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**Using Wordfast Anywhere Computer-assisted
Translation (CAT) Tool to Develop English Majors'
EFL Translation Skills**

BY

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Abstract:

This study attempted to investigate the effect of using Wordfast Anywhere computer-assisted translation (CAT) tool on developing the EFL translation skills of English majors whose inefficiency in such skills constituted the rationale of the present study. Participants ($N = 48$) were chosen at random from second year students enrolled in the English Department at the Faculty of Education, University of Sadat City, during the first semester of the 2019-2020 academic year. They were divided into two groups: an experimental group ($n = 24$) and a control one ($n = 24$). An EFL translation skills test was developed and administered before and after experimentation that lasted for seven weeks. The experimental group students were taught using Wordfast Anywhere while the control group students received regular instruction. Results revealed that students of the experimental group achieved significant improvement in EFL translation skills. Thus, using Wordfast Anywhere proved to have a positive effect on developing English majors' EFL translation skills.

Keywords: Wordfast Anywhere, computer-assisted translation (CAT), English majors, EFL translation skills.

استخدام أداة الترجمة بمساعدة الحاسوب Wordfast Anywhere لتنمية

مهارات الترجمة باللغة الإنجليزية كلغة أجنبية لدى طلاب قسم اللغة

الإنجليزية

إعداد

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مستخلص:

هدفت الدراسة الحالية إلى اختبار أثر استخدام أداة الترجمة بمساعدة الحاسوب Wordfast Anywhere على تنمية مهارات الترجمة باللغة الإنجليزية كلغة أجنبية لدى طلاب قسم اللغة الإنجليزية. وتكونت عينة الدراسة من ٤٨ طالبا من طلاب الفرقة الثانية بقسم اللغة الإنجليزية بكلية التربية، جامعة مدينة السادات، خلال الفصل الدراسي الأول من العام الجامعي ٢٠١٩-٢٠٢٠، حيث تم تقسيمهم إلى مجموعتين: مجموعة تجريبية (ن = ٢٤) ومجموعة ضابطة (ن = ٢٤). ولقد قامت الباحثة باستخدام اختبار مهارات الترجمة باللغة الإنجليزية كلغة أجنبية كاختبار قبلي-بعدي. ولقد استغرق التدخل التجريبي سبعة أسابيع، حيث تم التدريس للمجموعة التجريبية باستخدام أداة الترجمة بمساعدة الحاسوب Wordfast Anywhere أما المجموعة الضابطة فتم التدريس لها بالطريقة المعتادة. ولقد أوضحت نتائج الدراسة أن طلاب المجموعة التجريبية أظهروا تقدماً ذا دلالة إحصائية في مهارات الترجمة باللغة الإنجليزية كلغة أجنبية. ولقد خلصت الباحثة من الدراسة الحالية إلى أن استخدام أداة الترجمة بمساعدة الحاسوب Wordfast Anywhere له أثر دال إحصائياً على تنمية مهارات الترجمة باللغة الإنجليزية كلغة أجنبية لدى طلاب قسم اللغة الإنجليزية.

الكلمات المفتاحية: الترجمة بمساعدة الحاسوب، Wordfast Anywhere، مهارات الترجمة باللغة الإنجليزية كلغة أجنبية، طلاب قسم اللغة الإنجليزية.

1. Introduction:

In response to the forces of accelerated economic globalization, elevated cross-cultural communication and continued social informationization in the twenty-first century, there has been an increasing demand for professional translation talents and a growing interest in the study of translation pedagogy (Gharafi, 2020; Ke & Jiaping, 2017; Li, 2018; Liu & Yu, 2019; Maruenda-Bataller & Santaemilia-Ruiz, 2016; Sun, 2020; Tao, Wen & Wang, 2020; Zhang, 2019; Zhen & Jianbo, 2019) which has long been neglected. Though much has been written about the translation product and process, there is very little about its classroom dynamics (Davies, 2004). Such negligence has seriously restricted the development of English majors' translation performance. Consequently, how to effectively improve those students' translation skills and how to reform the traditional translation curriculum have become an urgent issue in tertiary education (Qiang & Chen, 2020; Wang, 2019; Zhang, 2019).

Due to the rapid breakthroughs in computer science and other related fields such as computational linguistics, comparable corpora and terminology extraction, translation technology has become a convention in translation practice, a crucial part of translation research and a new paradigm of translation instruction. It is increasingly employed by translation companies as an essential tool to do their business with high efficiency and productivity, by international organizations as a foundation for their global language solutions, by professional translators as a key element of their personal workflows, and by occasional users as a valuable tool of multilingual information mining. Therefore, the emergence of translation technology has completely disseminated translation and dramatically affected the way of processing, studying and teaching it (Bilić, 2020, Candel-Mora, 2016; Malenova, 2019; Sin-wai, 2015; Suau-Jiménez & Ramírez-Polo, 2016).

Translation technology incorporates a variety of domains. One of them is computer-assisted translation (also called computer-aided translation or CAT) which is "designed to facilitate the work of a human translator whose task is to translate a document from one language (the source language-SL) to another (the target language-TL)". The computerized system's task is to provide suggestions for translation of

each sentence which are reviewed by the human translator and are utilized to produce the final translation (Jaworski, 2013, p. 263). To achieve such purpose, CAT tools contain a range of interactive features including translation memories, terminology management, alignment and machine translation (Melby & Wright, 2015). Their preliminary providers were Trados (Translators' Workbench, still developed), IBM (the Translation Manager, no longer available) and the EuroLang Optimizer (also no longer marketed). In the 1990s and 2000s, many more appeared such as Atril (Déjà vu), SDL (the SDLX system), MultiCorpora (MultiTrans), Champollion (Wordfast) and Kilgray Translation Technologies (memoQ system) (Jaworski, 2013).

Recently, most existing CAT tools have been regularly upgraded and given added capabilities (Jaworski, 2013). Despite such progress in its development as well as its use in the translation industry, CAT technology has not received the due attention in the traditional classrooms of translation (Erwen & Wenming, 2013). Many scholars recommend it be incorporated into the translation instruction to bridge the gap between the classroom and the emerging industry requirements. Wordfast Anywhere, the free web-based Wordfast edition, is especially favored for its high usability (Sin-wai, 2017). Thus, it could prove beneficial to enhance EFL translation skills of English majors.

1. 1 Context of the Problem:

Translation courses constitute a fundamental component in most English undergraduate programs in Egyptian Faculties of Arts, Languages and Education. English majors at the Faculty of Education, University of Sadat City, are required to study a translation course once a year for four years. It has been noticed that they lack the skills needed to successfully translate assigned documents from English to Arabic and vice versa. Their performance in such dimensions like comprehension of the original message and TL culture, use of appropriate vocabulary, grammar and style, employment of translation shifts and creative invention of equivalents is weak. This inefficiency in EFL translation skills of Egyptian English majors may be due to (a) inadequacy in linguistic competence, cross-cultural awareness and general knowledge, (b) lack of effective practice at their university translation classes, (c) giving more emphasis on teaching the translation theories and ignoring

the translation process and the recent requirements of the industry and (d) adhering to the traditional methods in teaching translation (Abdel El-Hallim & Abdalla, 2019; Roshdy, 2020; Shehata, 2019). To document the problem, a pilot study was conducted which consisted of an EFL translation skills test administered to 30 second year English majors from the Faculty of Education, University of Sadat City, during the second semester of the 2018-2019 academic year. Results revealed students' lack of the required EFL translation skills.

1. 2 Statement of the Problem:

The problem of the present study was identified in second year English majors' obvious weakness in EFL translation skills. Thus, the present study attempted to help such students become good translators through using Wordfast Anywhere.

1. 3 Questions:

The present study attempted to answer the following questions:

1. To what extent do second year English majors master EFL translation skills?
2. How can Wordfast Anywhere be used to develop second year English majors' EFL translation skills?
3. To what extent does using Wordfast Anywhere affect the development of second year English majors' EFL translation skills?

1. 4 Hypothesis of the Study:

There would be a statistically significant difference between the mean score of the control group and that of the experimental group in EFL translation skills on the post administration of the EFL translation skills test in favour of the experimental group.

1. 5 Significance:

The present study is significant for:

1. **Students:** as it helps in developing their EFL translation skills.
2. **Teachers:** as it helps in providing them with the CAT tool Wordfast Anywhere that might help develop their students' EFL translation skills.

3. **Curriculum planners:** as it draws their attention to the efficacy of using Wordfast Anywhere in EFL translation skills and integrating it in the EFL translation courses.

1. 6 Terminology:

In the present study, EFL translation skills are operationally defined as second year English majors' abilities to transfer meaning from one language to another; i.e. from English to Arabic and vice versa. Moreover, CAT is operationally defined as translation carried out by second year English majors with the help of specific computerized tools aimed at accomplishing their translation-related assignments efficiently. Wordfast Anywhere is operationally defined as a CAT tool by which those students can develop their EFL translation skills in a collaborative or independent manner.

1. 7 Delimitations:

The present study was delimited to:

1. Forty-eight second year students enrolled in the English Department at the Faculty of Education, University of Sadat City.
2. The first semester of the 2019-2020 academic year.

2. Literature Review and Related Studies:

2. 1 Translation Skills:

Translation has long been viewed "as striving towards a faithful reproduction of a source text (ST) and possessing an invariant, stable meaning. The target text (TT) was considered an equivalent to an original" (Gambier, 2018, p. 19). Davies (2004, p. 11) defined it as "a complex linguistic process carried out by a professional practitioner who has to maintain a delicate balance when bridging languages and cultures". According to Richards and Schmidt (2010, p. 610), it is "the process of rendering written language that was produced in one language (the SL) into another (the TL), or the TL version that results from this process". Al-Musawi (2014, p. 1) defined it as a complex process which is carried out "to transmit appropriate meaning of a word or a sentence linguistically, semantically and pragmatically". In reviewing its nature, Hassan (2014, p. 1) considered it "a science, an art and a skill. It is a science in the sense that it necessitates complete knowledge of the structure of the two languages concerned. It is an art since it requires

artistic talent to reconstruct the original text. It is also a skill because it entails the ability to smooth over any difficulty in the process of translation".

Translation can be perceived as a form of writing since the translator is responsible for rewriting the author's original message in another language. Thus, the job of the translator is even more challenging than that of the original author. The writer is expected to produce directly his/her ideas and reactions in his/her own language however complicated his/her thoughts are. The translator is supposed to reproduce the experiences of a completely different person (Hassan, 2014). In that respect, translation "is not just a mechanical reproduction of the text but also a creative process in which the text is re-localized within the boundaries and specific features of the target culture". Moreover, translation can be regarded as a strategy for FL learning. It can be utilized as an efficacious medium for developing students' communicative competence as well as teaching the types and properties of meaning underlying communicative language functions, semantic relationships and discourse values. Within this context, translation is considered a cognitive activity that supports students learning new expressions in the TL and using them to communicate, on the one hand, and a problem-solving task in which students can develop their competences in data processing and analysis, on the other hand (Al-Musawi, 2014, p. 1). Literature on its strategic use in EFL learning revealed that it is effective in promoting student's reading skills (Abdel halim, 2011; Pham, 2017), writing performance (Awadalbari, 2015; Bagheri & Fazel, 2011), listening comprehension (Al Naami, 2017; Shabani & Jalali, 2015) and vocabulary acquisition (Alroe & Reinders, 2015; Hassanabadia & Heidari, 2014).

Translations can be categorized according to various ways: (a) subject matter (i.e. literary, technical, medical, economic, financial and legal translations), (b) type of document (e.g. translation of reports, translation of insurance policies, translation of users' guides, translation of catalogues, translation of travel guides and translation of patents) (Gouadec, 2007) and (c) the degrees of freedom between the two extremes of free and literal translation (Hassan, 2014). Translation in which greater emphasis is given to overall meaning than to exact

wording is recognized as free translation. However, a translation that approaches to a word-for-word representation of the original is identified as a literal translation (Richards & Schmidt, 2010). As a result, a distinction between two types of equivalence existed: formal equivalence and dynamic equivalence. In using formal equivalence, the translator focuses on the message itself, namely its form and content, and there should be a close similarity between the original and the target messages. Regarding dynamic equivalence, it is said that the relationship between the receptor and the message should be considerably the same as that which existed between the original receptor and message (Nida as cited in Hassan, 2014).

Since translation "aims at allowing effective communication to take place by overcoming potentially insurmountable obstacles of a linguistic, symbolic, or physical nature", reaching this effectiveness of the communication process is the pivotal evidence of having a quality translation which should be all of the following:

- a) **Accurate:** the contents of the translation must be true to the facts and to the interpretation of those facts within the limits of the domain or specialist field concerned.
- b) **Meaningful:** the message must be meaningful in the TL and culture even though concepts or their interpretations may vary from one culture to another.
- c) **Accessible:** any person using the translation must be able to clearly understand the information and the message conveyed.
- d) **Effective and ergonomic:** the translation must be effective both in terms of communicating a message and of making sure that the message fulfils its initial and subsequent purposes (and nothing but those purposes).
- e) **Compliant with any applicable constraint** in terms of:
 - target communities' linguistic and cultural standards and usages,
 - specific national laws, rules and regulations,
 - official standards concerning terminology or technicalities, and
 - physical limitations such as the assigned number of characters.

- f) **Compatible with the defense of the receptors' interests.** Working in the interest of the receptor means making sure the translation achieves the desired effect (helping to convince, assist, explain, inform, prompt purchase, assuage, seduce, etc.), while avoiding any undesirable effects (causing anger or irritation on the part of the buyer confronted with incomprehensible user instructions, causing mirth where emotion would be expected, etc.) (Gouadec, 2007, pp. 5-7).

Concerning the translation skills that a translator should possess, Fox (2000) delineated them as those "combinations of attributes that underlie successful translation performance" (p. 129) which constitute:

1. The ability to transact with and effectively comprehend texts both in the ST and TT language cultures,
2. The ability to produce TTs that satisfy both client and TT reader expectations concerning the purpose and demands of the translation task,
3. The ability to produce TTs that conform to the standards of correctness, appropriateness and meaningfulness expected by the target audience,
4. The ability to keep an accurate documentary record of decisions, and
5. The ability to resolve problems specific to the cross-cultural transfer of the text (p. 116).

Adab (2000, p. 225) identified five essential translation skills to be assessed to measure students' translation performance:

1. **Language accuracy.** It is to test the students' ability to understand an SL message and write in an appropriate style in the TL. An error is anything which is inappropriate for the register and style, or simply inaccurate syntax, spelling, punctuation and use of capital letters.
2. **Accuracy of the message, in terms of subject knowledge, SL author intention and in relation to the intended TT function in culture for the specified addressees, situational and contextual knowledge in the SL culture.** This is where students can demonstrate their knowledge of the source culture. An error is

anything which misrepresents the message in relation to the translation brief and with reference to the ST.

3. **Assumed knowledge and needs of target reader in both SL and TL.** Misrepresentations, additions or omissions are penalized according to the impact on the overall message and/or on individual details of the message.
4. **Any intertextual references contained in the ST.** These need to be interpreted, adapted, compensated for, made more explicit or implicit, or simply omitted, depending again on the translation brief and on the TL addressees.
5. **Acceptability/readability.** It is the appropriate use of language, textual aspects of coherence and cohesion.

Similarly, Khanmohammad and Osanloo (2009) identified five required translation skills of students studying translation courses:

1. **Accuracy-** the ability to comprehend and convey the original message completely to TL readers with no omissions or additions to information.
2. **Finding equivalents-** the ability to skillfully chose and use understandable lexical and syntactic items that the work reads like a good publishable version.
3. **Register and TL culture-** the ability to use register precisely and sensitively showing a sophisticated awareness of the cultural context.
4. **Grammar and TL style-** the ability to use accurate grammatical and stylistic structures, and
5. **Shifts and inventing equivalents-** the ability to use correct relative clauses, verb forms and parallel structure as well as creative inventions and skillful solutions to equivalents.

Professional translators go through various procedures to create the target product. According to Gouadec (2007), the translation process is a series of activities including three phases: pre-transfer, transfer and post-transfer. Each phase corresponds to what Mossop (2002) described as pre-drafting, drafting and post-drafting respectively. Pre-transfer covers all operations preceding the actual ‘translating’, including preparation of the material, documentary searches, memory consolidation, terminology identification and deciding on strategies. In this phase, the translator carefully reads, interprets and analyzes the source material to attain a full

understanding of it and the author's purpose, identify problems areas and clarify any obscure points which necessitates searching for relevant documentation and studying the subject or the product involved. Afterwards, the transfer phase begins, which is the well-known main activity of shifting contents and meaning to a different code and culture, making all the required adaptations to comply with the linguistic, communicative, cultural, aesthetic and professional requirements of the translation task. Then comes the post-transfer phase where translators perform editing, proof-reading and revising. It also includes anything that has to be done to meet the quality criteria prior to the delivery of the translated material (Gouadec, 2007).

To the researcher's knowledge, there is a scarcity of empirical studies devoted to teaching translation skills to English majors in EFL academic settings (Abdel El-Hallim & Abdalla, 2019; Abu Elenein, 2015; Lin, 2019; Moghaddas & Khoshsaligheh, 2019; Roshdy, 2020; Shehata, 2019; Tharwa, 2019). In the Egyptian context, competitive learning (Abdel El-Hallim & Abdalla, 2019), metacognitive strategies, namely planning, monitoring and evaluation (Shehata, 2019) and computer mediated communication (Roshdy, 2020) were found to be effective in developing students' EFL translation skills. In the Arab region, Abu Elenein (2015) utilized a suggested program based on pragmatics to enhance Palestinian students' translation performance. Tharwa (2019) explored the effect of the SCAMPER model to improve Saudi students' translation skills and their attitudes towards translation. At a global level, Lin (2019) reported the positive impacts of cooperative experiential learning in a flipped translation classroom which enabled Taiwanese EFL students to cope with linguistic problems when translating, engage actively in the translation process and elevate the learning process from lower-order thinking to higher-order thinking. Moghaddas and Khoshsaligheh (2019) examined the effectiveness of project-based learning in the improvement of Iranian students' critical thinking, their attitudes towards their teamwork performance and their translation competence.

2. 2 Computer-assisted Translation (CAT):

Since the use of technology in professional settings seems to be associated with the conception of process automation, machine/mechanical translation (MT) was developed as an obvious example of such format in the field of natural language processing and translation in 1946 (Candel-Mora, 2016). It refers to "the use of a translation program to translate text without human input in the translation process" (Richards & Schmidt, 2010, p. 350). Though great progress has been made in such domain during the 1950s and 1960s, MT texts varied greatly in quality, mostly depending on the complexity of the ST, and was seldom adequate for publication without human intervention to correct errors of grammar, meaning and style. As a result, in 1966, the Automatic Language Processing Advisory Committee (ALPAC) momentous report officially admitted the impossibility of producing a fully automated translation and discouraged conducting more research and development investment on such technology. Afterwards, MT complimented with human supervision began to be considered a key alternative, which entailed the emergence of CAT (Candel-Mora, 2016; Richards & Schmidt, 2010; Sin-wai, 2015). That is why MT systems are sometimes used in CAT tools to provide rough suggestions of translation which will be post-edited by translators (Jaworski, 2013).

According to Bussmann (2006, p. 712), CAT means the "transmission of a natural-language text into an equivalent text of another natural language with the aid of a computer program". Likewise, Richards and Schmidt (2010, p. 110) defined it as "translation with the aid of a computer program, usually a database containing examples of previously translated sentences, phrases and other stretches of speech, which the translator can consult before accepting, rejecting, or modifying the translation". Such database is called translation memory (TM) which is considered the most widely-recognized and prototypical feature of CAT and is assumed to contain high-quality translations that can be reused. More precisely, a TM is "a set of pairs of sentences, where the first sentence is in the SL and the second is in the TL. During the translation process, given an input sentence in the SL, the system looks for a similar one in the TM" (Jaworski, 2013, p. 264) "that matches the new sentence exactly (exact match) or approximately (fuzzy match)" (Sin-wai, 2017, p. 83). If such sentence is found, its translation appears as a suggestion for

translation. If not, it is translated by the human translator and added to the TM to enrich it (Jaworski, 2013). TMs were originally developed for translating software programs and operating systems instruction manuals for industries that produce new versions with slight modifications to each model, or for international corporations that publish a large number of documents "in different languages with repetitive standard text segments". Beside this increased productivity, another two main advantages are related to TM which are the quality and ease to locate segments already translated and stored in the form of bilingual corpus to ensure consistency and quality criteria for future translations (Candel-Mora, 2016, p. 53).

Another important feature associated with CAT is terminology management. It is "a mechanism of automated dictionary lookups during text translation. During the translation of a sentence, the translator is provided with dictionary matches of words or phrases that appeared in the sentence". Multiple dictionaries are searched for such purpose. They are divided into two types: (a) built-in dictionaries containing vast and comprehensive set of terms and (b) user-created glossaries storing more specialized words. These dictionaries and glossaries are most valuable when the TM fails to provide a suitable suggestion (Jaworski, 2013, p. 266). They interact with the translator not only as a reference tool, but because they allow the direct insertion of the term from the database. They are also useful in maintaining the terminological consistency, "which means that the same term is always used with the same sense, and the same object or action is always described by the same term" (Candel-Mora, 2016; Sin-wai, 2017, p. 80).

According to Bussmann (2006, p. 712), CAT comprises three components: "(a) analysis of the SL by means of parsing; (b) transfer: the transmission of information from the SL into the TL; and (c) synthesis: the generation of the TL". Its systems vary according to whether they translate directly from one language into another or whether the text in the SL must first be translated into a neutral interlingua and then into the TL, which makes particular sense if the SL is to be translated into several TLs. Melby (as cited in Alcina, 2008) in his classification of CAT features which are used in the translation process, distinguished three phases (before, during and after translation) at which they are employed

and two levels (terminology and segment) on which they act. Moreover, he differentiated between two other kinds for features that are not necessarily allocated to any of the two levels: the infrastructure (document management systems, terminological databases and telecommunications) and the translation workflow and billing management. Such classification is summarized in Table 1.

Table 1

Classification of CAT Features according to Melby (as cited in Alcina, 2008, p. 83)

Infrastructure		
	Terminology Level	Segment Level
Before Translation	- Term candidate extraction - Terminology research	- New text segmentation, previous source-target text alignment, and indexing
During Translation	- Automatic terminology lookup	- Translation memory lookup - Machine translation
After Translation	- Terminology consistency check and non-allowed terminology check	- Missing segment detection and format and grammar checks.
Translation Workflow and Billing Management		

For Sin-wai (2017), CAT includes five stages: an initiating stage, a data preparation stage, a data processing stage, a data editing stage and a finalizing stage. The initiating stage encompasses using a computer meeting the specifications of a CAT system, installing or logging into a system and creating a translation project. Data collection and data creation are the two key aspects of the data preparation stage. Data collection is manually conducted, whereas data creation involves using computers, scanners, and speech recognition systems for producing electronic files and using the translation system functions for creating TM and terminology databases. The data processing/translation stage is about the computational treatment of data. It includes three parts: (a) the filtering process to make sure that the file or files that the user wants to translate in a variety of formats can be processed by the CAT system, (b) the data analysis to investigate how many words need to be translated

and how many can be pre-translated using a TM and (c) the translation which is the most common form of data processing to create translation equivalents and the output or the TT using dictionaries and concordancers.

The data editing stage consists of performing interactive editing through an interface provided by the system with a number of functions. The amount of editing depends on how much of the contents are totally reusable, as in the case of exact matching; partially reusable, as in the case of fuzzy matching; or totally non-reusable, as in the case of no matching. It also depends on how much of the contents are totally acceptable, partially modifiable with the application of translation methods, or entirely rejectable which requires considerable rewriting. In the finalizing stage, a translator can use tools for quality assurance in the translation system, which runs automatic checks to ensure that the final output is the correct translation of the source such as grammar, punctuation, spacing, spelling and style checks (Sin-wai, 2017).

Several scholars have corroborated the significance of being able to use CAT tools and grasping related technical/instrumental skills as an indispensable subcomponent of the general translation competence and an essential market requirement (Gouadec, 2007; Massey & Ehrensberger-Dow, 2011; Sikora & Walczyński, 2015; Taghizadeh & Azizi, 2017). For example, Gouadec (2007) stated that the ability to use numerous computerized and translation-specific technologies constitutes a competitive advantage for those who are willing to make full use of the available resources, increases their employability on the market and the remuneration level in comparison to those who prefer to work in the traditional way. Sikora and Walczyński (2015, p. 122) pinpointed that developing translators instrumental competence requires mastering five skills which should be taught in the course of their university education and professional training: "(a) efficient use of CAT tools (including general and specialized translation technologies), (b) ability to use the Internet and communication technologies, (c) efficient information mining and terminology management skills, (d) document production skills and (e) ability to use documentation resources".

To the researcher's knowledge, some studies have been conducted to investigate English majors' perceptions about their preferences and concerns regarding CAT tools and their potential significance in conducting translation activities and accelerating the translation process (Alotaibi, 2014, 2020; Mahfouz, 2018; Mohammed, Samad & Mahdi, 2020; Omar, Khafaga & Shaalan, 2020). However, a very limited number of empirical studies were conducted to examine the instructional impact of CAT tools (e.g. SDL Trados Studio in Gomaa, AbuRaya & Omar, 2019 and Mediawiki in Baraniello, Degano, Laura, Lozano, Zahonero & Petroni, 2016; Baraniello, Laura & Naldi, 2019) on improving their translation skills. Despite their usefulness for translation, CAT tools were also found to promote students' language learning from the cognitive, linguistic and affective perspectives. From the cognitive perspective, it affected the cognitive effort by reducing the cognitive load when conducting preliminary translations (Baraniello et al., 2016; Mellinger, 2014; Rădulescu, 2015). From the linguistic perspective, CAT supported lexico-grammatical knowledge (Huang, Chen, Yang & Chang, 2013), enhanced writing performance (Huang et al., 2013; Kazemzadeh, 2014) and ultimately fostered language learning (Fernández-Parra, 2016). From the affective perspective, it raised students' engagement and collaborative learning (Baraniello et al., 2019; Bilić, 2020).

Wordfast Anywhere:

Wordfast LLC (www.wordfast.com) was incorporated in 1999 and is considered a lightweight application since it works within the framework of Microsoft Word. In 2009, it moved beyond its original macro (now called Wordfast Classic) to the paid Java-coded Wordfast Pro and the free web-based Wordfast Anywhere (Garcia, 2015). Wordfast Anywhere (www.freetm.com) was preferred to be used in the present study for various reasons summarized by Sin-wai (2017, pp. 211-212) as follows:

1. It is a browser-based CAT system that allows translators to work on projects from anywhere where they have access to an Internet connection. It can be used in any platform that supports Internet browsing, from a desktop computer to a mobile device. Unlike other browser-based CAT tools, it can work in most existing browsers.
2. It is extremely user-friendly as it is based on the popular Wordfast Classic, which is regarded the easiest CAT tool to learn and use.

3. It enables translation memories and glossaries to be created and uploaded.
4. It offers the option to retrieve machine translations from four different providers, namely WorldLingo (which is free and unlimited), Google, iTranslate4 and Microsoft; or, alternatively, to access its so-called 'Very Large Translation Memory' (VLTM), which consists of a large set of translation memories created from public-domain data.
5. It offers complete confidentiality. It is claimed that all data uploaded and stored in the translator's private workspace remains strictly confidential and is never shared (unless the user decides so), disclosed, or recycled in any way.
6. It supports common file formats such as plain text (.txt), Microsoft Word (.doc, .docx), Microsoft Excel (.xls, .xlsx), Microsoft PowerPoint (.ppt, .pptx), RTF, PDF (including scanned PDF documents), Acrobat InDesign (.inx), Acrobat FrameMaker (.mif), TTX and TXML.
7. Installation is not required; it can be used immediately by accessing its official website after registration.
8. It is the most functional of all the free CAT tools. It includes all the advanced features of commercial systems without restrictions.

To the researcher's knowledge, minimal studies have been conducted regarding how Wordfast Anywhere has been used in translation teaching (Annafi, 2019; He, 2014; Witczak, 2016). He (2014) examined the function and potentiality of CAT tools (Wordfast Anywhere and SDL Trados studio 2011) in the teaching of scientific and technological translation to promote the EFL translation skills of 40 Chinese university students. The experiment involved two groups of Master's students of Translation, from Imperial College London and Beijing University of Aeronautics and Astronautics: an experimental group ($n = 20$) which was trained using CAT tools for four months and a control one ($n = 20$) which received regular instruction. Results of the pre-post tests showed that the experimental group statistically outperformed the control group in EFL translation skills after intervention.

Witczak (2016) included a post-editing component to MT. Twenty-one EFL polish translation trainees used Wordfast Anywhere to post-edit

a fragment of a vacuum cleaner manual (Exercise 1) and then either a newspaper article or a patient information leaflet (Exercise 2). Exercise 3 involved a peer-review of post-edited texts. Participants comprised two groups: Group 1 ($n = 12$) which was selected from a written translation specialization at the Faculty of English, Adam Mickiewicz University, and Group 2 ($n = 9$) which was chosen from a master's program in Specialized and Professional Translation, run by the Faculty of Modern Languages at the same university. Pre-post questionnaires were used to elicit students' reflections about their translations using Wordfast Anywhere and the suitability of the STs for the process of post-editing. Results revealed that students considered Wordfast Anywhere a useful tool for post-editing and that formulaic texts are more suitable for that purpose.

Annafi (2019) compared the speed and the quality of Wordfast Anywhere translation and manual translation. Participants were two Indonesian English majors from the University of Sumatera Utara. Two newspaper texts were used; one for manual translation and the other for Wordfast Anywhere. Two instruments were employed: the typing logger of the respondents as the speed meter and the American Translators Association (ATA) standardized error marking as the quality parameter. Results indicated that the translation speed and quality were significantly improved after using Wordfast Anywhere. In manual translation, the participants' estimated times were changed from 28 to 13 and from 35 minutes to 15 after using Wordfast Anywhere. As for the translation error points, they were reduced from 52 to 19 points and from 23 to 14 points indicating a better translation quality.

3. Method and Procedures:

3.1 Design and Participants:

The present study is a control-group pre-post test quasi-experimental study. Participants ($N = 48$) were chosen at random from second year students enrolled in the English Department at the Faculty of Education, University of Sadat City, during the first semester of the 2019-2020 academic year. They were divided into two groups: an experimental group ($n = 24$) which was taught using Wordfast Anywhere and a control one ($n = 24$) which received regular instruction. The age of those participants ranged from 19 to 20 years old. All students were computer

literate, had email accounts, smart phones, PCs/Laptops and Internet access.

Before experimentation, participants of both groups were pre-tested using the prepared EFL translation skills test to make sure that both groups are identical in their entry levels of EFL translation skills. Table 2 demonstrates that no statistically significant difference existed between the mean score of the control group and that of the experimental group in EFL translation skills on the pre-test ($t = 0.28417$, $p > 0.01$). This ensures that both groups were fairly equivalent in their entry levels before conducting the experiment.

Table 2
The t-values of the Control and Experimental Groups on the Pre-test

Dimension	Group	N	M	SD	t	df	Sig.
1. Comprehension of the Original Message	Control	24	5.67	0.584	1.11631	46	No sig. > 0.01
	Exp.	24	5.48	0.580			
2. Finding Equivalents	Control	24	5.46	0.550	0.13781	46	No sig. > 0.01
	Exp.	24	5.44	0.496			
3. Register and TL Culture	Control	24	5.29	0.487	0.28309	46	No sig. > 0.01
	Exp.	24	5.25	0.532			
4. Grammar and TL Style	Control	24	5.23	0.390	0.31937	46	No sig. > 0.01
	Exp.	24	5.19	0.507			
5. Translation Shifts and Inventing Equivalents	Control	24	4.96	0.509	-0.60966	46	No sig. > 0.01
	Exp.	24	5.06	0.665			
EFL Translation Skills (total)	Control	24	26.60	2.080	0.28417	46	No sig. > 0.01
	Exp.	24	26.42	2.475			

3. 2 The EFL Translation Skills Test (TST):

It was used as a pre-post test. It consisted of two parts. The first part included two short passages to be translated from English to Arabic while the second part comprised two short passages to be translated from Arabic to English (See Appendix A). To establish its content validity, the TST- with its scoring rubric which was adapted from Khanmohammad

and Osanloo (2009)- was submitted to a panel of jurors who indicated that the test can be considered a valid measure of EFL translation skills. Its reliability was computed by using the test-retest method over a two-week interval on a group of 20 second year English Majors- out of the study sample- from the Faculty of Education, University of Sadat City, at the beginning of the first semester of the 2019-2020 academic year. The two administrations were correlated using the Pearson's correlation coefficient which was 0.811; thereby reflecting the test reliability. Piloting the TST was to identify clarity, readability and test time as well. The estimated time for answering the test was 70 minutes. The time was assigned by calculating the means of the time spent by the participants of the pilot study.

To ensure the objectivity of scoring the TST, two raters (the researcher and another EFL lecturer) evaluated the students' EFL translation skills in the pre- and post-tests and the mean was calculated. The two raters were of the same experience and qualifications. They used the EFL translation skills scoring rubric to measure students' EFL translation skills (see Appendix A). This rubric included five translation skills: comprehension of the original message, finding equivalents, register and TL culture, grammar and TL style, and translation shifts and inventing equivalents. Each of these skills consisted of a 5-point rating scale (1 = very poor, 2 = poor, 3 = average, 4 = good and 5 = very good). The scores range for each part of the test was from 5 to 25. Thus, the scores range for the whole test was from 10 to 50.

3. 3 Experimental Procedures:

Before experimentation, the researcher pre-tested the participants using the TST to measure their entry levels in EFL translation skills. Pre-testing took place on 19th October 2019 at the Faculty of Education, University of Sadat City. The experiment was part of the "Translation II" course. The first week of the experiment (a three-hour orientation session) aimed at introducing the conception of CAT tools and their importance to the experimental group students. It also aimed at training them on using Wordfast Anywhere at the Computer and Language Laboratory of the Faculty of Education, University of Sadat City. To facilitate training, step-by-step video tutorials and guides were used and made available for review purposes. Students were trained on how to (a)

create a free account and a password, (b) log-in, (c) explore the Wordfast Anywhere interface, (d) upload a document, (e) create a translation memory and upload a glossary, (f) set machine translation, (g) translate a document and (h) deliver/download it.

They were also trained on how to use the developed translation skills scoring rubric to evaluate their translations. Afterwards, students were engaged in a Wordfast Anywhere-based activity to practice translating two ρ -sentence texts; one from English to Arabic and the other from Arabic to English. They were divided into small groups of five: leader, documentation specialist, terminologist, translator and editor/reviewer. Each of these roles is outlined in Table 3. Throughout the experiment, the same group worked together five times, so that students have an equal opportunity to rotate through the roles. Each group shared a computer with a single user account. Moreover, a private WhatsApp group, containing the experimental group students and the researcher, was created to share materials and students' translations and to provide constructive feedback. For weeks 2-7, students continued using Wordfast Anywhere to collaboratively translate two given 250-word passages (from English to Arabic and vice versa) in class each week. During the in-class activities, the researcher circulated around offering help and feedback when needed.

Moreover, students were required to independently translate two more given 250-word passages each week as out-of-class Wordfast Anywhere-based activities. On the WhatsApp group, students shared their translations with screenshots of their work on Wordfast Anywhere (See Figure 1) and posted comments in response to each other related to such work. The researcher also participated in commenting on the students' work and engaged in rich discussions with them about their translations. As for the control group students, they received regular instruction with the same set of texts to be translated, either in class or as home assignments. Finally, and after a seven-week experiment, the researcher post-tested both groups using the same instrument. The post-testing was carried out on 7th December 2019 at the Faculty of Education, University of Sadat City.

Table 3

Students' Roles Description during the Translation Group Activities, adapted from Maruenda-Bataller and Santaemilia-Ruiz (2016, pp. 220-222) and Suau-Jiménez and Ramírez-Polo (2016, p. 248)

1. Leader

The leader is responsible for:

- a. Ensuring that the group works effectively.
- b. Assigning roles and responsibilities of each group member.
- c. Setting the schedule for the translation activity with well-defined stages.
- d. Coordinating and supervising all the work being done and responding to the problems encountered by the group members, communicating with the teacher when needed.
- e. Improvising the role of any absent group member.
- f. Uploading the ST document and creating the translation memories.
- g. Delivering/downloading the final product.

2. Documentation Specialist

The documentation specialist is responsible for:

- a. Identifying the main translation problems and selecting the ideal information sources to assist translators in solving problems and their lack of specific knowledge related to the topic of the given passage.
- b. Searching for documentations that help translators in solving problems and finding equivalents.
- c. Checking the quality and reliability of the sources.
- d. Preparing a list of sources, references, bibliographies, etc.

3. Terminologist

The Terminologist is responsible for:

- a. Establishing the relevant vocabulary for the translation activity.
- b. Providing the equivalents of the key terms in the translation activity.
- c. Making decisions regarding using or omitting certain terms.
- d. Creating, keeping and enriching the bilingual glossaries.
- e. Collaborating with the documentation specialist.
- f. Ensuring the quality and relevance of the glossaries.

4. Translator

The translator is responsible for:

- a. Reading the ST carefully to identify the main translation problems (terminological, conceptual, stylistics, etc.).
- b. Reading and analyzing attentively the sources provided by the documentation specialist and the information gathered in the pre-transfer phase.

- c. Providing solutions to the translation problems.
- d. Determining the ST function and the translation strategies to be used in the process.
- e. Preparing a list of resources such as encyclopedias, dictionaries and style manuals to be used in the transfer phase.
- f. Transferring the ST into an equivalent TT, making the necessary linguistic, communicative, cultural and aesthetic requirements.

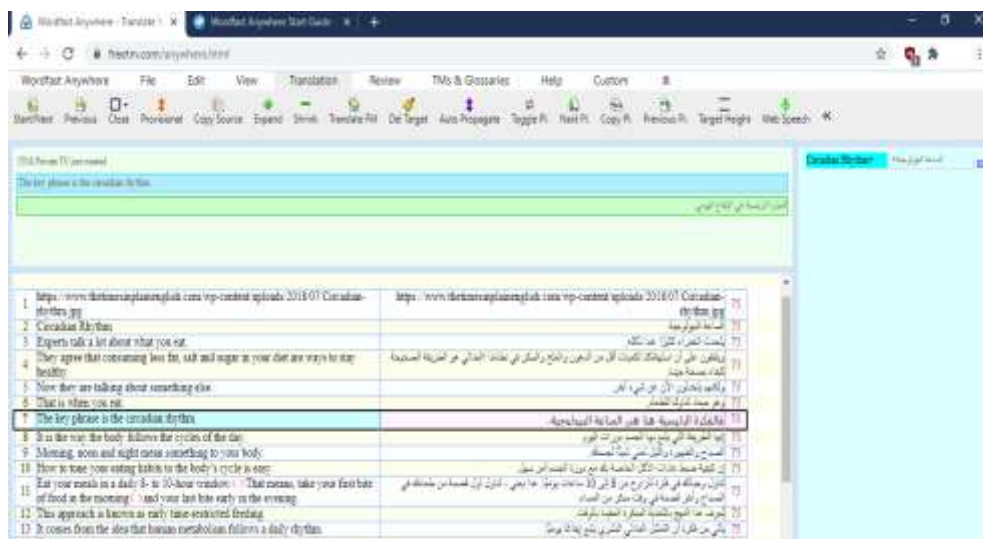
5. Editor/Reviewer

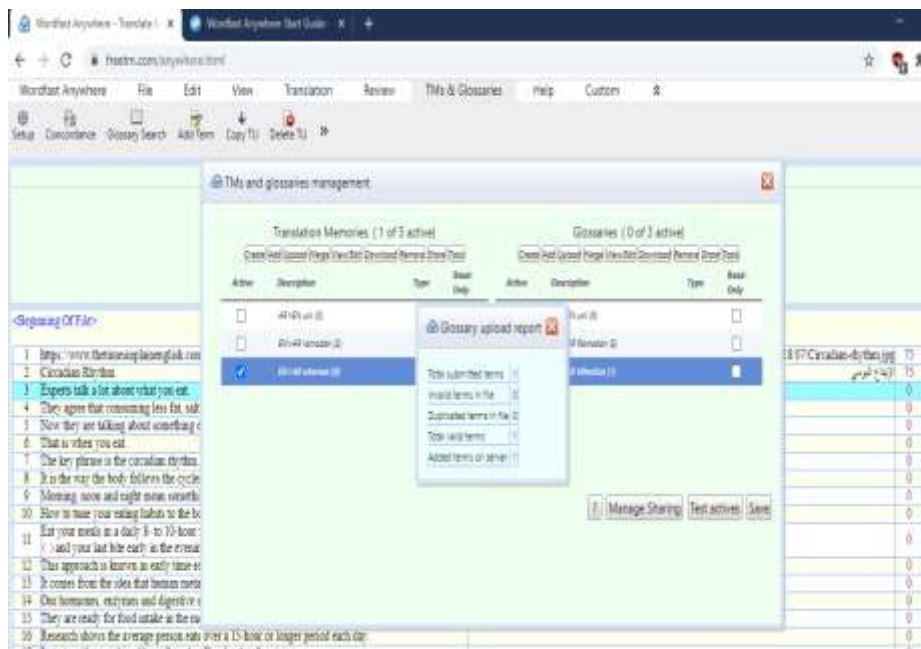
The editor is responsible for:

- a. Reading the ST and the sources provided by the documentation specialist to be familiarized with the field of the text.
- b. Comparing and revising the ST and the TT by checking the translation mistakes in the comprehension or transfer phases, ensuring the consistency in terminology and making all the necessary content changes.
- c. Editing and proofreading the TT by correcting the obvious spelling mistakes, grammar errors and the final format.
- d. Checking with the translator and the documentation specialist before making the final decision regarding the incorporation of the corrections in the final version.

Figure 1

Some screenshots of students' work on Wordfast Anywhere





بمعدت خبراء التغذية مرارا عما تتلوه من لحمية وتقولون على أن استهلاكنا لكميات أقل من الدهون والملح والسكر في
الحمية الغذائية هو سبيلنا للبقاء بصحة جيدة. والآن يتحدثون عن شيء آخر وهو عدم تناول تلك الأطعمة. ويستخدمون
الاسمى هنا هو ساعتنا البيولوجية. وهي الطريقة التي يتبعها الجسم التعليم بمرات اليوم والاستيقاظ بفترة النهار والظهور

Experts talk a lot about what you eat. They agree that consuming less fat, salt and sugar in your
diet are ways to stay healthy. Now they are talking about something else. That is when you eat.
The key phrase is the circadian rhythm. It is the way the body follows the cycles of the day.

4. Results and Discussion:

In order to investigate the hypothesis of the study, the *t*-test for independent samples was administered to compare the mean scores of the control and experimental groups in EFL translation skills on the post administration of the TST and identify the effect of using Wordfast Anywhere on the development of the EFL translation skills. Moreover, the effect size was calculated using Cohen's *d* formula to measure the magnitude of the mean differences between the control and experimental groups in EFL translation skills on the post-test. Table 4 provides the *t*-values of the control and experimental groups in EFL translation skills on the post-test as well as the effect sizes.

Table 4
The t-values and Effect Sizes of the Control and Experimental Groups on the Post-test

Dimension	Group	N	M	SD	t	df	Sig.	Effect Size
1. Comprehension of the Original Message	Control	24	5.81	0.586	-12.08668	46	0.01	3.48913
	Exp.	24	7.94	0.631				
2. Finding Equivalents	Control	24	5.65	0.429	-13.87755	46	0.01	4.00611
	Exp.	24	7.79	0.624				
3. Register and TL Culture	Control	24	5.50	0.590	-11.01171	46	0.01	3.17881
	Exp.	24	7.46	0.641				
4. Grammar and TL Style	Control	24	5.52	0.275	-13.36005	46	0.01	3.85672
	Exp.	24	7.29	0.588				
5. Translation Shifts and Inventing Equivalents	Control	24	5.29	0.464	-11.60665	46	0.01	3.35056
	Exp.	24	7.00	0.552				
EFL Translation Skills (total)	Control	24	27.77	1.922	-14.84046	46	0.01	4.28407
	Exp.	24	37.48	2.564				

Table 4 shows that the mean scores were 5.81 ($SD = 0.586$) and 7.49 ($SD = 0.631$) for "accuracy", 5.65 ($SD = 0.429$) and 7.79 ($SD = 0.624$) for "finding equivalents", 5.50 ($SD = 0.590$) and 7.46 ($SD = 0.641$) for "register and TL culture", 5.52 ($SD = 0.275$) and 7.29 ($SD = 0.588$) for "grammar and TL style", 5.29 ($SD = 0.464$) and 7.00 ($SD = 0.552$) for "translation shifts and inventing equivalents", and 27.77 ($SD = 1.922$)

and 37.48 ($SD = 2.564$) for "overall EFL translation skills" for the control and experimental groups respectively. Thus, there existed a significant difference at the 0.01 level between the mean score of the control group and that of the experimental group in each skill ($t = -12.08668$, $p < 0.01$ for "accuracy", $t = -13.87755$, $p < 0.01$ for "finding equivalents", $t = -11.01171$, $p < 0.01$ for "register and TL culture", $t = -13.36005$, $p < 0.01$ for "grammar and TL style", $t = -11.60665$, $p < 0.01$ for "translation shifts and inventing equivalents") and in overall EFL translation skills on the post-test in favour of the latter ($t = -14.84046$, $p < 0.01$). Thus, the hypothesis of the study was verified reflecting the fact that the experimental group achieved significant improvement in EFL translation skills on the post administration. Such improvement as indicated in Table 4 can be related to using Wordfast Anywhere.

In addition, Table 4 shows that the mean scores of both groups in each skill were very different as indicated by the very large effect sizes: "accuracy" ($d = 3.48913$), "finding equivalents" ($d = 4.00611$), "register and TL culture" ($d = 3.17881$), "grammar and TL style" ($d = 3.85672$), "translation shifts and inventing equivalents" ($d = 3.35056$). The mean scores of both groups in overall EFL translation skills on the post-test were also very different as indicated by the very large effect size ($d = 4.28407$). This is shown graphically in Figures 2a and 2b. Thus, using Wordfast Anywhere proved to have a positive effect on enhancing English majors' EFL translation skills.

Figure 2a

The Mean Scores of the Control and Experimental Groups in Each EFL Translation Skill on the Post-test

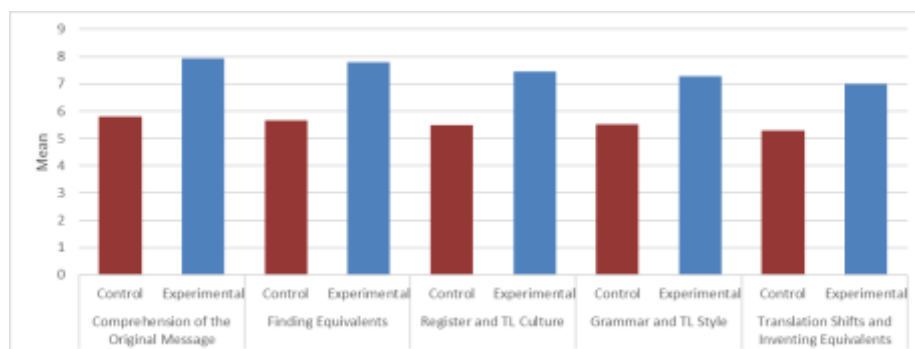
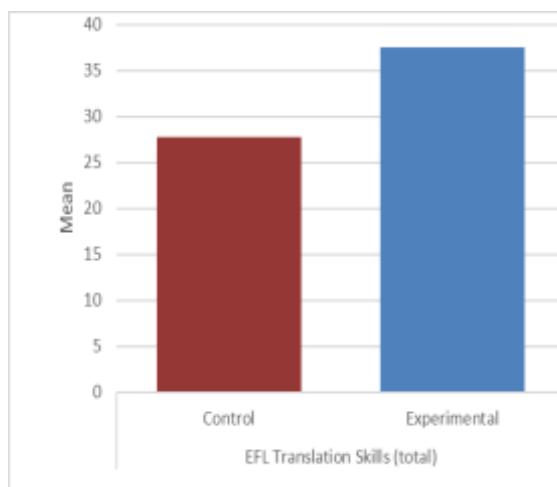


Figure 2b
The Mean Scores of the Control and Experimental Groups in Overall EFL Translation Skills on the Post-test



This significant result might be attributed to different reasons. During the experiment, EFL translation skills improved because students performed the required in-class and out-of-class Wordfast Anywhere-based activities where they collaboratively and independently translated a variety of texts from English to Arabic and vice versa. Using Wordfast Anywhere was fundamental in helping students create translation memories, establish bilingual glossaries, identify the main translation problems and solve them, transfer the STs into equivalent TTs where they can compare and revise them, and edit the TTs till they publish their final translations. In addition, students were excited and eager to work in a collaborative environment during the in-class Wordfast Anywhere activities. Such environment increased their participation and engagement because they were involved in performing different roles of leader, documentation specialist, terminologist, translator and editor/reviewer. Moreover, students had the opportunity to rate their own progress and the performance of their peers using the prepared translation skills scoring rubric. Such peer interaction and reflection enabled them to identify the strengths, weaknesses and areas of improvement of their peers' translations which in turn increased their motivation to do their best to enhance them. Teacher constructive feedback, comments and reflection might have promoted their translation skills as well.

The experimental group students' improvement in overall EFL translation skills was apparent after the use of Wordfast Anywhere. Students were able to comprehend the original message by completely conveying it to receptors with minimal omissions or addition of information. They succeeded in using a wide range of well-chosen, understandable and accurate lexical items which represented suitable equivalents. Their translations demonstrated a good sensitivity to nuances of meaning, register and cultural context. They used more correct grammatical structures and appropriate stylistic features. As for translation shifts and inventing equivalents, they attempted to use more accurate relative clauses, verb forms and parallel structures as well as creative inventions of equivalents. Such result is in agreement with the findings of other studies conducted by He (2014), Witczak (2016) and Annafi, (2019) who concluded that using Wordfast Anywhere supports students' EFL translation abilities and provides an effective medium for developing them with the help of its interactive features.

5. Conclusion:

Within the delimitations of the present study as well as the result attained, it can be concluded that using Wordfast Anywhere CAT tool proved to have a positive effect on enhancing English Majors' EFL translation skills. Unlike the control group students, those of the experimental group showed significant development in EFL translation skills. During the implementation, students of the experimental group expressed concerns about technical problems and frustration when using Wordfast Anywhere at the beginning of the experiment. Despite such challenges and by the end of the experiment, the students became more accustomed to the landscape of such tool and reported that they have benefited from using it reflected in their EFL translation skills.

6. Recommendations:

Based on the aforementioned result reached, the following recommendations are offered:

1. Using CAT tools, particularly Wordfast Anywhere, is recommended to be included in the translation curricula of English majors.
2. More attention and time should be devoted to EFL translation skills as they are very important for those students. That is

because they have to master what they are going to use in their future study and career.

3. English majors should be encouraged to use CAT tools to develop their EFL translation skills, help them produce high quality translations and prepare them to cope with the new challenges of the market needs.
4. EFL university lecturers should be acquainted with the new methods and technologies in teaching EFL translation skills. Besides, they should be trained on using them.

7. Suggestions for Further Research:

The following topics are suggested for further research:

1. Replicating the present study with different participants.
2. Investigating the effect of Wordfast Anywhere on students' (a) reading comprehension, (b) writing performance, (c) grammar development, (d) vocabulary acquisition and (e) autonomous learning.
3. Examining the effect of other CAT tools on students' translation skills.
4. Exploring the comparative effects of CAT tools and MT on students' translation competence.

References:

- Abdel El-Hallim, N. & Abdalla, M. (2019). The impact of a competitive learning strategy on developing EFL students' translation skills at the faculty of specific education. *Journal of Research in Curriculum, Instruction and Educational Technology (JRCIET)*, 5 (1), 11-44.
- Abdel halim, S. (2011). Improving EFL majors' critical reading skills and political awareness: A proposed translation program. *International Journal of Educational Research*, 50, 336-348.
- Abu Elenein, A. (2015). *The effectiveness of a suggested program based on pragmatics in developing some translation skills of Palestinian English majors at Al-Aqsa university*. Unpublished doctoral dissertation, Faculty of Education, Ain Shams University, Egypt.
- Adab, B. (2000). Evaluating translation competence. In C. Schaffner & B. Adab (Eds.), *Developing translation competence* (pp. 215-228). Amsterdam, the Netherlands: John Benjamins Publishing Company.
- Al Naami, F. (2017). *The effectiveness of translated English videos on enhancing English majors' listening comprehension skills and their attitudes towards them at AUG*. (master's dissertation, Faculty of Education, Al-Azhar University-Gaza, Palestine, 2017). Retrieved from http://www.alazhar.edu.ps/Library/aattachedFile.asp?id_no=0050571
- Alcina, A. (2008). Translation technologies: Scope, tools and resources. *Target, International Journal of Translation Studies*, 20 (1), 79-102.
- Al-Musawi, N. (2014). Strategic use of translation in learning English as a foreign language (EFL) among Bahrain university students. *Innovative Teaching*, 3 (Article 4), 1-10.
- Alotaibi, H. (2014). Teaching CAT tools to translation students: An examination of their expectations and attitudes. *Arab World English Journal (AWEJ), Special Issue on Translation* (3), 65-74.
- Alotaibi, H. (2020). Computer-assisted translation tools: An evaluation of their usability among Arab translators. *Applied Sciences*, 10 (6295), 1-13.
- Alroe, M. & Reinders, H. (2015). The role of translation in vocabulary acquisition: A replication study. *Eurasian Journal of Applied Linguistics*, 1, 39-58.
- Annafi, I. (2019). *The usefulness of computer-assisted tool "Wordfast Anywhere" in a translation process: A case study of USU English department students*. (Undergraduate thesis, Faculty of Cultural Studies, University of Sumatera Utara, Medan, Indonesia, 2019). Retrieved from <http://repositori.usu.ac.id/bitstream/handle/123456789/16436/140705110.pdf?sequence=1>

- Awadalbari, M. (2015). Translation as an aid to enhance students' writing skills at university level. *SUST Journal of Humanities*, 16 (4), 241-252.
- Bagheri, M. & Fazel, I. (2011). EFL beliefs about translation and its use as a strategy in writing. *Reading Matrix*, 11 (3), 292-301.
- Baraniello, V., Degano, C., Laura, L., Lozano, M., Zahonero, M., & Petroni, S. (2016). A wiki-based approach to computer-assisted translation for collaborative language learning. In Y. Li, M. Chang, M. Kravcik, E. Popescu, R. Huang, Kinshuk & S. Chen (Eds.), *State-of-the-art and future directions of smart learning: Lecture notes in educational technology* (pp. 369-379). Singapore: Springer.
- Baraniello, V., Laura, L. & Naldi, M. (2019). Collaborative language learning through computer-assisted translation on a wiki-based platform: Operations and management. In T. Mascio et al. (Eds.), *Methodologies and intelligent systems for technology enhanced learning, 8th international conference* (pp. 88-96). Springer Nature Switzerland AG.
- Bilić, V. (2020). The online computer-assisted translation classroom. *Translation & Interpreting*, 12 (1), 127-141.
- Bussmann, H. (2006). *Routledge dictionary of language and linguistics* (2nd ed.). London, UK: Routledge, Taylor & Francis Group.
- Candel-Mora, M. (2016). Translator training and the integration of technology in the translator's workflow. In M. Cerrió-Pastor (Ed.), *Technology implementation in second language teaching and translation studies* (pp. 49-69). Springer Science+Business Media Singapore.
- Davies, M. (2004). *Multiple voices in the translation classroom: Activities, tasks and projects*. Amsterdam, the Netherlands: John Benjamins Publishing Company.
- Erwen, Z. & Wenming, Z. (2013). Application of computer-aided translation technology in translation teaching. *iJET*, 8 (5), 15-20.
- Fernández-Parra, M. (2016). Integrating computer-assisted translation tools into language learning. In A. Pareja-Lora, C. Calle-Martínez & P. Rodríguez-Arancón (Eds.), *New perspectives on teaching and working with languages in the digital era* (pp. 385-396). Dublin: Research-publishing.net.
- Fox, O. (2000). The use of translation diaries in a process-oriented translation teaching methodology. In C. Schaffner & B. Adab (Eds.), *Developing translation competence* (pp. 115-130). Amsterdam, the Netherlands: John Benjamins Publishing Company.
- Gambier, Y. (2018). Concepts of translation. In L. D'hulst & Y. Gambier (Eds.), *A history of modern translation knowledge* (pp. 19-38). Amsterdam, the Netherlands: John Benjamins Publishing Company.

- Garcia, I. (2015). Computer-aided translation systems. In C. Sin-wai (Ed.), *The Routledge encyclopedia of translation technology* (pp. 68-87). London, UK: Routledge, Taylor & Francis Group.
- Gharafi, A. (2020). Teaching translation to Moroccan university students: challenges and perspectives. In H. Belhiah, I. Zeddari, N. Amrous, J. Bahmad & N. Bejjit (Eds.), *English language teaching in Moroccan Higher education* (pp. 143-159). Springer Nature Singapore Pte Ltd.
- Gomaa, Y., AbuRaya, R. & Omar, A. (2019). The effects of information technology and e-learning systems on translation pedagogy and productivity of EFL learners. *Proceedings of the 2019 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT), Sakhier, Bahrain*, 1-6.
- Gouadec, D. (2007). *Translation as a profession*. Amsterdam, Philadelphia: John Benjamins.
- Hassan, B. (2014). *Between English and Arabic: A practical course in translation*. Newcastle upon Tyne, UK: Cambridge Scholars Publishing.
- Hassanabadia, F. & Heidari, M. (2014). The effect of intersemiotic translation on vocabulary learning. *Procedia-Social and Behavioral Sciences*, 98, 1165-1173.
- He, P. (2014). *The application of computer-assisted translation tools to the teaching of scientific and technological translation: English to Chinese*. (PhD dissertation, Translation Studies Unit, Imperial College London, London, UK, 2014). Retrieved from <https://dsprpub.cc.ic.ac.uk:8443/bitstream/10044/1/25987/1/He-P-2014-PhD-Thesis.pdf>
- Huang, C., Chen, M., Yang, P. & Chang, J. (2013). A Computer-Assisted Translation and Writing System. *ACM Transactions on Asian Language Information Processing*, 12 (4), 1-20.
- Jaworski, R. (2013). Anubis- Speeding up computer-aided translation. In A. Przepiorkowski, M. Piasecki, K. Jassem & P. Fuglewicz (Eds.), *Computational linguistics: Applications* (pp. 263-280). Springer-Verlag Berlin Heidelberg.
- Kazemzadeh, A. (2014). The effect of computer-assisted translation on L2 learners' mastery of writing. *International Journal of Research Studies in Language Learning*, 3, 29-44.
- Ke, W. & Jiaping, W. (2017). The study of application of translation workshop in translation teaching of English majors. *Science Innovation*, 5 (5), 267-271.
- Khanmohammad, H. & Osanloo, M. (2009). Moving toward objective scoring: A rubric for translation assessment. *JELS*, 1 (1), 131-153.

- Li, X. (2018). Self-assessment as ‘assessment as learning’ in translator and interpreter education: Validity and washback. *Interpreter and Translator Trainer*, 12 (1), 48-67.
- Lin, Y. (2019). Cooperative experiential learning in a flipped translation classroom. *International Journal of English Linguistics*, 9 (5), 29-36.
- Liu, C. & Yu, C. (2019). Understanding students' motivation in translation learning: a case study from the self-concept perspective. *Asian-Pacific Journal of Second and Foreign Language Education*, 4 (4), 1-19.
- Mahfouz, I. (2018). Attitudes to CAT tools: Application on Egyptian translation students and professionals. *Arab World English Journal (AWEJ), Special Issue on CALL* (4), 69-83.
- Malenova, E. (2019). Cloud technologies in a translation classroom. *trans-kom* 12 (1), 76-89.
- Maruenda-Bataller, S. & Santaemilia-Ruiz, J. (2016). Project-based learning and competence assessment in translation training. In M. Cerrió-Pastor (Ed.), *Technology implementation in second language teaching and translation studies* (pp. 207-228). Springer Science+Business Media Singapore.
- Massey, G. & Ehrensberger-Dow, M. (2011). Technical and instrumental competence in the translator's workplace: Using process research to identify educational and ergonomic needs. *ILCEA*, 14, 12.
- Melby, A. & Wright, S. (2015). Translation memory. In C. Sin-wai (Ed.), *The Routledge encyclopedia of translation technology* (pp. 662-677). London, UK: Routledge, Taylor & Francis Group.
- Mellinger, C. (2014). *Computer-assisted translation: An empirical investigation of cognitive effort*. (PhD dissertation, Department of Modern and Classical Language Studies College of Arts and Sciences, Kent State University, USA, 2014). Retrieved from https://etd.ohiolink.edu/rws_etd/send_file/send?accession=kent1398088162&disposition=attachment
- Moghaddas, M. & Khoshsaligheh, M. (2019). Implementing project-based learning in a Persian translation class: a mixed-methods study. *The Interpreter and Translator Trainer*, 13 (2), 1-20.
- Mohammed, O., Samad, S. & Mahdi, H. (2020). The attitudes of professional translators and translation students towards computer-assisted translation tools in Yemen. *Journal of Language and Linguistic Studies*, 16 (2), 1084-1095.
- Mossop, B. (2002). The workplace procedures of professional translators. In A. Chesterman, N. Salvador & Y. Gambier (Eds.), *Translation in context* (pp. 39-48). Amsterdam, the Netherlands: John Benjamins Publishing Company.

- Omar, A., Khafaga, A. & Shaalan, I. (2020). The impact of translation software on improving the performance of translation majors: A Case Study of the Saudi Universities. *International Journal of Advanced Computer Science and Applications (IJACSA)*, 11 (4), 287-292.
- Pham, C. (2017). Reading comprehension and translation performance of English linguistics students of Hung Vuong University: A correlational study. *International Journal of English Language & Translation Studies*, 5 (3), 79-85.
- Qiang, Y. & Chen, W. (2020). The application of translation workshop teaching model to college English translation teaching. In T. Wang, A. Ip, M. Tavana & V. Jain (Eds.), *Recent trends in decision science and management: Proceedings of ICDSM 2019* (pp. 529-534). Springer Nature Singapore Pte Ltd.
- Rădulescu, A. (2015). The cognitive impact of computer-assisted translation (CAT) and machine translation (MT) on professional legal translators. *Contemporary Readings in Law and Social Justice*, 2, 60-65.
- Richards, J. & Schmidt, R. (2010). *Longman dictionary of language teaching and applied linguistics (4th ed.)*. Pearson Education Limited.
- Roshdy, A. (2020). The effectiveness of a CMC course in developing some English translation skills in light of beyond Constructivism for English majors and their attitudes towards translation. *Minia Journal of Research in Education and Psychology*, 35 (2), 149-169. Retrieved from https://mathjournals.ekb.eg/article_91464_2366f47c0043502b1cf61ee6f40390ad.pdf
- Shabani, M. & Jalali, M. (2015). The effect of translation on the L2 learners listening comprehension. *Journal of Applied Linguistics (Dubai)*, 1 (1), 66-74.
- Shehata, M. (2019). Using some metacognitive strategies in teaching translation to enhance faculty of education English majors' translation skills. *Assiut Faculty of Education Scientific Journal*, 35 (6), 1-37. Retrieved from https://journals.ekb.eg/article_103879_85b89ae55b8597a129f12da264dd17a1.pdf
- Sikora, I. & Walczyński, M. (2015). Incorporating CAT tools and ICT in the translation and interpreting training at the undergraduate level. In Ł. Grabowski & T. Piotrowski (Eds.), *The translator and the computer 2* (pp. 119-133). Wyższa Szkoła Filologiczna, we Wrocławiu, Wrocław.
- Sin-wai, C. (2015). *The Routledge encyclopedia of translation technology*. London, UK: Routledge, Taylor & Francis Group.
- Sin-wai, C. (2017). *The future of translation technology towards a world without Babel*. London, UK: Routledge, Taylor & Francis Group.

- Suau-Jiménez, F. & Ramírez-Polo, L. (2016). How to blend language and ICT in the didactics of scientific translation. In M. Cerrió-Pastor (Ed.), *Technology implementation in second language teaching and translation studies* (pp. 229-250). Springer Science+Business Media Singapore.
- Sun, Y. (2020). Teaching translation and culture. In L. Lim & D. Li (Eds.), *Key issues in translation studies in China: Reflections and new insights* (pp. 29-45). Springer Nature Singapore Pte Ltd.
- Taghizadeh, M. & Azizi, M. (2017). Exploring computer-aided translation competences of some Iranian translators. *International Journal of English Language & Translation Studies*, 5 (1), 78-87.
- Tao, Y., Wen, H. & Wang, S. (2020). Translation teaching research in the Chinese mainland (1978-2018): Theory, method and development. In L. Lim & D. Li (Eds.), *Key issues in Translation studies in China: Reflections and new insights* (pp. 47- 76). Springer Nature Singapore Pte Ltd.
- Tharwa, F. (2019). Using the SCAMPER model to develop translation skills for major students in the Faculty of Education, Majmaah University, Saudi Arabia. *Arab World English Journal for Translation & Literary Studies*, 3 (2), 91-113.
- Wang, S. (2019). Discussion on how to improve the effectiveness of English translation teaching in colleges and universities. *Advances in Social Science, Education and Humanities Research*, 334, 497-501.
- Witczak, O. (2016). Incorporating post-editing into a computer-assisted translation course: A study of student attitudes. *Journal of Translator Education and Translation Studies*, (1) 1, 35-55.
- Zhang, W. (2019). Studies on college translation teaching models in an information and Internet age. In J. Hung, N. Yen & L. Hui (Eds.), *Frontier computing: Theory, technologies and applications (FC 2018)* (pp. 815-819). Springer Nature Singapore Pte Ltd.
- Zhen, W. & Jianbo, H. (2019). On application of translation workshop in translation teaching for English majors. *Advances in Social Science, Education and Humanities Research*, 345, 104-106.