

Challenges Faced by Libyan Translation Students When Translating Scientific Texts from English into Arabic

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التحديات التي تواجه الطلبة الليبيين عند ترجمة النصوص العلمية من اللغة الإنجليزية إلى اللغة العربية

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Abstract:

Libyan undergraduate students face many challenges when translating scientific terms from English into Arabic; therefore, this study seeks to identify and analyze these difficulties. The findings showed that the majority of students relied on transference and naturalization, which frequently resulted in inaccurate and distorted renderings. Their use of literal translation was sometimes successful when standardized Arabic equivalents existed. More accurate strategies such as recognized translation and functional equivalents were applied less frequently. Some examples of semantic mistranslation and overgeneralization revealed students' limited exposure to specialized terminology and their insufficient use of scientific dictionaries. This analysis indicates that the difficulties students encounter arise not only from linguistic gaps but also from limited subject-matter knowledge and inappropriate pedagogical preparation.

Keywords: Scientific translation, Technical terminology, Translation strategies, English–Arabic translation.

ملخص الدراسة:

تهدف هذه الدراسة إلى معرفة التحديات التي يواجهها الطلاب الليبيون عند ترجمة المصطلحات العلمية من اللغة الإنجليزية إلى اللغة العربية وقد أظهرت النتائج أن معظم الطلاب اعتمدوا على النقل والتمطيط (أو التطبيع)، وهو ما أدى في كثير من الأحيان إلى ترجمات غير دقيقة أو مشوهة. كما أن استخدامهم للترجمة الحرفية كان ناجحاً في بعض الحالات فقط، أي عندما تتوافر مقابلات عربية معيارية. أما الاستراتيجيات الأكثر دقة، مثل الترجمة المعترف بها والمكافئ الوظيفي، فقد استخدمت بدرجة أقل. وكشفت بعض الأمثلة الأخطاء الدلالية والتعميم الزائد عن محدودية اطلاع الطلاب على المصطلحات المتخصصة وضعف اعتمادهم على القواميس العلمية. وتشير هذه التحليلات إلى أن الصعوبات التي يواجهها الطلاب لا تعود فقط إلى الفجوات اللغوية، بل أيضاً إلى نقص المعرفة بمجالات التخصص وضعف الإعداد التربوي المناسب.

الكلمات المفتاحية: الترجمة العلمية، المصطلحات التقنية، استراتيجيات الترجمة، الترجمة من الإنجليزية إلى العربية.

1.1 Introduction:

People of different languages can share ideas, information, and cultural values because of translation, which acts as a communicative bridge between cultures. It is essential to the transmission of scientific and technological advancements throughout societies. According to Catford (1965:vii), translation is not just for linguistic studies; it is also used in a variety of fields where precise communication is crucial, such as engineering and mathematics. The necessity for technical translation has grown dramatically as science and technology continue to improve. This kind of translation requires both linguistic correctness and mental comprehension because it deals with complex terminology in fields like engineering, law, and

medical. As a result, finding suitable methods for accurately translating technical phrases from English into Arabic is one of the ongoing difficulties for translation students.

1.2 Significance of the Study

This study attempts to make a significant contribution to the field of translation studies. Its goal is to help curriculum designers, students, and translators in identifying the conceptual and language obstacles that come up when translating scientific texts from English into Arabic. The findings of this research may also support instructors in designing translation courses that enhance students' proficiency and general performance in technical translation assignments by combining theoretical knowledge with practical training.

1.3 Objectives of the study:

This study seeks to achieve the following objectives

1-To investigate the linguistic and terminological difficulties that Libyan undergraduate translation students at the University of Tripoli face when translating scientific texts from English into Arabic .

2- To explore the fundamental linguistic, cognitive, and educational factors that underlie these translation difficulties.

3- To make practical recommendations that could improve students' ability to deal effectively with technical and scientific terms in translation contexts

1.4 Questions of the study:

1- What linguistic and technical challenges do Libyan undergraduate translation students face when translating scientific texts and terminology from English into Arabic?

2.Which translation strategies or procedures are most frequently used by the students when dealing with specialized scientific terms?

3. How can educational or methodological improvements help students overcome the main obstacles during the translation process?

1.5 Statement of the problem:

Because Arabic and English come from different language origins—Germanic and Semitic—technical translation frequently uses specialized terms and concepts that may not be present in Arabic. As a result , during translation process between Arabic and English, translators encounter difficulties in the field of technical translation , mistakes or inaccurate renderings can have serious effects , such as manufacturing problems, dissatisfied customers, and even possible safety risks. For these reasons, it's important to look at the difficulties Libyan translation students encounter when translating such materials, identify the underlying causes of these challenges, and propose practical recommendations to overcome them.

2. Clarification of Key terms

2.1 Translation

Translation refers to the process of transferring information and meaning from the source language to the target language. Catford (1995:20) , views translation as the replacement of textual material in one language (SL) by the equivalent text material in another language (TL). Nida and Taber (1969:12) , believe that translating consists of reproducing in the receptor language the closest natural equivalent of the source language message, first in terms of meaning and second in terms of style . Newmark (1981: 7) indicates that translation is a craft that attempts to replace a written message and/or statement in one language by the same message or statement in another language. Also, he views translation as a science, a skill, an art, and a matter of taste.

2.2 Technical Translation

According to Newmark (1988: 151), technical translation constitutes a branch of specialized translation, alongside institutional translation, which encompasses fields such as politics, commerce, finance, and government. What primarily differentiates technical translation from other types of translation is its reliance on specialized terminology and distinctive grammatical structures. Byrne (2006: 280) argues that technical translation is a type of specialized translation that deals with texts produced by technical experts, including manuals, user guides, medical records, prescriptions, and documents related to technological subjects.

2.3 Scientific Texts

Halliday and Martin (1993: 22) describes scientific texts as a form of discourse that generates knowledge through logical argumentation, empirical validation, and the use of specialized terminology. This definition emphasizes the structured and formal nature of scientific language. El Mustapha L. and Wafa A. (2014 : 89) note that the concept of “science” covers a wide variety of disciplines, such as physics, biology, chemistry, astronomy, mathematics, geology, biochemistry, astrophysics, ecology, and the engineering sciences.

2.4 Requirements of scientific translator

Scientific translation plays a critical role in bridging the gap between scientific communities across linguistic and cultural boundaries. Since scientific translation renders specialized terminology and complex concepts from one language to another, high levels of accuracy are required for this type of translation. According to Thivierge (2002), a scientific translator needs to be very proficient in both the source and target languages, particularly the ability to understand complex syntactic structures and convey them clearly and accurately in the target language. Thivierge also emphasizes the importance of subject-matter knowledge, noting that scientific translators must be familiar with the technical concepts and terminology of the relevant field to avoid misinterpretations or inaccuracies (Thivierge, 2002).

Similarly, Byrne (2006) points out that scientific translators require high technical expertise as well as knowledge of how scientific discourse is structured. He emphasizes the necessity of terminological accuracy, and explains that mistranslated terminology can lead to serious misunderstandings, especially in fields such as medicine, engineering, and environmental science (Byrne, 2006). Byrne also highlights the importance of research skills, stating that scientific translators must know how to consult specialized dictionaries, academic literature, and domain experts to verify terminology and concepts.

3. Procedures for Translating Scientific Terms from English into Arabic

Translating scientific terms from English into Arabic requires specialized skills and the application of appropriate strategies to ensure the accurate and meaningful transfer of scientific knowledge. Although numerous scholars have proposed different classifications of translation strategies, this study focuses specifically on the framework introduced by Newmark (1988). According to him translators may employ several procedures when dealing with specialized terminology. The procedures most relevant to technical and scientific translation are the following:

1. Transference / Naturalization – The process of borrowing the source language term directly or adapting its pronunciation and spelling into the target language.

2. Literal / Through Translation (Calque) – Rendering the source language structure word-for-word or introducing a direct equivalent into the target language while preserving grammatical form.

3. Recognized Translation – Using the officially accepted or widely established equivalent in the target language.

4. Functional Equivalent – Replacing a source term with a target-language equivalent that conveys the same function, regardless of linguistic differences.

5. Paraphrase – Explaining the meaning of a source term by rephrasing it in the target language.

6. Semantic Translation – Focusing on conveying the contextual and precise meaning of the source language term within the constraints of the target language.

4-LITERATURE REVIEW

Rendering scientific and technical texts into Arabic presents various linguistic challenges, with terminology being one of the most critical. Byrne (2006) highlights terminology as the most noticeable component of any technical text, serving as the driving force for successful translation. Similarly, Al-Hassnawi (2010) argues that translation of scientific terms requires skills, intelligence, and proficiency in both the source and target languages.

Several empirical studies have explored this issue in depth. Nouri (2011) examined the errors made by Iraqi university students when translating scientific texts from English to Arabic. The study revealed that many students relied on general-purpose dictionaries rather than specialized ones, leading to frequent inaccuracies. In a similar vein, Abu Elayyan (2019) investigated the problems encountered by Jordanian translators in technical fields such as medicine, business, and law. Findings indicated that difficulties stemmed from lexical choice, syntax, semantics, and a tendency toward literal translation due to inexperience and a lack of specialized bilingual resources.

Maqabli and Al-Shehab (2017) assisted translation students at Jadara University and found that their ability to translate technical and military texts was relatively low, with no significant performance difference between genders. Based on their findings, the researchers recommended increasing the number of translation courses in university curricula. More recently, Al-Asmadi (2022) identified key lexical and syntactic problems in translating

scientific texts, including issues with word order, agreement, passive voice, and terminological consistency. These challenges were attributed to students' reliance on literal translation and a general lack of experience and sensitivity to the nuances of scientific language.

5- METHODOLOGY

. The methodology adopted in the current study begins with a description of the data used, followed by data analysis procedures

5.1 Instrument of the Study

In this research, a translation test was used as the primary instrument to address the study's objectives. The test consisted of eleven English sentences that included various scientific terms, which participants were required to translate into Arabic. This tool was designed to explore the challenges encountered by Libyan learners when translating scientific terminology. The researcher adopted a descriptive and analytical approach in conducting the study.

5.2 Participants

The study involved 26 undergraduate translation students from the Department of Translation at the University of Tripoli.

5.3 Discussion and Analysis

Using different strategies to translate scientific terms, students deal with them in various ways. The test included twenty scientific terms, and the following section discusses how students handled each of them.

1- Ecosystems rely on photosynthesis for energy flow. The sentence includes two technical terms "ecosystems" and "photosynthesis". The analysis of these terms was presented in the following table.

The First sentence: Term one: Ecosystems

The English Term	proposed Translation	Number of Occurrences	Percentage%
Ecosystems	النظم البيئية	5	19%
	ايكوسستمز	10	38%
	البيئات	3	12%
	النظم الايكولوجية	7	27%
	No translation	1	4%
Total		26	100

Table one: Translation of the term **Ecosystems**

As illustrated in Table 1, all students—except two —provided translations for the term (ecosystems) using different strategies. The analysis identifies four renderings. The first rendering, *النظم البيئية*, appeared 5 times, representing 19% of the responses. The second (*ايكوسستمز*) occurred 10 times (38%). The third option (*البيئات*) was used 3 times (12%), while the fourth (*النظم الإيكولوجية*) appeared 7 times (27%).

The first translation appears that students relied on recognized translation, whereas the fourth indicates the use of through translation (calque), both of which produced acceptable Arabic equivalents. In contrast, the second option indicates the transference strategy, which is considered inappropriate here because it preserves the English pronunciation and fails to convey meaning in Arabic. No-equivalent responses occurred 3 times (12%), where students provided inaccurate renderings such as (*البيئات*) and one student left the term untranslated.

The First sentence: Term two : Photosynthesis

The English Term	Proposed Translation	Number of Occurrences	Percentage%
photosynthesis	البناء الضوئي	5	19%
	التركيب الضوئي	14	54%
	فوتوسنتيسيس	6	23%
	تصنيع الضوء	1	4%
Total		26	100%

Table 2: Translation of the Term photosynthesis

Table 2 shows that 25 students were able to produce Arabic equivalents for the term " photosynthesis ". They proposed three translations using three various procedures; The first rendering (*البناء الضوئي*) appeared in 19% of the occurrence, applying the procedure of recognized translation . It is successful as it uses a pure Arabic term, which is the closest equivalent for " photosynthesis". The second suggestion (*التركيب الضوئي*) accounted for 54% of the answers, using a through translation (calque). The third suggestion (*فوتوسنتيسيس*) occurred with a percentage of 23%, which reflects a transference strategy. This borrowing from the source language is inappropriate in scientific translation because it fails to convey meaning in Arabic. On the other hand, one student translated the term as (*تصنيع الضوء*) with a ratio of 4%, which is an over-literal translation of synthesis, giving a scientifically incorrect meaning.

2-The hard disc stores the operating system of the computer.

All of the students were able to translate this second sentence. It includes two technical terms "hard disk" and "computer". These terms were analyzed, as shown in the following tables.

The Second sentence: Term one : Hard disc

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Hard disc	القرص الصلب	4	
	الهارد دسك	14	15%
	الديسك الصلب	6	54%
	القرص القاسي	2	23%
Total		26	8%
Total		26	100%

Table 3: Translation of the Term hard disc

As presented in table 3, four students translated the term as (القرص الصلب), using the procedure of through translation (calque) i.e., applying pure Arabic vocabulary and 14 students rendered it into (دسك الهارد), they employed the transference procedure, which is considered inappropriate in scientific translation because it still keeps the source language pronunciation and it fails to convey any sense in Arabic. 6 students wrote (الدسك الصلب), using a couplet combining transference and literal translation, while 8% of students offered no equivalent for the term. They rendered it into (القرص القاسي). This incorrect translation resulted from a lack of knowledge of technical terminology.

The Second sentence: Term two: Computer

The English Term	Proposed Translation	Number of Occurrences	Percentage%	The Method Used
Computer	الحاسوب	10	38%	
	كمبيوتر	16	62%	
Total		26	100%	

Table 4 : Translation of the Term computer

As indicated in the table above, all students translated the term and produced two different equivalents. They employed two procedures: functional equivalence and naturalization. The first equivalent has a percentage of 38% of the responses, while the second represented 62%. The rendering (الحاسوب) is an appropriate equivalent for the English term, as it is a pure Arabic expression that accurately conveys the intended meaning. On the other hand, the alternative (الكمبيوتر) is not regarded as an accurate equivalent because it involves naturalization rather than a purely Arabic term.

3-The voltage dropped due to a failure in the transformer. This sentence includes two technical terms "voltage" and "transformer". The analysis of these terms was presented in the following tables.

The third Sentence: Term one: Voltage

The English Term	Proposed Translation	Number of Occurrences	Percentage%
voltage	الجهد الكهربائي	4	
	الفولت	16	15% 62% 23%
	الطاقة الكهربائية	6	
Total		26	100%

Table 5 : Translation of the Term voltage

In table (5), 20% of students rendered the term 'voltage' by using two different translations. 15% of the total students translated the term as (الجهد الكهربائي), which constitutes functional equivalent and demonstrates accurate understanding of the established scientific terminology in Arabic. However, 62% translate it as (الفولت), reflecting naturalization, where the English term was phonetically borrowed rather than conceptually translated. 23% of students provided no equivalent for the term "voltage" and rendered it as (الطاقة الكهربائية), which represents a semantic mistranslation, resulting from confusion between voltage and electrical energy.

The third sentence: Term two : Transformer

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Transformer	المحول الكهربائي	5	19%
	المحول	6	23%
	ترانسفورمر	12	46%
	المغير الكهربائي	3	12%
Total		26	100%

Table 6 : Translation of the Term transformer

This table indicates that 23 students provided three proposed equivalents for the term. 5 students rendered the term “transformer” into (المحول الكهربائي), using functional equivalent, however 6 students used the shorter form (المحول), which can be considered a case of reduction, as the essential meaning is preserved but the technical specification is omitted. The first suggestion is a successful one, it is the nearest equivalent to the English term. While 12 students rendered the term as (ترانسفورمر), a clear example of transference. The rest of students translated it as (المغير الكهربائي), which constitutes a semantic mistranslation resulting from interpreting the lexical meaning of transformer as "changer" rather than recognizing its specialized technical sense.

4-Ultrasound is commonly used to detect fetal development. This sentence includes one scientific term. The term was translated using different procedures: functional equivalent and naturalization. The analysis presented two proposed translations as it is shown in the following table.

The fourth sentence: The term ultrasound

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Ultrasound	الموجات فوق الصوتية	5	19%
	الالتراساوند	20	77%
	No translation	1	4 %
Total		26	100%

Table 7 : Translation of the Term ultrasound

The table indicates that 25 students provided Arabic equivalents for the term "ultrasound". They used two different procedures: functional equivalence and naturalization. The first equivalent (الموجات فوق الصوتية) appeared in 19% of the responses and represents the use of functional equivalence. This option is appropriate, as it provides the closest and most accurate equivalent to "ultrasound". The second rendering (الالتراساوند) occurred with a percentage of 77% of the responses and simply reflects a naturalization that does not convey any meaning in Arabic. Additionally, one student did not provide any translation to the term.

5-Stem cells have the ability to become different tissue types. This sentence includes one scientific term. Students used two different procedures: functional equivalent and naturalization. The following table presents these renderings.

The fifth sentence: The term stem cells

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Stem cells	الخلايا الجذعية	7	27%
	ستيم سيلز	16	61%
	الخلايا الجذرية	3	12%
Total		26	100%

Table 8 : Translation of the Term stem cells

In the translation of the term stem cells, 27% of students rendered it as (الخلايا الجذعية), which represents a functional equivalent and reflects an accurate understanding of the established biomedical terminology in Arabic. However, the majority of students (61%) produced ستيم سلز, a case of naturalization . A smaller group (12%) translated the term as الخلايا الجذرية, which constitutes a semantic mistranslation, resulting from misinterpreting the word stem as "root" instead of its specialized meaning " stem" in medical discourse.

6-The patient underwent an MRI scan. This sentence includes one scientific term. Student translated this term by using different procedures: functional equivalent and transference.

The sixth sentence : The term stem cells

The English Term	Proposed Translation	Number of Occurrences	Percentage%
MRI scan	فحص الرنين المغناطيسي	5	19%
	MRI فحص الرنين	13	50%
	فحص الرنين الكهربائي	6	23%
	No translation	2	8%
Total		26	100%

Table 9 : Translation of the Term MRI scan

This table indicates that the term " MRI scan " was rendered by 19% of students as (فحص) (بالرنين المغناطيسي), which represents a functional equivalent and reflects proper understanding of the established medical terminology in Arabic. Half of the students 50% translated it as MRI فحص ب, a case of transference, where the English abbreviation was retained without translation. Another 23% mistranslated it as فحص بالرنين الكهربائي, a semantic error resulting from confusing magnetic with electric. The rest of students 8% left the term without translation, indicating either uncertainty or overreliance on the source text.

7-The antibiotic inhibits the growth of bacteria. Two scientific terms were included in this sentence. These terms have been examined in the student's translations as the tables illustrate.

The seventh sentence: Term one: Antibiotic

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Antibiotic	المضاد الحيوي	5	
	الدواء	9	19%
	انتبيونكس	11	35%
		1	42%
	No translation	1	4%
Total		26	100%

Table 10 : Translation of the Term Antibiotic

The term above shows that only 19 % rendered the term (antibiotics) correctly as (المضاد الحيوي) , which represents a functional equivalent and reflects accurate understanding of medical terminology . while 35 % rendered it as (الدواء) , which is a semantic mistranslation caused by overgeneralization, since the term " medicine" is too broad and does not capture the specific meaning of antibiotics. The highest percentage of students (42%) rendered it as (انتبيونكس) , a case of transference , where the English word was borrowed phonetically into Arabic. However, 4 % of them left the term without translation.

Term two: Bacteria

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Bacteria	البكتيريا	23	88%
	الجراثيم	3	12%
Total		26	100%

Table 11: Translation of the Term Bacteria

The above table shows that the majority of students 88% rendered bacteria as (بكتيريا) , which is a transference and scientifically accurate equivalent . While 12% translated it as (جراثيم) , which reflects descriptive equivalent, but it is less precise in scientific contexts.

8-The vaccine stimulates the immune system to produce antibodies. This sentence includes three scientific terms and the following tables present analyses of how the students translated them.

The eighth sentence: Term one : Vaccine

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Vaccine	اللقاح / التطعيم	7	
	الدواء	9	27%
	فاكسين	8	34%
		2	31%
	No translation	2	8%
Total		26	100%

Table 12 : Translation of the Term vaccine

This table indicates that a considerable proportion of students 34% translated vaccine as (الدواء), which is a functional equivalent but scientifically inaccurate. About 31% rendered it as (فكسين), reflecting transference, while 27% used the correct scientific term (اللقاح), which represents a literal or recognized translation. Whereas the rest of students 8% left the term without translation.

The term two: Immune system

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Immune system	الجهاز المناعي	5	19%
	الجهاز الاميوني	18	69%
	No translation	3	12%
Total		26	100%

Table 13 : Translation of the Term immune system

The above table shows that the majority of students (69%) rendered the term immune system as (الجهاز الاميوني), reflecting naturalization, since the English term was phonetically adapted into Arabic rather than replaced with the established equivalent. While 19% of students translated it as (الجهاز المناعي), which is a literal or recognized translation and represents the accurate scientific equivalent. However, 12% of students left the term without translation.

The term three: antibodies

The English Term	Proposed Translation	Number of Occurrences	Percentage%
antibodies.	الاجسام المضادة	13	50%
	الاجسام المناعية	5	19%
	انتبيوديز	8	31%
Total		26	100%

Table 14 : Translation of the Term antibodies

The above table shows that half of students 50% translated antibodies correctly as (الاجسام المضادة), which represents a recognized translation. About 19% rendered it as (الاجسام المناعية), reflecting a descriptive equivalent that is close in meaning but not the standard scientific term. Meanwhile, 31% translated the word phonetically as (انتبيوديز), which falls under naturalization and indicates reliance on the source form rather than the accepted Arabic equivalent.

9-The algorithm uses a matrix to process large sets of data. This sentence contains three terms; "The algorithm", "Matrix" and "data". The following tables present analyses to student's translations.

The ninth sentence: Term one: The algorithm

The English Term	Proposed Translation	Number of Occurrences	Percentage%
The algorithm	الخوارزميات	6	23%
	اللوغارثمات	11	42%
			27%
			8%

	المعادلة	7	
	No translation	2	
Total		26	100%

Table 15 : Translation of the term algorithm

This table indicates that only 23% of students translated the scientific term algorithm correctly as (الخوارزميات), which represents a recognized translation. The largest percentage 42% rendered it incorrectly as (اللوغارثمات), reflecting a mistranslation caused by confusion due to the phonetic similarity between algorithm and the distinct mathematical concept logarithm. Meanwhile, 27% translated it as (المعادلة), which also constitutes a mistranslation resulting from contextual confusion with equation. Whereas, 8 % of students did not provide any kind of translation.

Term two: Matrix

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Matrix	المصفوفة	6	23%
	الجدول	7	27%
	ماتركس	13	50%
Total		26	100%

Table 16 : Translation of the term matrix

This table shows that when translating the term matrix, only 23% of the students rendered it correctly as (المصفوفة), which is the recognized equivalent in Arabic mathematical and scientific discourse. A proportion of 27% translated it as (جدول), which reflects a mistranslation caused by confusion with the more general concept of a table. The largest group, 50%, opted for (الماتركس), which represents naturalization, showing reliance on the source term rather than using the established Arabic equivalent.

Term three :Data

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Data	بيانات	5	19%
	معلومات	18	69%
	داتا	3	12%
Total		26	100%

Table 17 : Translation of the term data

The above table shows that only 19% of the students rendered the term "data" as "بيانات," which is the recognized and most accurate equivalent in Arabic scientific usage. The majority, 69%, translated it as (معلومات), reflecting a semantic inaccuracy since data and information are not fully interchangeable concepts. Meanwhile, 12% used (داتا), which represents

transference , indicating reliance on the source term rather than adopting the established Arabic equivalent.

10-The circuit was damaged due to a failure in the resistor. This sentence contains two scientific terms; "Circuit " and "resistor ".

The tenth sentence: Term one: Circuit

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Circuit	الدائرة الكهربائية	5	19%
	السيركت	11	42%
	الدائرة	7	27%
	المسار	3	12%
Total		26	100%

Table 18 : Translation of the Term circuit

The table above shows that when translating the term circuit, 19% of the students rendered it correctly as (الدائرة الكهربائية), which is the recognized equivalent in Arabic. The largest group, 42%, opted for (السيركت), representing naturalization . Meanwhile, 27% translated it as (الدائرة), which is incomplete and ambiguous, lacking the necessary technical specification. Finally, 12% rendered it as (المسار), which reflects a mistranslation resulting from confusion with the general meaning of path or route.

The term two: Resistor

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Resistor	المقاومة	6	23%
	الريزستور	16	62%
	الجهاز	4	15%
Total		26	100%

Table 19: Translation of the term resistor

The above table shows that the term resistor, only 23% of the students rendered it correctly as (المقاومة), which is the recognized equivalent in Arabic technical usage. The majority, 62%, opted for (الريزستور), reflecting naturalization , Meanwhile 15% translated it as (الجهاز), which represents a mistranslation caused by overgeneralization and lack of precision in identifying the technical concept.

11-Cravity affects the motion of planets. This sentence contains one scientific term " Gravity".

The eleventh sentence: The term: Gravity

The English Term	Proposed Translation	Number of Occurrences	Percentage%
Gravity	الجاذبية	5	19%
	الجرافتي	13	50%
	النقل	6	23%
	قوة السحب	2	8%
Total		26	100%

Table 20 : Translation of the Term Gravity

The above table shows that when translating the term gravity, 19% of the students rendered it correctly as (الجاذبية), which is the recognized scientific equivalent in Arabic. Half of the students (50%) used (الجرافتي), reflecting transference/naturalization of the English term. A proportion of 23% translated it as (النقل), which shows a partial equivalence but does not fully convey the scientific meaning. Finally, 8% rendered it as (قوة السحب), which represents a mistranslation caused by confusion with related physical concepts.

Conclusion

This study examined how Libyan undergraduate students translated English scientific terms into Arabic and the strategies they employed. The results showed that students often relied on transference and naturalization, which led to inaccurate renderings. Literal translation worked well only when clear Arabic equivalents were available. More precise strategies, like recognized translation and functional equivalents, were rarely used. Mistakes in meaning and awkward paraphrases referred to gaps in students' scientific knowledge and limited use of specialized resources.

These findings suggest that the main obstacles to accurate scientific translation are both linguistic and educational. They arise from a lack of training in terminology and limited exposure to real scientific texts. To overcome these obstacles, translation curricula in Libyan universities should place greater emphasis on technical and scientific translation. Translation programs in Libyan universities should also encourage the use of specialized dictionaries and corpora, and collaboration with experts in fields such as medicine, engineering, and technology.

By addressing these issues, Libyan translation programs can prepare future translators with the competence required to meet the growing demand for high-quality scientific translation.

7.Recommendations

Based on the conclusions above, here are the suggested recommendations:

1. Universities ought to incorporate translation workshops and practice-based assignments using real scientific texts to improve students' accuracy and confidence.
2. Instructors should highlight the use of appropriate translation methods and guide students in applying them correctly.
3. Students should consult experts in fields such as medicine, engineering, and technology to help them understand concepts and enhance terminological precision.

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