



*Scientific and technical translation between literal and transliteration in
Arabic and English*

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الترجمة العلمية والتقنية بين الحرفية والتصرف في اللغتين العربية والإنجليزية

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Abstract

Translating new concepts into new terminology has always been challenging because of linguistic variations between languages. Over the decades, English has become the language of science and technology. Therefore, it dominates all other languages in the globe. Translation of technical terms and concepts are usually carried out from English into other languages, such as Arabic. Many specialized dictionaries have attempted to give a suitable Arabic equivalent for technical and scientific terms. The aim of this paper is to identify the strategies used in the process of translation and transliteration. Accordingly, a descriptive and comparative analysis of five English technical terms with their translational and Arabicized counterparts were analyzed and discussed. Some were translated literally and some were transliterated. Results showed that there is not always a formal equivalent in translating a technical term; literal translation can sometimes be productive.

Key words: Scientific and technical translation, Technical translation, literal and non- literal translation, Scientific translation, Technical idiom.

المستخلص

إن ترجمة المفاهيم الجديدة إلى مصطلحات جديدة كانت دائماً تشكل تحدياً بسبب الاختلافات اللغوية بين اللغات. وعلى مر العقود، أصبحت اللغة الإنجليزية لغة العلوم والتكنولوجيا. وبالتالي، فهي تهيمن على جميع اللغات الأخرى في العالم. وعادة ما تتم ترجمة المصطلحات والمفاهيم التقنية من اللغة الإنجليزية إلى لغات أخرى، مثل اللغة العربية. وقد حاولت العديد من القواميس المتخصصة تقديم معادل عربي مناسب للمصطلحات التقنية والعلمية. والهدف من هذه الورقة هو تحديد الاستراتيجيات المستخدمة في عملية الترجمة والنسخ الحرفي. وبناءً على ذلك، تم تحليل ومناقشة تحليل وصفي ومقارن لخمسة مصطلحات تقنية إنجليزية مع نظيراتها المترجمة والعربية. وقد تمت ترجمة بعضها حرفياً وتم نسخ بعضها حرفياً. وأظهرت النتائج أنه لا يوجد دائماً معادل رسمي لترجمة المصطلح التقني؛ فقد تكون الترجمة الحرفية مثمرة في بعض الأحيان..

1. Introduction:

Since most sciences and knowledge are western, transforming the same to our Arabian world needs broad translation process based on translating the idioms, terms and concepts of those western sciences into Arabic. The translators are divided in terms of translating the technical and scientific idioms into various groups. One group has adopted the literal translation of western sciences and knowledge in which it is known as "the direct translation" whereas the other group concentrated on transforming those sciences and knowledge into Arabic in consistent with our cultures, traditions and customs without literal translation for those sciences and knowledge. Technical and scientific translation have been clearly distinguished as two distinct areas of study and instruction in recent studies. Many professional writers' guides cover the technical and scientific discourse in English, which has been the subject of extensive research for many years.

Nonetheless, we think that there is still demand for research in the area of technical and scientific genre analysis from the perspective of the translator, as genre expertise may prove particularly beneficial in distinguishing between these and their subgenres when they are employed in various contexts and may also be a crucial component of an efficient translation. A model for genre analysis and its integration into the translation process was developed and exemplified by Dejica (2011) and can be used for the translation of technical and scientific texts as well.

Technical language is classified under the specialized language. The main feature of the specialized language is the usage of special *terms* and *idioms*. Linguistically speaking, a technical idiom or a technical term refers to identifying concepts and terms agreed upon the specialists for expressing relevant scientific concepts. As per Le Robert1 dictionary, the term is defined as " the word

related to special vocabulary that doesn't have familiar use in the common language such like regional and technical terms (Robert, 1977:19-46).

As for the specialized language, it refers to: "the language that is not limited in idioms but rather using specialized designations including the non-linguistics symbols among statements controlling the nature source of certain language" (Lerat,1995:21). Therefore, it can be defined as language that "introduce specialized knowledge from the technical aspect" (Al-Mesawy, 2013:64).

The specialized language is not limited to listing the terms. It goes beyond to be a mean of communication between the scientific groups. It plays the role of transmitting knowledge. As for Nagy (2014:264), he believes that "the language of science is precise, clear and unambiguous. Impersonal statements, logical thinking, clear and accurate descriptions prevail, while metaphors, humor or affective connotations are completely absent". Additionally, David Crystal explains the characteristics of science specific grammar.i.e. the extensive technical vocabulary primarily derived from Greek or Latin terminology with many compounds which may be somewhat lengthy, requiring abbreviations for ease of use for practical use "long sentences with a complex internal structure (sentences based on noun phrases).and the use of passive constructions". (ibid).

We will address the scientific and technical translation between literal and non- literal translation approach in Arabic and English along with reviewing the literal and non- literal approaches in the scientific and technical transition into Arabic, highlighting the significant dilemmas in translating the scientific and technical terms in those two languages.

2. The Concept of Scientific and Technical Translation

Scientific and Technical translation fall under the specialized translation as the language of science and technology used by the translator as a part of specialized languages. According to Newmark(1988), technical scientific translation is one part of specialized translation; it differs from other translation styles mainly in terms of terminology. He in his book “A textbook of Translation, (1988:151) addresses the concept of technical translation “is one part of specialized translation; institutional translation, the area of politics, commerce, finance, government etc., is the other? I take the technical translation as potentially non-cultural, therefore ‘universal’; the benefits of technology are not confined to one speech community”.

The term used in technical translation can be distinguished from other types of translation, “its characteristics, its grammatical features (for English, passives, nominalizations, third persons, empty verbs, present tenses) merge with other varieties of language” (ibid).

Technical translation does not only include texts of engineering or medicine but it is also encompassing other disciplines like economics, psychology and law which requires a full “understanding of the subject field treated by the text, coupled with the research skills needed to write like an expert on the leading edge of technical disciplines.” (Wright & Wright.1993:1).

2.1 Terminology as a core of scientific and technical term

The most important aspect of the scientific language and the final and innermost circle of a technical writing is *terminology*. One could say that the phrase perfectly captures the essential elements of a technical work and is very applicable to the tasks related to scientific training.

A *term* is a word or phrase that precisely describes a thing, phenomenon, or scientific idea that makes its meaning clear. Many factors influence the selection of an appropriate equivalent in a language. There are linguistics-related ones as well as extra-linguistic ones. Thus, words that are synonymous in two separate languages are not always equivalent. In this regard, Baker (1992:20) states that “non-equivalent at word level means that the target language has no direct equivalent for a word which occurs in the source text; the type and level of difficulty posed can vary tremendously depending on the nature of nonequivalence. Translation professionals should thus attempt to provide similar meaning and impact for the target language recipients, as different types of non-equivalence employ various strategies. Taking the terms and language into account, (Cabr , 2003:182) claims that: Technical translation and other related duties pertaining to the presentation and transfer of specialist information are necessary for terminology. Language training for specialized fields, technical writing, special topic instruction, documentation, language planning, special language engineering, and technical standardization, among other things. We see that terminology is necessary for all occupations involving specialized knowledge.

2.2 Scientific and technical terminology as a language of specialists

It should be noted that "terminology" and "term" are interchangeable. The development of science and technology has significantly increased as a result of the fact that an individual vocabulary is the primary component of all new words that are created every day across all languages. Scientific and technical terminology, henceforth STT, a complex and vital component of science and technology, which refers to a collection of expressions that are used in a certain field. Although linguists have been examining terminology issues for more than ten years, the word "term" does not yet have a definition that is widely accepted. The term is always accurate, aesthetically neutral, and indicates a meaning that can be logically defined. The same terms can be viewed in many different ways when they appear in works from a number of academic fields.

In such a situation, the translator requires to be able to use specialist technical unique to the field in question freely and competently. As already stated "terminology is a group of terms that functions in a specific area. Based on this definition, it becomes necessary to find out what terms are in terms of form, as well as what difficulties may arise in the translation of scientific and technical terms" (Qizi,2022:88). The development of knowledge about nature and society is concurrently reflected in the history of terminology in any field of science. Every specialized field of study or industry has its own terminology. The investigation of terminological systems across diverse scientific and technological domains has proven the existence of a general language pattern interweaving that influences the lexicon of a specific field of study.

2.3 Difficulties of Technical and Scientific translation

An interpreter is always faced with a number of challenges while translating a material written in a foreign language. All of the intricacies of a foreign language must be considered when translating. An interpreter's duty is to sense the article's style and capture every aspect of the translated text without altering the original. Scientific and technical translations are among the most challenging kinds of translation since they require both linguistic and technical skills in order to be perceived properly in another language. The main feature of technical translation, as seen through the prism of vocabulary, is the full saturation of the unique terminology unique to a particular field of study. Translators must possess a comprehensive understanding of all terms related to a particular technical sector they are translating. This is one of the primary features associated with translating scientific and technical supplies.

Kobaya & Machlab believe that the “technical translator faces multiple difficulties. Before initiating the translation, he shall conduct in order to be familiar and aware of all technical terms and the receiving audience. If the receiving audience is public, he shall use different terminology than the one use. Once the translator finishes searching, he will face other difficulties such like either such or like, choose one the misusing of some terms that led to misunderstanding trap and using abbreviations randomly without interpreting them”. (Kobaya and Machlab,2004:68).

On the other hand, the translator may find difficulty in differentiating between technical and scientific terms and the descriptive ones. The author of the source text may resort to use descriptive terms in order to describe modern technical terms or use them as synonyms for technical terms to avoid repetition (Newmark, 1988, :151). Glossaries also represent another obstacle

for the translator since they are not subject to regular updating, especially for Arabic language, therefore, most of the technical terms glossaries are literal translation or calque from the foreign language without explanation or interpretation (Kobaya and Machlab,2004:68).

This indicates that, the primary goal of scientific and technical translation is to convey precise and understandable meanings to grammatical constructions and terms “the characteristics given are inherent in scientific and technical texts”. (Saporbayevich and Kamlbekqizi,2021:64).

With technical documents being the majority of translation work, technical translations constitute a sizeable portion of the language services market. When launching new products on the market, businesses across all industries require qualified translators for anything from software strings to study papers and patents.

2.2.2 literal vs non-literal

The key concern for translators today remained centered around translating the text word-by-word "literal translation" or by meaning of each phrase "non- literal translation". “The most popular techniques that may be used by the translator during the scientific and technical translating is the literal and non-literal translation (Vinay and Darbelnet, 1977:54).

Non- literal translation was widely approved by major translators long time ago because it is reader –oriented rather than author-oriented. According to this approach, it is essential to provide the reader text written as it was written in the reader. "It was the dispute between the literal and non- literal translation approaches or the conflict between the phrase and intent" (Munday, 2009:191) "due to the thorny dilemmas affected translating the bible and the Greek heritage. People was confused between the exaggerated

sincerity to bible and translating them in a language understood by general people" (Weissbort & Eysteinson, 2006:20).

As for the literal translation, it refers to adhere with the source per word along with transmitting the author style in an honest manner without any revise or prejudice to the author identity. In this case, the priority is for the author in terms of maintaining his style and not to the reader in terms of smoothing his experience (Newmark, 1991:27).

2.2.3 characteristics of technical and scientific texts

Technical and scientific texts share common features like:

- (i) Simple structure and sentence order.
- (ii) Explicitness.
- (iii) Brevity.
- (iv) Objectiveness.
- (v) Clarity.
- (vi) Impersonality.

Scientific and technical texts differ from other texts in its "accuracy of propositions, credibility of conclusions and hypothesis as well as the intention of addressers to show their true position and willingness to convince an addressee". (Batiuta and Hordiienko,2009:5).

Technical and scientific texts have informative function; they usually describe, explain or provide "recipients with all necessary information for realizing particular kind of activity of scientific and technical orientation" (ibid). In another words, technical and scientific texts contribute in providing two roles, namely persuasive and informative "Informative texts are also characterized by the presence of specialized information about

concrete topics, issues, subject matters, objects, destinations, etc.” (Valdeón,2009:77).

An Informative text has a very limited lifespan, though it varies from text to text, news texts change within few hours whereas advertising changes within few weeks or months “since information tends to be very changeable, even if this varies from text to text: from a few hours in the case of news texts, to a few weeks or months in advertising, and years in the case of tourist guides or documentaries” (ibid). Additional characteristic of informative writings includes the inclusion of specific information on concrete subjects, problems, themes, things, and locations, etc.

2.2.4 The Glossary's Significance in Technical Translations

Almost undoubtedly, the most important component of any technical translation is terminology. This is not the area to cut corners if your goal is to save money and time on your project. The success of a product can be severely harmed by a translation that uses incorrect terms.

When discussing the purpose of terminological vocabulary, it's crucial to bear in mind that terms are one way to represent the stylistic elements of the scientific functional style “such as: abstractness, consistency, accuracy, objectivity, clarity, brevity”. (Qizi,2022:89).

Translators should be proficient in using the standard vocabulary used in each industry, both in the source and target languages. If not, they'll provide a subpar translation that might even endanger people's safety and health. A glossary of words is an essential tool for technical document translation and can assist you in overcoming this difficulty. Regardless of the pair of languages they are working with, it creates a "unique language" that all of your translators can refer to. The glossary will eliminate errors and

speed up turnaround times for translators while also assisting them in maintaining consistency in terminology. Ideally, you should start the translation process by creating a glossary of terminology. In this manner, you can supervise each translator and guarantee the same level of quality throughout all translations, independent of the target language.

3. The scientific and technical translator's success guide

Finding a glossary and taking into account appropriate grammatical forms are only two aspects of becoming a scientific translator. Here are some expert suggestions for anyone wondering how to enhance the quality of their translations.

For a translator, translating scientific and technical material may be both difficult and tiresome. The translation process is difficult since academic books place a lot of restrictions, criteria, and requirements on the expert's shoulders. The translator needs to have in-depth scientific understanding in addition to being proficient in the target language pair.

Translators' jobs involve more than just translating text into another language. It is the responsibility of the experts to localize and modify the tone of the translated content while ensuring that it does not offend the target culture. In order to collaborate closely with the client or the original text's author, the expert needs to have excellent communication skills.

Lexical gaps can be problematic for translators and make it challenging to translate meaning into the target language. According to the universal translatability principle, this might result in some kinds of untranslatability. But we also need to be aware that there are instances when a word used in one technical discipline can also be used in another, thus the lexical gaps in science are not always absolute. Additionally, several phrases are

composed of several pieces that illustrate the various functions of a piece of machinery or a scientific procedure; therefore, translators who are familiar with the stems and definitions of these terms may be able to interpret the meaning of entire terms. Technical translators must be well-versed in both the sector and the market.

4. Newmark approach on translating informative texts

Newmark believes that communicative translation is used for informative and vocative texts (Newmark, 1988:). Therefore, as a technical informative text, it aims to inform readers of the target language while giving greater weight to the communicative function than the language itself. So it makes more sense to translate the scientific and technical texts using the communicative translation approach. Therefore, in the target language, the translator must accurately and truthfully convey the information contained in the source text. The original text's messages and information should be verified as factual and accurate while keeping the translation's intended meaning in mind. Since one of the most important characteristics of communicative translation is accuracy, thus Newmark's principle of information accuracy states that "accuracy information is important in communicative translation" (Cai, 2019: 176). In terms of the impact it seeks to have on the TT reader, this explanation of communicative translation is similar to Nida's dynamic equivalence. However, the translator still has to respect and work on the form of the source language text as the only material basis for his work.

5. Methodology

In this paper, the researcher selected five English scientific and technical as well as structured sentences extracted from Booch & Brayan (1994) containing terms that are used in the field of computer since it is the most familiar field in our daily life. And then analyzed with their Arabic translation to see to what extent the translation was able to convey the meaning applying Newark's approach on translating informative texts.

6. Results and Discussions

Example1:

To establish the interface of each object, we produce a module specification (Booch. & Brayen. 1994:39).

لبناء واجهة تخاطب لكل غرض، ننتج توصيف وحدة.

In example (1): the technical term *interface* is defined linguistically as واجهة تخاطب (wajihat tukhatib). Oxford Dictionary (2008:233) defines *interface* as “the way a computer program presents information to a user especially the layout of the screen and the menus”.

According to the Dictionary of Computer and Internet Terms, *interface* is defined as “the connection between two systems through which information is exchanged. For example, in computer hardware, an *interface* is an electrical connection of the proper type. In software, it is a standard format for exchanging data. The user *interface* of a piece of software is the way it interacts with the human being who is using it”. (2009:255).

The English closed compound term *interface* consists of ‘inter’ which means what happens between two persons and the root ‘face’.

| Second part | Root | First part | idiom |
|-------------|------|------------|-----------|
| / | face | inter | interface |

Interface is translated into Arabic واجهة تخاطب to refer to a mean that allow the user to interact with computer or a software that interact with another software. In Arabic translation, the single term *interface* has been translated into two words واجهة تخاطب wajiaht tukhatib. It is popular in the technical field to use the term "wajihat" instead of " wajihat tukhatib". The term "tukhatib" may have been added for more clarification and the interaction here is not limited to the singular user but for another software. So according to Newmark's communicative approach the translation was meant solely for the second reader. Moreover, there is no formal equivalence as the semantic equivalence exists, and this is how the technical term interface was translated.

Example 2:

In this section, we examine the various classes of generic parameters. (Booch and Brayen., 1994:247).

سنفحص في هذا القسم، عدة صفوف من المعاملات المولدة.

In example (2): the technical term *parameter* is defined linguistically as معاملات (mueamalat). Oxford Dictionary (2008:317) defines *parameter* as "something that decide or limits how something can be done". According to the Dictionary of Computer and Internet Terms the term *parameter* means "a symbol that will be replaced in a procedure, function or method by supplied values when the procedure is called. For example, if max is a function, then in max (x,y),x and y are the parameters"(2009:352).

The English technical term *parameters* are translated into Arabic as معاملات plural form of معامل mueamil. It refers to a specific figure or value carrying out the program. By matching the two technical terms *parameters* and *mueamalat*, we will find out that both of

them are in plural form. Accordingly, there is formal equivalence as well as meaning. Therefore, the adopted technique of translation is literal one. Meanwhile, the English term *parameter* has two equivalents in Arabic, namely; متغير mutaghayir and معامل mueamil that makes the Arabic audience unable to differentiate between them, since the term متغير mutaghayir is always linked with the term ‘variable’ and ‘parameter’. The verbal multiplicity for the single English term represents dilemma for the Arabic audience.

Example (3a):

Whenever we have parallel hardware and software development. (Booch and Brayen, 1994:18)

عندما يكون لدينا على التوازي، تطوير للبرمجيات وتطوير للبنية الصلبة.

Example (3b):

We solve real-world problems by employing software and hardware. (ibid,1994:91)

وتستخدم عادة أدوات الكيان الصلب والبرمجيات لبناء حلول مسائل العالم الحقيقي.

The linguistic definition for the term *Hardware* consists of two words *Hard* and *ware*. (Oxford dictionary, 2008) defines the term and the two words as follows:

| | |
|----------|--|
| hard | Adj. firm and solid; not ease to bend(p.202). |
| ware | N. ;manufactured goods (p.499) |
| hardware | machinery and electronic parts of computer system (202). |

The terminological definition for *hardware* is “the physical elements of a computer system; the computer equipment as opposed to the programs or information stored in the machine. Contrast SOFTWARE.”. (Dictionary of Computer and Internet Terms,2009:227). The computer equipment that handle software or information kept at the device”.

The term *hardware* is translated into two terms البنية الصلبة (albinyat alsulba) and الكيان الصلب (kian alsulb) و where البنية(binyat) refers to

the structure and composition of an object (al-Mu'jam al-Wasit, 2007:150). As for the word (kian), it refers to the form and nature of object or person (Al-Raed, 2007:430). We notice that both (bunya) and (kian) terms are equivalents.

By matching the two terms, we will find that the term *hardware* consists of two words 'hard' and 'ware'. The composition of the term in Arabic consists of two words as well binyat sulba and kian sulb. Accordingly, the formal equivalence and the meaning have been achieved through both terms "the translator attempts to produce the same effect on the TL readers as was produced by the original on the SL readers" (Newmarkk1988:22). There are two meanings for the term *hardware*. Therefore, the applied technique is the literal translation. The term used in the computer field refers to hardware is عتاد الحاسوب eatad alhasub.

Example (4):

The *Software* Crisis. (Booch and Brayen, 1994:3).

أزمة البرمجيات.

The term *Software* consists of two words 'soft' and 'ware', (Oxford dictionary, 2008) defines the term and the two words as follows:

| | |
|----------|--|
| soft | Adj. not hard, smooth and gentle (p.421). |
| ware | N. ;manufactured goods (p.499). |
| Software | programs used to operate a computer (p.421). |

The Dictionary of Computer and Internet Terms defines the term *software* as "programs that tell a computer what to do. The term contrasts with *hardware*, which refers to the actual physical machines that make up a computer system. The hardware by itself is of little value without the instructions that tell it what to do." (2009:244).

The term *software* is translated into Arabic البرامجيات (albarmajiaat) which means several program control the computer functions and units and operate the operations carried out by it. Such programs include the operating systems, applications and so on.

By matching the English term and the Arabic one we will observe that *software* is a singular term consists of ‘soft’ and ‘ware’ and it has been translated into Arabic in plural form البرامجيات (albarmajiaat). As we can observe, there is no formal equivalence between the two terms, yet the meaning is the same. Translating the term into plural maybe due to the fact that *software* is uncountable noun and the term refers to several programs. The term ‘barmajiat’ is an Arabic word derived from the verb ‘barmaja’, that hasn't been previously used unless to refer to the new term in computer science. Accordingly, the applied technique is the non- literal technique through modification of the term.

Example (5):

Model for typical programming task. (Booch and Brayen, 1994:35).

موديل لمهمة برمجية نموذجية.

Oxford dictionary (2008:283) defines *model* as was defined as follows: “small scale copy of something, design or kind of product.”

According to the Dictionary of Computer and Internet Terms, (2009:521) the term *model* refers to system, process or informational technological system that is used to recognize the behavior of programs and programming languages. The technical term *model* has been translated into Arabic to (mudil). Therefore, there is formal equivalence between both terms. The technique applied in this translation is the literal translation as the formal equivalence is considered one of forms for translating meaning by

meaning “The concepts of communicative and semantic translation are based on a narrowing of the ancient and old distinction between ‘free’ and ‘literal’ translation” (Newmark,1988:22)

5.Conclusion:

Translating technical term differs from translating other terms because it is constantly evolving. Technology is in race against time, in a single minute, there is new technical term emerges. That makes it difficult for the Arabic language to keep in pace with this rapid changing rhythm of developments to set a meaning for each term. Analyzing the technical terms have shown that:

Technical terms usually consist of prefixes and suffixes; this type of terms is translated by dividing prefixes and suffixes and translating them in a literal manner, or on one scale of Arabic language scales. Multiplicity of translations for the single technical term. Scientific and technical terms are complicated and hard to translate. There is not always a formal equivalent in translating the technical term; sometimes an additional translation is added for the sake of clarification. Additionally, using transliteration of technical terms can often be productive.

6. Bibliography

1. Baker, M. (1992). In Other Words: A course book on translation. London: Routledge.
2. Batiuta and Hordiienko) (2009): Pragmatic characteristics of scientific and technical texts.
https://kamts1.kpi.ua/sites/default/files/files/batiuta_hordiienko_pragmatic%20characteristics.pdf
3. Booch, G. Brayen, D. (1994). Software Engineering with ADA (3rd). California. The Benjamin/Cummings Publishing Company. Inc.
4. Cai, Y. (2019): A Brief Analysis of Peter Newmark's Communicative Translation Theory. 2nd International Conference on Arts, Linguistics, Literature and Humanities (ICALLH 2019)
5. Cabré, M.T. (2003). Theories of terminology: Their description, prescription and explanation. Terminology, 9 (2). pp. 163-199.
6. Dejica, D. (2011): 'Identifying and analyzing professional genres' peculiarities for translation purposes: a methodological approach'. In Frentiu, L. (ed.) Romanian Journal of English Studies. Timisoara: Editura Universitatii de Vest. 2011. pp. 155-166.
7. Lerat, P. (1995). Les langues specialisees, Presses Universitaires de France, Paris.
8. Munday, J. (2009). The Routledge companion to translation studies. New York: Routledge.
9. Nagy, I.K. (2014): English for Special Purposes: Specialized Languages and Problems of Terminology. ACTA UNIVERSITATIS SAPIENTIAE, PHILOLOGICA, 6, 2 (2014) 261–273. DOI: 10.1515/ausp-2015-0018.
10. Newmark, P. (1988). A Text Book of Translation. New York. Prentice Hall International.
- 12.----- (1991). About Translation. Clevedon, United Kingdom: Multilingual Matters.
13. Qizi, U.M. (2022): Scientific And Technical Terminology as A Vocabulary of The Language of Communication of Specialists. Journal of Pedagogical Inventions and Practices ISSN NO: 2770-2367.
14. Saporbayevich, A.O. and Kamlbekqizi, T.U. (2021): Difficulties in Translating Scientific and Technical Texts. International Journal of Academic Pedagogical Research (IJAR). ISSN: 2643-9123. Vol.5. Issue 4, April-2021, pp.63-66.

15. Valdeón, R.A. (2009): Translating informative and Persuasive texts. Perspectives: studies in Translatology. Vol.17, No,2. pp77-81.
16. Weissbort, D., Eysteinnsson, Astradur (2006). Translation: Theory and Practice: A Historical Reader. 1st ed. Oxford: Oxford University Press.
17. Wright, S.E. and Wright, L.D. (1993): Scientific and Technical Translation. American Translators Association Scholarly Monograph Series. Vol.(vi). John Benjamins Publishing Company. Amsterdam/Philadelphia.

-Arabic bibliography:

1. Aljabiri, (2009). 'iishkaliat tarjamat almustalaha. majalat albuḥuth waldirasat alquraniati.
2. Almisawi, K. (2013). almustalah allisani watis almafhum (ta1). alribati. dar al'amani.
3. Kubaya w miklabi. (2004). sinaeat altarjamat wa'usuliha. mawsueat altarjuman almuhtarifi. bayrut. dar alraatib aljamieia.

-Dictionaries Consulted

1. Per le Robert Dictionary. (1977): <https://pro.lerobert.com/en/french-dictionary-le-petit-robert.html>.
- 2 Dictionary of Computer and Internet Terms, Barron's Business Guide. (2008) Tenth ed. Look; https://archive.org/details/DictionaryOfComputerAndInternetTerms2009_201701/mode/2up https://archive.org/details/DictionaryOfComputerAndInternetTerms2009_201701/mode/2up
3. Al-Mu'jam al-Wasit. Majma' al-Lughah al-'Arabīyah/ (2007). (Cairo, Egypt). Dar al-Da`wah.
4. Al-Raed, Jubran Masud, Dar Al-Ilm Lilmalayeen. (2007) 3rd ed. Beirut.

