a. 6 Calque and Pure borrowing translation techniques.

The sixth translation technique used by the translator is calque and pure borrowing translation techniques. There are 4 data (6, 45 %) of 62 data using this technique. The examples of calque and pure borrowing translation techniques are as follow:

Example 1:

ST: There is a part of the United States known as ***tornado alley*** that is especially prone to tornadoes.

ST: *Di Amerika Serikat, terdapat bagian yang dikenal sebagai **lorong tornado** yang secara khusus rentan terkena tornado.*

(Datum number 44)

Example 2:

ST: When heavier cold air forces itself underneath the warm air, a ***cold front*** is formed.

TT: *Ketika udara dingin yang lebih berat menekan sendiri di bawah udara hangat, sebuah **front dingin** terbentuk.*

(datum number 53)

In example 2, the term of *tornado alley* in source text is translated into *lorong tornado* in target text. The term of *tornado* in target text is the term borrowed from source text *tornado* without any change in target text. This technique called as pure borrowing technique. The other technique used by the translator is calque technique. In this case, the phrase of *tornado alley* is literally translated into *lorong tornado* in target text. *Tornado alley* is a part of valley that is prone to tornadoes (Basset, 2002:63).

In example 2, the term of *cold front* is translated into *front dingin* in target text. The term *front* itself means a boundary where two air masses of different temperatures meet. Meanwhile, *cold front* is a boundary between air masses where cold air moves forward (Basset, 2002:62). In this case the translator borrows the term of *front* in target text. It does not translate in target text. It is called as pure borrowing technique. Besides,

the translator also uses calque technique. The phrase of *cold front* in source text is literally translated into *front dingin* in target text. The data numbers of this technique can be seen as follows:

Table 4.6

The data translated using calque & pure borrowing translation techniques

Translation technique	Data number	Total
Calque & pure borrowing translation techniques	44, 53, 54, 55	4

a. 7 Amplification and pure borrowing translation techniques.

The seventh translation technique used by the translator is Amplification and pure borrowing translation techniques. Amplification technique is the technique to introduce details that are not formulated in the Source Language. It explicates or paraphrases information into target language. Meanwhile, in pure borrowing the translator borrows pure term from source language without any change (Molina & Albir, 2002). There are 3 data (4, 83 %) of 62 data using this technique. The examples of this technique are as follows:

Example 1:

ST: If snow falls very windy condition, with winds more than 35 miles per hour (55 km/h), it is called ***blizzard.***

TT: *Jika salju turun dalam keadaan yang sangat berangin dengan kecepatan angin lebih dari 55 km per jam, keadaan cuaca ini di sebut* ***badai salju (blizzard).***

(Datum number 13)

Example 2:

ST: The area of low pressure near the equator, where winds seldom blow, was called the ***doldrums.***

TT: *Daerah bertekana rendah di dekat katulistiwa, tempat anginnya jarang bertiup, disebut* ***doldrums (angin mati).***

(Datum number 33)

In datum number 13, the term of *blizzard* is translated into *badai salju (blizzard)* in target text. *Blizzard* is heavy snowfall in very windy conditions (Basset, 2002:62). In this case, the translator explicates that term in target text, the term of *blizzard* is translated into *badai salju (blizzard)*. It shows that the translator uses amplification translation technique. Besides, the translator also borrows the foreign term *blizzard* in target text. This technique called as pure borrowing technique. *Blizzard* is type of weather, it is more than just a heavy snowstorm. It is a gale of wind, zero cold, and drifting powdery snow (Trewartha, 1954: 333).

In example 2, the term of *doldrums* is translated into *doldrums (angin mati)* in target text. The translator paraphrases the term of *doldrums* into *angin mati* in target text. The technique used by the translator in translating that term is amplification translation technique. Besides, the translator also used pure borrowing translation technique in his translation by borrowing the term of *doldrums* in target text. *Doldrums* is an area of low pressure near the equator where winds seldom blow (Basset, 2002:62). The data numbers of this technique can be seen below:

Table 4.7

The data translated using amplification and pure borrowing translation techniques

Translation technique	Data number	Total
Amplification and pure borrowing translation techniques	13, 33, 52	3

a. 8 Amplification and established equivalent translation techniques.

The eighth translation technique used is amplification and established equivalent translation techniques. There is 1 datum (1, 61 %) of 62 data using this technique. This datum will be discussed below:

Datum number 29:

ST: The winds that blow toward to the equator are known as the ***trade winds.***

TT: *Angin yang bertiup ke katulistiwa disebut* ***angin perdagangan (angin pasat).***

In datum number 29, the term of *trade winds* is translated into *angin perdagangan (angin pasat)* in target text. In this case, the translator using two terms in target text *angin perdagangan & angin pasat* in target text. It explicates the information into target text. This technique called as amplification translation technique. The term of *trade winds* also translated into *angin pasat* – the term recognized by dictionary in target text. It is standard word in target text. This technique called as established

equivalent translation techniques. It is also called as *angin perdagangan* because it gives a big contribution in expediting trade activities in sailboat period (Andani. 1995:208). The datum number of this technique can be seen below:

Table 4.8

The data translated using amplification and established equivalent translation techniques

Translation technique	Data number	Total
Amplification & established equivalent	29	1

a. 9 Amplification, pure borrowing, and transposition translation techniques.

The ninth technique used by the translator is amplification, pure borrowing, and transposition translation techniques. There are 3 data (4, 83 %) of 62 data using this technique. Here are the examples of this technique:

Example 1:

ST: High above these winds are narrow bands of very strong winds called ***jet streams.***

TT: *Jauh tinggi di atas angin ini terdapat jalur sempit angin yang kuat yang disebut* ***jet stream (aliran jet).***

(datum number 25)

Example 2:

ST: Calm air is also found in areas of high pressure called the ***horse latitudes***.

TT: *Udara tenang juga terdapat di daerah bertekanan tinggi yang disebut* ***lintang kuda (horse latitude).***

(Datum number 34)

In example 1, the term of *jet streams* is translated into *jet stream (aliran jet)* in target text. In this translation, the translator uses three translation techniques; amplification, pure borrowing, and transposition translation techniques. The term of *jet streams* is translated into *jet stream (aliran jet)* in target text. It shows amplification technique. The translator explicates that term into in target text. That term also translated using pure borrowing. It borrows the foreign term *jet stream* and *jet* in target text. The last technique using by the translator is transposition. In this case, the phrase of *jet streams* (plural) is translated into *aliran jet* (singular) in target text. It does not translated into *aliran-aliran jet* in target text. In this translation, the translator applied transposition technique from plural into singular form in target text. Transposition from plural into singular is a technique to change the grammatical category in the form of plural in source text into singular form in target text. In English language system, the noun phrase showing plural form must be added by the suffix –s/ es on it. On the other hand, in Indonesian the addition of the suffix is not needed since it has been implied from the noun itself. *Jet stream* is a narrow band of very strong wind high in the atmosphere (Basset, 2002:62). It is a very

fast of air current. *Jet Stream* is closely associated with surface weather phenomenon. It is an important element in the control of surface weather such as storms, cyclone and precipitation (Trewartha, 1954:92).

In second example above, the term of *horse latitudes* is translated into *lintang kuda (horse latitude)* in target text. It shows that the translator used amplification technique in his translation. This technique used because the translator wants to introduce the foreign term to the target reader. However, he also translates it into *lintang kuda* the equivalent word in target text. The translator also uses the pure borrowing in his translator by borrowing the tem of *horse latitude* in target text. On the other hand, the translator also uses transposition technique in his translation. The term of *horse latitudes* (plural form in source text) is translated into *lintang kuda* (singular form) in target text. *Horse latitude* is the areas of calm in the tropic (Basset, 2002:62). It is a transition area between the easterlies and the westerlies. *Horse latitude* is the wind of the subtropics area (Trewartha, 1954: 81). The data numbers of this technique can be seen below:

Table 4.9

The data translated using amplification, pure borrowing, and transposition translation techniques

Translation technique	Data number	Total
Amplification, pure borrowing & transposition translation techniques	25, 34, 45	3

a. 10 Pure borrowing and naturalized borrowing translation techniques.

The last translation technique used by the translator is pure borrowing and naturalized borrowing translation techniques. There is 1 datum (1, 61 %) of 62 data using this technique. This datum will be presented below:

Datum number 14:

ST: The ***wind-chill factor*** is a measure of how quickly a person loses body heat due to the wind.

TT: ***Faktor wind-chill*** *adalah suatu ukuran seberapa cepat seseorang kehilangan panas tubuhnya karena angin.*

From the datum above, it shows that the translator used pure borrowing and naturalized borrowing translation techniques. In datum number 14, the term of *wind-chill factor* is translated into *faktor wind-chill* in target text. The term of *wind-chill* is a foreign term used in target text. It borrowed from the source text *wind-chill*. This technique named as pure borrowing technique where the translator borrows the foreign term of *wind-chill* from source text into the target text. On the other hand, the word of *factor* is translated into *faktor* in target text. It indicates that the translator used naturalized borrowing in his translation because the spelling rule in source text is changed into the target text. *Wind-chill factor* is the equivalent temperature in still air that would have the same effect on human skin as a higher temperature combined with wind (Basset, 2002:63). The datum number of this technique can be seen below:

Table 4.10

The data translated using pure borrowing and naturalized borrowing translation techniques

Translation technique	Data number	Total
pure borrowing & naturalized borrowing	14	1

The list of translation techniques applied from all data can be seen in the table below:

Table 4.11

Translation techniques applied by the translator in translating of scientific terms translation of weather and climate in scientific book for children entitled "Science activities: weather and climate"

No	Translation Technique	Number of data	Percentage
1	Established equivalent translation technique.	20	32, 25 %
2	Naturalized borrowing translation technique.	14	22, 58 %
3	Calque translation technique.	5	8, 06 %
4	Pure borrowing translation technique.	4	6, 45 %
5	Calque and naturalized borrowing translation	7	11, 29 %

	techniques.		
6	Calque and Pure borrowing translation techniques.	4	6, 45 %
7	Amplification and pure borrowing translation techniques.	3	4, 83 %
8	Amplification and established equivalent translation techniques.	1	1, 61 %
9	Amplification, pure borrowing, and transposition translation techniques.	3	4, 83 %
10	Pure borrowing and naturalized borrowing translation techniques.	1	1, 61 %
	Total	62	100 %

Based on the translation techniques presented above, the translation technique frequently used by the translator in translating the science terms is established equivalent translation technique. There are 20 data (32, 25 %) 0f 62 data using this technique. The second technique is naturalized borrowing translation techniques. Among 62 data, there are 14 data (22, 58 %) translated using this technique. The third technique is calque and naturalized borrowing

translation techniques, there are 7 data (11, 29 %) using this technique. The fourth technique is calque translation technique, there are 5 data (8, 06 %) using this technique. The fifth technique is pure borrowing translation technique, there are 4 data (6, 45 %) translated using this technique. The sixth technique is calque and pure borrowing translation techniques, 4 data (6, 45 %) of 62 data are translated using pure borrowing and transposition translation techniques. The seventh technique is amplification and pure borrowing translation techniques, 3 data (4, 83 %) of 62 data are translated using this technique. The next technique used is amplification, pure borrowing, and transposition translation techniques. Among 62 data, 3 data (4, 83 %) are translated using this technique. The ninth technique is amplification and established equivalent translation techniques. There is 1 datum (1, 61 %) of 62 data using this technique, and the last technique used by the translator is pure borrowing and naturalized borrowing translation techniques, there is 1 datum (1, 61 %) translated using this technique.

b. The Analysis of Translation Quality

In this sub chapter, the researcher analyzed the quality of scientific terms translation in term of accuracy and acceptability. The detail analysis will be presented below:

1. The accuracy of translation.

   In this analysis, the accuracy of translation can be classified into three classifications; they are classification A (accurate translation), classification B (Less accurate translation), and Classification C (inaccurate translation).

Based on the analysis, from 62 data, 61 data (98, 39 %) are accurate, 1 datum (1, 61 %) is less accurate and there is no datum (0%) which belongs to inaccurate translation.

a. Classification A (Accurate translation).

The data taken in this classification are accurate. Most of the data are classified into this classification. There are 61 data (98, 38 %) from 62 data that belong to this category. The data are considered accurate if the content/ message of the original source text is accurately conveyed to the target text. The followings are the examples of accurate translations:

Example 1:

ST: Measuring air pressure with a device called a ***barometer*** can tell us if the weather will be fair, rainy, or stormy.

TT: *Mengukur tekanan udara dengan sebuaha lat yang disebut* ***barometer*** *dapat memberitahu kita apakah cuacanya akan cerah, hujan atau berangin.*

(datum number 47)

In example above, the term of *barometer* in source text is translated into *barometer* in target text. It can be seen that the message is accurately translated into the target text. All raters classified the datum above into accurate translation. They agree that the message of the source text was accurately conveyed into the target text. From the researcher's point of view, the message in

datum 47 is also accurately conveyed from the source text into the target text. *Barometer* is a device used to measure air pressure. (Basset, 2002: 62).

Example 2:

ST: As the vapor rises, it cools, and the water ***condenses*** or freezes.

TT: *Saat naik, uap air menjadi dingin, dan air* ***mengembun*** *atau membeku*.

(datum number 48)

In example 2, the term of *condenses* in source text is translated into *mengembun* in target text. All the three raters considered that the message of that science term is accurately conveyed into the target text. It indicates that the datum number 48 is accurate translation. The researcher also has the same opinion that the translation is accurately conveyed into the target text. The message of the source text has been transferred well into the target text. *Condensation* is the process of turning from a gas (such a water vapor) into a liquid (Basset, 2002: 62). *Condensation* therefore depends upon two variables: (1) the amount of cooling and (2) the relative humidity of the air. If the dew point is not reached until the temperature falls below $32^{o,}$ some of the condensed water vapor may be in form of tiny ice crystals (white frost, snow, and some clouds), if condensation occurs above the

freezing point, it will be the liquid state (dew, fog and cloud) , (Trewartha, 1954:119).

Most of the data included this classification are resulted from established equivalent translation technique.

b. Classification B (Less accurate translation).

This classification includes all data that are considered less accurate. In this classification, there are certain problems in meaning, or the translation raises multiple or ambiguous meaning. From 62 data, there is 1 datum (1, 61 %) considered as less accurate. The following datum is considered as less accurate translation:

Datum number 33:

ST: The area of low pressure near the equator, where winds seldom blow, was called the ***doldrums.***

TT: *Daerah bertekanan rendah di dekat katulistiwa, tempat anginnya jarang bertiup, disebut* ***doldrums (angin mati).***

In datum number 33, the term of *doldrums* in source text is translated into *doldrums (angin mati)* in target text. From the three raters, there are two raters who agree that the datum above is accurate. Nevertheless, one rater has different opinion. He considered that the translation is inaccurate. He thinks that *doldrums* is not kind of wind, but an area. It should be translated into '*daerah berangin mati*' not '*angin mati*' only. It can be

concluded that the translation is less accurate. From the researcher' point of view, the term of *doldrums* from the source text into the target text is accurate. Nevertheless, the term of *angin mati* in target text is less accurate. Based on KBBI (2008: 339) the term of *doldrums* defined as *'daerah angin mati'*. It will have different meaning if it was translated into *angin mati* only. *Doldrums* is the areas of flow pressure near the equator where winds seldom blow (Basset, 2002: 62).

Table 4.12

The classification of translation accuracy

Classification	Number of data	Total	Percentage
A (Accurate)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53 , 54, 55, 56, 57, 58, 59, 60, 61, 62	61	98, 39 %
B (Less accurate)	33	1	1, 61 %
	Total	62	100 %

2. The acceptability of translation.

In this analysis, the acceptability of translation can be classified into three classifications; they are classification A (acceptable translation), classification B (Less acceptable translation), and Classification C (unacceptable translation).

Based on the analysis, from 62 data, 50 data (80, 64 %) are acceptable, 12 data (19, 35 %) are less acceptable translation and there is no datum (0%) which is unacceptable. The followings are detail analysis of each classification:

a. Classification A (acceptable translation).

The acceptable data are the data which sound natural, almost do not seem like a translation product and do not contain any grammatical error. From 62 data, there are 50 data (80, 64 %) considered as acceptable translation. The following data are the examples of acceptable data:

Example 1:

ST: When there is a sudden summer thunderstorm, the heavy rain cannot sink into the ground and instead flows over the ground and creates a ***flash flood.***

TT: *Ketika tiba-tiba ada badai guntur musim panas, hujan deras tidak dapat meresap ke dalam tanah melainkan mengalir di atas tanah dan menghasilkan* ***banjir bandang****.*

(Datum number 36)

In example above, the term of *flash flood* in source text is translated into *banjir bandang* in target text. All the three raters considered that datum above is acceptable. The translation sounds natural and it is grammatically correct in target text. According to the researcher, the translation of datum number 36 is acceptable because the translation sounds natural in target text. The term used is usual term in target text. *Flash flood* is a sudden flood caused by heavy falling on hard, dry ground (Basset, 2002: 62).

Example 2:

ST: The ***dew-point*** temperature gives a much better estimate of the amount of moisture actually present in the air than relative humidity.

TT: *Suhu **titik embun** memberikan perkiraan banyaknya uap air yang sebenarnya di udara jauh lebih baik daripada kelembapan nisbi.*

(datum number 57)

In datum above, the term of *dew-point* in source text is translated into *titik embun* in target text. According to the three raters, the translation sounds natural. The datum above categorized as acceptable translation. The researcher also agrees with them. The translation has natural form in target text. It is considered as acceptable translation. *Dew point* is the temperature below which the air is too cold to hold water vapor (Basset, 2002: 62). It can

result from radiational processes or from the mixing of warm and cold air masses (Trewartha, 1968:132).

b. Classification B (less acceptable translation).

This category consists of all data that are considered less acceptable in target text. The translation is closely natural, but there are still some uncommon terms in target text. There are 12 data (19, 35 %) that are considered as less acceptable translation. Some of the data will be discussed further below:

Example 1:

ST: Weather features such as depressions (an area of pressure lower than its surroundings, which can bring ***hurricanes*** in the tropics, for example) do not stay in one place.

TT: *Fitur-fitur cuaca seperti depresi (sebagai contoh, suatu daerah yang tekanannya lebih rendah daripada sekitarnya, dapat membawa* ***hurikan*** *di daerah tropis) tidak berada di suatu tempat.*

(datum number 23)

In example 1, the term of *hurricanes* in source text is translated into *hurikan.* The three raters assumed that the translation sounds less natural in target text. Therefore, it belongs to less acceptable translation. Rater 1 suggests that the translator should add some explanations for the word 'hurikan', i.e. 'hurikan' (semacam topan). Rater 3 suggests that it will be better if it is

translated into *angin ribut* in target text. The translation sounds more natural in target text. The researcher has different opinion about that term. The term of *hurikan* is acceptable in target text. Based on the KBBI (Kamus Besar Bahasa Indonesia), (2008:513), *hurikan* is a storm with the great speed in tropical area. It shows that the term of *hurikan* is common term in target text. Therefore, it is considered as acceptable translation. There is another definition of *hurikan* taken from the glossary of science book. ***Hurikan*** is a tropical storm over the Atlantic Ocean in which the wind speed is force 12, or greater, on the Beaufort scale (Basset, 2002: 62).

Example 2:

ST: ***Prevailing winds*** that blow from west to east are called west-erlies.

TT: ***Angin umum*** *yang bertiup dari barat ke timur disebut angin barat.*

(datum number 30)

In datum above, the term of *prevailing winds* in source text is translated into *angin umum* in target text. According to the raters, the datum above is assumed as less acceptable translation. Rater 1 assumed that the phrase of *angin umum* sounds ambiguous and less natural. It should be translated into *angin biasa* in target text. Rater 3 thinks that the translation is less natural. He suggests that the translation is translated into *angin* only in target text. Whereas, rater 2

assumed that the translation sounds natural in target text. The researcher agrees with rater 2 that the translation sounds natural. *Prevailing winds* are the main wind at a given place (Basset, 2002: 63). *Prevailing winds* are the world wind system or pattern. It caused by winds related to the change of pressure system and local conditions (Trewartha, 1968:150). The data numbers of this technique can be seen below:

Table 4.13

The classification of translation acceptability

Classification	Number of data	Total	Percentage
A (Acceptable)	1, 2, 3, 5, 6, 7, 8, 9, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 44, 45, 46, 47, 48, 49, 50, 51, 52, 54, 55, 56, 57, 58, 59, 60, 62	50	80, 64 %
B (Less acceptable)	4, 10, 14, 23, 30, 39, 40, 41, 42, 43, 53, 61	12	19,35 %
	Total	62	100 %

B. Discussion

In this sub chapter, the researcher will focus on the impact of the translation techniques applied by the translator to the quality of translation in terms of accuracy and acceptability. The table below shows the impact of the translation techniques applied by the translator to the quality of translation in terms of accuracy and acceptability.

Table 4.14

The impact of translation techniques to the quality of translation in term of accuracy and acceptability

No	Translation quality / Tecnique	Accurate Data	Less accurate Data	Acceptable Data	Lees acceptable Data
1.	Established equivalent translation technique	2, 5, 7, 8, 16, 17, 18, 19, 20, 21, 27, 28, 31, 32, 35, 36, 48, 51, 57, 62	-	2, 5, 7, 8, 16, 17, 18, 19, 20, 21, 27, 28, 31, 32, 35, 36, 48, 51, 57, 62	-
	Total/ percentage	20 (100%)	-	20 (100%)	-
2.	Naturalized borrowing translation technique	1, 4, 15, 12, 21, 23, 24, 26, 40, 41, 42, 49, 60, 61	-	1, 15, 12, 21, 24, 26, 49, 60	4, 23, 40, 41, 42, 61

	Total/ percentage	14 (100)	-	8 (57, 15 %)	6 (42, 85%)
	Calque translation technique	3, 30, 37, 50, 59	-	3, 37, 50, 59	30
3.	Total/ percentage	5 (100 %)	-	4 (80 %)	1 (20 %)
	Pure borrowing translation technique	39, 43, 47, 56	-	47, 56	39, 43
4.	Total/ percentage	4 (100 %)	-	2 (50 %)	2 (50 %)
	Calque and naturalized borrowing translation techniques	6, 9, 10, 11, 38, 46, 58	-	6, 9, 11, 38, 46, 58	10
5.	Total/ percentage	7 (100 %)	-	6 (85, 71 %)	1 (14, 29%)
	Calque and pure borrowing translation techniques	44, 53, 54, 55		44, 54, 55	53
6.	Total/ percentage	4 (100 %)	-	3 (75 %)	1 (25 %)
	Amplification and pure borrowing translation techniques	13, 52	33	13, 33, 52	-
7.					

	Total/ percentage	2 (66, 67 %)	1 (33, 3 %)	3 (100 %)	-
8.	Amplification and established equivalent translation techniques	29	-	29	-
	Total/ percentage	1 (100%)	-	1 (100%)	-
9.	Amplification, pure borrowing, & transposition translation techniques	25, 34, 45	-	25, 34, 45	-
	Total/ percentage	3 (100%)	-	3 (100%)	-
10.	Pure borrowing & naturalized borrowing translation techniques	14	-	14	-
	Total/ percentage	1 (100%)	-	1 (100%)	-

The result of data analysis shows that from 10 translation techniques used by the translator established equivalent technique is the translation technique frequently used by the translator. Based on the analysis, the researcher found that among 62 data (100%), there are 20 data (32, 25 %) are translated by established

equivalent translation technique. Among 20 data, all of the data (100%) are accurately conveyed into the target text. Those data also considered as acceptable translation. All of the data sound natural, so it considered as acceptable translation. The technique considered as less accurate translation is amplification & pure borrowing translation techniques. From 3 data, there is 1 datum (33, 3 %) considered as less accurate translation. On the other hand, naturalized borrowing translation technique is the technique considered as less acceptable translation. From 14 data using this technique, there are 6 data (42, 85%) considered as less acceptable translation.

CHAPTER V

CONCLUSION AND RECOMMENDATION

A. Conclusion

Based on the result of the analysis, the conclusion of the research can be drawn as follows:

1. The results of the analysis data shows that there are 10 translation techniques used by the translator in translating scientific terms of scientific book for children entitled "Science Activities: Weather and Climate". They are Established equivalent translation technique (20 data or 32, 25%), Naturalized borrowing translation technique (14 data or 22, 58 %), Calque translation technique (5 data or 8, 06 %), Pure borrowing translation technique (4 data or 6, 45 %), Calque & naturalized borrowing translation techniques (7 data or 11, 29 %), Calque & pure borrowing translation techniques (4 data or 6, 45 %), Amplification & pure borrowing translation techniques (3 data or 4, 83 %), Amplification & established equivalent translation techniques (1 datum or 1, 61 %), Amplification, pure borrowing, & transposition translation techniques (3 data or 4, 83 %), Pure borrowing & naturalized borrowing translation techniques (1 datum or 1, 61 %). Established equivalent translation technique is the technique mostly used by the translator to translate scientific terms found in the scientific book.

2. Based on the quality of translation, the scientific terms found in scientific book for children entitled "Science Activities: Weather and Climate" are generally well translated in the target text. The analysis on the accuracy of the translation shows that 61 data (98, 39 %) of 62 data are considered to be accurate and 1 datum (1, 61 %) is considered to be less accurate. The technique which results in translation with the high level of accuracy is Established equivalent translation technique. Meanwhile, the technique with the low level of accuracy is amplification & pure borrowing translation techniques.

   The analysis on the acceptability of the translation shows that 50 data (80, 64 %) are considered to be acceptable and 12 data (19, 35 %) are considered to be less acceptable. The technique which results in translations with high level of acceptability is established equivalent translation technique. Meanwhile, the technique which results in translations with low level of acceptability is naturalized borrowing translation technique.

B. Recommendation

After drawing conclusion of the research, the researcher would like to give some recommendations to the translator and other researchers.

1. The translator.

   Before translating scientific terms, the translator should read the definition of each scientific term first in order to understand the meaning.

By understanding the definition of each scientific term, the translator will be able to find more accurate and acceptable translation for the target readers.

Established equivalent translation technique is the appropriate technique needed in translating the scientific terms. Generally, by using this technique the translation of scientific terms in target text becomes accurate and acceptable.

2. Other researchers.

The researcher suggests other researchers to conduct the research about the other type of scientific terms since there are many types of scientific terms. It is also recommended that other researchers develop the findings into more comprehensive and applicable research.