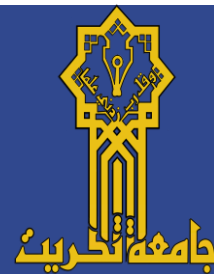


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Applicability of Liao's Framework in Assessing Translation Quality of Arabic Scientific Texts into English

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ABSTRACT

This paper focuses on translation quality of target language scientific texts and investigates the translation errors committed by five translators as they render Arabic scientific texts into English. It also shows the main translation problems behind these errors and how they affect the target texts. Translation analysis of these errors reveals the levels of translation students and to what extent they can reformulate scientific texts accurately. This paper hypothesizes that translation students know enough about the translation process and how the scientific texts must be translated appropriately to convey clear and natural meaning in the target language. Liao's (2010) framework is used to assess and analyze translation errors and classify them into three categories. To achieve the aims of this study, three Arabic scientific texts are distributed to five translation students from the Department of Translation/College of Arts/University of Tikrit/ Four Year to render them into English and analyze them according to the adopted framework.

KEYWORDS

Translation, Translation Errors, Translation Quality, Scientific Texts, Liao's Framework



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1. Introduction:

Translation is always defined from different perspectives in order to convey the meaning from one language into another appropriately. The linguistic aspect is highly taken into consideration by many translation scholars but this does not mean other aspects are ignored in translation process. The translator must take into account several aspects in order to have a complete picture in his mind and convey the meaning clearly. This paper studies the translation errors committed by translation students as they render Arabic scientific texts into English. It also shows the key translation problems behind these errors and how they affect the target texts. Translation analysis of these errors reveals the levels of translation students and to what extent they can reformulate scientific texts accurately. Most of translation theorists interested in translation error analysis (TEA) and what are the significant reasons behind these errors.

The literature review sheds light on some of main aspects of scientific texts and translation errors and what are main classifications of these errors. This paper attempts to pinpoint the translation errors committed by translation students. The researchers employ Liao's framework (2010) to identify and classify these errors. This study focuses on analyzing the errors translation students commit when translating the scientific text from Arabic into English. In this study, suitable solutions such as translation strategies are identified to bridge the gaps and overcome translation problems that jeopardize the meaning of the Target Text(TT).

To achieve the aims of this study, three Arabic scientific texts are distributed to five translation students of four year from the Department of Translation/College of Arts/University of Tikrit/ to render them into English and analyze them according to the adopted framework. This study concludes that several translation errors can be resulted from lack of linguistic knowledge, translation knowledge and strategic knowledge. The study will hopefully be of great help to translation students and translation teachers to know more information about the solution for those errors and how to render them in such texts that require appropriately.

2. Scientific Translation:

There are several definitions of translation that are presented by different translation scholars from different perspectives. They describe translation as a process of rendering ST textual material in one language into TT textual materials in another language. Translation is seen as an activity that aims at conveying meaning of a ST from one language to another taking into account all the linguistic, semantic, pragmatic and syntactic aspects.

Ghazala (2008, p.157) uses technical translation and scientific translation interchangeably and gives a clear definition for scientific translation as a process of rendering all types medical, physical, chemical, mathematical, technological, biological, geological, agricultural, computer terms and internet text from one language into the second taking into account all the significant differences between the languages.

Olohan (2020, p. 1) states that there are several overlapping fields of science that put an emphasis to understand the place of science among other studies. Both science studies and translation studies are fundamentally interdisciplinary and employ a wide range of theorization and practice to address historical, philosophical, social, cultural and political questions. Our understanding of the significant place of scientific translation among other disciplines provide us with unlimited benefit to possess how these sciences are interrelated. Moreover, Olohan(2020, p. 3) highlights that understanding scientific textual analysis serves mainly as a informative and referential function of the scientific texts and it is easier than other types of translation because the language of science is universal that requires significant expressive and operative functions of scientific discourse,

For Khashimovich *et.al*/(2022, p.1), translating scientific texts is needed to the advancement of science, especially since in various countries English is regarded a second language and is

generally the lingua franca of certain industries. Thus, scientific translation becomes a must for everyone who wants to benefit from scientific findings speaks English, or relevant findings that are published in English.

In the same perspective, Dong (2022, p. 19) emphasizes that the scientific translation is not an easy task for translator because they may face number of translation problems in the process of translating these texts and the translation quality is directly affected. For Dong, the main key point in the scientific translation is the understanding of the readers of the TT in order to convey the meaning appropriately and accurately in the second language.

3. Scientific Text Type:

In Translation Studies, text types and genres are significant for the translator to know in rendering the text from one language into another. There are several text types that require special attention to be rendered correctly and convey the meaning effectively in TL. Moreover, text types help translator select an appropriate translation strategy, technique or method.

Maingueneau (1996:85) states that there are three categories of text typologies and each one has its specific condition. These typologies are classified based on the situation in which the text is uttered (that is the relationship between the participants in the communicative act and the time and place of its utterance); communicative typologies (function- oriented); and typologies that take into consideration the social sphere the text is related to (for instance: school, family, etc).

For Ilyas (1989:109), in scientific texts the translator needs to prioritize the subject matter over the style of the linguistic medium because this types of texts aim at expressing facts, experiments, hypotheses, etc. Therefore, in these texts the readers do not look for a pleasure as in the literary works, but they want to understand the information and scientific content. Moreover, the translation of the scientific text must be direct and clear, freer from alternatives, and much less artistic than the other kinds of prose. The language of scientific and technical language is characterized by certain features that make them different from other types of texts such as: impersonal style, simpler syntax, use of acronyms, and clarity. The scientific vocabulary is more specialized than other types of vocabularies because it refers to facts and has direct link between both texts involved in the process of translation.

Furthermore, Dambska-Prokop (2000:230) asserts that text can be determined by two significant aspects including utterance or communicative act when it used to convey certain situation. Thus, text is always seen as a sequence of sentences which form a cohesive whole. Cohesion is achieved by means of connectors, specific word order, repetitions, etc., and is the basic criterion of textuality, that is the fact that a given series of sentences can be called a text.

In the same perspective, Eslamieh(2017:112) mentions that in Reiss's text typology, she links the three functions of language to their corresponding language dimensions and communicative situations in which they are used and she also suggests that there four significant text types such as(informative, expressive, operative and audio-medial.

Munday (2022:100) states that text types are classified according to Reiss's typology of text types which is built on the concept of equivalence and viewed the text, rather than a word or sentence, as a level at which communicative event is achieved. As far as the text typology is concerned, Reiss gives four main text types as follows:

(1) Informative text type: It conveys Plain communication of facts. This type refers to the text that conveys information, knowledge, opinions etc. The dimension of the language used to communicate the information is logical and referential and the content or 'topic' is the main focus of the communication.

(2) Expressive text type: This type concerns with creative composition. When this type is used, the author employs the aesthetic dimension of language.

(3) Operative text type: This type refers to inducing the behavioural responses of the people during the communication event. The purpose of the appellative function in this text type is to appeal to or persuade the reader or 'receiver' of the text to act in a certain way. This type is mainly used when someone buys a product (if an advert), or to agree to an argument (if a political speech or a barrister's concluding statement).

(4) Audio-medial texts: This type is specifically used in films and visual and spoken advertisements which supplement the other three functions with visual images, music etc.

4. Translation Quality Assessment:

In translation studies, most of the scholars and researcher tend to assess the translation outcomes according to certain procedures in order to figure out the appropriateness of the final product. Translation quality assessment (TQA) covers different steps and procedures that are frequently employed to assess the translation and check its acceptability in the target language. Translation is always assessed whether subjectively or objectively to produce acceptable and comprehensible message in the TL. Most of scholars prefer to assess translation according to certain criteria in order to present an objective view based on certain model.

Al-Qinai (2000:2) assures that the process of assessing a translated text aims at measuring the degree of efficiency of that text with regard to the syntactic, semantic and pragmatic functions of source text within the cultural frame and expressive potentials of both languages involved in that communicative event.

For Neves (2002:115), in translation studies to do the comparison between some authors have suggested that a comparison between two texts in order to assess the translation quality and create a clear message in target language. This should be conducted based on objective measure of translation quality in the target language in order to grantee that translation achieves the requirement of appropriateness in target language and provide a comprehensible message.

In the same perspective, House (2001:2) mentions that quality assessment is considered as one of the final steps in translation process through the final outcome is assessed. The key aim of this step is to check the quality of the translation through consistency and proper usage of terminology that suitable to the meaning of the source text. She adds that there are several aspects need to be tracked and checked by the assessor which directly affect the translation quality and result in translation errors such as language register, punctuation, selecting an appropriate equivalence in target language. Thus, quality assessment is considered as a crucial instrument in translation studies.

Jun-song (2017:1) emphasizes that TQA is a fundamental concern in translation studies and it has been a central subject for both theorists and professionals. Basically, there is different views about the TQA models employed in translation assessment carried out on daily basis and they are criticized for being subjective or impressionistic due to the lack of theoretical basis; while the models suggested by theorists, on the other hand, are rejected by practitioners for being too ideal to be used in practice. Moreover, Jun-song(2017:2) explains that in the field of TQA, text type is a significant factor that has to be taken into account when the translation is assessed. The texts to be assessed in academic studies are totally different from those in industry. There seems to be a tradition in translation studies that literary texts are the first choice both in translation criticism and Translation Quality Assessment.

5. Translation Errors:

Translation errors are one of the most essential aspects that must be focused on when translating a text from one language to another. These errors directly affect the quality of the translation, and therefore the final result is not consistent with the meaning of the original text. Translation errors occur on several levels, including grammatical, semantic, pragmatic and cultural,

which have a significant and clear impact on the quality of the translation. These errors are described by different scholars in the field of translation studies because they clearly affect translation quality and make the target message is incomprehensible.

Basically, errors in translation are attributed to the non-equivalence between the two languages involved in this process. Koller (1979: 216) defines translation error as a kind of non-equivalence between ST and TT or non-adequacy of the TT. For Koller, the message considered is meaningless when non-equivalence occurs because the ST and TT and the meaning is not conveyed perfectly in the target language. In relation to one of Koller's five equivalence, the error can occur reference with respect to equivalence between the two text involved in the translation process.

Seguinot(1990:2) emphasizes that when good translators possess encyclopedic knowledge and linguistic knowledge of both languages, they are able to manage the translation process efficiently and know how deal with such errors. Thus, errors are seen as indicators to the quality of translation through which the final translation outcome can be assessed.

Nida(1997:73) states that according to Sigrid Kupsch-Losereit who sees translation errors as an offence against different aspects including:

1. The function of the translation,
2. The coherence of the text,
3. The text type or text form,
4. Linguistic conventions,
5. Culture- and situation-specific conventions and conditions,
6. The language system.

Moreover, translation errors occur frequently when the translator is unable to figure out an appropriate equivalence in the target language. These errors jeopardize the whole meaning and it becomes ambiguous sometimes because of the impossibility to achieve that meaning. For Akil(2007:), translation errors can be classified into five kinds according to nature specifically:

1. Inversion of meaning: the expression of meaning of the source language text in another way round. In this case, the target language's intention contradicts with that of source language;
2. Addition of meaning: the inclusion of intentions or ideas which are not mentioned or implied in the source language. In the other word, the intention of the source language is broadened;
3. Omission of meaning: the exclusion of idea or ideas of the source language in the target language, so that the intention of the source language is not completely transferred;
4. Deviation of meaning : the diversion of the intention of the source language to other notions;
5. Modification of meaning: the expression of the intention of the source language into an unclear form.

6. Translation Errors Analysis:

Translation error analysis is considered one of the most essential steps taken by translation evaluation specialists and teachers to determine the type of these errors according to specific procedures. There are many models devoted to analyzing translated texts according to clear steps in order to know what errors can be benefited from by translators and translation teachers.

Ellis (1985: 296) elaborates that error analysis involves a procedure to collect sample of the learner's language, identify the errors in the sample, describe these errors, classify them according to certain criteria, and evaluate their seriousness. Whereas, Brown (1994: 206) states that learners may make errors and that these errors can be observed, analyzed and classified to reveal something of the system operating within the learner, led to a surge of study of learners called error analysis. This analysis helps to know how these errors affect the final outcome and what are their categories.

For Kussmaul (1995:130), to analyze the translation for errors the teacher or the evaluator has to take into account the significance of communicative function of a particular word, phrase or sentence. Furthermore, the interrelation between identifying errors and detecting problems is

considered as an analysis of the problematic text passages should form the basis for the teachers' evaluation of their students' translations.

Nord (1997: 74) mentions that it is significant to link between functionalism and translation error because translation is used to achieve specific function for the target language addressee and anything that hinders the achievement of this purpose is regarded as a translation error. Thus, it is important to conduct translation error analysis to check into what extent the function of translation is achieved perfectly. More precisely, a translation error occurs when the addressee's expectations are unfulfilled because the translator failed to follow the task instructions in some way. For Nord, errors are considered useful instrument for the translation teachers as they can formulate the translation brief.

Sulaiman and Mohammed(2019:4) explain that during the last few years several translation researchers considered error analysis as significant tool for evaluating translation and explaining the right steps of teaching and learning process of translation. For them, translation error analysis is seen as a systematic description and classification of errors in the foreign language and this error analysis not only resulted from interlingual transfer or interference of the first language, but it can be created from jeopardizing the perfect rules of translating a text and making some omission, selection, addition and ordering of some language elements.

7. Liao's Framework of Assessment:

One of the most significant models in the field of translation studies that can be used to assess the translation quality. Liao (2010) proposes this framework to assess translation quality and to categorize translation errors into three key classifications as rendition errors, language errors and miscellaneous error. In the same perspective, Al-Jailani *et al.*(2023) say that Liao's (2010) framework covers sub-classifications of errors that come under the main classifications including the following classifications:

Construction Errors: Mistakes or inaccuracies that occur during the translation of the source text into the target language are referred to as rendering errors. These mistakes may involve grammar, syntax, vocabulary, style, or register.

Language Errors in language are errors that have nothing to do with the act of translation but derive from insufficient knowledge or command of the target language. These errors may involve grammar, vocabulary, syntax, or other aspects of language.

Miscellaneous Errors: Errors that do not specifically fit under the categories of rendition errors or language errors. Errors may include formatting errors, punctuation errors, typographical errors, terminology inconsistencies, and content omissions/additions. Miscellaneous translation errors may be unintentional or the result of oversight or carelessness.

Finally, this framework gives a comprehensive analysis of the translation error and classifies them effectively.

8. Research Methodology:

In this paper, the researchers choose a clear and thorough framework to identify and classify these errors proposed by Posen Liao (2010). This study focuses on analyzing the errors translation students make when translating the scientific text from Arabic into English. This study will seek to analyze those translation errors and suggest suitable remedies.

8.1. Data Collection and Procedure:

The data of this study have been collected from a website called ([Link](#)) that contains Arabic scientific articles talking about certain scientific subjects. Three Arabic texts are selected and distributed into five translators who studied scientific translation and hold B.A in translation. The five subjects are asked to render these three texts into English. The below table shows the three Arabic texts used as a data in this study.

Text 1	أخطر كويكب ممكن أن يرتطم بكوكب الأرض تم اكتشافه حتى الآن اسمه بينو Benu ويبلغ عرضه حوالي نصف كيلومتر. تم اكتشاف بينو في عام ١٩٩٩ وبعد دراسة مداره وميزاته تبين أنه في عام ٢١٣٥ سيمر بينو على مسافة قريبة جداً من كوكب الأرض مما سيغير مداره لكي يعود ضمن مسار من الممكن أن يكون ارتطام مباشر مع كوكب الأرض في نهاية القرن الثاني والعشرين. بينو يدور حول نجم الشمس مرة واحدة في ١,٢ سنة أرضية بسرعة ٢٨ كيلومتر في الثانية ويأتي بالقرب من كوكب الأرض كل ست سنوات. في كل دورة حول الشمس يقطع الكويكب حوالي مليار كيلومتر ويبعد عن كوكب الأرض حوالي ٣٤٠ مليون كيلومتر في أبعد نقطة عن كوكب الأرض.
Text 2	العصبونات الدماغية شبيهة بالخلايا الأخرى الموجودة في الجسم إلا أنها تمتلك خاصية تمكنها من إرسال رسائل لخلايا عصبية أخرى. الخلية العصبية تتألف من نواة حيث تحدث الأعمال الخلية من استقبال طاقة وترجمة الحمض النووي وغيرها من الأعمال الخلية الاعتيادية. القسم الثاني هو قسم الزائدة الشجرية (Dendrite) حيث تستقبل الخلية العصبية الرسائل الواردة من قبل الخلايا العصبية الأخرى.
Text 3	ذرة الأوكسجين تتألف من نواة ومن ٨ الكترونات (سالبة) تحوم (تتواجد) حول النواة. ذرة الهيدروجين تتألف من نواة والكترون (سالب) وحيد يحوم (يتواجد) حول النواة. ذرة الأوكسجين لديها ٨ الكترونات ولهذا هي "تسعى" للوصول إلى أقرب رقم سحري لها وهو ١٠. إذاً تبحث عن إلكترونين إضافيين. الهيدروجين لديه الكترون وحيد ويسعى إلى الوصول إلى أقرب رقم سحري منه وهو ٢.

8.2 The Model Adopted

Liao's (2010) framework is adopted in this study to analyze translation errors and classify them into three categories. This framework also describes errors adequately and put them in a systematic typology. This study showed that all translation errors could be divided into three main categories: language errors, rendition errors, and miscellaneous errors and other sub-categories that come under the main ones. The above table shows the main and sub- categories of translation errors.

Type	Rendition Errors	Language Errors	Miscellaneous Errors
1	Misinterpreting the source text	Grammatical mistake or ungrammatical syntax of target language	Missing parts in the target text
2	Insufficient rendering, which differentiates the translation from the original text.	Awkward expression, including ambiguous meaning, mismatch, redundant words and unnecessary repetition, etc.	omission.
3	Excessive rendering, which differentiates the translation from the original text.	Inappropriate register.	
4	Subtle difference of meaning between the source and target texts; insufficient accuracy.	Excessive literal translation, which leads to ambiguous translation.	
5	Misinterpretation due to unawareness of terms.	Excessive free translation, which differentiates the translation from the original text.	
6		Incorrect character, improper punctuation marks or inconsistency in term translation.	

8.3. Data Analysis and Discussion:

The source texts are rendered by five translators into English and they are analyzed according to the criteria of Liao's framework to identify the translation errors. This framework helps to find out every error type in order to show the most occurring errors and the least occurring errors. The texts contained obvious grammar and spelling mistakes and/or punctuation mistakes, some of their parts were missing. The current paper attempts to explore those translation errors.

8.3.1. First Translator's Rendition:

TT 1	The most dangerous asteroid that could hit planet Earth, which has been discovered so far, is called Benu, and it is about half a kilometer across. Benu was discovered in 1999, and after studying its orbit and features, it became clear that in the year 2135 Benu will pass very close to planet Earth, which will change its orbit so that it returns on a path that could be a direct collision with planet Earth at the end of the twenty-second century.
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TT 2	Brain neurons are similar to other cells in the body, except that they have a property that enables them to send messages to other neurons. A nerve cell consists of a nucleus where cellular activities such as energy metabolism, DNA translation, and other normal cellular activities occur. The second section is the dendrite section, where the nerve cell receives messages received from other neurons.
TT 3	The oxygen atom consists of a nucleus and 8 (negative) electrons that hover (reside) around the nucleus. A hydrogen atom consists of a nucleus and a single (negative) electron circling the nucleus. The oxygen atom has 8 electrons, so it "strives" to reach the nearest magic number, which is 10. So you're looking for two extra electrons. Hydrogen has a single electron and seeks to reach the closest magic number, which is 2.

Liao's Criteria	Rendition Error (R)		Language Error (L)		Miscellaneous Errors (M)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	0	0	3	7.6%	7	17.9%
2	5	12.8%	2	5.1%	5	12.8%
3	2	5.1%	2	5.1%		
4	3	7.6%	4	10.2%		
5	3	7.6%	4	10.2%		
6			4	10.2%		

This translator renders the ST into English with certain translation errors which are classified according to Liao's framework. On the level of rendition errors, there are insufficient renderings that led to different meaning in the TT resulted from certain lexical items. He also renders certain items excessively that are totally have different meaning. Most of the errors that are found in her rendition resulted from insufficient accuracy between the ST and TT and the misinterpretation of unawareness the lexical items in ST. As far as the language rendition criteria, the translator tends to use free and literal translation to convey the meaning from the one language into the second language. Some grammatical mistakes are identified in the TT with meaning mismatch. Moreover, there is improper use of punctuation marks and incorrect character which leads to inconsistency in terms of translation product. He also tends to use inappropriate register which creates a main reason of changing the meaning. The third criteria of this framework to identify the errors focuses on miscellaneous errors. According to this criteria, the translator makes several errors in the TT that affect the quality of translation. There are missing parts in the TT that lead to create a different meaning because their meaning is not translated and missed in TT. Additionally, the translator tends to omit certain lexical items in the TT which lead to give inappropriate meaning in the TT. These miscellaneous errors are considered main reasons to affect the translation quality and they give inaccuracy meaning in the TT.

8.3.2. Second Translator's Rendition:

TT1	The most dangerous asteroid could hit the earth has been discovered, named Bennu, it's about (half a kilometer) wide. Bennu was discovered in 1999 and after studying its orbit and its features, it appeared that in 2135 Bennu will pass so close from the earth which changes its orbit to return back within a track, there could be a direct collide with earth at the end of the 22nd-century. Bennu revolves around the sun once in (1,2 earth-year) at speed of (28Km/per second). It passes by earth every six years. In every cycle around the sun, the asteroid travels about (1billion/ Km), and gets farther from earth at about 340 million kilometer, in the farthest spot of earth.
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TT2	Neurons are just like other cells in the body but it has a special feature that makes it send messages to another neurons. A neuron consists of nucleus , where the cellular functions occur as a result of the metabolism and translation of the DNA and other regular cellular functions. The second part is the part of Dendrite where the neuron receive the incoming messages that come from the other neurons
TT3	The Oxygen atom consists of nucleus and of eight negative electrons moving around(existed) around the nucleus. The Hydrogen atom consists of a nucleus and a single negative electron(existed) around the nucleus. The oxygen atom has eight electrons that's why it seeks to reach out to the closest magical number which is 10. So it seeks to find out 2 extra electrons. The hydrogen got 2 single electrons so it seeks to reach out to the closest magical number which is 2.

Liao's Criteria	Rendition Error (R)		Language Error (L)		Miscellaneous Errors (M)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	0	0	7	30%	0	0
2	0	0	4	17.3%	0	0
3	3	13%	2	8.6%		
4	1	4.3%	3	13%		
5	2	8.6%	1	4.3%		
6			0	0		

This translator reformulates the ST into TT with certain translation errors that can be seen on different levels. According to the analysis of his translation, there are clear inaccuracy in the translation of the ST resulted from the translation errors in the TT.

For rendition errors, this translator uses several excessive renderings that affect the meaning of the TT because different translation. He also translates the ST with subtle difference in meaning between the two texts of both languages involved. Thus, the accuracy is insufficient and the meaning is not rendered well in the TL. Moreover, this translator is unaware of certain lexical items because of the misinterpretation of the ST lexical items. From the perspective of language errors, there are several grammatical mistakes in the TT that affect the translation quality because this translator lacks the grammatical knowledge in both languages. He also gives ambiguous meanings for certain lexical items that mismatch their meaning in the TT. Additionally, he uses inappropriate register which affects the meaning of certain TT sentences. The translator employs both literal translation and free translation to convey the meaning but this leads to different meaning in the TL.

8.3.3. Third Translator's Rendition:

TT1	The most dangerous micro planet may collide with the earth has Been discovered so far. name Bennu, the width over half Kilometre. Bennu discovered in 1999, after a studying it's orbit and characteristic, the study shows that in 2135 Bennu will be on a very close distance with planet earth, that will change Bennu orbit and will return in a path that possibly would leads to a direct collision between Bennu and Earth at the end of the twenty two century. Bennu orbits around the sun star once every 1,2 light year with a speed over 28 kilometres in second, and comes close to planet earth every six years. in every orbit around the sun the micro planet travels over 1 billion kilometres, and about 340 kilometres away from planet earth, at the farthest point from planet earth.
TT2	The Oxygen atom contains of a nucleus and 8 electrons (negative), circling (covers) around the nucleus. the hydrogen nucleus contains of a nucleus and only one negative circling (cover) around the nucleus.

	Oxygen atom has 8 electrons and for that it trying to reach its magical number which is 10, so it seeking for two more extra electron. the hydrogen has one and only electron and seeking for reaching the closet magical number which is number 2.
TT3	Brain neurons are very similar to the other cells that are exist in the body but it has a special characteristic, allow it to send messages to other neuron cells. the nervous cell consist of a nucleus, where occurs the cellular activities upturn the energy and interpretation the DNA and the other ordinary activities. the second part is Dendrite where the nervous cell receiving messages by the other nervous cells.

Liao's Criteria	Rendition Error (R)		Language Error (L)		Miscellaneous Errors (M)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	0	0	12	35%	2	5.8%
2	2	8.5%	1	2.9%	2	5.8%
3	1	2.9%	4	11.7%		
4	1	2.9%	0	0		
5	0	0	3	8.8%		
6			7	20.5%		

For translation errors, this translator reformulates the ST with certain insufficient rendering because he uses different lexical items that give different meaning in TL. Generally, he renders the ST with excessive translation and elusive translation that are basically different in meaning and resulted in insufficient accuracy. Thus, most translation errors in the TT give unclear rendering that are supposed to be a reflect of the ST meaning. Moreover, language errors are another reason that affect the translation quality in the TT. This translator makes several grammatical mistakes that change the TT meaning because he lack the grammatical knowledge of the TL. He also employs certain lexical items in the TT that mismatch the SL items and some items that are regarded as unnecessary repetition in the TL. In rendering of the ST, the translator tends to use inappropriate register to convey the meaning in TL which affect the meaning and translation quality in the TL. Free translation is also used by the translation which clearly differentiates from the meaning of the SL. In terms of punctuation, this translator misuse the punctuation marks in the TL because there is improper use of punctuation such as incorrect character that directly affects the translation quality in the TL. As far as the miscellaneous errors, the translation quality is also affected because there are certain parts are missed in the TT. Furthermore, the translator omits significant parts of the text that affect the translation quality of the TT.

8.3.4. Fourth Translator's Rendition:

TT1	The most dangerous planet maybe touches with earth planet discovered now that it's name bennu it is half kilometer wide . Bennu discovered in 1999 and after study tropic and feathers show in 2135 will bass nearly the earth planet that's change tropic to returns Within the track maybe being direct touches with earth planet in the end of 22nd century bennu spins around sun star one time on 1.2 year on 28 kilometer speed in the second , it's come near earth planet every six years. On every turning around the earth the planet cutting almost billion kilometers and take away from earth 340 million kilometers At the farthest point from planet Earth.
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TT2	The Brain nerves like the other cells on the body But it has quality can sense message to other nerves cells. nerve cell include nucleus Cellular cells works from reversal power ,translate DNA and other cells works. The part two It is a dendrite The nerve cell receives messages coming from other nerve cells.
TT3	oxygen atom consists of a nucleus and eight negative electrons exist around nucleus. hydrogen atom consists of nucleus and alone negative electron around nucleus. Oxygen atom has eight electrons that's want arrive to near magic number 10. If you looking for Two extra electrons hydrogen have single electron want arrive to near magic number2.

Liao's Criteria	Rendition Error (R)		Language Error (L)		Miscellaneous Errors (M)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	6	10.7%	10	17.8%	6	10.7%
2	5	8.9%	1	1.7%	1	1.7%
3	1	1.7%	3	5.3%		
4	6	10.7%	3	5.3%		
5	3	5.3%	1	1.7%		
6			10	17.8%		

This translator renders the ST with several translation errors that lead to create different meanings in the TT. The translator misinterprets the ST perfectly in a way that gives different meaning in the TL. He also renders the ST insufficiently and this resulted in a translation that different from the original text. Additionally, this translator reformulates the ST with subtle rendering that create a difference in meaning between the ST and TT and resulted in insufficient accuracy. The translator is unaware of the certain terms that lead to misinterpretation of the ST lexical items and create a different meaning in the TL. From the perspective of language errors, the translator makes several grammatical mistakes in the TT which affect the meaning of the ST. This resulted from the unawareness of the grammatical rules in both languages involved in the translation process. The translator avoids to employ awkward expressions which create an ambiguous meaning in the TL but he uses an appropriate register in the TT that is clearly different from the ST register. Furthermore, there is a literal translation of the ST that leads to create an ambiguous renderings in the TT. While the translator tends to reformulate the ST freely and excessively. This leads to create a different rendering in the TL for certain lexical items. This translator employs punctuation marks improperly in the TT which resulted in inconsistency in terms of rendering the ST. As far as the miscellaneous errors, the translator tends to give a translation with several missing parts in the TT with omitting certain lexical items that are basically affect the meaning of the TT.

8.3.5. Fifth Translator's Rendition:

TT1	The most dangerous asteroid that could potentially collide with Earth discovered so far is named Bennu. It is about half a kilometer wide. Bennu was discovered in 1999, and after studying its orbit and characteristics, it was found that in 2135, Bennu will pass very close to Earth, which could alter its orbit to potentially be on a direct collision course with Earth by the end of the 22nd century. Bennu orbits the Sun once every 1.2 Earth years at a speed of 28 kilometers per second and comes near Earth every six years. In each orbit around the Sun, the asteroid travels about a billion kilometers and is about 340 million kilometers away from Earth at its farthest point.
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TT2	Brain neurons are similar to other cells in the body, except they have the unique ability to send messages to other nerve cells. A nerve cell consists of a nucleus where cellular activities like energy metabolism and DNA translation occur, among other typical cellular functions. The second part is the dendrite, where the nerve cell receives incoming messages from other neurons.
TT3	An oxygen atom consists of a nucleus and eight negatively charged electrons that orbit around the nucleus. A hydrogen atom consists of a nucleus and a single negatively charged electron that orbits around it. The oxygen atom has eight electrons, so it seeks to reach its nearest magic number which is 10, meaning it looks for two additional electrons. Hydrogen has only one electron and seeks to reach its nearest magic number which is 2

Liao's Criteria	Rendition Error (R)		Language Error (L)		Miscellaneous Errors (M)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	1	4.3%	9	39.1%	1	4.3%
2	5	21.7%	0	0	0	0
3	1	4.3%	0	0		
4	0	0	1	4.3%		
5	2	8.6%	3	13%		
6		0	0	0		

The translator misapprehends the ST and unable to give an appropriate rendering for certain lexical items. While this translator insufficiently renders the ST that gives a different translation in the TL. This insufficiency is considered as an indicator of the translator's lack of translation knowledge. Additionally, this translator tends to render the ST items excessively which basically resulted in a different translation in the TL. Moreover, the translator is unaware of the meanings of the ST lexical items because he is unable to interpret accurately. For language errors, the translator makes several and significant grammatical mistakes in the TL. This comes from the lack of grammatical competence in both languages. This translator tends to give an ambiguous rendering because free translation affects the final rendering of the ST and makes the meaning of TT confusing. The translator depends on free translation for some ST sentences that leads to give different translation for the ST and the TT meaning contradicts with ST meaning. Finally, miscellaneous error is another reason that affects the translation quality because there are missing parts in the TT.

9. Conclusion:

This paper concluded that translators need to have a broad knowledge and awareness of the errors that occur during the translation process. Translators must develop their translation skills by translating texts of different types and not limited to only one type. It was found that most errors are caused by not knowing the appropriate equivalent in the target text for the scientific text, which does not accept a second translation because scientific terms are often fixed in meaning.

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