Challenges and Solutions of Translating English Scientific Metaphors into Arabic from Students' Perspective

تحديات ترجمة التعبيرات المجازية العلمية الإنجليزية إلى العربية من وجهة نظر الطلبة والحلول المقترحة

Abdulhameed A. Ashuja'a[1]
Sumaiah M. Almatari[2]
Ali S. Alward[3]

(1)Associate Prof. of Applied Linguistics
Sana'a University, Yemen
ashujaa2@gmail.com
(2)MA in Translation
University of Science and Technology, Yemen
sumaiah.almatari@gmail.com
(3)Associate Prof. of Applied Linguistics
University of Science and Technology, Yemen
a.alward@ust.edu

Abstract

This study aimed to explore the challenges and solutions of translating English scientific metaphors into Arabic from senior translation students' perspective. To achieve this objective, the descriptive survey method was adopted. A questionnaire, consisting of 18 statements focusing on possible challenges and solutions, was developed for collecting data from a sample of 91 senior translation students randomly selected from the largest public university (Sana'a) and two private universities in Sana'a, Yemen. Data was analyzed with the help of the SPSS software. Major findings revealed that the challenges were related to linguistic variations between English and Arabic in terms of lexical content, syntax and ideology. Other challenges were related to students' knowledge and skills such as the lack of experience and the unfamiliarity with the English culture. With regard to solutions, the findings also revealed that more attention should be paid to translation practice with a focus on metaphoric expressions in both English and Arabic. Focus should also be on translation methods and strategies used to translate metaphoric expressions. The study recommended that translation programs and

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departments should consider the introduction of an additional course on contrastive science discourse that would enhance students' ability to deal with metaphors in English and Arabic scientific texts.

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د/عبدالحميد عبدالواحد الشجاع[1]

أ/سمية محمد المطري[2]

د/علي صالح الورد[3]

(1)أستاذ اللغويات التطبيقية المشارك

كلية اللغات- جامعة صنعاء – اليمن

(2)ماجستير ترجمة

جامعة العلوم والتكنولوجيا – اليمن

(3)أستاذ اللغويات التطبيقية المشارك

جامعة العلوم والتكنولوجيا – اليمن

الملخص:

هدفت هذه الدراسة إلى التعرف على التحديات التي ترافق ترجمة التعبيرات المجازية العلمية الإنجليزية إلى العربية من وجهة نظر طلبة المستوى الرابع قسم الترجمة في بعض الجامعات اليمنية والحلول المقترحة. ولتحقيق ذلك استخدم الباحثون المنهج الوصفي المسحي، وتكونت العينة من (91) طالبًا وطالبة تم اختيارهم عشوائيا من أكبر الجامعات الحكومية (صنعاء) ومن جامعتين أهليتين (العلوم الحديثة والعلوم والتكنولوجيا). واستخدمت الاستبانة التي اشتملت على (18) فقرة لجمع البيانات حول التحديات والحلول. وتم تحليل البيانات باستخدام برنامج المعالجات الإحصائية (SPSS). وأظهرت النتائج بأن أهم التحديات تتعلق بالتباين اللغوي بين الإنجليزية والعربية من حيث المحتوى اللفظي والتراكيب النحوية والفكر. وارتبطت التحديات الأخرى بمعارف الطلبة ومهاراتهم؛ مثل قلة الخبرة وعدم الإلمام بالثقافة الإنجليزية. أما الحلول فقد أشارت عينة الدراسة إلى أهمية التدريب والممارسة لترجمة التعبيرات المجازية بين العربية والإنجليزية مع التركيز على استراتيجيات وأساليب الترجمة المستخدمة في هذا المجال. وأوصت الدراسة بضرورة استحداث مقررات إضافية في أقسام وبرامج الترجمة تركز على الدراسات التقابلية للنصوص العلمية بين اللغتين والذي من شأنه تعزيز قدرات الطلبة للتعامل مع التعبيرات المجازية في سياقات علمية.

الكلمات المفتاحية: الترجمة، التعبيرات المجازية العلمية، التحديات، الحلول.

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Introduction

The translation of metaphoric expressions between languages of varying systems and cultures may constitute a challenge to translators, especially novice ones. Challenges of translating metaphors seem to stem from the nature of a metaphor itself, as each metaphor implies the speaker's meaning and the word or expression meaning (Bell, 1991; Mohammed, 2011; Ortony, 1993; Tay, 2014). According to Jalali (2016), furthermore, the metaphoric image in the source language does not always have the same effect in the target language; not only that, it may also seem odd to target language audience. That is why great care should be taken by translators when rendering metaphoric expressions from one language to another.

It has been a wide belief over the past decades that the use of metaphor was restricted to the domain of literary genres, being a rhetorical device that has nothing to do with non-literary texts (Alshunnag, 2016; Lakoff & Johnsen, 1980 & 2003). This has led researchers of translation studies to restrict their investigation of the use and translation of metaphors to literary texts only between languages at the expense of non-literary texts (Fung, 1994; Jalali, 2016; Khairuddin, 2015; Krunger, 1993; Omer, 2012).

Apparently, translation research studies seem to have overlooked the translation of metaphoric expressions in non-literary texts, including science-related texts (Al-Harrasi, 2001; BoaseBeier, 2006; Massey, 2017; Merakchi, 2017). The fact is that, however, metaphors are freely used in scientific discourse (Bleakley, 2017). The translation of such metaphors is even more challenging than in literary genres, as science discourse contains new and innovative scientific and technological terms and expressions. In this regard, the translation of metaphors in science is different and becomes more challenging as the purpose is not to reproduce the metaphoric expressions from one language to another, but to present scientific content to new audience (Byrne 2006). This would require translators to exercise great care while attempting to transfer science metaphoric expressions between language pairs.

With regard to English-Arabic translation of metaphors, it seems the process is beset with difficulties and challenges, as both languages belong to different language families. This entails the presence of linguistic and cultural variations between the two languages. In addition, metaphors in both languages are classified differently in that one metaphoric expression which is widely used in English may not be so in Arabic, and the converse is true. Taking this into consideration, the present study aims at exploring challenges of translating scientific metaphors from English into

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Arabic as perceived by senior translation students at public and private universities in Sana'a, Yemen.

Review of Literature

According to Newmark (1981), translation can be defined as a "craft consisting of the attempt to replace a written message and/or statement in one language by the same message and/or statement in another language" (p. 7). Though this definition has been viewed as less comprehensive by Shuttleworth (2017), the word 'craft' seems to imply the challenging job that the translator has to do, particularly when dealing with scientific metaphoric expressions between language pairs of different cultures and origins.

Due to the additional challenges linked to the translation of metaphors, a number of studies have been done on translating metaphors in literary texts (Al-Harrasi, 2001; Massey, 2017), where the focs was on exploring cross-cultural issues between different languages, but at the same time ignoring the use of metaphors in scientific discourse (Massey, 2017; Merakchi, 2017). This might be attributed to the old belief that science language uses hard facts and has nothing to do with metaphoric expressions (Finatto, 2010). This perspective of metaphors was reflected in the number of studies that have been conducted on literary texts (Alvarez, 1993; Dagut, 1976; Fung, 1995; Kruger,1993; Jay-Rayon, 2007; Mason, 1982; Maalej, 2008; Omar, 2012), to just mention a few of them.

In their breakthrough ideas concerning metaphors and in a reflection of cognitive linguistics, Lakoff and Johnsen (1980) developed a new cognitive framework for considering metaphoric expressions, where they demonstrate that metaphors are not only found in the language of literature but also in people's ideas and acts when dealing with other. Lakoff and Johnsen (2003) have also proposed a classification of metaphors as follows: structural, ontological, and orientational metaphors.

In comparison to studies conducted on literary texts, research on metaphoric expressions used in science discourse seems to be rare. Massey (2017) emphasized that most of the studies that handle translating metaphors were not in science. Al-Harrasi (2001) also emphasized that there is a lack of research conducted on the translation of metaphors in cognitive scientific fields. However, there are studies such as Hodgkin (1985) and Vu (2015) which deal with metaphors in scientific texts but they tend to deal with these metaphors within the same language (i.e. they do not investigate the translation of metaphors between two languages). There are also few

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cross-cultural and cross-linguistic studies investigating metaphor in popular science (Merakchi, 2017), but they are not related to Arabic-English translation studies. For example, Abdullah & Shuttleworth (2013) investigated metaphoric expressions in science discourse between English and Malay. More specifically, they analyzed metaphors in an engineering book translated from English into Malay.

On the other hand, six corpus-based studies were carried out to investigate the translation of metaphors from English into Arabic in various domains: Al-Jumah (2007) in the business domain; Alshunnag (2016) in biomedical texts; Nader (2013) in the economic domain; Nasser (2014) in science; Nazzal (2017); and Merakchi (2017) in the domain of astronomy and astrophysics. All of these studies used Lakoff and Johnsen's (1980; 2003) taxonomy of cognitive metaphors.

In spite of the relevance of the above studies to the translation of metaphoric expressions in non-literary domains and which were content- and corpus-based studies, none of them considered the investigation of the challenges of translating metaphors in science from the perspective of senior translation students. They neither investigated challenges faced by translators when translating metaphors.

Therefore, this research on the translation of metaphoric expressions in scientific discourse appears to be a new area that is worth investigation, and which would fill a gap in the literature.

More specifically, this study is an attempt to explore senior translation students' perspective regarding the challenges of translating metaphoric expressions in science discourse from English into Arabic, as well as to identify possible solutions that would help in overcoming the challenges.

Method
Participants

The study sample consisted of (91) senior translation students randomly selected from one major public university and two private universities. (See table 1) All the universities are located in the city of Sana'a.

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Table 1

Distribution of the participants across three universities

University	Sample
Sana'a University	48
University of Science and Technology	26
University of Modern Sciences	17
Total	**91**

Data Collection and Procedures

In order to explore the challenges and solutions in translating English scientific metaphors into Arabic, a questionnaire was used to collect the data. The questionnaire was given to a jury of nine validators to check the clarity, the wording of statements and the relevance of the content to the issue under investigation. The first section of the questionnaire addressed the challenges that senior translation students face in translating English scientific metaphors, whereas the second section focused on suggested solutions for overcoming these challenges. The final version of the questionnaire (see Appendix 1) was distributed to the study participants (See Appendix 1).

Data Analysis

After the data was collected, the participants' responses were coded entered into the SPSS program for processing and analysis. The results were presented in form of tables in which the means and the standard deviation of the participants' responses to each statement in the questionnaire were provided.

Results and Discussions

The results and discussion of data analysis will be presented according to the two sections of the questionnaire: the challenges and the solutions.

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Section One: Challenges of translating scientific metaphors

Challenges of translating English scientific metaphors were represented by 12 items in the questionnaire. The results of the descriptive statistics of the statements are presented in Table (2). As shown in Table (2), the overall mean of the variable is (4.072) and the standard deviation is (0.528) with the degree 81.4% (Agree), which indicates the challenging nature of metaphor translation in science texts. Each challenge is discussed separately starting with the most challenging aspect to the least challenging one.

Table 2

Descriptive statistics of challenges of translating English scientific metaphors

Rank	Statement No.	Items	Mean	Std. Deviation	Percentage	Verbal Result
1	2	Every language has its own lexical content, syntax and ideology.	4.333	.8073	86.7%	Strongly Agree
2	10	Students are familiar with using metaphors in scientific texts.	4.256	.9187	85.1%	Strongly Agree
3	1	Metaphors are culture-based forms.	4.211	.8413	84.2%	Strongly Agree
4	6	Metaphors have indirect meaning.	4.133	.9853	82.7%	Agree
5	11	Students receive enough exposure to metaphors particularly in relation to	4.122	.8719	82.4%	Agree

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Rank	Statement No.	Items	Mean	Std. Deviation	Percentage	Verbal Result
		scientific texts.				
6	9	Students have enough experience in translating scientific texts.	4.078	.9856	81.6%	Agree
7	4	English classification of metaphors differs from Arabic.	4.067	.8453	81.3%	Agree
8	7	There is a gap between the language system of English and Arabic.	4.000	.8741	80.0%	Agree
9	12	There is a lack of specialized technical dictionaries.	3.989	1.0222	79.8%	Agree
10	3	There are English metaphors that follow the regular structure of sentences.	3.956	1.1408	79.1%	Agree
11	5	It is difficult to find appropriate equivalent of English scientific metaphors in Arabic.	3.911	1.1282	78.2%	Agree

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Rank	Statement No.	Items	Mean	Std. Deviation	Percentage	Verbal Result
12	8	Students are familiar with English culture.	3.811	1.0482	76.2%	Agree
Challenges of translating scientific metaphors			**4.072**	**.528**	**81.4%**	**Agree**

Challenge (1): "Every language has its own lexical content, syntax and ideology."

The difference between the lexical content, syntax and ideology between the two languages was the most challenging problem for senior students in the translation of scientific metaphors. As Khajeh and Khanmohammad (2011) stated, interaction between translation and ideology is very essential as ideology can shape the translators' actions and can influence his/her strategies in providing the final product. Similarly, selecting lexical and grammatical choices from a wide range of choices is also a challenging task for translators (Mansourabadi & Karimnia, 2013). In the case of the current study, 86.7% of the participants agreed that lexical, syntactic and ideological differences between English and Arabic are considered the main challenges that could lead to mistranslations of metaphoric expressions in scientific discourse.

Challenge (2): "Students are familiar with using metaphors in scientific texts."

Using metaphors in scientific texts is new for most of the participants where (85.1%) disagreed with this statement. They considered the topic to be one of the main challenges that they faced in translating scientific metaphors in their translation courses. The findings of the study were supported by Alshunnag (2016) who indicated that translating scientific metaphors is a challenging task because the image conveyed by the expression is a new metaphor which is not familiar to translators. Research on metaphor indicates that lack of knowledge of metaphor leads learners to get off on a wrong foot (Khairuddin, 2015; Shirazi & Talebinezhad, 2013).

Challenge (3): "Metaphors are culture-based forms."

The third challenge for the participants was that metaphors are culture-based forms. Translating metaphor from one language to another is a challenging task for translators due to linguistic and cultural variations between the source and the target

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language (Kövecses, 2004; Merakchi, 2017). The findings of the current study indicate that 84.2% of the participants agreed with this statement. As students of translation, the participants are aware that each language has its own metaphors which are related to its culture. Since the culture of each language is different, metaphors differ accordingly. Thus, the metaphors being rooted in the culture is considered to be another challenging problem for senior translation students.

Challenge (4): "Metaphors have indirect meaning."

This statement was seen as one of the main challenges that participants consider. Therefore, almost 83% of the participants believe that the challenges lie in the fact that metaphors have two meanings one of which is the speaker' or writer's intended meaning which is invisible. Searle (1979) argued that metaphor is like indirect speech in expressing a distinctive speaker's meaning. As Al-Hasnawi (2007) put it, metaphors are generally linked to indirect speech which in turn makes translating metaphoric expressions a more complex process.

Challenge (5): "Lack of exposure to metaphors in scientific texts."

Students do not receive enough exposure to metaphors particularly in relation to scientific texts. The findings revealed that 82.4% of the participants agreed that one of the reasons of their difficulty in translating scientific metaphors was that they had not been exposed to metaphors, in general, and scientific metaphors, in particular. Equipping learners with necessary background knowledge on metaphors can contribute positively to the development of such skills and thus motivate accurate comprehension (Filipczuk-Rosińska, 2016).

Challenge (6): "Lack of experience in translating scientific texts."

The lack of enough experience in translating scientific texts is considered to be another challenge from the participants' point of view. The participants' responses indicate that 81.6% thought that they have insufficient experience in translating scientific texts which made them agree with this statement. The findings of previous studies confirm the findings of this study. According to Byrne (2006), adequate technical translation requires not only specialist knowledge, but also adequate translational skills.

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Challenge (7): "English classification of metaphors differs from Arabic."

The difference of the classification of metaphors between English and Arabic was also another challenge perceived by the participants in translating English scientific metaphors. Therefore, 81.3% of the participants agreed with this statement. The classification of metaphors in English differs from Arabic which made a metaphor in English become a non-metaphorical expression in Arabic. Those who disagreed with this statement thought that English and Arabic have the same or similar classification of metaphors. As Jalali (2016) confirmed, the same metaphoric image might not necessarily evoke the same meaning in another language.

Challenge (8): "A gap between the language systems of English and Arabic."

The gap between the systems of the two languages in general can be another challenge of translating scientific metaphors. In the case of the present study, 80.0% of the participants believe that English and Arabic do not belong to the same language family and their systems are almost different which makes the process of translation in general and translating figures of speech between them seems to more difficult. Alkhatib and Shaalan (2018) pointed out that Arabic has different linguistic perspectives than other languages, which creates real challenges for translators.

Challenge (9): "Lack of specialized technical dictionaries."

The lack of specialized dictionaries sometimes makes translators take the wrong decision, which certainly, affect the accuracy of the translated text. Atkins (2002) commented that there would not be an ideal dictionary tailored or at least tailorable to one particular type of user. With regard to the participants of the present study, 79.8% of them agreed that there is a lack of specialized dictionaries in the scientific genre. Translators are sometimes unsure of the meaning of a word and may not know how to express a concept. In this context, the dictionary becomes an important tool to solve specific problems for students of translation.

Challenge (10):
"There are English metaphors which follow the regular structure of sentences."

The complexity of the metaphorical expressions is one of the main challenges that translators encounter in decoding the meaning of the components of the

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metaphor. In relation to the participants' answers, 79.1% agreed that there are English metaphors that do not follow the regular structure of sentences. The irregular structure of some metaphors in English makes them complicated and difficult to be understood. Participants may not be familiar with this idea or they thought that the difference in the structure is not difficult to be understood. Some participants disagreed with this statement because, in reality, there are metaphors that follow the regular structures.

Challenge (11): "Difficulty of finding appropriate equivalent of English scientific metaphors in Arabic."

(78.2%) of the participants agreed that it is difficult to find equivalents for English scientific metaphors. Finding Arabic appropriate equivalents for English scientific metaphors may be difficult which can be attributed to the different linguistic systems of Arabic and English. In addition, some words, included in metaphors, may not have equivalents in the target language; therefore, a translator may resort to using a different structure to compensate for the equivalents. If translators do not keep the structure of the source and target language together with the semantic roles in both languages, these roles are likely to be lost during the process of translation (Hamidi, 2009). Furthermore, rendering the source metaphorical expression should not cause any cultural conflict in the target language (Nasser, 2014).

Challenge (12): "Students are familiar with English culture."

It is a well-known fact that translation is not basically a matter of changing one text to another or transmitting words from one language to another. Rather, it entails the act of transferring one entire culture to another (Safarnejad, Ho-Abdullah & Awal, 2014). Variations between the source language and the target language can pose challenges in the process of translation. The findings revealed that 76.2% of the participants' responses believe that they are not exposed adequately to English culture. This is true as their exposure to English is only during their four years of study at college. The familiarity with any culture needs exposure to its society, living with people and extensive study of language.

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Section Two: Solutions for overcoming challenges and using appropriate strategies:

This section is devoted to the discussion of the possible solutions to overcome challenges. The results of the descriptive statistics of the statements of this section are presented in Table (3). The overall mean of the variable is (4.32) and the standard deviation is (0.548) with the degree 86.4% (Strongly Agree). Each suggested solution is discussed separately.

Table 3

Descriptive Statistics of Section Three Statements

Rank	Statement No.	Items	Mean	Std. Deviation	Percentage	Verbal Result
1	3	There should be more focus on translation practice.	4.500	.6746	90.0%	Strongly Agree
2	1	Students should widen their familiarity with English culture.	4.433	.7503	88.7%	Strongly Agree
3	5	Students should be aware of the translation criteria: when, where, why and to	4.278	.8615	85.6%	Strongly Agree

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Rank	Statement No.	Items	Mean	Std. Deviation	Percentage	Verbal Result
		whom they translate.				
4	2	Using online dictionaries and internet resources is helpful.	4.244	.9399	84.9%	Strongly Agree
5	6	Making specialized dictionaries available for students is a must.	4.244	.8908	84.9%	Strongly Agree
6	4	Students should be exposed to metaphors in English and Arabic.	4.222	.8316	84.4%	Strongly Agree
Solutions for overcoming challenges and using appropriate strategies			**4.32**	**.548**	**86.4%**	**Strongly Agree**

Solution 1:"There should be more focus on translation practice."

90.0% of the participants agreed with this suggestion. Perhaps, they do not receive enough practice during the courses of translation; or the syllabus does not focus on practical aspects as much as it is required. Participants put this solution to be the first which reflects its importance to them. Focusing on the practical aspects during the courses of translation means practice on using specialized dictionaries and

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exposure to a variety of text types, which makes senior translation students acquire more technical vocabulary and become able to produce more accurate and adequate translations.

Solution 2:"Students should widen their familiarity with English culture."

88.7% of the participants agreed with this possible solution. This would require students to read more about the English culture, to study and analyze translated texts between Arabic and English science discourse. This would develop their knowledge and understanding of the meaning of English metaphors and facilitate their search for equivalents in Arabic when translating metaphors used in science.

Solution 3:"Students should be aware of the translation criteria: when, where, why and to whom they translate."

85.6% of the participants agreed with this statement. As discussed before, the time available for translation, the purpose of translation and the audience are the factors that affect the choice of the strategy and the translation product. Thus, familiarity with such criteria can help the translator a lot in choosing appropriate strategy, managing his/her time and producing an adequate translation. Those who disagreed with this statement seemed not to understand the criteria.

Solution 4: "Using online dictionaries and internet resources is helpful."

84.9% of the participants agreed with this solution. This means that the great advantage of internet cannot be ignored by any translator, especially senior translation students. Others who disagreed with this solution might not be familiar with online dictionaries; or they may not be able to use them in the right way.

Solution 5: "Helping students to access specialized and technical dictionaries."

84.9% of the participants agreed with this solution. The agreement with this solution can emphasize two things: i) the disagreement to the statement of the previous section concerning specialized dictionaries and ii) the importance of having specialized dictionaries in the translation of scientific metaphors. Participants believed that there are specialized dictionaries but they are not available for them, which explains the high percentage of agreement with this statement. No one can deny the importance of dictionaries in general and specialized dictionaries in

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particular, especially in the case of translating metaphors by senior translation students.

Solution 6: "Students should be exposed to metaphors in scientific texts in English and Arabic."

84.4% of the participants agreed with this solution. This indicates that the participants might not have received enough exposure to metaphors in both languages, which makes the idea of scientific metaphors new to them. Interpreting the meaning of the English metaphor is more difficult and finding an Arabic equivalent for that metaphor is difficult, too. Those who disagreed with this solution might think that there is no use in exposing to metaphors and that exposure may not be useful in translating scientific metaphors.

Conclusion

This study attempted to explore the challenges and solutions from senior translators' perspective. The involvement of the student-translators in this study aimed at identifying the real challenges that they encounter in the field of translating English scientific metaphors into Arabic. The findings revealed that the challenges are related to linguistic variations between the source language and the target language in terms of lexical content, syntax and ideology and the difference in the language systems. Other challenges were related to students' training and background such as lack of experience in translating scientific texts, unfamiliarity with the English culture and the difficulty of finding appropriate Arabic metaphors for the English ones, which is probably due to the lack of specialized technical dictionaries, the new idea of using metaphors in scientific texts or that metaphors are related to culture and have indirect or hidden meanings.

The other aspect of this study was to explore solutions as given by the senior translators involved in this study. The primary solutions, therefore, were focusing on translation practice and widening of students' knowledge of the English culture. This would enable them to deal with more scientific texts, learn more vocabulary and improve their translation skills. The other main solutions were the importance of the awareness with the translation criteria that enable the students to manage the time available for doing the translation and to choose appropriate strategies and equivalents, and the importance of using online dictionaries and internet resources. Other solutions were the importance of making specialized dictionaries available for all students and the importance of the exposure to metaphors in English and Arabic

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that increase the students' awareness of the English and Arabic metaphors and enable them to find the appropriate metaphorical expressions.

On the basis of what has been presented above, it seems necessary to take certain steps to improve students' skills in translating metaphors in scientific texts at the college level between English and Arabic in Yemen and elsewhere. These steps might include: i) inclusion of theoretical topics and practical exercises on the properties of metaphors of English and Arabic in the courses of translation; ii) focus on strategies of translating metaphors with a variety of examples; iii) drawing students' attention to the differences between metaphors in English and Arabic; iv) more focus on practice than theory; and v) introduction of a course which focuses on the differences and similarities between English and Arabic with a focus on translation of metaphors used in non-literary genres.

Further studies can be conducted to investigate the similarities and differences between scientific metaphors in English and Arabic in order to support the teaching of translation for university students in Yemen and elsewhere.

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Appendix (1): The Final Version of the Questionnaire

Section One: Challenges of translating scientific metaphors					
No.	Statement	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1	Metaphors are culture-based forms.					
2	Every language has its own lexical content, syntax and ideology.					
3	There are English metaphors that do not follow the regular structure of sentences.					
4	English classification of metaphors differs from Arabic.					
5	It is difficult to find appropriate equivalent of English scientific metaphors in Arabic.					
6	Metaphors have indirect meaning.					
7	There is a gap between the language system of English and Arabic.					
8	Students are familiar with English culture.					

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No.	Statement	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
9	Students have enough experience in translating scientific texts.					
10	Students are familiar with using metaphors in scientific texts.					
11	Students receive enough exposure to metaphors particularly in relation to scientific texts.					
12	There is a lack of specialized technical dictionaries.					
Section Two: Suggestions for overcoming challenges						
No.	**Statement**	**Strongly agree**	**Agree**	**Undecided**	**Disagree**	**Strongly disagree**
1	Students should widen their familiarity with English culture.					
2	Using online dictionaries and internet resources is helpful.					
3	There should be more focus on translation practice.					
4	Students should be exposed to metaphors in					

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	scientific texts in English and Arabic.					
5	Students should be aware of the translation criteria: when, where, why and to whom they translate.					
6	Helping students to access specialized and technical dictionaries.					