



**SEMANTIC EQUIVALENCE IN THE TRANSLATION OF
CHEMISTRY TERMS IN THE CHEMISTRY BILINGUAL
TEXTBOOK FOR SENIOR HIGH SCHOOL YEAR XI**

a final project

submitted in partial fulfillment of the requirements
for the degree of *Sarjana Pendidikan*
in English

by

Ocvaria Melati Sukma

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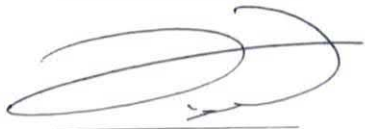
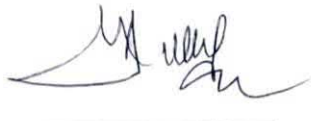

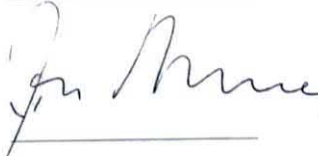
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APPROVAL

This final project entitled *Semantic Equivalence in the Translation of Chemistry Terms in the Chemistry Bilingual Textbook 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 August 14, 2019

Board of Examiners:

1. Chairman
Dr. Syahrul Syah Sinaga, M.Hum
NIP. 196408041991021001 
2. Secretary
Arif Suryo Priyatmojo, S.Pd., M.Pd.
NIP. 198306102010121002 
3. First Examiner
Dr. Issy Yuliasri, M.Pd.
NIP. 196207131990032001 
4. Second Examiner
Dr. Rudi Hartono, S.S., M.Pd.
NIP. 196207131990032001 
5. Third Examiner/Advisor
Prof. Dr. Januarius Mujiyanto, M.Hum.
NIP. 195312131983031002 

Approved by:
The Dean of Faculty of Languages and Arts

Dr. Sri Rejeki Urip, M.Hum.

NIP. 196202211989012001

DECLARATION OF ORIGINALITY

I Ocvaria Melati Sukma hereby declare that this final project entitled *Semantic Equivalence in the Translation of Chemistry Terms in the Chemistry Bilingual Textbook For Senior High School Year XI* 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 Information derived from the published and unpublished work of others has been acknowledged in the text and a list of references is given in the bibliography.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, August 14, 2019



Ocvaria Melati Sukma

MOTTO AND DEDICATION

“When there's an end, there is also another start”

(Kim Hanbin of iKON)

*This final project is dedicated to
My beloved and precious parents, my wonderful siblings,
my super friends, my future, my amazing self, for my faboulus idol
iKON who always make me proud,
I knew it.*

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Next, I dedicate my final project to the most beloved parents of mine (Bapak Sumaji and Ibu Kris Pangestuti), my cute sisters (Titik Lina and Widiani Merry) who are always be the biggest supporters through their prayers, helps, and motivations. All of my friends in the English Department especially Nurul Anisa for the incredible friendship and memories we have been through both in good and bad times. I also want to thank for Isabella Nilam, Alimatun Nisa, Temmy Valentina and Wage Darminto for their warm hug and deadly jokes. Also for my idol iKON especially B.I for all inspirations and purities that help me strong doing this final project. Last but not least my deep gratitude to everyone who has given me their supports and helped me in finishing this final project.

I realize that this final project is far from perfect; therefore, I hope criticisms and suggestions for its betterment.

Ocvaria Melati Sukma

ABSTRACT

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Keywords: semantic equivalence, chemistry terms, bilingual book

This study attempted to analyze the semantics equivalence of chemistry terms in the chemistry bilingual book translated from Indonesian to English in different ranks of linguistic forms which are word for word, word for phrase, phrase for word, and phrase for phrase in the Chemistry Bilingual Textbook For Senior High School Year XI. This study applied qualitative method to describe the objectives of this study. The theory was used to determine the semantic equivalence that occurred in the translation is the theory of Peter Newmark 1988. The semantic equivalence also identified by using indicator researcher made according to Fu (2017). The results of the study shows that there are 137 data of Chemistry terms and nine translation procedures found in this study. Based on analysis, each procedures are transference, naturalization, literal translation, synonym, recognized translation, reduction, through translation, couplets, and triplets. The result of analysis of word for word terms shows us that 98.25% data was found to be equivalent. In phrase for word term, 80% data was found to be equivalent. In phrase for phrase terms, 94.7% data was found to be equivalent.

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CHAPTER I

INTRODUCTION

This chapter presents introduction of study, which consists of the background of the study, the reasons for choosing the topic, the statement of the problems, the objectives of the study, the significance of the study, and the outline of the final project.

1.1 Background of the Study

Education is a conscious effort in order to make students or students can achieve predetermined educational goals (Soedjadi, 2000, p.6). In realizing the quality of education can be done by improving aspects of teaching and learning activities. Act No. 20 of 2003 on the National Education System (Sisdiknas) states that the national education system is the overall educational components that are interlinked in an integrated manner to achieve national education goals. There are three main components involved in the teaching and learning process, namely educators or teachers, students, and learning resources. Therefore, interaction between students and educators in learning activities must be maximized optimally. In addition, there are also factors of learning resource used in learning, which can be in the form of books or sources in the form of environment (Darwati, 2011, p.76). In Indonesia, textbooks are learning resources that play an important role and are most widely used in learning. Therefore, textbooks used in

learning in schools must have quality that is qualified in order to achieve optimal learning outcomes.

In the current era of globalization, English plays an important role in international communication, both in the fields of development, technology, economics, and education. In line with this, skills in English are needed. Therefore, it is not surprising that Indonesia needs to provide intensive and sustainable English lessons to students in secondary schools even for children are still in elementary school. This can be done by applying learning resources in the form of bilingual textbooks in the learning process.

Bilingual books have actually been implemented in schools when the Indonesian government issued a regulation on the program of the Pioneering of the International Standard School in Indonesia (RSBI). Bilingual books become one of the requirements for The Pioneering of International Standard School in Indonesia (RSBI). The Pioneering of International Standard School in Indonesia (RSBI) is a national pilot school in Indonesia with international quality standards. The use of English in RSBI schools is to make students and teachers get used to English in line with the purpose of RSBI schools that is to be the International Standard School. RSBI applied in big cities in Indonesia a few years before The Indonesian Constitution Assembly decided to stop such a program. Even though the program has been abolished since 8th January 2013, bilingual books are still used by schools in teaching their students. It is considered that books written in two languages (Indonesian and English) can give benefits for improving knowledge and language skills. A number of subjects such as Physics, Biology,

Chemistry, and Mathematics are affordable in bilingual textbooks for students in secondary education.

However, a good textbook must have certain criteria. also applies to Bilingual Textbooks used in school learning process. The National Education Standards Agency (BSNP) has its own criteria for textbooks. As stated by Masnur Muslich, quality textbooks must fulfill four elements of feasibility, they are feasibility of content, feasibility of language, feasibility of presentation and feasibility of graphics. For feasibility of language itself has several indicators, one of which is the use of the terms. According to Oxford Advanced Learners' Dictionary, term is a word or phrase used as the name of something, especially one connected with a particular type of language.

Translating such scientific terms is not an easy task, it must be appropriate with the Scientist' intention. Newmark (1988) stated that translation is rendering the meaning of a text into another language in the way that the author intended the text (p.6). Furthermore, Newmark (1988) stated 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 (p.6). Based on the descriptions, we know that translators need to be careful to translate such difficult source texts. To a certain extent, Catford (1965) defined translation as the replacement of text material in one language (source language) by equivalent textual material in another language (target language). In addition, Bell (1991) stated that "Translation is the expression in another language (target language) of what has been expressed in

another, source language, preserving semantic and stylistics equivalence.” It means that in the translating process, the translator must pay attention the message delivery and the equivalence. In this case, comes a question, does the target language, in this case, the terms of the bilingual book of the target language, deliver the same message as the terms of the bilingual book of source language?

Regarding how important the equivalence of using terms in the bilingual textbook, I am interested to conduct a research about the translation equivalence of chemistry terms in the CHEMISTRY BILINGUAL TEXTBOOK FOR SENIOR HIGH SCHOOL YEAR XI published by Yudhistira. This research focuses only on semantics equivalence of chemistry terms contained in the chemistry bilingual textbook. Lyons (1977, p.204) states that research on the meaning of words is the study which deals with meaning relations of some words which can be grouped into a semantic field. The editor of the book I used in this research uses the direction of translation from Indonesian into English. Therefore, this research will contribute whether the Chemistry Bilingual Book for Senior High School Year XI is good enough to be applied as a guide for teachers and students.

1.2 Reasons for Choosing the Topic

This research entitled Semantic Equivalence in the Translation of Chemistry Terms in the Chemistry Bilingual Textbook For Senior High School Year XI was chosen based on some reasons:

1. The researcher is interested in the topic because there are just a few studies conducted the translation in the bilingual textbook for school especially chemistry. In fact, chemistry is a branch of Natural Sciences (IPA) and one of the important knowledge to be studied (Sirhan, 2007). Therefore, it can be said that chemistry is a subject that contributes greatly to science.
2. The researcher chooses semantic equivalence as the topic because there are just a few kinds of research conducted about it as well as it is important to be conducted in the bilingual book for school. Translating science book is not an easy case because there are many scientific terms that must be translated not only accurately but also still carry equivalence messages from the source language. Therefore, semantic equivalence need to be conducted because semantics is the field of linguistics concerned with the study of meaning in language.
3. The researcher wants to know whether the semantic equivalence of chemistry terms in the Chemistry Bilingual Textbook For Senior High School Year XI is good enough in order to prevent the misunderstanding between the students.
4. The researcher wants to help the secondary school students who are interested in learning further about chemistry major in the university.

1.3 Statement of the Problems

Based on the background of the topic, this study intends to answer the following problems:

1. How is the word for word semantic equivalence in the translation of chemistry terms in the book entitled Semantic Equivalence in the translation of chemistry terms in the Chemistry Bilingual Textbook For Senior High School Year XI published by Yudhistira?
2. How is the word for phrase semantic equivalence in the translation of chemistry terms in the book entitled Semantic Equivalence in the translation of chemistry terms in the Chemistry Bilingual Textbook For Senior High School Year XI. published by Yudhistira?
3. How is the phrase for word semantic equivalence in the translation of chemistry terms in the book entitled Semantic Equivalence in the translation of chemistry terms in the Chemistry Bilingual Textbook For Senior High School Year XI. published by Yudhistira?
4. How is the phrase for phrase semantic equivalence in the translation of chemistry terms in the book entitled Semantic Equivalence in the translation of Chemistry Terms in the Chemistry Bilingual Textbook For Senior High School Year XI published by Yudhistira?

1.4 Objective of the Study

According to the statements of the problem, the objectives of this study can be stated as follows:

1. to describe the word for word semantic equivalence in the translation of chemistry terms in the book entitled *Semantic Equivalence in the Translation of Chemistry Terms in the Chemistry Bilingual Textbook For Senior High School Year XI*, published by Yudhistira.
2. to describe the word for phrase semantic equivalence in the translation of chemistry terms in the book entitled *Semantic Equivalence in the Translation of Chemistry Terms in the Chemistry Bilingual Textbook For Senior High School Year XI*, published by Yudhistira.
3. to describe the phrase for word semantic equivalence in the translation of chemistry terms in the book entitled *Semantic Equivalence in the Translation of Chemistry Terms in the Chemistry Bilingual Textbook For Senior High School Year XI*, published by Yudhistira.
4. to describe the phrase for phrase semantic equivalence in the translation of chemistry terms in the book entitled *Semantic Equivalence in the Translation of Chemistry Terms in the Chemistry Bilingual Textbook For Senior High School Year XI*, published by Yudhistira.

1.5 Scope of Study

Related to the problem and the scope of the study, the researcher has to limit the scope of study in order to avoid wider analysis. Based on the background above, the paper only focused on analyzing the equivalents of chemistry terms classified into noun and noun phrase on *Chemistry Bilingual* text book. As stated by Luu's (2011), "If the semantic components in the target language are tightly

compacted, the translated terms will be single words, and if the semantic components in the target language are loosely compacted, the translated terms will be complex words or phrases”.

1.6 Significances of the Study

The researcher hopes that this research will be useful both theoretically and practically.

1) Theoretical Significances

This research is expected to be able used to give information how the semantic equivalence of translating chemistry terms in the book entitled **CHEMISTRY BILINGUAL TEXTBOOK FOR SENIOR HIGH SCHOOL YEAR XI** published by Yudhistira are.

2) Practical Significances

- The researcher expects that the result of this research can be used for the authors of the Bilingual Textbooks for school to enrich their knowledge about semantic equivalence as well as to improve their skills in translating especially for the semantic equivalence of meaning in the translated scientific terms in their books.
- The researcher expects that this research can help the readers especially students and teacher in second grade in senior high school in terms of supporting the understanding of English-language teaching materials so that they can gain broader insights and improve their learning outcomes.

- This study is able to be used as the additional reference for the further study that is related to this topic.

1.7 Outline of the Study

This study consists of five main chapters as follows:

Chapter I presents the introduction which contains several sub-chapters consisting of the background of the study, reason for choosing the topic, statement of the problem, objective of the study, scope of study, significance of the study, and the outline of the study.

Chapter II is review of related literature, which presents a review of the previous studies, review of theoretical study and theoretical framework. The review of theoretical study provides theories that support this study.

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

Chapter IV is the findings and discussion, which consists of findings, and discussion.

Chapter V is the closing of this study. It presents the conclusions and suggestions based on the findings.

CHAPTER II

REVIEW OF RELATED LITERATURE

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

2.1 Reviews of the Previous Studies

In conducting a study, a review of previous studies should be done because it is useful in terms of comparisons with studies that we will do. The study of semantic equivalence in textbooks has not been widely conducted, but the researcher managed to find some previous studies related to the topic of the study the researcher did. They are as follows:

The first research was conducted by Nasrum and Sari (2016). The objective of this research is to know the kinds of translation used in slang language, to know kinds of slang language itself used in the movie and to know the meaning equivalence between translated text and the original text in English slang language. This research applied descriptive qualitative method in analyzing the data and describe the kinds of translation and meaning of slang language in *22 Jump Street* movie. The subject of this research is *22 Jump Street Movie*. The researchers analyzed the data using three theories, they are Newmark's, Partidge's, and Palmer's theories. The research findings showed that in *22 Jump*

Street movie the source language (SL) and the target language (TL) are not equivalent.

The second research was conducted by Utai and Sumani (2015). This research aims to identify the words level equivalence used by the translator in translating abbreviation found in The Jakarta Post according to word level equivalence classification. The descriptive qualitative method was applied in conducting this research. The researcher also applied documentation technique. The object of this research is the abbreviation which is found in The Jakarta Post during February 2012. After analyzing the data, the researcher can find out the word level equivalence of the abbreviation translated from Indonesian into English found in The Jakarta Post newspaper in follows: translation by more general word (subordinate) with 19 item (27.1%); the closest equivalence with 17 item (24.3%); translation by more neutral/less expressive word with 13 item (18.6%); loan or loan word plus explanation and translation by omission with each of them are 5 item (7.1%); and translation by paraphrase using related words is the less frequent with 4 item (5.7%).

Another research was conducted by Agustine (2014). The objective of this research are to analyze the categories of semantic shift; generalization, specification, substitution, reversal, deviation, and its manifestation found in the object of the study. The object of the study is Tintin comic series entitled “The adventure of Tintin: The Black Island”. This research applied descriptive qualitative method to analyze the data. The steps of analyzing the data are reading, identifying, classifying. The data was classified based on the semantic shift

categories proposed in Mujiyanto (2001), they are deviation, generalization, substitution, specification, and reversal. The research finding showed that there are 60 data found in this study. They are substitution 33 data (55%), specification 11 data (18.3%), generalization 6 data (10%), reversal 6 data (10%), and deviation 4 data (6.7%). From the research finding we can know that the most dominant category of semantic shift that appears in the object of the study is substitution.

Another research was conducted by Mustafani (2017). This analysis aims to find the equivalence, accuracy, acceptability and readability of sociological terms in the Bilingual Sociology Textbook. The theory is used to determine the equivalence that occurred in the translation is the theory of Peter Newmark 1988 which states that there are 17 procedures to translate from the original language to the target language. The result analysis shows that the accuracy, acceptability and readability of the translation have the average score 2,8 from 3 based on parameter of qualified translation and it can be classified as the translation that is almost accurate, almost acceptable and almost readable for the readers.

Another study was conducted by Latif (2017). The objectives of this study are to find out the translation techniques used in the dialogs of the subtitle of the movie *Philomena* and to find out the accuracy of the Indonesian subtitle in its dialogs. The first data of this study were English-Indonesian translations obtained from original screenplay and its Indonesian subtitle. The second data were obtained by handing out the accuracy rating instruments to three expert respondents. The finding showed that there are sixteen translation techniques used in the English-Indonesian translation of the movie *Philomena*. They are literal

translation, reduction, amplification, established equivalent, linguistic compression, borrowing, transposition, calque, compensation, modulation, particularization, discursive creation, linguistic amplification, generalization, substitution, and description. In terms of accuracy level, the Indonesian subtitle found in the movie has the accuracy level as much as (97.89%).

Another research was conducted by Kumaralalita (2018). The objectives of the study are (1) to describe the strategies used in translating idiom and (2) to describe the accuracy of English-Indonesian Idiom translation. This study belongs to qualitative study. The data were analyzed by finding the idiom in the source language and the target language, by using Mona Baker's idiom classifications. For assessing the accuracy of the idiom translation, the researcher used Nababan's assesment in evaluating the translation quality. The result of the study showed that (1) there are four strategies used by the translator in translating idiom translation. The first is translation by paraphrase. The second is using an idiom of similar meaning but dissimilar. The third is using an idiom of similar meaning and form, the last is translation by omission of entire idiom (2) the translations of idiom in this novel are accurate.

The study was conducted by Sari (2017). The objectives of the study are (1) to analyze contextual equivalence of Indonesian – English on the Label in Museum Radya Pustaka, and (2) to describe the translation methods used in the Indonesain – English translation of the label in the Museum Radya Pustaka. there were two research methods used in the study, they were data library research and descriptive qualitative research method. The data were taken from Museum

RadyaPustaka Surakarta. Contextual equivalent has relationship with grammatical and lexical equivalence. The findings showed that almost text labels in the Museum Radya Pustaka use grammatical equivalent.

This research was conducted by Agung, Wibowo, and Wilujeng (2016). Kidung doa song composed by Sunan Kalijaga are analyzed by using the descriptive qualitative approach in finding denotative meaning. In qualitative research, the researcher is the key-data collection instrument. To conduct the data, the researcher constructs a free interview by asking the Javanese societies. The research method is used from the researcher itself because for analysis the data use interpretation of own words. The data is taken three lyrics from kidung doa song by Sunan Kalijaga such as "Kidung Rumecko Ing Wengi", "Ilir- ilir" and "Kidung Lingsir Wengi". The research findings showed that there are many words, phrase, and sentences refer to the mandates of Islamic which contained song lyric.

Another research was conducted by Hussaeni (2018). The objective of this study is to find out the kinds of semantic shift and to assess the quality of English – Indonesian translation of Dessen's *What Happened to Goodbye*. The object of this study is English - Indonesian semantic shift translation of Dessen's *What Happened to Goodbye*. This study belongs to descriptive qualitative study. The unit of analysis could be in the form of sentence and phrase. The instrument used to analyze the data was classification sheet. The analysed data were concluded as the use of note taking, questionnaire and in-depth interviews the data. The result of the analysis shows that there are 395 semantic shift found in Dessen's *What*

Happened to Goodbye. The first type of shift / the change from Singular to Plural and the position of Adjective with 19 data, the second type of shift / in SL Grammatical Structure not exist in TL with 139 data, the third type of shift / the grammatically possible not accord with natural usage in the TL dominates in 197 data and the fourth type of shift / the replacement of a virtual lexical gap by a grammatical structure with 85 data. The analysis on the translation quality shows that 108 translations are considered as accurate, and 287 translations are considered as less accurate. In clarity level, 176 translations are belong to clear and 219 translations are belong to unclear. Naturalness level shows that 246 translations are categorized as very natural, and 149 translations are categorized as sufficient natural.

Another research was conducted by Nurlaila, Lubis, Sinar, and Muchtar (2018). This study aims at describing semantics equivalence of cultural terms in meurukon texts translated from Acehnese into Indonesian. This study applied qualitative descriptive approach is used to analyze the context of semantics equivalence in these texts. This research is designed to be of qualitative descriptive nature, wherein data are documented and analyzed using various methods proposed by Miles, Huberman, and Saldana (2014), such as data condensation, data display, drawing and verifying conclusions. The source of the data collected is from meurukon texts and its translation. The semantic equivalence here only pertains to lexical meaning of nouns and adjectives by using componential analysis. The result of the research shows that there are 129 cultural terms found in 623 sentences. Of the analyzed data, it is seen that only

16.66% of the data is not equivalent with the target text, while 83.34% words and phrases of meurukon text are equivalent.

Another research was conducted by Yuniarto (2016). The objective of this research are to describe type classifier of semantic change and to explain the factors causing semantic change. A qualitative-descriptive approach was applied to conduct this research. The method of research is conducted by comparing the words meaning from the Old Javanese and Sanskrit loan word to Modern Javanese. The research only focuses on Javanese words included in Sanskrit loan words in the dictionary of Zoetmulder (1982) *Semantic Change Type in Old Javanese Word and Sanskrit Loan Word to Modern Javanese* and Mardiwarsito (1990). The research findings show that there are seven types of semantic change of Old Javanese words and Sanskrit loan words to Modern Javanese which are involving widening, narrowing, shifting, metaphor, metonymy, pejoration, and euphemism. Furthermore, the research findings show that there are several factors that cause the semantic change occur. They are psychological factor covering emotive and taboo, polysemy, religious development, the development of science and technology, social and political developments, and the need for a new name.

Another research was conducted by Kamil (2014). The objective of this research is to analyze the quality of the translation in Twitter Web pages. This study applied a qualitative case study. This research only fous on some words or phrases on the Twitter Web pages. The data were obtained from the analysis of translation quality which is underpinned by the translation procedures as well as through an interview to five English students who are majoring Translation. The

research findings showed that there are 170 phrases from 22 selected Twitter Web pages obtained from the interviewees' responses. From this research, the researcher suggests to the translators to produce and choose natural and clear translation as the characteristics of good translation in order to reach the goals to achieve the real message of the text

Next research was conducted by Yolanda and Yuliasri (2016). The objective of this study are to find out the kinds of translation techniques used and to assess the quality of English – Indonesian pun translation English – Indonesian Tolkien's *The Hobbit*. In collecting data, the researcher applied note taking, questionnaire, and interviews method. The research findings shows that there are 243 puns which were found in J.R.R Tolkien *The Hobbit*. Furthermore, there are three kinds of pun found in this novel, they are Paronymy which dominates in 231 data, Homonymy with 11 data, and Homophony with 1 datum. The analysis on translation techniques finds out that there are six techniques which are used. Pun to Non Pun technique, Punoid, Pun to Pun, Non Pun to Pun, then Pun in ST is copied to Pun in TT and Pun to Zero. The analysis on the translation quality finds out that there are 56 translations are considered as accurate, and 187 translations are assessed as less accurate. In acceptability level shows that there are 116 translations are categorized as acceptable, and 127 translations are categorized as less acceptable. In readability level shows that there are 133 translations belong to high readability, and 110 translations are belong to sufficient readability.

Another research was conducted by Yuliasri and Hartono (2014). The objective of this research is to find out the translation techniques which are used

by the Indonesian translator in translating the novel and how they produce the equivalence of the humor. The research applied descriptive qualitative research. Furthermore, the analyses were done by three Indonesian lecturers and a native English professor collaboratively. In analyzing the texts, this research used Mollina & Albir's classification of translation techniques (2002). In data triangulation used a simple reader survey to see how Indonesian readers perceive the humor in the Indonesian translation. The results show that the dominant translation techniques which are used in translating humor are literal translation (35.5%), linguistic amplification (10.7%), modulation (9.9%), generalization (9.1%), and amplification (8.3%). The results of text analysis also show that some of the humor are successfully provided but some are lessen and/or even removed. Moreover, the reader survey shows that there was not much humor in the novel and that the novel belongs to be more mystical than humorous.

This research was conducted by Sholihah (2018). This research aims to analyze the meanings of semantic and moral values which were found in songs lyrics in the Coldplay's album. The research findings show that the lexical meanings found in this song include 6 denotations, 5 connotations, 1 ambiguity, 10 antonyms and 11 synonyms. Moreover, also found various kinds of figurative languages in some lyrics of the song such as apostrophe, antithesis, simile, hyperbole, personification, metaphor, paradox, symbol and, synecdoche etc. There are many kinds of figurative language found in lyrics a head full of dreams album such as 1 metaphor, 2 similes, 2 symbol, 2 hyperboles and 1 irony. In addition, the five-song lyrics in an album by Coldplay entitled a head full of

dreams let know us a human social life include love, sadness, happiness, spirit, and adventure of life.

Another research was conducted by Farrokh (2011). The objective of the research is to find out the types of equivalence and shifts in the Persian translation of English complex sentences with *wh*-subordinate clauses. This study applied a qualitative descriptive method in conducting the research. The source of the data are English fictions and their Persian translations. The researcher categorizes the data into two main categories: the equivalence and shift. This research employs Nida's theory of equivalence which is divided into formal and dynamic equivalence. Meanwhile, in categories of shift, the researcher employs Catford's classification, which involve structure shifts, unit shifts, rank shifts and intra-system shifts. There are 160 data found in this study. The research findings show that in the Persian translation of these sentences, the shifts betide more than the equivalence, with the percentage of shifts (86.25%) and the percentage of equivalence (13.75%).

Another study was conducted by Anggraeni (2015). The objective of this study are to explain the experiential meanings of participants' element realized in the students' recounts, to explain the experiential meanings of processes' element realized in the students' recounts, and to explain the experiential meanings of circumstances' element realized in the students' recounts. The research applied a descriptive qualitative method of discourse analysis. The data were gained through 20 students' recounts of Writing 4 at English Education Study Program of Unissula. The study uses a clause as the unit of analysis. The research findings

show that the participants' element is the dominant element of experiential meanings with percentage of (46.5%). From the research findings, it can be seen that the experiential meanings in students recounts are realized by the specific participants of actor and goal, material process and circumstances of place and time.

The study was conducted by Windawati (2015). This study aimed to analyze the translation method and meaning equivalence that used in translating idiomatic phrasal verbs in *X-Men: First Class* movie. This study applied qualitative method to achieve the purpose of this research. Newmark's translation methods and Nida's equivalence theory were applied in analyzing the idiomatic phrasal verb. The study result shows that the commonly found methods there are idiomatic, communicative, faithful and semantic translation. In addition, The analysis explains that dynamic equivalence which was most collected in the *Xmen First Class* movie, as dynamic focuses more on the reader and target language.

Another research was conducted by Damayanti (2012). The objective of the study is to analyzes types of themes, theme equivalence, theme shifts in the Indonesian English translation of thesis abstracts. The data were obtained from 10 thesis abstracts and their translation into English, which are taken from Postgraduate Program of Semarang State University in the last two years (2010-2011). The research findings show that topical theme dominates the whole texts with 98 data out of 247 data (80.16%) in ST and 222 data out of 279 data (79.56%) in TT. Meanwhile, there is not found interpersonal theme both in ST and TT. The most topical themes are in participants, followed by circumstance

and process. The textual theme contains in both texts is adjunct conjunctive. Most of the themes (70.2%) are categorized as non shift or equivalent. The theme shift happens through three processes: (1) by changing the grammatical function within the theme (11.7%), (2) by adding more themes (14.7%) and (3) by deleting themes (3.4%). From the study, the researcher suggested for a translator to have full mastery over the grammatical structure of both the SL and TL and also be careful of the notions and application of shifts and equivalence. The study uses a clause as the unit of analysis.

Another study was conducted by Suharto and Subroto (2014). The objective of the study is to describe the equivalence of eclessial song lyrics include the content word, the meaning of the sentences and their effect on church songs. This study applied descriptive and qualitative method in conducting the study by using music, language, and interdiciline approach. The data collection method was done by using questionnaires technique, documents, interview, and content analysis. According to the data analysis, the research findings are in followings. Firstly, the translated content word which is located in the same bars and equivalent around is (27.07%), the translated content word which is located in the same bars, but not equivalent is (18.34%), the translated content words which is located in the different bars, but equivalent was (11.79%), the translated content word which is located in the different bars and not equivalent is (2.62%), and the untranslated words are (4.17%). Secondly, the translation of equivalence of beautiful lyrics which are showed the beauty of the song is equivalent at (17.02%), the beauty of the song is less equivalent at (29.78%), the beauty of the song is not equivalent of

(61.70%). Thirdly, the differences of structure cause the incorrect diction or choice of words as well as missing words in the translated lyrics.

Another study was conducted by Haryanti and Adityarini (2016). This study belongs to descriptive qualitative research method. This study aims to classify the types of words which have non equivalent meaning and to find the causal factors and translation strategies concerning with non equivalent meaning in the word level. The data were gained through the subtitle of the Frozen movie in English and its Indonesian translation. The interpretive methods were done to gather the data which used documentation as its technique. This study used investigator triangulation in order to warrant the data validity. There are 6 causal factors found categorized as the target language lacks specific terms (hyponyms); differences in forms; differences in frequency and purpose of using specific forms; the source-language concept is not lexicalized in the target language the source and target languages make different distinctions in meaning; and culture specific concepts. There are 5 translation strategies which are employed by the translator in translating the subtitle referring translation by using more general words (superordinates); translation by using more neutral/less expressive words; translation by using loan words or loan words plus explanation; translation by using omission; and translation by using paraphrase using related words.

Another study was conducted by Mahmud, Bayusena and Mawarrani (2018). This study aims to identify techniques of translation tend to be applied; whether the same Islamic terms repeatedly applied in the text have the same translation technique and whether they use the same equivalence or not. A

descriptive-comparative method was done in conducting this research. The data analysis applied in this research by comparing both kind of data written to see what translation phenomena occur, whether the terms repeatedly used are translated applying the same techniques, whether they use the same equivalence, whether they are viewed from different perspectives. The research findings find out the most dominant translation technique applied in the text is borrowing.

Another study was conducted by Hartono and Yuliasri (2018). The objective of the study is to explain translation techniques, non-equivalent problems, and grammatical equivalence in Indonesian English translation of “Central Java Visitor Guide”. A qualitative method was applied in conducting this research. The object used in this study consist of a word, phrase, clause or sentence in “Central Java Visitor Guide”. The reseracher only takes three towns as the sample which totally contain 464 sentences. The research findings show that nine of 18 translation techniques which are proposed by Molina & Albir (2002) are applied by the translator such as literal, borrowing, modulation, reduction, amplification, transposition, particularization, generalization, and description. The most technique occur in text are literal translation (50.98 %) and borrowing (17.24 %). Besides that, description and generalization belong to the lowest ones (0.73 %). It can be sen that the translation techniques applied by the translator has resulted in 223 data use voice equivalent (45.60 %), 203 data use equivalent (41.51 %), and 63 data use number equivalent (12.88 %). In addition, the use of modulation and transposition techniques cause the non-equivalent on the category of voice. On the other hand, the common problems of non-equivalence occur in translating the

text are culture specific term (75.67 %), TL lacks specific term (12.16 %), TL lacks superordinate (8.10 %), and the use of loan words in the ST (4.05 %).

Another research was conducted by Luong (2016). This research aims to reveal the levels of equivalence in relations to semantic features by investigating and comparing the Shakespeare's English and the Vietnamese translation of *Romeo and Juliet* by Dang The Binh. This research applied the theories proposed by Vinay and Darbelnet, Nida and Taber, Catford, Baker, House and Pym. This study also applied the qualitative method to explain semantic features of English and Vietnamese translation of Shakespeare's *Romeo and Juliet* when comparing equivalents. The research findings show that both objective and subjective factors, in which language differences, culture and the translator's ability are the keys which are affecting the orientation in determining equivalents of the translator. Therefore, there is no unique type of equivalence in the Vietnamese translation, but the combination of formal equivalence and dynamic equivalence. In conclusion, the translation is partly over and partly covert.

Another research was conducted by Lyanwar (2018). The objective of this research is to find out the words experience meaning change and kind of meaning change on the Minangkabau traditional song lyrics. The researcher applied qualitative descriptive method. Then, the researcher applied the theory proposed by McMahon (1999) which are extension and restriction, amelioration and pejoration. The data in this research are the lyrics of Minangkabau traditional song which consist of 30 songs. The research findings showed that there are change of meaning and type of meaning change exist in traditional songs

Minangkabau. There are 19 words belong to extension, 2 words belong to amelioration, and 3 words belong to pejoration.

Another research was conducted by Ruminda (2016). The objective of the research is to reveal the semantic category of the reporting verbs found in news articles published in online media. This research applied a qualitative method. The reporting verbs in each reporting sentence are marked and their meanings are looked up from a dictionary. After that, the researcher classified those verbs based on the same core meaning and categorized employing the theory proposed by Biber, et al. (2002) and Quirk (1985). After that, their literal meanings were analyzed and each of them were put into the same category. The research findings result that there are three semantic categories which are found in the reporting verbs used in online news article which are into communication, activity, and mental verbs.

Another research was conducted by Rupiah (2017). The objective of the study is to find shift and equivalence of noun phrases in English-Indonesian translation of Barbie short stories. This study applied descriptive qualitative approach in conducting this study. The data were obtained from five stories from Barbie story book: The Pearl Princess, A Mermaid Tale, Princess Charm School, Princess Popstar, Sreet Door and their translation, entitled Putri Mutiara yang Cantik, Putri Peselancar, Sekolah Pesona Putri, Kekuatan Bintang, Teman-Teman Ajaib. The unit of analysis of the research is the English noun phrases with Indonesian translation. The data was analyzed based on each subsystem of translation shift proposed by Catford (cited in Venuti, 2000) and equivalence

proposed by Popovic and Nida in Bassnet (2002). The research findings show that translation shift is used higher than equivalence applied. The use of category shift of structural shift is the highest step in process of translating Barbie short stories. On the other hand, the highest equivalence occurs on textual equivalence which have the equivalence structuring of a text.

Another research was conducted by Mujiyanto (2011). The objective of the research are to find out how such formal nonequivalence occurs in the translation of behavioral clauses and how to reach functional equivalence through the appearance of formal nonequivalence. The object for this study is J.K. Rowling's Harry Potter series and their Indonesian translation done by L. Srisanti. The data were clauses in Indonesian and their counterpart in English. The research findings show that formal nonequivalence may occur in word, phrase, and clause levels. However, such formal nonequivalence has facilitated the attempt of attaining functional equivalence at clause level. In order to realize functional equivalence at the clause level, the translation has been done by effort of defending behavioral clauses or restructuring them to form mental clauses, verbal clauses or material clauses.

Another research was conducted by Diati (2016). The objective of this research is identifying the word level equivalence strategy in translating the dialogues of *The Lightning Thief* from English into Indonesian and identifying its word level equivalence meaning. This research belongs to descriptive qualitative method. In collecting the data, content analysis were used while in analyzing were done based on Brown's theory. The result shows that: the strategies used by the

translator to overcome the problems in translating the dialogue are translation by paraphrase using related word (24.11%), translation by a more specific word (18.43%), translation by paraphrase using unrelated word (14.89%), translation by a more general word (14.19%), translation by omission (13.48%), translation by more expressive or less neutral word (8.51%) and translation by using loan word or loan word plus explanation (6.39%). Word level equivalence meaning in the strategies: translation by using loan word (92.59%) was the strategy whose data were got higher result of score 3 (meaning is sufficiently rendered) by three raters, translation by a more general word (36.67%) was the strategy whose data were got higher result of score 2 (meaning is insufficiently), and translation by omission was the strategy whose data were got higher result of score 1 (59.65%).

Another study was conducted by Nafisah (2018). The objectives of the study are (1) to identify the methods used by the translator in translating Tolstoy's *God Sees the Truth, But Waits*, (2) to describe the degree of equivalence between the English original version and the Indonesian translation of the short story, and (3) to show the relation between the translation methods used and the degree of equivalence. The translation methods used in this study are proposed by Newmark while the degrees of equivalence are analyzed using Bell's. The primary data were written text in the form of words, phrases, clauses or sentences found in both English and Indonesian version of the short stories. Other sources such as books, e-journals, e-books, final projects and internet were used as secondary data. Findings of this study show the followings. First, six translation methods were used to translate *God Sees the Truth, But Waits* into Indonesian which are

semantic translation, communicative translation, literal translation, adaptation, free translation and word-for-word translation. Second, mostly produce partly equivalent translation with increased meaning.

Another research was conducted by Nurjannah (2012). This study aims to investigate the strategies applied by the translator and the meaning transfer in translating a series of bilingual children storybook entitled: *Monyet dan Pangeran*, *Tikus dan Burung Hantu*, *Kancil Jadi Raja* and *Kura-kura dan Katak* published by Dinar Media, Jakarta. This study applied a descriptive qualitative study design. The theory she applied based on Newmark's translation procedures. The microstructural analysis introduced by Leuven Zwart (1989) was applied in analyzing document. The result analysis shows that the translation strategies applied was in line with the skopos theory and Equivalent Based Theory. In addition, the meaning transfer of the bilingual children storybooks are categorized successful.

Next research was conducted by Maryati (2016). The objective of this study is to describe the translation method and meaning equivalence used by the translator to translated the selected data in the song lyric "*Let It Go*" to song lyric "*Lepaskan*" sung by Demi Lovato and sung by The Artists of Indonesia, such as Anggun, Regina, Nowela, Chilla Kiana, and Cindy Bernadette. This study applied the qualitative method. The results of the study shows that: first, Peter Newmark's theory can describe how the translation methods to classify the selected 23 data by using Peter Newmark's theory, and secondly, the meaning equivalence to achieve the purpose of translation consist of dynamic equivalence and formal equivalence.

Another study was conducted by Munir (2009). The objective of this study is to find the strategies used by the translator in translating the abbreviations found in the Jakarta Post during January – May 2007. There were 103 abbreviations as sample data from Indonesian into English. The study used word level equivalence classification of Baker (1992). The result of this study showed the following strategies: translation by more general word (*superordinate*) (12,62%), translation by more neutral/less expressive word (24,27%), translation using loan word or loan word plus explanation (3,88%), translation by paraphrase using related words (8,74%), translation by omission (11,66%), translation by more specific word (*subordinate*) (24,27%), some accurate translation (the closest equivalence) (14,56%).

Another research was conducted by Septiani (2013). The objectives of this study are to describe: (1) the linguistic form of equivalence strategy through addition, deletion and shift strategy in translation of the novel entitled *The Hunger Games*, (2) the dominant strategy used by the translator, (3) the equivalence and non—equivalence of the translation. The descriptive qualitative research design was applied in this study. The researcher used comparison method which compares source language and target language which consists of equivalence strategy through addition, deletion and shift strategy. The result analysis shows that from the entirely 702 data there are 642 data or 91,45% belong to equivalence while 60 data or 8,55% belong to non—equivalence. In conclusion, the translation of the novel entitled *The Hunger Games* into Indonesian is excellent with grade A.

The research was conducted by Negara (2016). The objective of the study is to analyze the semantic changes found in the definition of noun words of friendship such as *girlfriend*, *best friend*, *true friend* and *friend* found in an instagram account, 8FACTDICT. The data were collected from 43 definitions of noun words of friendship. The data were analyzed based on the theory proposed by Breal concerning the semantic change and by Leech concerning componential analysis. This study applied qualitative approach as the methodology. The research findings show that the most frequent type of semantic changes found in the definitions for the noun words of friendship is amelioration and the second highest is pejoration. It shows that the meaning of *friendship* shifting from time to time in the dictionary given by the Instagram user. According to the features or components that are found, the features of girlfriend represent a woman in negatively. Meanwhile, the features of best friend, friend and true friend are represented in more positively.

The last research was conducted by Rayendi (2017) in his study entitled *The Equivalence and Strategies in Translating Slang in American Movie 8 Mile*. The objective of the research are to analyze the equivalence type of the slang translation collected from the American movie 8 Mile and the equivalence of the slang whether they are transferred equivalently or not and to identify which strategy is suitable to be applied in translating the slang found in American movie 8 Mile. This research applied the library research as the method of the research. There are 2 data used by the researcher as the object. The first one is the data of the slang which are taken from the English subtitle of the original American

movie 8 Mile distributed by Universal Pictures. The second one is the data of the slang which are taken from the Indonesian subtitle of the original American movie 8 Mile distributed in Indonesia by PT. Medialine Entertainment. Only the dialogues which contain slang are collected for the fact that slang is the main object of the present research. After listing the whole slang, the researcher categorizes the slang based on the indicator of the both formal correspondence and dynamic equivalence. The first result of the analysis demonstrated that dynamic equivalence was the most used type of equivalence to translate the slang. There were 15 translations were considered as dynamic equivalence and 9 translations were considered as formal correspondence in the total of 24 slang translations. The second result of analysis showed that the translation strategy which was most frequently employed to translate the slang is communicative translation. There were 24 translations in total found from 5 slang categories which are 9 translations are considered as calque, 14 translations are considered as communicative translation, and 1 translation was considered as cultural transplantation.

Comparing to the previous studies above, most of them discussed about translation equivalence. Regarding that there was still area that had not been explored, I decided to conduct a research about the semantic equivalence of chemistry terms in the bilingual textbook. This research is also quite different with the previous studies because the object of this research is scientific terms different from them whose objects are mostly literary terms.

2.2 Review of the Theoretical Studies

2.2.1 Definition of Translation

Translation has various definitions from the experts who have experiences in translation studies for many years depending on how they view language and translation. It is also revealed by Larson (1984) that translation consist of transferring meaning of Source Language into the Receptor Language (p.3). Besides, Tedty (2013) suggested taht translation is a language that contains the meaning and information in source language which is transferred in other language by the text (p.2). According to Nida and Taber (1982) said that translating consists in the reproducing in the receptor language the closest natural equivalent of the source language message, firstly in terms of meaning and secondly in terms of style (p.12).

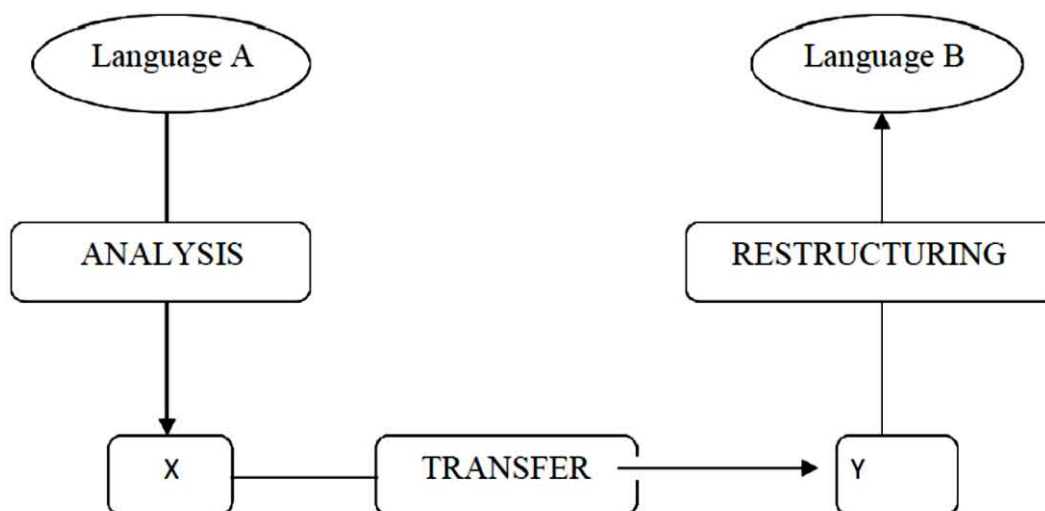
From the notions that have been stated by the experts above, it can be concluded that the translation is not only change the form from the source language into the target language, but also translation is a process of transferring meaning from source language into target language. In translating the text the translators must consider reproducing the message by finding the equivalence of the SL in order to keep the meaning in accordance with what the author intended.

2.2.2 Translation as a Process of Transfering Meaning

Translation is not only about changing a SL to TL. It is not writing the translator's owns thinking, how best it is, and it is not to re-write only. Besides understanding what the translation is and what should be produced in translation.

The translation process should be understood by the translator genially to take steps in translating and in finding the best solution of the difficulties encountered. Based on Rosa's research, it was found that the Students and Professionals spent longer time duration in taking pauses than typing the text indicating the important role of pauses in translation process. This finding indicates that pauses are compulsory activities in translation process. (Rosa et. al, 2018, p. 24)

Nababan (1999) defines process is a sequence of activities that were done on purpose (p.24). So a process of translation means as some activities that doing by translator while he transferring the messege from SL to TL. Translating the process of translation can be seen in a broader and narrow ponit of view. In the broader point of view, it relates to the translation project, while in the narrow point of view, it relates to mental relations in the translation process. Nida and taber (as quoted by Widyamartaya, 1989, pp. 14) also states that the process of translation can be devided into three; they are analysis, transfer, and restructuring. Analysis used for knowing the message that will be translated and contain of grammatical analysis ans semantic analysis. Transfer discussed how the words, sentences, or even phrases transfer from SL to TL by a little fault of meaning and connotation, but by a same reaction like in the original. Restructuring , how the transaltor uses the word choice that suits to the texts and the readers.



2.2.2.1 Analyzing Source Text

Analyzing SL is done by reading the SL in order to obtain and comprehend the ideas from the text. The ideas comprehension incoherence with the linguistics and extra-linguistics elements which exist in the text. The analysis of linguistics elements includes all level such as in the level of sentence, clause, phrase and word. By doing this, the translator can fully comprehend the ideas from the SL.

2.2.2.2 Transferring Ideas

After comprehending the ideas and the structure of the SL, then the translator can obtain the meaning from the SL. Afterwards, the translator transfers the meaning from the SL into TL. The translator must find the equivalent of the SL in TL in this step. This process occurs in the translator mind (Nababan called it as *proses batin*).

2.2.2.3 Restructuring

Restructuring is the last step. After finding the equivalent of ST, the translator has to reconstruct it in the form of SL becoming TL. The translator has to determine what style suits best to the text and the readers.

2.2.2 Equivalence in Translation

Some experts have their own notions about equivalence. Vinay and Darbelnet stated that equivalence refers to cases where languages describe the same situation by different stylistic or structural means (Munday, 2001, p. 58). Nida and Taber (1964) explain the closest natural equivalent as follows: (1) equivalent, which points toward the source language message; (2) natural, which points toward the receptor language; (3) closest, which binds the two orientations together on the basis of the highest degree of approximation (p.166). Equivalence is not the same with the sameness or similarity, but it is referred to the rules in the target language but also the same value in the meaning of the translation product. A translator must look for the equivalence between the source text and target text, so that there is no missing information when he transfers the messages from ST to TT. (in Venuti, 2000, pp. 133).

As defined by Halverson (1997), equivalence is the relationship existing between two entities, and the relationship is described as one of similarity in terms of any of a number of potential qualities.

J. C. Catford defines translation equivalence with his notable statement: "Translation equivalence occurs when an SL (source language) and TL (target

language) text source items are related to (at least some of) the same relevant features of situation substance.” (as reviewed in Broek, 1978). Moreover, Catford in the Hatim and Munday’s book wrote texts in different languages can be equivalent in different degrees (fully or partially equivalent), in respect of different levels of presentation (equivalent in respect of context, of semantics, of grammar, of lexis, etc), and at different ranks (word-for-word, phrase-for-phrase, sentence-for sentence).

2.2.3 Semantic Equivalence

Semantic equivalence is basically an advanced translation equivalence. Before understanding semantic equivalence problem, translators must understand what semantic is and what semantic equivalence is. To understand the research status and significance of semantic equivalence has important guiding role in understanding the theory.

2.2.4.1 Semantic.

Djajasudarma (1993) says the term semantics, derived from the Greek ‘sema’ which means ‘mark’ or ‘samaino’ which means ‘marking’ (p.1). Furthermore, Lyons (1977) states that research on the meaning of words is the study which deals with meaning relations of some words which can be grouped into a semantic field (p.204). While Chrystal (1991) proposes that semantic is one of the branches of linguistics studying about the meaning, and it is considered as a major branch of linguistics devoted to the study of meaning in language (p.301). From the notions that have been stated by the experts before, it can be concluded

that the term semantic is used by the linguists to explain the science that studies the meaning of language. In translation, it refers to the meaning of a word or a sentence. Semantic is from words equivalence until equivalence terminates and it is throughout the whole process of translation.

2.2.4.2 Semantic Relations

According to Hjørland (2007), relations between concepts or meanings are under the study of semantic relations. Fromkin, Rodman and Hyams (2003) divide semantic relations into three: lexical, phrasal and sentential relations (p.173). The meaning relationships among words are under the field of lexical relations. According to Fromkin, Rodman and Hyams (2003), the second semantic relation is in phrase which is called as phrasal relations (p.189). As stated by Fromkin, Rodman and Hyams (2003), the last semantic relation is sentential meaning relation (p.195). The meaning of noun phrase and verb phrase in a sentence built its meaning.

2.2.4.3 Semantic Equivalence.

According to Fu (2017), semantic equivalence is the deep equivalence in translation based on surface equivalence of translation, such as equivalence of format, rhythm, part of speech, grammar, etc. Semantic equivalence emphasizes the translation and the source text should achieve equivalent results in the expression. The hidden deep meanings in source text should be reflected in translation text. For example, the feelings which the author convey and the touches which the feelings bring to readers can make the readers of the two languages achieve the same position when appreciating the work of different

languages. For example, a piece of music can bring people of different countries the same feelings without borders. Semantic equivalence is to make languages produce this kind of feelings without borders.

2.2.3 Newmark's Translation Procedures

The material studied in this research is about translation of terms, thereupon the researcher needed to consider about what techniques used to translate the terms, especially scientific terms. Newmark (1988) said that when the translation method relates to the text as a whole, translation procedures are used to translate smaller sentences and language units (p.88). Below are the kinds of translation techniques that are proposed by Newmark (1988) as follows:

2.2.3.1 Transference

Transference according to Newmark (1988) is the process of transferring an SL word to a TL text (p.81). Transference or loan word is transferal of a word from the SL directly into the TL without translating it at all. This technique is usually applied when there is not yet an equivalent of the certain word or it is applied to appreciate the SL word /term. It is done simply by using a loan word from the SL and putting it into the TL. Generally, only cultural "object" or concept that should be transferred (Newmark, 1988, p.81).

For example:

*SL: The young **reporter**.*

*TL: **Reporter** yang muda itu.*

The influence of Transference is transferring SL words which is commonly used in TL. The SL word reporter is translated into reporter in TL. The word from SL into TL is not translated at all because it is considered common word which is often used in TL.

2.2.3.2 Naturalization

Naturalization is the procedure that adapts the SL word first to the normal pronunciation, then to the normal morphology of the TL (Newmark, 1988, p.82). This procedure is quite same as the transference procedure. However, while transference is transferring SL words or phrases into TL without changes, this procedure adjust SL words so that it will fit the TL rules. According to Newmark (1988), this technique succeeds transference and adapts the SL word first to the normal pronunciation (p.82).

For example:

*SL: In my head I hear **President** Snow's words.*

*TL: Kata-kata **Presiden** Snow berdentam dalam kepalaku.*

In the example above, SL word president is translated into presiden in TL, where the letter 't' is deleted. The pronunciation of SL word presidents with TL word presiden is not completely different, so the naturalness of the translation could be seen.

2.2.3.3 Literal

Literal translation is the direct transfer of the source text into the target language in a grammatically and idiomatically proper way. (Newmark, 1988, p. 70). Literal translation occurs when the translator converts the source language

(SL) grammatical constructions into their nearest target language (TL) equivalents, but the lexical words are again translated individually (Newmark, 1988, p. 46). It is a procedure that focuses on rendering the words rather than the form. Newmark (1988) clearly mentions that literal translation should be distinguished from word-for-word or one-to-one translation (p.69). He argues that word-for-word or one-to-one translation translates the meaning of SL words and transfers SL grammar and word order into TL, while literal translation attempts to achieve the nearest equivalents in TL both in terms of meaning and word order.

For example:

*SL: ...for example menopause, **hormonal imbalance**,*

*TL: misalnya, menopause, **ketidakseimbangan hormon***

It is clear that literal translation was applied in translating the term above because the words in the phrase are translated individually and literally. Then, the words from SL are reconstructed according to the rules in TL so that the rules of TL noun phrase are still maintained.

2.2.3.4 Synonym

Synonym is a "near TL equivalent." Here economy trumps accuracy. (Newmark, 1988, p.84). Synonymy is a translation procedure which is applied where there is no clear one-to-one equivalent, and the word is not important in the text, in particular for adjectives or adverbs of quality (which in principle are outside the grammar and less important than other components of a sentence).

For example:

SL: He purses his lip.

TL: Dia hanya memonyongkan bibirnya.

In example above, the word purses is translated into memonyongkan. Literally, purses means ‘mengerucutkan’ in TL. ‘mengerucutkan’ has one equivalent word in TL as memonyongkan where both words are often used to show ‘the condition of lips or the shape of lips’.

2.2.3.5 Through Translation

Trough-translation means replacing a SL common collocation with a TL common collocation (Newmark, 1988, p. 84). This procedure is the literal translation of names of organizations that already have recognized terms . However, it can also be applied for components of compounds or phrases. Through translation can also be called: calque or loan translation. (Newmark, 1988, p. 84). In theory, a translator should not 'initiate' a through-translation. Normally, through-translations should be used only when they are already recognized terms.

For example:

SL: Justice Building.

TL: Gedung Pengadilan.

The translation by using Through Translation doesn't give many changes because the translator covers the exact information from SL into TL.

2.2.3.6 Recognized Translation

Recognized translation occurs when the translator "normally uses the official or the generally accepted translation of any institutional term." (Newmark, 1988, p.89). This procedure is best used to translate terms whose translation is already recognized (Newmark, 1988, p.89).

For example:

SL: More x-rays were ordered, and ultimately a CT scan was also done.

TL: Diperintahkan untuk dilakukan lagi beberapa foto Rontgen, dan akhirnya dilakukan CT scan juga.

It is translated into foto Rontgen as in the name of a person, Wilhelm Rontgen. Foto Rontgen is already familiar and commonly known by most people in Indonesia if dealing with radiation.

2.2.3.7 Cultural Equivalent

Cultural equivalent means replacing a cultural word in the SL with a TL one. However, "they are not accurate" (Newmark, 1988, p.83). By this procedure, the translator uses the typical word in the target language to replace the typical word in the source language. The main thing to note is the distinctive culture words of the source language are replaced also by the distinctive culture words of the target language.

For example:

SL: Homeless.

TL: Gelandangan.

In the example above, the word homeless means ‘a person without home or living on the streets’, in TL, there’s a cultural term *gelandangan* which has the same meaning as homeless.

2.2.3.8 Descriptive Equivalent

Descriptive equivalent is translating a SL text or word using a description in the TL. In this procedure the meaning of the CBT is explained in several words (Newmark, 1988, p.83). This equivalent is trying to describe the meaning or function of the source language word. This procedure is done because the source language word is closely related to the distinctive culture of the source language and the use of cultural equivalents deemed unable to provide the desired degree of accuracy.

For example:

SL: Natural thing

TL: Makhluk hidup yang bukan hasil rekayasa.

2.2.3.9 Functional Equivalent

This procedure applied to cultural words, requires the use of a culture free word, sometimes with a new specific term; it therefore neutralizes or generalizes the SL word; and sometimes adds a particular.

For example:

SL: Istana Merdeka

TL: a palace used as the official residence of the President

2.2.3.10 Shifts or Transpositions

According to Newmark (1988) transposition or shift reflects the grammatical change that occurs in translation from SL to TL (p.85). It is a procedure that basically concerns with word's form and position. Newmark divides into 4 types of shift or transpositions (Newmark, 1988, p.86):

- a. The first type is the changing from singular to plural or in the position of the adjective. For example, the plural form in English '**a pair of shorts**' is translated into '**sebuah celana pendek**'. Next, the position of the adjective in '**beautiful dress**' is translated into '**gaun yang indah**' not 'indah gaun'.
- b. The second type is the changing required when a specific SL structure does not exist in the TL.

For example:

*SL: **Kelas** itu harus kamu ambil.*

*TL: You should take that **class**.*

The translation above shows that the object 'kelas' in SL (Bahasa Indonesia) is located forward. This passive form does not exist in TL (English), so the sentence should be change into active voice.

- c. The third type is the change of an SL verb to a TL word, change of an SL noun group to a TL noun and so forth. For example, the SL noun phrase can be shifted into a TL verbal phrase, as follows:

*SL: We must all responsible **for the existence of fresh water**.*

*TL: Kita semua bertanggung jawab **untuk menjaga air bersih**.*

- d. The last type of shift or transposition is the replacement of a virtual lexical gap by a grammatical structure.

For example:

SL: He is very pleasant, but his wife is arrogant.

TL: Ia sangat baik (sekali), tetapi istrinya sangat sombong.

2.2.3.11 Modulation

Newmark (1988) argues that by applying modulation, translator is able to express a different point of view in the translation (p.88). The change in the point of view does not alter the message of SL and does not generate a sense of strangeness in the TL.

For example:

SL: You should know that module writing takes time.

TL: Perlu diketahui bahwa menulis modul itu memakan banyak waktu.

2.2.3.12 Translation Label

Translation label is a provisional translation, usually of a new institutional term, which should be made by inverted commas, which can later be discreetly withdrawn (Newmark, 1988, p. 90). It could be done through literal translation.

For example:

SL: Promosi (Kenaikan Pangkat)

TL: 'Social Advancement'

2.2.3.13 Compensation

Compensation occurs when loss of meaning in one part of a sentence is compensated in another part (Newmark, 1988, p.90).

For example:

SL: Sebuah gunting

TL: A pair of scissors

2.2.3.14 Paraphrase

Paraphrase is a translation procedure whereby the translator replaces a word in the source text by a group of words or an expression in the target text. This procedure is an amplification or explanation of the meaning of a segment of the text. It is used in an 'anonymous' text when it is poorly written, or has important implications and omissions (Newmark, 1988, p.90).

For example:

SL: The brains.

TL: Kelompok-kelompok cerdas.

In example above, the brains literally means 'otak' in TL, but based on the context of the plot, the brains refers to 'a group of smart people', and 'otak' does not refer to it, therefore 'otak' needs to be rephrased into kelompokkelompok cerdas.

2.2.3.15 Componential Analysis

Componential analysis means "comparing an SL word with a TL word which has a similar meaning but is not an obvious one-to-one equivalent, by demonstrating first their common and then their differing sense components." (Newmark, 1988, p.90)

Source Language	Target Language
Stirzen	to fair

In this example (Newmark, 1988, p.114) the translator translates the word *stürzen* into *to fall* in the TL. Here, the translator makes a componential analysis by giving component +suddenly, +heavily, +refers to an important person or entirely) to the corresponding target language word in order to produce a closer approximation of meaning.

2.2.3.16 Reduction and Expansion

Reduction is the omission of information considered to be unnecessary, of little importance, or unlikely to make sense to the target language reader. While expansion is to use more words in TL in order to re-express an idea or to reinforce the sense of TL word because the correspondence in the TL cannot be expressed as concisely (Newmark, 1988, p. 90).

a. Reduction

*SL: Struggling to keep up with her on his **chubby toddler legs**.*

*TL: Berjalan tertatih-tatih dengan **kaki balitanya**.*

In example above, if *chubby toddler legs* is translated literally, it means *kaki balita gemuk*. There is a deletion of the word *gemuk* in TL, so that *chubby toddler legs* is changed into *kaki balita*.

b. Expansion

*SL: The children are being **educated**.*

*TL: Anak-anak **dididik di sekolah**.*

In example above, the SL word *educated* literally only means *dididik*. There is an additional information ‘*di sekolah*’ which is placed after *dididik*. In TL, it could give new information that *dididik* is implemented at school.

2.2.3.17 Notes

According to Newmark (1988) additional information in the translation may take various forms, such as within the text, notes at bottom of page, notes at end of chapter, notes or glossary at end of book (p.92). This procedure is usually used to translate the words related to the cultural, technical, or other sciences.

For example:

SL: Angkot

TL: Angkot (city transport)

2.2.3.18 Couplets

Newmark (1988) argues that translator may also combine two, three or four different procedures when conducting translation process (p.91). Combining two procedures is described as couplets, combining three procedures is described as triplets and combining four procedures is described as quadruplets.

For examples: **Transference + descriptive equivalent**

SL: GAM

TL: GAM (Aceh Freedom Movement)

2.2.4 Information of Chemistry Terms

‘Term’ is a word or combination of words that carefully express the meaning of concepts, processes, circumstances, or characteristics that are unique

in a particular field (KBBI, 1988, p.341). The term is also a specific language that applies in a particular field of science (Hornby, dkk., 1994, p.269). There are two kinds of terms: (1) specific terms and (2) general terms. Special term is a word which its uses and meanings are limited to a particular field, for example chicken claw (building), aggregate (economy); while general term is a word that becomes an element of general language. For instance, take over, usability, and intelligence are general terms; while radiators, pedagogies, androgogies, fuses, and atoms are specific terms. Indonesian terms are based on common Indonesian vocabulary, cognate language vocabulary, and foreign language vocabulary.

Chemistry terms stands for terms related to the study of matter, its properties, how and why substances combine or separate to form other substances, and how substances interact with energy. Here the explanation about chemistry terms;

Chem-is-try ('ke-mə-strē) (noun)

1. a science that deals with the composition, structure, and properties of substances and with the transformations that they undergo

Retrieved from <https://www.merriam-webster.com/dictionary/chemistry> (accessed on June 13rd 2019).

Here some examples of Chemistry terms:

absorption

fluid

basic solution

Graham's Law

covalent bond

ionic compound

detergent

keratin

emulsion

lone pair

2.3 Theoretical Framework

Based on KBBI in Hartono (2009), procedure is stages to solve an activity (p.27). Machali in Hartono (2009) stated that translation procedures are stages to solve a translation (p.27). 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. Based on the title of the study, the researcher applied the theory from Newmark about translation procedures in analyzing the data to reach the semantic equivalence. The researcher used comparison technique that compares between source language and target language in the book entitled Chemistry Bilingual Textbook for Senior High School Year XI published by Yudhistira and its translation into English.

The researcher use 17 translation procedures proposed by Newmark. These procedures are appropriate to analyse Chemistry Bilingual Textbook for Senior High School Year XI. The orientation of this study is within the chemistry terms only.

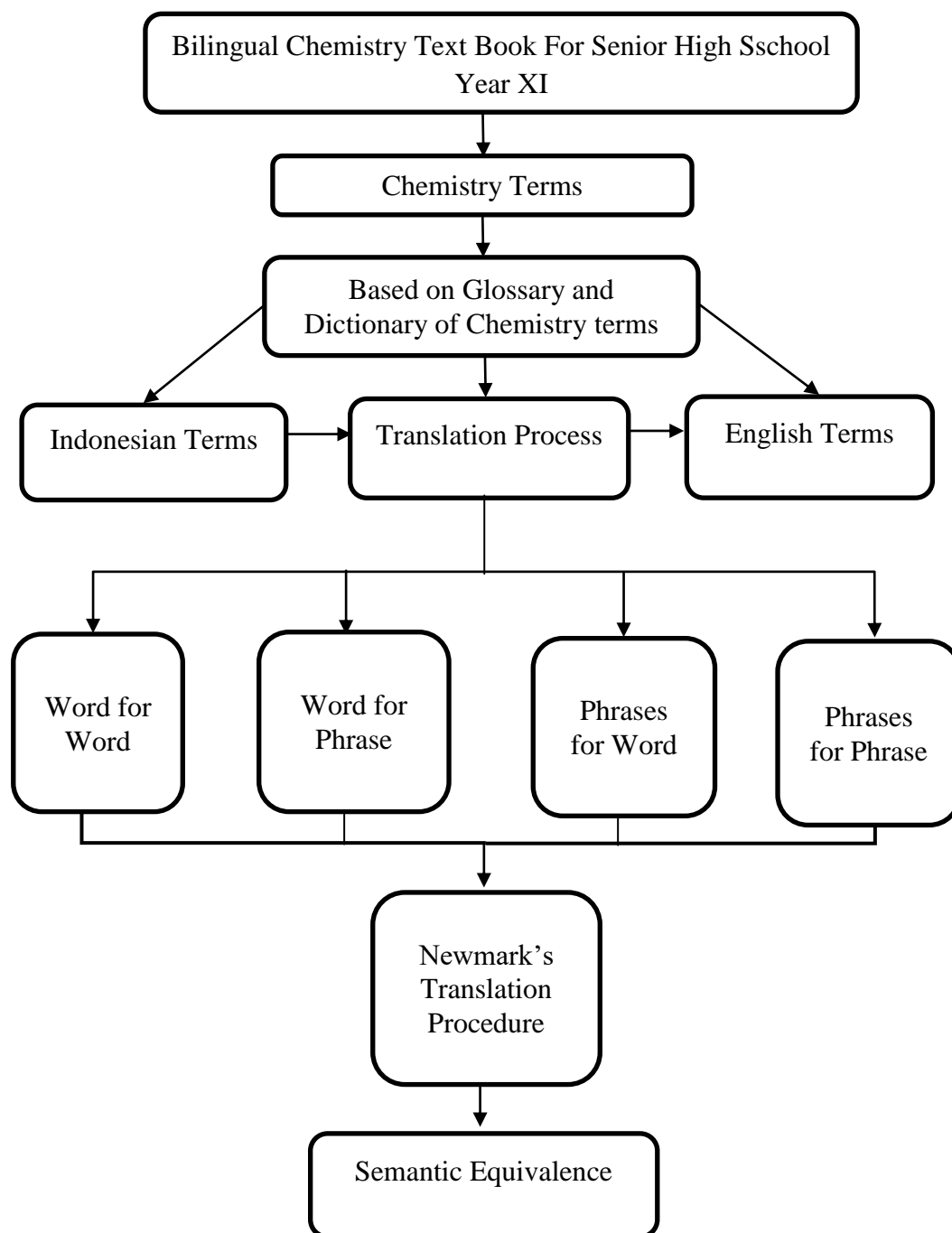


Figure 2.1 Diagram of Data Analysis

CHAPTER V

CONCLUSIONS AND SUGGESTIONS

This chapter is the last chapter that presents the conclusions of the study that includes the main points of this study which have been discussed in the previous chapter. This chapter also provides some suggestions for the next study, especially for those who want to conduct researches with similar topic.

5.1 Conclusions

Conclusions are explained to answer the research problem of this study to underline other findings. The finding result shows that Chemical terms used in the Chemistry Bilingual book for Senior High School Year XI have high semantic equivalence with the translated Chemistry terms. Of the 137 data on chemistry terms analyzed, there are 57 terms categorized as word for word terms, 0 term categorized as word to phrase terms, 5 terms categorized as phrase for word terms, and 75 terms categorized as phrase for phrase terms. The result of analysis of word for word terms shows us that 56 data or 98.25% was found to be equivalent while 1 data or 1.75% was non-equivalent. In phrase for word term, 4 data or 80% was found to be equivalent while 2 data or 20% was non-equivalent. In the last one, phrase for phrase terms, 71 data or 94.7% was found to be equivalent while only 4 data or 5.33% was non-equivalent. Based on the result of analysis of

data in Chemistry textbook on semantics equivalence of chemistry terms, it is shown that from 137 terms, 130 chemistry words and phrases were found to be equivalent and 7 chemistry words and phrases were found to be non-equivalent. From the data analysis, it is shown that only 94.89% of the data is not equivalent with the target text, while 5.11% of words and phrases of chemistry terms are equivalent. It means that the result of translation of chemistry terms has high semantics equivalence with the target text.

The researcher also analyzing the semantic equivalence of chemical terms Through some translation procedures by Newmark. Based on analysis, each procedures are (1) transference is found 8 times, (2) naturalization is found 40 times, (3) literal translation is found 32 times, (4) synonym is found 5 times, (5) recognized translationis found 17 times, (6) reduction is found 4 times, (7) through translation is found 2 times, (8) couplets is found 29 times, and (9) triplets is found 1 time . The analysis shows that the most frequently – used translation procedure is naturalization. Besides, the most procedure categorized as equivalent is naturalization. Then, the most procedure categorized as non-equivalent literal translation. The finding of this research also indicated that in translating the chemistry terms, the translator should focus on word order of the Target Language. The equivalence and the function of each word would be different if it is put in a different context. Therefore, as overall, chemistry terms used in the Chemistry Bilingual book for Senior High School Year XI have high semantic equivalence with the translated Chemistry terms. It also indicates that Chemistry

Bilingual Book for Senior High School Year XI is appropriate to be used by the secondary education students.

5.2 Suggestions

After drawing conclusions, some suggestions can be presented as follows:

1) The Translator

Translating terms, become the challenge for a translator in most cases in doing translation process because in this phase the translator decides if he/she makes orientation to the target text or not. From the finding results, in translating chemistry terms the translator should focus not on word order of the Target Language. Besides, the translator should pay attention in translating chemical compound. He/she need to check the translation by looking up in the chemistry dictionary because chemical compound itself has official terms. Both of these things are certainly should can not be ignored in order to avoid the misperceptions conveyed by the teacher or those in the teaching book because not all students are able to speak English well.

2) Further Researcher

The researcher expects this study is going to give a contribution to the future researchers which have the similar topics about semantic equivalence, especially in scientific terms. Besides, the other researchers who want to do such research should learn deeper about technical terms will be analyzed. Especially, in

determining the rating scale or rubric, the future researcher should pay more attention to whether it has been suitable with what will be studied. Therefore, it is suggested that a study related to terms translation can be conducted in the future against every branch of science such as physics terms, cultural terms, medical terms, etc. In addition, the future research related to the equivalence of technical or specialized terms can be conducted at least at the level of clause or sentence. It is also suggested to be conducted research about quality of translation of technical or specialized terms .

3) Students of English Department

I suggest students of English Department who interest in analyzing the similar research should read many books related to translations as well as journals related to the similar research in order to expand the knowledge about translation. It is necessary to have a deeper understanding about translations so that the study about translation conducted can be better than the previous studies.

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