



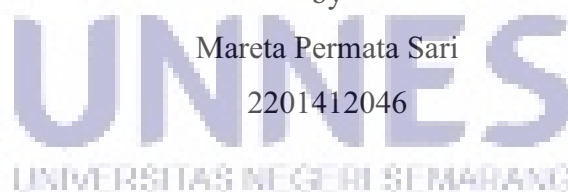
**TRANSLATION PROCEDURES AND ACCURACY OF
PHYSICS TERMS IN THE PHYSICS BILINGUAL BOOK FOR
SENIOR HIGH SCHOOL YEAR XI**

a final project
submitted in partial fulfilment of the requirements
for the degree of Sarjana Pendidikan
in English Language Education

by

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ENGLISH DEPARTMENT

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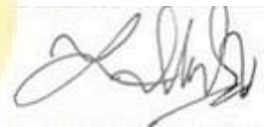
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2016

DECLARATION OF ORIGINALITY

I Mareta Permata Sari hereby declare that this final project entitled *Translation Procedures and Accuracy of Physics Terms in the Physics Bilingual Book for Senior High School* is my own work and has not been submitted in any form for another degree or diploma at any university or other institute of tertiary education. Information derived from the published and unpublished work of others has been acknowledged in the text and a list of references is given in the bibliography.

Semarang, 17 October 2016



Mareta Permata Sari



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APPROVAL

This final project entitled *Translation Procedures and Accuracy of Physics Terms in the Physics Bilingual Book for Senior High School Year XI* has been approved by board of examiners and officially verified by the Dean of the Faculty of Languages and Arts of Semarang State University on October 18, 2016.

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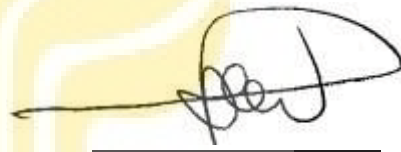
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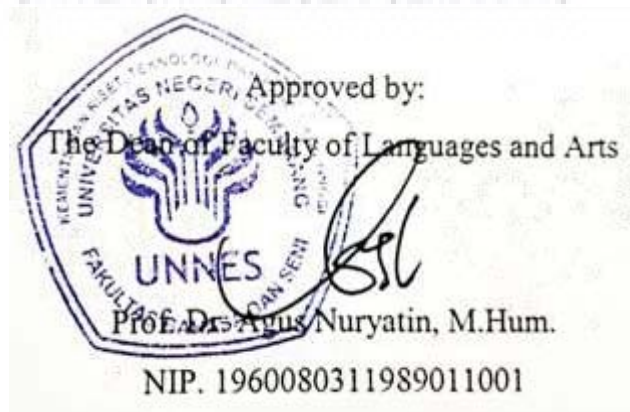


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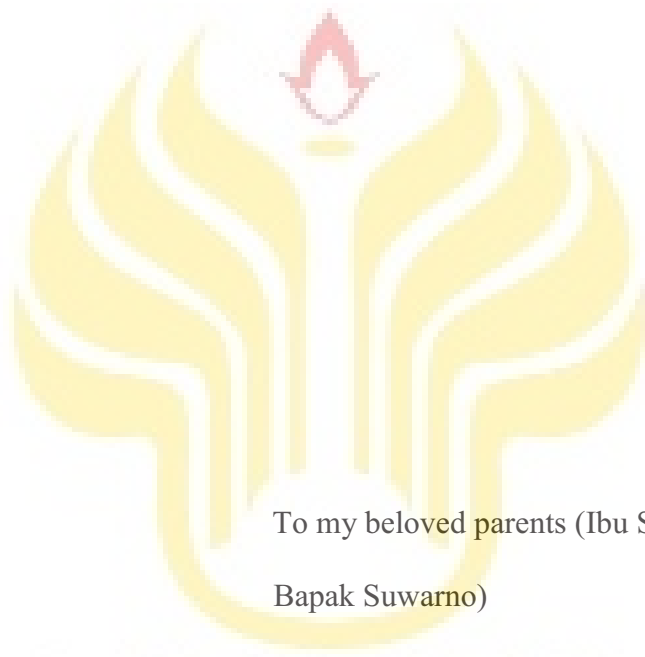
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MOTTO AND DEDICATION

Nothing good come easy

Anonymous



To my beloved parents (Ibu Siti Sulastri and
Bapak Suwarno)

brother (Hasan Tholabi)

sister (Navi'ah Khoirunisa)

friends (Nurdiana, Soraya, Agustina, Riri, Fika,
Vicky, Jien, Evita, Septi, Eva, Nita, Hilda, all of
my friends of English Department '12 and Kos
Cute)

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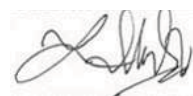
First and foremost, I feel very grateful to the Mighty Allah SWT for His blessing and guidance of living things from being nothing to existence, who amazingly guides the writer in the process of making this research.

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I dedicate my final project to the most beloved parents of mine (Bapak Suwarno and Ibu Siti Sulastri), my brother (Hasan Tholabi), and my sister (Nafia'ah Khoirunnisa), for always supporting me in every step in my life. My thanks also go to my beloved friends, Nurdiana, Soraya, Feeding frenzy, Riri, Hilda and all my friends in the English Department for the joyfulness in my life.

At last, I hope this final project will be useful for the translation study and for the students of English Department of UNNES.

Semarang, 17 October 2016



Mareta Permata Sari

ABSTRACT

Sari, Mareta, Permata. 2016. *Translation Procedures and Accuracy of Physics Terms in the Physics Bilingual Book for Senior High School*. Final Project, English Department, Faculty of Languages and Arts, Semarang State University. Advisor I: Dr. Issy Yuliasri, M.Pd. Advisor II: Arif Suryo Priyatmojo, S.Pd.

Keywords: translation procedures, accuracy, physics terms, bilingual book

This study attempted to analyze the use of translation procedures and their accuracy. The objectives of the study were to describe the translation procedures used to translate the Physics terms and to identify their accuracy in Physics Bilingual Book for Senior High School Year XI. This research was conducted qualitatively. This study applied the theory proposed by Vinay and Darbelnet (in Hatim and Munday 2004:30) about translation procedures and the accuracy criteria of translation assessment by Nababan (2012:50). The results of the study showed that there were 119 data of Physics terms and three translation procedures found in this study. The three translation procedures were equivalence, calque and transposition. The translation procedure mostly used was equivalence, followed by calque and transposition. In terms of accuracy, three raters found that around 99.15% of the data were translated accurately, whereas the rest 0.84% of the data were inaccurately translated. The translation procedure with the highest accuracy was equivalence, followed by calque and transposition. Thus, the equivalence procedure was mostly used and had the highest accuracy rating in this research, followed by calque and transposition.



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LIST OF ABBREVIATIONS

Abbreviation

ST Source Text

TT Target Text



CHAPTER I

INTRODUCTION

In this starting point, I intend to present the orientation of this study. This study is subdivided into several parts. They are the background of the study, reason for choosing the topic, statement of the problem, objective of the study, and significance of the study.

1.1 Background of the Study

To begin with, the existence of RSBI (The Pioneering of International Standard School) in secondary education has piled up in Indonesia. This kind of school uses English for communication. The use of English in RSBI schools is to make students and teachers get used to English. The use of English is in line with the purpose of RSBI schools that is to be the International Standard School. RSBI schools use English in teaching learning activities or in a daily language in the school. Teachers in RSBI schools are also taught English in order to enable them to teach. In order to make the teachers and students acquainted with English, they are equipped with supportive textbooks in teaching learning activities. The supportive textbooks mentioned above are bilingual books. The bilingual books are provided with two languages Indonesian and English. Of all languages, English is used in bilingual textbooks for RSBI schools. A number of books and International journals written in English by foreign authors about Science have been translated into Indonesian language by Indonesian translators. A number of subjects such as Physics, Biology, Chemistry and Mathematics are affordable in

bilingual textbooks for students in secondary education. Secondary education students of RSBI schools are supposed to use Bilingual textbook for Science subjects.

Regarding the use of bilingual textbooks in RSBI schools, I am interested in using Physics bilingual book for this research. According to Oxford Advanced Learners's Dictionary, term is a word or phrase used as the name of something, especially one connected with a particular type of language. However, Physics is the scientific study of matter and energy and the relationships between them, including the study of forces, heat, light, sound, electricity and the structure of atoms. In addition, Physics is one of lessons which full of scientific terms and complicated formulas. Besides, the studies about Physics terms are just few. Those things make Physics more interesting to be studied.

In this case, in Indonesia the use of bilingual textbook is in line with the need to acknowledge English as an International language. Automatically, the secondary education students who are acquainted with English in their bilingual textbooks will be at some advantages. First, students can obtain the knowledge from the subjects. Second, students will be familiar with the English terms related to the subjects. The last, students will be having less difficulty in learning from International journals which indeed use English as the language.

Producing bilingual textbooks is not easy. Bilingual textbooks are produced by publishers. The publishers of bilingual textbooks need translators who are acquainted well with English to translate foreign languages into Indonesian language. It is logical, when most of translators in Indonesia are

Indonesian people which English is not their mother tongue. The translators, at least, should have high proficiency in English. They are demanded to have good ability in translating English textbooks as the source of information in education into the target text in Indonesian. Besides, translation work needs translation procedures in which it is not an easy task to do. The translation procedure is needed to obtain a high quality of translation in target language or at least equal with the source language. There are some procedures of translation as the way to gain at least adequate results of translation. Vinay and Darbelnet's in Hatim and Munday (2004:30) categorization of translation procedures is very detailed. They name two 'methods' covering seven procedures 1) Direct translation, which covers borrowing, calque and literal translation, and 2) Oblique translation, which is transposition, modulation, equivalence and adaptation. In this case, translators need to be careful to translate such difficult source texts, for example, the one which has Physics terms.

Beside the translation procedures, translators need to be aware of the source text to be translated. Translators should make the translation work accurate as the intended meaning in the source text. In order to know whether a translation is good or not, it would be better if a translation is evaluated by experts. The experts can evaluate the accuracy of a translation. According to Nababan (2008:86), an assessment toward the quality of a translation mainly focuses on the accuracy. Newmark (1988:173) suggested that that some kind of accuracy must be the only criterion of a good translation in the future what kind of accuracy depending first on the type and then the particular text that has been translated and

that the word 'sub-text' with its Gricean implications and implicatures can be made to cover a multitude of inaccuracies.

Moreover, to translate such scientific terms, it must be appropriate with the Scientist' intention. Newmark (1988:6) stated that translation is rendering the meaning of a text into another language in the way that the author intended the text. To a certain extent, Newmark (1988:6) declared that translation is an instrument of education as well as of truth precisely because it has to reach readers whose cultural and educational level are different from, and often 'lower' or earlier, than, that of the readers of the original. After confirming to the editor of Yudhistira, I acknowledge that the editor of the book which is used in this research uses the direction of translation from Indonesian into English. The materials in the book were extracted from the bibliography. The materials were synchronized with the curriculum for the time being. The editor uses the books reference for reference only. Hence, I intend to analyse the translation procedure and accuracy of the translated Physics terms in PHYSICS BILINGUAL BOOK FOR SENIOR HIGH SCHOOL YEAR XI published by Yudhistira. The selection of translation procedure in translating technical terms was very essential because it affected the validity and accuracy of the data. Therefore, this research will contribute to determine whether the Physics Bilingual Book for Senior High School Year XI is good enough to be studied as a guide for Physics lesson for secondary education students.

1.2 Reasons for Choosing the Topic

First, the reason for choosing this topic is the prior study about translation research for bilingual book is just a few, especially the one related to the Physics bilingual book for secondary education student. Physics is one of important subjects which give big contribution toward the scientific knowledge. Students in Senior High School are usually asked to know and understand the Physics terms in order to have deeper understanding toward the subject and knowing the application of it in daily life. Secondly, the low literate rate of English in Indonesia adds the concern for the writer to take the challenge to analyse bilingual book. To a certain extent, I want to know whether the Physics bilingual book has gone through the proper translation procedure to make the translation product (target text) is accurate and natural for the students in order to avoid the misunderstanding. It makes sense to consider that the book used in this research is compiled by translating the Indonesian texts into English. Thirdly, I concern towards the students from senior high school who are interested in taking the physics major in a university. This research will be useful for them to study from international journals and foreign books of physics, which are commonly written in English so that they will be acquainted with Physics terms in English. Thus, Science is always developing, it would be better if Indonesian students also learn from the foreign scientist perspective in which their works are usually published in English. Regarding to the translation procedures which will be conducted in this research, I use Vinay and Darbelnet theory on translation procedures. Vinay and Darbelnet theory on translation procedures in Hatim and Munday (2004:30)

are applied on three levels of language 1) The lexicon, 2) The grammatical structures and 3) The 'message', which is used to refer to the situational utterance and some of the higher text elements such as sentence and paragraphs.

In this case, I want to apply the Vinay and Darbelnet translation procedures at the level of lexicon. According to Oxford Advanced Learner's Dictionary, lexicon is a list of words on a particular subject or in a language in alphabetical order. In a certain extent, Vinay and Darbelnet in Peter Newmark (1988:54) stated that the largest quantity of translation in a text is done at the level of the word, the lexical unit, the collocation, the group, the clause and the sentence. Based on the Vinay and Darbelnet theory's mentioned beforehand, the writer has an urge to analyse the Physics terms in Physics bilingual book for Senior High School published by Yudhistira publisher. This study will be conducted regarding the development of Science and regarding the importance of using bilingual textbook for secondary education students mentioned earlier.

1.3 Statement of the Problems

The problems particularly appealing in this study are:

1. What kinds of translation procedures are used to translate the Physics terms in PHYSICS BILINGUAL BOOK FOR SENIOR HIGH SCHOOL YEAR XI published by Yudhistira?
2. How is the accuracy of the translated Physics terms in PHYSICS BILINGUAL BOOK FOR SENIOR HIGH SCHOOL YEAR XI published by Yudhistira?

1.4 Objectives of the Study

The objectives of the study are as follows:

1. To describe the translation procedures used to translate the Physics terms in PHYSICS BILINGUAL BOOK FOR SENIOR HIGH SCHOOL YEAR XI published by Yudhistira.
2. To identify the accuracy of the translated Physics terms found in PHYSICS BILINGUAL BOOK FOR SENIOR HIGH SCHOOL YEAR XI published by Yudhistira.

1.5 Significance of the Study

The significance of the study obtained in this research is as follows:

This research is expected to give contribution toward scientific knowledge.

In a certain extent, through this research, hopefully students will learn Physics eagerly and vividly especially after they are acquainted with Physics term itself. Besides, the students can learn the English term from the subject being learnt in bilingual textbook. Students who start learning about translations also can use this research as a reference for their studies.

1.6 Outline of the Study

This study has five main sections as follows:

Chapter I is presenting the introduction which contains the background of the study, reason for choosing the topic, statement of the problem, objective of the study, significance of the study, and the outline of the study.

Chapter II is about the related literature, presenting some reviews of the previous studies and review of theoretical study. The review of theoretical study provides theories that support this study. They are definition of translation, the process of translation, and translation procedures.

Chapter III deals with research methods. This chapter presents the research design, object of the study, role of the researcher, method of data collection, and method of data analysis.

Chapter IV is the final outcome of the research. It contains general description and results of the study.

Chapter V is the closing of this study. It presents the conclusions and suggestions related to the translation studies.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter discusses the review of related literature which covers three sections. They are review of the previous studies, review of theoretical studies, and theoretical framework.

2.1 Reviews of the Previous Studies

In conducting a study, it needs prior supporting studies to support a study. There are several studies related to this study. They are as follows:

The first research was conducted by Agung (2016) in her study entitled *Translations Procedures in Translating Religious Terms*. The objective of this research is to investigate the translation procedures applied in translating religious terms. This research used qualitative method in analyzing the data. The subjects of this research is a book entitled 'The Perfection of Yoga' written by Prabhupada and the translated version entitled 'Kesempurnaan Yoga'. The data in this study consists of religious terms in form of words, phrases and expressions. The research findings showed that there were nine translation procedures applied to translate the religious terms. The translation procedures were borrowing, literal translation, transposition, modulation, equivalence, adaptation, amplification, reduction, and explicitation.

Another research was conducted by Haditya (2014) in *Translation Procedures Used in Translating Computer Terms from English into Bahasa Indonesia*. This research is aimed to identify the computer terms as well as the

translation procedures used in translating the book entitled *Wireless Networking in the Developing World 2nd Edition*. This research applied a qualitative method in analyzing the data. The subject of this research is a textbook entitled *Wireless Networking in the Developing World 2nd Edition*. The finding of the research showed that borrowing procedure is the dominant translation procedure to translate the computer terms into the target language. Furthermore, from the thirty one data, twenty data are translated by using borrowing procedure. Four data are translated by using borrowing procedure combined with transposition procedure. Then two data are translated by using literal translation, and one datum is using calque. The rest four data are translated by using transposition.

Another research was conducted by Novawati (2012) entitled *An Analysis of Translation Procedures of Accounting Terms in a Bilingual Textbook for Grade XII of Senior High School Entitled "Accounting 2"*. This research was conducted to identify the accounting terms in the form of noun phrase, to identify the procedures in translating the noun phrases of accounting terms from English into the Indonesian language and to examine the quality of the translation. This research applied a qualitative method in analyzing the data. The subject of this research is a textbook entitled *Accounting 2: A Bilingual textbook for Grade XII of Senior High School*. The results of this research showed that there were four dominant categories of noun phrases, with the most dominant translation procedures used is borrowing procedure of 43 terms (33.4%). In addition, the study has fulfilled the criteria of what is called as good translation purposed by Larson in terms of accuracy, clarity and naturalness.

Another research was conducted by Noviaty (2012) in her study entitled *Financial Terms in Financial Statements and Their Translation into Indonesian*. The objective of this research is to analyze the techniques applied in translating English financial terms into Indonesian found in financial statement. This research used qualitative method in analyzing the data. The subject of this research is the financial terms found in a financial statement of PT Unilever Indonesia Tbk 2011. The data consisting of words and phrases were presented in the SL and their equivalent in the TL. The research findings showed that there were 7 techniques used by translator in translating English financial terms into Indonesian found in financial statements. They are borrowing, reduction, established equivalent, calque, literal translation, modulation, and transposition.

The last research was conducted by Rosita, et al. (2013) in their study entitled *The English Students' Techniques in Translating Indonesian Beverage Terms into English*. The objectives of this research are to analyze and describe the techniques being used, accuracy and clarity in translating beverage terms from Indonesian into English by using 30 Indonesian beverage terms as instruments. This research used qualitative method in analyzing the data. The subject of this research is translation product produced by 30 students of Linguistic major of English Department of the State University of Padang. The research findings showed that there were 16 techniques applied by the translator to translate the beverage terms from Indonesian into English and the dominant technique used by the translator to translate beverage terms is established equivalent technique. In

addition, the accuracy of the beverage terms was accurate and their clarity was in the high clear level.

The similarities between the previous studies and my study are the use of translation procedures to analyze specific terms. The difference between the previous studies and my study is the subject of the study. This research is quite different with the previous studies. This research will analyze different terms in another subject in order to enrich the research findings for the previous studies in translation procedures. Moreover, this research will be rated by expert judgment to assess the accuracy of the terms in order to gain accurate results.

2.2 Review of Theoretical Studies

2.2.1 Definition of Translation

Bassnett (2002:1) stated that significantly, a major development in translation studies since the 1970s has been research into the history of translation, for an examination of how translation has helped shape our knowledge of the world in the past better equips us to shape our own futures. Newmark (1988:7) in his book *A Textbook of Translation* proposed his idea that

translation is used for multilingual notices, for instructions issued by exporting companies; for tourist publicity; for official documents, such as treaties and contracts; for reports, papers, textbooks to convey information, advice and recommendations for every branch of knowledge.

The definition of translation varied from the experts who have experience in translation studies for many years. Newmark (1988:5) stated that translation is rendering the meaning of a text into another language in the way that the author

intended the text. Larson follows Nida's description of translation in Hatim and Munday (2004:152), he stated that translation as 'a process which begins with the ST, analyses this text into semantic structure, and then restructures this semantic structure into appropriate receptor language form in order to create an equivalent receptor language text'. Nida in Hatim and Munday (2004:163) also stated that translation means 'reproducing in the receptor language the closest natural equivalent of the message of the source language, first in terms of meaning and second in terms of style'. Catford (1978) in Hartono (2009:2) mentioned that translation is the replacement of textual material in one language (SL) by equivalent textual material in another language.

2.2.2 *The Process of Translation*

Newmark (1988:19) referred the translation procedure is operational. It begins with choosing a method of approach. Secondly, when we are translating, we translate with four levels more or less consciously in mind:

(1) The SL text level, the level of language, where we begin and which we continually (but not continuously) go back to;

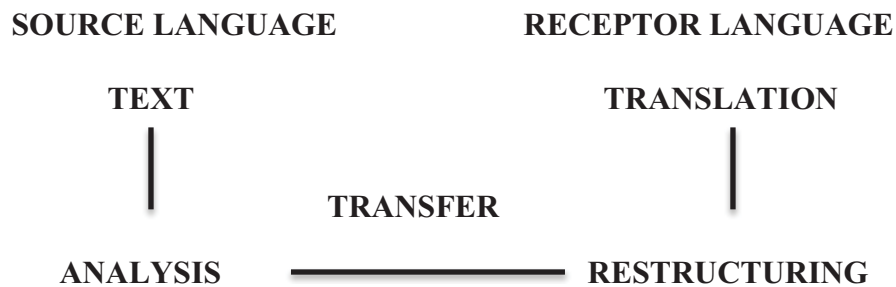
(2) The referential level, the level of objects and events, real or imaginary, which we progressively have to visualise and build up, and which is an essential part, first of the comprehension, then of the reproduction process;

(3) The cohesive level, which is more general, and grammatical, which traces the train of thought, the feeling tone (positive or negative) and the

various presuppositions of the SL text. This level encompasses both comprehension and reproduction: it presents an overall picture, to which we may have to adjust the language level;

(4) The level of naturalness, of common language appropriate to the writer or the speaker in a certain situation. Again, this is a generalised level, which constitutes a band within which the translator works, unless he is translating an authoritative text, in which case he sees the level of naturalness as a point of reference to determine the deviation - if any - between the author's level he is pursuing and the natural level. This level of naturalness is concerned only with reproduction. Finally, there is the revision procedure, which may be concentrated or staggered according to the situation. This procedure constitutes at least half of the complete process.

Nida (1969) in Hatim and Munday (2002:161) stated that a careful analysis of exactly what goes on in the process of translating. That is to say, the translator first analyses the message of the SOURCE language into its simplest and structurally clearest forms, transfers it at this level, and then restructures it to the level in the RECEPTOR language, which is most appropriate for the audience which he intends to reach. Such a set of related procedures may be represented diagrammatically as follows:



Nida in Hatim and Munday (2002:45) stated that the translator:

- (1) Analyses the SL message into its simplest and structurally clearest forms (or 'kernels').
- (2) Transfers the message at this kernel level.
- (3) Restructures the message in the TL to the level which is most appropriate for the audience addressed.

Kernel analysis is thus a crucial step in the process of moving from ST to TT. This is in keeping with the essentially universalists hypothesis to which Nida subscribes: languages 'agree far more on the level of the kernels than on the level of the more elaborate structures' (Nida and Taber in Hatim and Munday 2004:46).

Kernels consist of combinations of items from four basic semantic categories:

1. Object words (nouns referring to physical objects including human beings)
2. Event words (actions often represented by verbs)
3. Abstracts (qualities and quantities, including adjectives)
4. Relationals (including linking devices, gender markers)

2.2.3. Translation Procedures

Vinay and Darbelnet (1958/1995) in Hatim and Munday (2004:148-151) mentioned that translators can choose from two methods of translating activity, namely direct, or literal, translation and oblique translation. They name two 'methods' covering seven procedures:

1. Direct translation, which covers borrowing, calque and literal translation, and
2. Oblique translation, which is transposition, modulation, equivalence and adaptation.

These procedures are applied on three levels of language:

1. The lexicon
2. The grammatical structures and
3. The 'message', which is used to refer to the situational utterance and some of the higher text elements such as sentence and paragraphs.

Vinay and Darbelnet in in Hatim and Munday (2004:148-151) defined seven translation procedures are as follows:

2.2.3.1 Procedure 1: Borrowing

Borrowing is the simplest of all translation method. The origin word or expression in the source language is borrowed and used in the target language. This phenomenon happens when there is no equivalent word or expression which has similar meaning among the source language and the target language. Some examples of Indonesian term which does not exist in English:

Indonesian term:	English term:
<i>Pecel</i>	<i>Pecel</i>
<i>Ruwatan</i>	<i>Ruwatan</i>
<i>Gamelan</i>	<i>Gamelan</i>

2.2.3.2 Procedure 2: Calque

A calque is a special kind of borrowing whereby a language borrows an expression form of another, but then translates literally each of its elements. Calque is literal translation of a foreign word or phrase lexically as well as structurally. A lexical calque respects the syntactic structure of the target language, for example, English-French calque; Compliments of the Season – Compliments de la saison!. A structural calque introduces a new construction into the language, for example, English-French calque; Science-fiction - Science-fiction.

2.2.3.3 Procedure 3: Literal Translation

Literal, or word for word, translation is the direct transfer of a source language text into a grammatically and idiomatically appropriate target language text in which the translators' task is limited to observing the adherence to the linguistic servitudes of the target language. Here is an example of literal translation in English-French language; 'I left my spectacles on the table downstairs': ' J'ai laissé mes lunettes sur la table en bas '. Words or phrase when translated literally should;

1. Gives another meaning, or;
2. Has no meaning, or;
3. is structurally impossible, or;
4. Does not have a corresponding expression within the metalinguistic experience of the target language, or;
5. Has a corresponding expression, but not within the same register.

2.2.3.4 Procedure 4: Transposition

The method called Transposition involves replacing one word class with another without changing the meaning of the message. Beside being a special translation procedure, transposition can also be applied within a language. For example: ‘Il a annoncé qu’il reviendrait’ [He announced he would return], can be re-expressed by transposing a subordinate verb with a noun, thus: ‘Il a annoncé son retour’ [He announced his return]. In contrast to the first expression, which we call the base expression, we refer to the second one as the transposed expression.

2.2.3.5 Procedure 5: Modulation

Modulation is a variation of the form of the message, obtained by a change in the point of view. This change can be justified when, although a literal, or even transposed, translation results in a grammatically correct utterance, it is considered unsuitable, unidiomatic or awkward in the target language. Some examples of modulation are as follow; ‘It isn’t expensive’ – ‘harganya murah’, ‘it is not possible to do’ – ‘ini mustahil’.

2.2.3.6 Procedure 6: Equivalence

Equivalence is where one and the same situation can be rendered by two texts using completely different stylistic and structural methods. The classical example of equivalence is given by the reaction of an amateur who accidentally hits his finger with a hammer: if he were French his cry of pain would be transcribed as ‘Aïe!’, but if he were English this would be interpreted as ‘Ouch!’.

The method of creating equivalences is also frequently applied to idioms. For example, ‘Like a bull in a china shop’ : Comme un chien dans un jeu de quilles.

[literal translation becomes ‘Like a dog in a game of skittles’]

2.2.3.7 Procedure 7: Adaptation

Adaptation is used in those cases where the type of situation being referred to by the SL message is unknown in the TL culture. In such cases translators have to create a new situation that can be considered as being equivalent. Adaptation can, therefore, be described as a special kind of equivalence, a situational equivalence. In English Indonesian translation is usually found a translation of phrase such as ‘Dear Sir’ becomes ‘Yang terhormat’ or ‘Sincerely Yours’ becomes ‘Hormat Saya’.

2.3 Theoretical Framework

Based on KBBI in Hartono (2009:27), procedure is stages to solve an activity. Machali in Hartono (2009:27) stated that translation procedures are stages to solve a translation. The difference between methods and procedure is based on the application unit. The translation method related to the whole text, while translation procedure occurs in sentences and textual-micro units such as clause, phrase, words, and others.

The writer use 7 translation procedures proposed by Vinay and Darbelnet. These procedures are appropriate to analyse Physics Bilingual Book for Senior High School Year XI. The orientation of this study is within the physics terms only.

The following diagram shows the role of translation procedure in the process of analysis in this study.

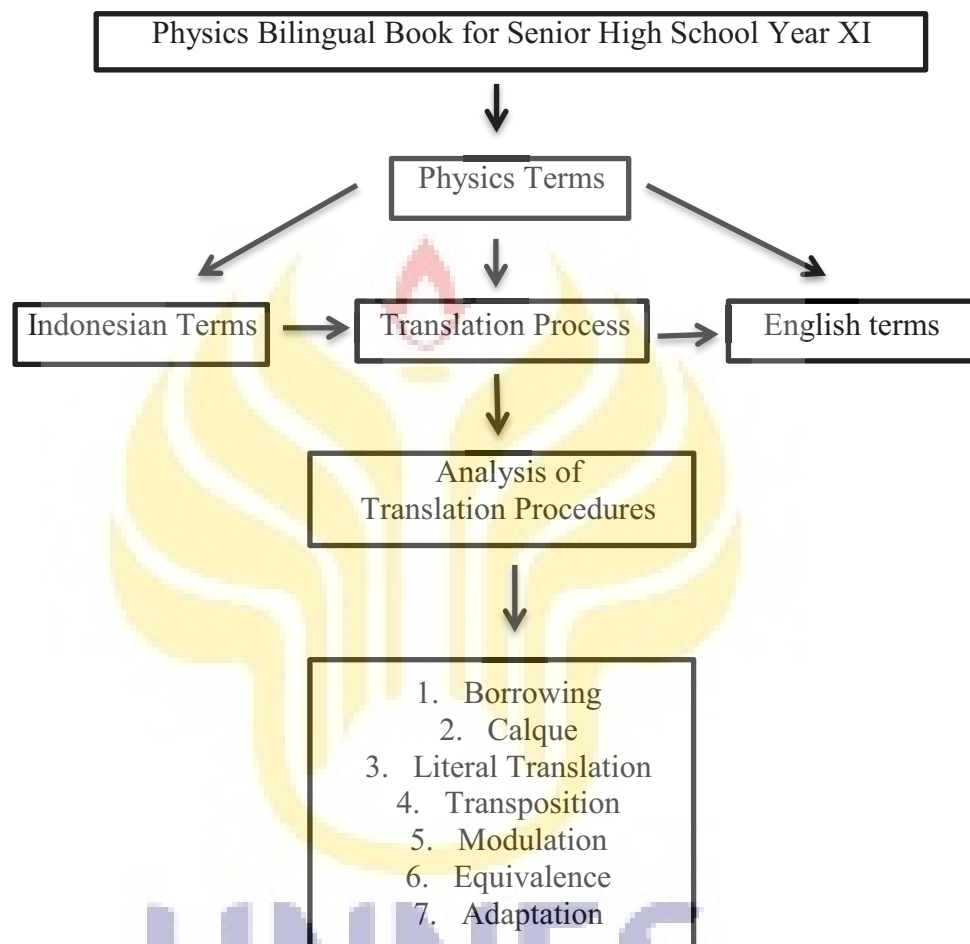


Figure 2.1 Diagram of Data Analysis

CHAPTER V

CONCLUSIONS AND SUGGESTIONS

5.1 Conclusions

This research is conducted to find out the objectives in the study. The objectives in the study are to describe the translation procedures used to translate the Physics terms and to identify the accuracy of the translated Physics terms found in Physics Bilingual Book for Senior High School Year XI published by Yudhistira. The results show that from 119 data, there were three translation procedures used by the translator. The translation procedures were equivalence, calque, and transposition procedures. The translation procedure mostly used was equivalence procedure with the frequency of 100 times (84%), followed by calque procedure with the frequency of 17 times (14.28%) and transposition procedure with the frequency of 2 times (1.68%). The frequency was gain by calculating the average score from three raters. Besides the translation procedures, the technical term is assessed its accuracy. The assessment of accuracy itself is done by three raters. The accuracy of the equivalence procedure was 84.03%, followed by calque procedure with the accuracy 13.44%, and transposition procedure with the accuracy 1.68%. Thus, the equivalence procedure was mostly used and had the highest accuracy rating in this research. As overall, the Physics terms are translated accurately. The accuracy of the translation is 99.15% from 118 data. It means that almost all the data was accurate.

The remains of the data are inaccurate data with the accuracy of 0.84% from 1 datum. Therefore, as overall, the data in Physics Bilingual Book for Senior

High School Year XI is accurate. Thus, the translator conveys the meaning of Physics terms to the target language accurately. The selection of translation procedure in translating technical terms was very essential because it affected the validity and accuracy of the data. The accuracy of the data showed that the Physics Bilingual Book for Senior High School Year XI is appropriate to be used by the secondary education students. Meanwhile, the raters for this kind of study especially the one related to Physics terms should not be mastering in English only but also mastering in Physics. It is important because the raters who are mastering in English does not always acknowledge the Physics terms in the form of English terms.

5.2 Suggestions

After drawing conclusions related to the research, I would like to recommend some suggestions as follows:

1. The Translator

The translator of bilingual Science book should have better competence in translating the technical terms into the target language in order to produce good and natural translations. The translator should choose a proper translation procedure in translating technical terms. The selection of translation procedure in translating technical terms is very essential because it affects the validity and accuracy of the technical terms. The outcome of translation activity depends on the translator itself. Therefore, translator's competence and cautious work are really needed.

2. Other Researcher

The other researchers who want to do the same research should look for variations of other similar references. The other researchers should learn deeper about technical terms such as Physics terms, Chemistry terms, medical terms, etc. The other researchers should also analyze translation procedures and their applications in technical terms such as Physics terms.

3. Students of English Department

I suggest students of English Department who want to analyze the similar research should read many books of translations. A deeper understanding about translations is needed in order to make the study of the translations themselves better than the previous studies. Moreover, the students should read many International journals related to the similar studies to widen their knowledge about translations.

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