Increasing Willingness and Opportunities to Communicate in a Foreign Language with Machine Translation and Instant Messaging

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Abstract

Advances in technology over the last few decades have led to significant changes in the way we communicate. Technological innovation has been one of the reasons for the development of computer-mediated communication (CMC), which has had far-reaching implications in the private and professional lives of many people. Instant messaging (IM), which is one form of computer-mediated communication, has significantly gained popularity over the years and many scholars have examined its influence in areas including business and academics. Initially developed to enhance communication between users who understood the same language, some IM clients including Wechat (www.wechat.com), QQ International (www.imqq.com), and Skype Translator (www.skype.com) have integrated a built-in translation application that facilitates communication among users that speak different languages.

The current research project explores the relationship between machine translation, IM, and foreign language (FL) learning. In particular, it investigates whether machine-translated IM could improve the willingness to communicate (WTC) of beginner FL learners and whether the IM translation tool offers learners opportunities to communicate (OTC) in the FL. To answer these questions, China-based beginner FL learners were recruited and paired with native and near-native English speakers based in Canada. China-based participants completed two questionnaires and also exchanged (machine-translated) IM on selected topics with Canada-based participants for a period of ten weeks. Some China-based participants communicated with the help of the IM translation tool, while the others communicated without the tool.

After analyzing the data gathered during the study, we found that WTC increased more for participants with the IM translation tool than for participants without the IM translation tool. Our analysis also indicated that the IM translation tool offered participants OTC in English. This was illustrated in various conversation aspects including number of words and turns exchanged,

synchronous exchanges, ownership, conversation enhancement, topics discussed, tasks undertaken, and requests for paraphrase, repetition and explanation.

In the discussion of the implications of our findings, we outline how the research project reinforced our understanding of the concept of WTC in a technology driven FL learning environment. We also discuss the implications of our findings for machine translation (MT), FL, and translation studies. Our discussion focuses on the debate on the tools to use and content to teach in the translator and FL training environments as well as various concepts in translation studies including MT quality, writing for MT, fit-for-purpose MT, collaboration and MT post-editing. This project enables us to test the applicability of MT in a different context using a novel group of users. The project therefore contributes to ongoing research on the relationship between CMC (specifically IM), MT, and FL learning, as well as to our knowledge of applications and perceptions of MT.

Résumé

Au cours des dernières décennies, les progrès en matière de technologie ont mené à des changements importants dans notre façon de communiquer. L'innovation technologique a mené à l'émergence de la communication assistée par ordinateur (CAO), qui a provoqué des transformations d'envergure dans la vie privée et professionnelle de bon nombre de personnes. La messagerie instantanée (MI), qui représente une forme de CAO, est de plus en plus utilisée et fait l'objet de nombreuses études scientifiques visant à mesurer son impact, entre autres, dans les milieux des affaires et académique. Certains systèmes de MI dont Wechat (www.wechat.com), QQ International (www.imqq.com) et Skype translation (www.skype.com), conçus d'abord pour bonifier la communication entre des utilisateurs parlant la même langue, intègrent maintenant leur propre moteur de traduction automatique (TA) afin de faciliter la communication entre les utilisateurs parlant des langues différentes.

Ce projet de recherche se concentre sur la relation entre la TA, la MI et l'acquisition d'une langue seconde. Concrètement, ce projet vise à déterminer si la MI traduite à la machine peut améliorer le souhait de communiquer (SdC) des apprenants d'une langue seconde débutants, et si l'outil de TA intégré à la MI offre aux apprenants des occasions de communiquer (OdC) en langue seconde. Afin de répondre à ces questions, nous avons recruté des apprenants de l'anglais langue seconde habitant en Chine, jumelés avec des locuteurs de l'anglais natifs ou ayant une compétence de l'anglais très avancée, habitant au Canada. Les participants en Chine ont répondu à deux questionnaires et ont échangé des messages instantanés traduits à la machine sur certains sujets avec les participants du Canada sur une période de dix semaines. Certains des participants en Chine ont communiqué à l'aide de l'outil de TA de la MI, alors que d'autres ne l'ont pas utilisé dans leurs échanges.

Après l'analyse des données récoltées dans cette étude, nous avons trouvé que le SdC a augmenté davantage pour les participants ayant utilisé l'outil de TA que pour ceux qui ne l'ont pas utilisé. Notre analyse a aussi indiqué que l'outil de traduction offre aux participants des OdC en anglais. Ce constat est démontré dans divers aspects communicationnels tels que la quantité de mots utilisés et le nombre de tours échangés, les échanges synchroniques, l'appropriation, le renforcement conversationnel, les sujets traités, les tâches réalisées, les demandes de reformulation, les répétitions et les explications.

Dans la discussion sur les retombées de nos résultats, nous décrivons dans quelle mesure ce projet de recherche a amélioré notre compréhension du concept de SdC dans un milieu d'apprentissage des langues secondes axé sur les technologies. Nous faisons le point également sur les retombées de nos résultats dans les domaines de la TA, des langues secondes, et de la traductologie. Notre discussion se concentre sur le débat autour des outils à utiliser et le contenu à livrer dans l'enseignement de la traduction et des langues secondes, ainsi que sur d'autres concepts traductologiques tels que la qualité de la TA, la rédaction à des fins de TA, la TA pour des besoins spécifiques, la collaboration et la postédition de TA. Le présent projet nous permet de mettre à l'essai un nouveau contexte d'application de la TA en utilisant un tout nouveau groupe d'utilisateurs. Ainsi, le projet contribue aux travaux de recherche menés actuellement sur la relation entre les CAO (notamment la MI), la TA et l'apprentissage de langues secondes, ainsi qu'à notre connaissance des domaines d'application de la TA et des perceptions qui s'y rattachent.

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List of abbreviations and acronyms

CALL	Computer-assisted language learning
CAT	Computer-assisted translation
CEFR	Common European Framework of Reference for Languages
CMC	Computer-mediated communication
EBMT	Example-based machine translation system
EFL	English as a foreign language
FAHQMT	Fully automatic high-quality machine translation
FL OTC	Opportunity to communicate in a foreign language
FL WTC	Willingness to communicate in a foreign language
FL	Foreign language
HAMT	human-aided machine translation
IM	Instant messaging
ITU	International Telecommunication Union
JWTC	Just willing to communicate
L2	Second language
LWTC	A little willing to communicate
MAHT	Machine-aided human translation
MT	Machine translation
NS	Native speaker (of English)
NNS	Near-native speaker (of English)
NWTC	Not willing to communicate
OTC	Opportunities to Communicate

OTTIAQ	Ordre des traducteurs, terminologies et interprètes agréés du Québec
RBMT	Rule-based MT system
SISU	Shanghai International Studies University
SWTC	Somewhat willing to communicate
VWTC	Very willing to communicate
WNWTC	Willing but not very willing to communicate
WTC	Willingness to communicate

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Introduction

The introduction provides a general overview of the research undertaken for this thesis. It begins by establishing the epistemological foundations of the study, followed by an outline of the main research questions, the hypotheses, general methods, and the contribution of the project to knowledge. The introduction ends with a conclusion that includes an outline of the rest of the thesis.

1) Theoretical grounding of the research

The act of communication has been defined as the process of transmitting information and common understanding from one person to another (Keyton, 2011). It also refers to a variable activity characterized by information transfer within communication systems where both the sender and receiver are actively involved in the process (Losee, 1999). Therefore, "communication occurs if, and only if, information moves from the input to one process to the output from a second process, the latter process being the inverse of the first process" (Ibid., p. 8).

Several factors contribute to make the communication process complete. These include a sender, a message, a receiver, a channel, feedback, and noise (Lunenburg, 2010). Generally, communication is triggered when a sender encodes a message intended for a receiver, who decodes the message upon reception. The message is either verbal, non-verbal, or written language encoded by the sender. The message is sent through a channel or medium such as a telephone, an email, a text or an instant message, face-to-face conversation, or a written report. Noise is believed to be elements that contribute to distorting the message, such as language barriers, attitude, and physical obstruction (Ibid.， p. 3). Finally, feedback is the response sent by the receiver to the sender. Without feedback, it may be impossible to determine whether messages are sent successfully. It is important to note that each of these elements is crucial for any effective communication to take

place. For instance, communication may not be possible if the message is coded in a language that the receiver does not understand.

In 1949, Shannon and Weaver developed a communication model that was different from that suggested earlier by Saussure (1919). The model was known as the mathematical model because it appeared to "enable the reader to focus on the engineering question of how to make sure that a signal transmitted can be received as that signal by a receiver, despite noise from a noise source" (Baecker, 2013, p. 86). The model borrowed from information theory and claimed that communication consisted of three elements: a transmitter, a receiver, and sources of noise (Shannon & Weaver, 1949). The concept of statistical mechanics was applied to explain that transmitted messages could be distorted by interference (noise). According to Shannon and Weaver (1949), the receiver of the message has "to calculate the probabilities of possible messages in order to substitute a possibly distorted one by a probably correct one" (Cobley & Schulz, 2013, p. 86). The model was developed with a special focus on signal transmission in telecommunication. Eventually, it was criticized by several social linguists including Roman Jakobson (1960), who basically believed the model could not be appropriately applied to inter-human communication.

Roman Jakobson (1960) developed a semiotic theory of communication which maintains that any act of verbal communication comprises factors (i.e. elements of the language) and functions (i.e. what people do when they use language). He claims that a language comprises six factors: an addresser, an addressee, a context, a contact (between the addresser and addressee), a common code, and a message. According to Jakobson (1960), the communication context refers to the co-text, that is, other verbal signs that exist in the same language and the environment within which the message takes place (Valentovičová & Varečková, 2014). The six functions of language,

according to Jakobson (1960), include: referential, emotive, conative, phatic, metalinguistic, and poetic (aesthetic).

Accordingly, each function may be oriented towards one or more factors. For instance, the referential function is oriented towards the context. It would be the dominant function in a message such as, "water boils at 100 degrees" (Jakobson, 1960, p. 356). The emotive function is generally oriented toward the addresser. It would be the dominant function in interjections such as, "bah!" and "oh!" (ibid.) which show feeling or emotion. The conative function is oriented toward the addressee and may be the dominant function when imperatives are employed for various purposes. The phatic function serves to "establish, prolong, discontinue communication, or confirm whether the contact is still there" (ibid.). It is also known as the contact function and it "strengthens social ties" (Valentovičová & Varečková, 2014, p. 148) during communication. It is crucial to note that these functions are not mutually exclusive, but nevertheless "each utterance can be classified into the function whose primary purpose it serves" (Tribus, 2017, p. 5). The factors and functions of Jakobson's model, arguably, continue to underlie the concept of communication today despite the development of computer-mediated communication (CMC).[1]

Over the last few decades, rapid technological advances have completely revolutionized the way we communicate. The transformation of computers into powerful data processing machines, as well as the availability of the Internet, have largely contributed to the development of CMC, which has reshaped our communication landscape, heralded new and exciting ways of developing and maintaining social and professional networks, and altered the way information is made available to individuals and the public. Thorne (2006, p. 21) remarks that:

[1] Communication via computers (see Chapter 1, section 1.1.1)

> The Internet has enabled multiple new opportunities for information gathering, enhanced possibilities for producing and disseminating information to others, and has provoked changes in the granularity of information sharing between spatially dispersed co-workers, friends, and family members.

The several types of CMC can be grouped into two broad categories: synchronous and asynchronous CMC. Synchronous CMC refers to forms of communication where information exchange relies essentially on immediate or instant feedback. Examples include IM, video conferencing, and voice and video calls. Asynchronous CMC, on the other hand, refers to forms of communication such as email, text messaging, and video and voice messages (Georgakopoulou, 2011), where responses may be provided at a later time. The first email was sent in 1971 (MOD, 2015), text and instant messages came later in the early 90s, while voice and video calling features are relatively new (Sharan & Ajeesh, 2012). The invention of smartphones and other mobile devices such as tablets, coupled with the affordability of mobile data packages, have partly accounted for the expansion of both synchronous and asynchronous CMC.

As the Internet became more accessible, the desire or need to have instant conversation led to the development of IM applications, which enabled users to engage in real-time communication with friends on a "buddy list" (friends list). Today's IM applications come with better and more advanced features (see Chapter 1, section 1.2). The combination of features on mobile devices is an added convenience. The integration of IM into wearable devices has made it possible to communicate instantly at moments, and from locations, where using a smartphone may not be very convenient (such as during physical exercise). With IM, users can choose to engage in one-on-one exchanges on the fly (Baron, 2004) and, therefore, enjoy a certain degree of privacy because IM communication generates less sound than other forms of synchronous communication such as voice and video calling.

Furthermore, the integration of MT to IM has facilitated communication among interlocutors who do not share a common language. For instance, a Chinese IM user based in China may be able to communicate with a Russian IM user based in Russia without having to learn a foreign language. The Chinese user simply inputs the outgoing message in Chinese and sends it to the Russian user, who receives the message in Russian. The reply is sent in Russian, but the Chinese user receives it in Chinese. Due to advances in MT, the message is translated from Chinese into Russian before or after it is sent or received and vice versa. It should be noted that several years ago, IM clients were virtually incapable of offering an IM translation option with the same level of efficacy as is the case today. Nowadays, IM clients including ChatLingual, Lringo, QQ International, Skype, VoxOx, and WeChat are capable of providing their subscribers with machine-translated IM that make it possible to break down linguistic barriers.

From an epistemological standpoint, therefore, the current research builds on Jakobson's (1960) communication model. Formulated at a time when CMC was at its inception, the striking similarities between Jakobson's communication model and CMC cannot be overlooked. As a matter of fact, the communication factors espoused by Jakobson (1960) seem to form the core of CMC. In particular, exchanges within the context of the current research require a combination of Jakobson's (1960) factors — an addresser, an addressee, a context, a message, a contact, and a code — to occur. To varying degrees, CMC also combines the factors with the functions[2] (phatic, emotive, conative, and referential) of language Jakobson (1960) outlines in his communication model.

[2] See sections 3.2.1 (OTC perception); 3.2.2 (words and turns exchanged); 3.2.5 (conversation enhancement); 3.2.6 (pre-selected topics/tasks); 3.2.7 (synchronous exchanges); and 3.2.8 (repetition, paraphrase, and explanation), for more information.

The intricate connection between the model proposed by Jakobson and various forms of CMC has been examined by various scholars (Kulkarni, 2014; Taiwo, 2010; David, 2007; Ulrike et al., 2005; Baron, 2004; Isaacs et al., 2002). For instance, Dipti Kulkarni (2014) has explored the phatic function of Jakobson's communication model in instant messages (IM) and found that users apply different strategies, including questions, to maintain contact during exchanges. For her part, Angela Tribus (2017) has examined Jakobson's communication model, especially its referential, conative, expressive, phatic, poetic, and metalinguistic functions, in TESOL contexts. She concludes that the intertwining functions of language suggested by Jakobson serve as "a lens through which communication can be viewed and skills can be developed in response to the complex reality of any given TESOL context" (Ibid., p. 27).

The current study investigates whether exchanging real-time machine-translated IM leads to improvement in the willingness to communicate (WTC) perception of beginner English as a foreign language (EFL) learners and whether the IM translator offers them opportunities to communicate (OTC) in English. While the exchange of IM among participants aligns with all the factors of Jakobson's communication model (addressee, context, contact between the addresser and addressee, common code, and message), our analysis of some conversation aspects to determine OTC (see Chapter 3, section 3.2) relies, to a considerable extent, on some of the functions of Jakobson's model.

This study intends to contribute to ongoing research in the areas of FL learning, MT, and IM by examining whether (and if so, how) beginner English as a foreign language (EFL) students could: 1) improve their willingness to communicate (WTC)[3] in English (Yashima, 2012; Peng &

[3] WTC is the probability of FL learners to engage in conversation when given the opportunity (see Chapter 1, section 1.1.4 for details).

Woodrow, 2010; Taguchi et al., 2009; Liu & Jackson, 2008; MacIntyre et al., 1998); and 2) take the advantage offered by the built-in real-time IM translator to create opportunities to communicate (OTC)[4] in English with native speakers (NS)[5] and/or near-native speakers (NNS)[6] located in a foreign country. The study brings together FL learning, IM, and MT and also investigates how the concept of WTC could be understood, analyzed and appraised from an innovative technology-based perspective. Finally, the study highlights how, by integrating MT and IM, it may be possible to apply MT in a novel context of usage.

2) Aim of the research

This research project examines how MT and IM could contribute to improving FL learning. The study seeks to answer the following fundamental question: do beginner EFL learners believe real-time machine-translated IM helps them improve WTC, and does the real-time IM translator provide them with OTC in English? The study also intends to investigate whether the WTC perception of learners reflects actual IM exchanges; whether leaners encounter any challenges while using the IM translator and how they overcome them; and finally, whether there are any implications of the findings on our understanding of MT, FL learning, and IM. The methodology adopted in this study is intended to ensure that these research questions are appropriately investigated and answered.

3) Hypotheses and assumptions

This research project was conducted based on the hypothesis that beginner EFL students would perceive WTC (both the score and level) to be lower at the beginning of the study than at

[4] OTC is the ability to use a specific tool or take advantage of a specific platform to communicate in a foreign language (see Chapter 1, section 1.1.5).
[5] NS are those who have spoken English from their earliest childhood as their first language.
[6] NNS are those who have learned and currently use English but not as a first language.

the end of the study, and that the IM translation option[7] would provide learners OTC in English with their Canada-based interlocutors. It was further hypothesized that participants with access to the IM translation option would be able to exchange more IM, initiate conversation, engage in synchronous exchanges, perform more tasks, and discuss more topics than participants with no access to the IM translation option[8]. Furthermore, participants with the translation option may receive more requests for explanation, paraphrasing, and repetition than participants communicating without the help of the IM translation option. Finally, we hypothesize that participants will rely more on the IM translation option at the beginning than at the end of the study.

Our hypothesis was based on the assumption that, unlike participants communicating without the help of the IM translator, those with the IM translator would be able to considerably overcome linguistic challenges by machine-translating outgoing and incoming IM. As a result, they would be able to exchange more IM. However, poorly machine-translated IM, it was assumed, would sometimes lead to misunderstanding, therefore triggering requests for explanation, paraphrasing, and repetition from Canada-based participants. These requests could enable China-based participants to seek alternative ways of expressing themselves with the help of the IM translator.

[7] Note: Participants with the IM translation option refers to those who are able to translate incoming messages and outgoing messages.

[8] Participants with no access to the IM translation option refers to those who are able to translate incoming messages, but not outgoing messages.

4) General methods

The study focused on how real-time machine-translated IM could improve WTC and serve as an OTC for beginner EFL students. Therefore, the methodology was adopted with the intention of answering the following questions:

i) What are the current uses of and attitudes towards machine-translated IM and IM clients among beginner EFL students?

To answer this question, a questionnaire was completed at the beginning of the study to assess how often participants used machine-translated IM, how they felt about it, which IM clients they used most, and why, who they regularly "chatted" with, and their preferred language(s) of communication. Knowledge of learners' habits and attitude towards IM and IM translation was important to better understand the data of actual (real-time machine-translated) IM exchanges gathered during the study.

ii) What effect does using machine-translated IM have on EFL students' WTC?

The effect of machine-translated IM on beginner EFL students' WTC was evaluated by comparing WTC level and WTC score at the beginning and at the end of the study, and by comparing the corpus created during participant exchanges — with and without the IM translation option. At the beginning and the end of the study, participants were asked to indicate how willing they were to communicate in English. The answers to both questionnaires were compared to determine whether or not the WTC level was higher or lower at the end of the study.

As for WTC score, participants were provided with the 20-item WTC scale (see Appendix K) developed by McCroskey & Baer (1985), in which they were asked to indicate how willing they would be to enter into a conversation in various situations. The WTC scores participants

obtained at the beginning and at the end of the study were compared to find out which participants, those with or without the IM translation option, had a higher WTC score at the end of the study.

Finally, the data of actual real-time machine-translated IM exchanges was compared with the WTC level and WTC score for each participant. This made it possible to determine participants (those with or without the IM translator) who were more WTC in English. Furthermore, we were able to analyze the data of (machine-translated) IM exchanges to determine how participants benefitted or took advantage of the IM translation option during exchanges. It was by analyzing the questionnaires and data of exchanges that we could enhance our understanding of the concept of WTC and suggest an alternative approach to measure it.

iii) Does real-time machine translated IM effectively improve OTC in a FL?

To answer this question, data gathered during exchanges between EFL students and Canada-based participants, as well as answers to the final questionnaire, were analyzed to determine whether IM translation increased the opportunities for China-based EFL beginner students to converse in English. The analysis to determine WTC perception focused mainly on answers to the final questionnaire that required participants to indicate the extent to which they believed the IM translation option was useful during exchanges, the problems they encountered using the IM translation tool, and how they managed to resolve them.

To examine how the IM translator offered OTC in English, the conversation history of participants with and without the IM translation option was examined in detail. Particular attention was paid to the following conversation aspects: number of words and turns exchanged; number of outgoing messages; percentage of translated messages; number and proportion of synchronous exchanges; response to specific tasks; conversation ownership; and repetitions, paraphrase and

requests for explanations. The data was analyzed to evaluate whether and how participants with the translation option were able to take advantage of the tool they were using to communicate.

5) Scope

The project brought together 22 beginner EFL students from Shanghai International Studies University (SISU) and 8 native and near-native English-speaker volunteers based in different cities in Canada. China-based and Canada-based participants exchanged IM in order to generate data for the study. Participants engaged uniquely in interpersonal communication. This means that the project examined IM exchanges between participant pairs as opposed to exchanges during group discussion and meetings.

Some participants communicated with the help of the IM translation option. This means they could translate both incoming and outgoing messages. Other participants communicated without the IM translation option. This means they could translate incoming messages, but not outgoing messages. QQ International was the IM client used for the study because of the unique features it offered, including the possibility to display both the SL and TL texts and their translation for analysis. See Chapter 2, section 2.1 for more details on the choice of the application.

All participants owned both smartphones and laptop computers and were familiar with IM, IM clients, and IM translation. They exchanged real-time (machine-translated) IM synchronously and asynchronously for a period of up to10 weeks during which they were also expected to discuss certain pre-selected topics and perform specific tasks. The corpus, together with questionnaires, made it possible to determine whether participants believed machine-translated IM helped them improve WTC in English. It was also possible to assess whether and how the IM translation option offered OTC in the FL.

6) Contribution to knowledge

This research project builds on the volume of research that already exists regarding the impact of IM in today's society. It focuses on the relationship, and intends to contribute to bridging the gap, between IM, MT, and FL learning. The research explores the contribution that real-time IM translation, a relatively new IM feature, could make in facilitating FL learning. The study, therefore, sheds light on the concept of WTC by examining how it could be further understood using a new technology-based approach. The research also explores how the integrated IM translation option could offer OTC, the challenges users may encounter while using the IM translator, and possible ways to overcome them.

Current research on how to improve WTC among FL learners is predominantly teacher-centered, with particular emphasis on better classroom management and varying language activities (Cutrone, 2009) in class. Existing literature on IM and FL learning with a focus on WTC indicates that sufficient research has not been undertaken to investigate how machine-translated IM could improve FL WTC. This study, therefore, intends to partially fill this gap.

Furthermore, as the use of IM translation applications increases with globalization, this study intends to assess whether these applications could offer OTC in a FL for beginner students. The study, therefore, identifies a new tool for EFL teaching and learning that blends with their daily routine activities and generates learner data for pedagogical purposes. Finally, the study explores a completely new context of MT usage, evaluates the perceptions of a specific novel user group, and assesses how the tool could impact FL learning, MT, and translation studies, a multidiscipline that continues to expand.

7) Thesis structure

The rest of the thesis comprises four main chapters. Chapter one reviews relevant literature beginning with the definition of main concepts (CMC, IM, MT, WTC, OTC, and FL learning). It further examines IM user profiles, IM language, and the relationship among IM, FL learning, and translation. Chapter two details the methodology adopted for the research by focusing on participant and IM tool selection as well as the procedures for gathering and analyzing the data. Chapter three analyzes the data obtained from both the initial and final questionnaires, as well as the conversation history of participants, with the aim of answering research questions and confirming (or refuting) the hypotheses formulated at the beginning of the study. Data analysis leads to findings which are presented, first, for WTC and then for OTC. Chapter four discusses the implications of the findings for our understanding of WTC, FL learning, MT, and translation studies. The thesis ends with a conclusion (Chapter 5) which summarizes the research questions and findings, recapitulates the limitations of the study, and suggests avenues for further research.

Chapter 1: Literature review

1.1) Introduction

The literature review chapter begins with the definition of the main concepts on which the current project is based. The concepts which are defined here include: computer-mediated communication; machine translation; instant messaging; English as a foreign language; foreign language willingness to communicate; and opportunities to communicate in a foreign language. The definition of concepts is followed by a detailed presentation of IM with a focus on IM users, IM language, and IM clients currently available in the market. The IM clients we have introduced in this section include: QQ International; Wechat; Skype Translator; Lringo; Chatlingual; VoxOx, and Sendboo.

After introducing the main underlying concepts of this research project and presenting IM clients, the focus shifts to the relationship between IM and other disciplines. IM and FL learning are examined first, followed by an analysis of the relationship between IM and translation (practice and theory). The analysis highlights how translators interact with IM (translation) at work and outlines the effects of machine-translated IM on some translation studies concepts including conflict, ethics, and translation teaching. Chapter one ends with a presentation of the future of IM translation and a conclusion.

1.1.1) Computer-mediated communication (CMC)

Over the years, different definitions have been suggested for the term CMC. Most of the definitions have stressed the relationship between humans and machines with slight shifts in focus. In 1995, Gerry Santoro (1995) suggested an encompassing definition of CMC that emphasized the role computers could play in their interaction with humans. Santoro (1995, p. 11) maintained that CMC "can encompass virtually all computer uses including diverse applications such as financial

modelling programs, remote-sensing systems, and statistical analysis programs." A year later, Susan Herring (1996, p. 1) defined CMC as "communication that takes place between human beings via the instrumentality of computers." The definition suggested by Herring (1996) appeared to focus more on humans rather than machines. The focus on humans also seemed to have underpinned the definition proposed by John December in 1997. According to December (1997, p. 14), CMC is "a process of human communication via computers, involving people, situated in particular contexts, engaging in processes to shape media for a variety of purposes." However, Kerr and Hiltz (1982, p. 2-3) placed equal emphasis on humans and machines when they defined CMC as systems that, "use computers to structure, store, and process communications… Geographically dispersed groups are able to communicate at a speed and cost superior to telephone, mail, and face-to-face meetings." The definitions suggested here, irrespective of the focus, all point to the close connection between humans and computers which is the very essence of CMC.

CMC can arguably be considered as one of the areas in which remarkable progress has been made over the past decades. Its development has had an impact in many areas including business, communication, language learning, and medicine. It can, therefore, be argued that CMC, given its very nature, is an interdisciplinary area criss-crossed by multiple views and perspectives, rather than a neatly defined independent discipline (Baron, 2004; Thurlow et al., 2004).

As far as CMC and language learning are concerned, many researchers have focused on various aspects of computer-enhanced teaching and learning. Wang et al. (2012), for example, have examined how computers can help identify FL learners' error patterns while Chiu (2013) and Hampel and Hauck (2006) have focused on the use of computers to improve vocabulary learning. The integration of CMC in education in general, and in the language classroom in particular, means

that institutions, teachers, and learners need to adjust to the fast-changing learning environment. As Williams and Chen (2008, p. 141) suggest:

> Institutions that rely on blended and online instruction must provide adequate preparation to bridge gaps in student and faculty technical competence…learning spaces should account for flexibility and multiple communications channels…synchronous interaction and clearly directed activities have an impact on student expectations and comfort levels.

Many CMC-related tools and platforms have gradually become part of the language learning environment. Some of these include electronic dictionaries, email, IM, laptops, PD's, smartphones, tablets, weblogs, and other online pedagogical material including language game websites (Alm, 2016; Kadirire, 2007; Baird & Fisher, 2005). The interconnected nature of these devices, coupled with the transformation of traditional classrooms into multimedia learning environments, have considerably contributed in enhancing language learning (Castleberry & Evers, 2010; Crystal, 2006). These novel learning environments have provided learners the opportunity to acquire knowledge both inside and outside of the classroom and to be constantly connected, in one way or the other, to the language they learn. As Baird and Fisher (2005, p. 6) maintain, this CMC-based learning environment means, "the convergence of social networking technologies and new 'always on' pedagogy is rapidly changing the face of education."

CMC can either be synchronous or asynchronous. In synchronous CMC, participants are both present online, and information is exchanged real or near-real time via "chat, IM, audio and video web-based conferencing" (Repman et al., 2005, p. 58). With asynchronous CMC, the data transmitted to one or many users is received at a later time. As David Crystal (2006, p. 13) maintains, "interactions are stored in some format, and made available to users upon demand," and as Quan-Haase and Young (2010, p. 358) affirm, this type of communication "does not necessitate users to be [sic] online simultaneously."

Researchers in the area of CMC have identified a number of distinguishing features between synchronous and asynchronous CMC based mostly on the tools employed, message content and impact on users. Some scholars (Quan-Haase & Young, 2010; Satar et al., 2008; Repman et al., 2005) have argued that some message exchange tools and media are more suitable for synchronous communication, while others are suitable for asynchronous communication. For instance, Repman (2005, p. 58) states that while most smart mobile devices may be used for both synchronous and asynchronous communication, the latter particularly makes use of tools such as "listserv [sic], discussion boards, and blogs/Weblogs." Synchronous CMC (web conferencing, video conferencing, IM, voice calling, etc.) tends to be done using smartphones, tablets, both desktop and laptop computers, and other mobile and fixed data-based devices equipped with or capable of integrating cameras.

A further difference between synchronous and asynchronous CMC lies in the content of the messages exchanged. Messages that are posted asynchronously, especially on users' social network sites (Facebook, Twitter, Instagram, etc.), may be different in the degree of familiarity. Quan-Haase and Young (2010, p. 357) confirm this assertion by stating that asynchronous messages, such as those posted on social media site walls, "are less prone to support deep conversations than those on IM but, rather, serve as a way of entertainment and having fun." In other words, users share general information on these social media platforms, while more intimate topics and personal information is shared during synchronous exchanges: IM, voice and video calling, etc.

As far as the impact of synchronous or asynchronous CMC on the user is concerned, some researchers (Satar et al., 2008; Arnold, 2007) have found that the level of anxiety, especially for FL learners, is lower during asynchronous than synchronous CMC because learners "have more

time to plan and monitor their own messages as well as process input" (Arnold, 2007, p. 432). The fact that users engaged in asynchronous communication can pause and reflect on their messages appears to lighten the cognitive load associated with rapid synchronous exchanges. However, as far as the transfer of skills (from written to oral) is concerned, synchronous CMC seems to be more beneficial to FL learners than asynchronous CMC. As Satar et al. (2008, p. 598) explain for synchronous CMC, "turn-taking is rapid in text chat, which resembles spoken interaction." This is different from asynchronous CMC where turn taking is comparatively slower.

Because of its peculiarity, researchers have also been interested in investigating the language used in CMC. According to Herring (1996, p. 3), IM language is 'typed' using a computer keyboard or other mobile input methods and has been studied mainly because "exchanges are often rapid and informal, and hence more like spoken conversation (Ibid.) She furthers that the uniqueness of IM language is essentially due to the fact that it has "features of its own, such as the use of 'emoticons' and other graphics, as well as special lexis ('lurking', 'flaming') and acronyms" (Ibid.).

Despite these apparent differences, some researchers have argued that the real impact of IM language on students' linguistic performance is minimal. For instance, Naomi Baron (2005, p. 30) maintains that "the most important effect of IM on language turns out to be not stylized vocabulary or grammar but the control seasoned users feel they have over their communication networks."

Research in CMC is ongoing, and this project contributes to the reinforcement of our understanding of IM, especially machine-translated IM. Our analysis in this project centers on how the real-time IM translation tool could offer English learners OTC and also help improve their WTC in the FL.

1.1.2) Machine translation (MT)

This section examines the concept of MT by presenting its various forms and systems. The section begins with a definition and differentiation of the main forms of MT, human-aided machine translation (HAMT) and machine-aided human translation (MAHT). Secondly, the major MT systems (example-based, hybrid, neural, rule-based, and statistical) are defined and an example of each is provided.

The definition of MT has evolved slightly over the years, possibly due to the transformation of computers into powerful data processing machines. In 1994, the idea of producing fully automated MT systems may have influenced Hutchins' (1994) definition of MT as "computerized systems responsible for the production of translations with or without human assistance" (p. 2322). The phrase "with or without human assistance" could be misunderstood, especially when we know that humans, at the very least, may need to input information into the computer system to be processed. Other definitions, including that suggested by Giuseppe Palumbo (2002), highlight the intertwining relationship between humans and machines. In fact, he defines MT as, "translation performed automatically by a computer with different degrees of human involvement" (Palumbo, 2002, p. 30).

One of the goals of MT, as we know, has been to reach a stage where machines can produce fully automatic high-quality machine translation (FAHQMT). However, as Philipp Koehn (2009, p. 20) maintains, "given the complexity of language and the many unsolved problems in machine translation, this goal has been reached only for limited domain applications." As a matter of fact, FAHQMT has been achieved in some domains where the set of possible sentences is so constrained that MT experts can write translation rules that capture all possibilities. Some of these areas include rail and flight information, scheduling (and rescheduling) appointments, sporting event summaries, and weather forecasts (Koehn, 2009; Muegge, 2006; Kay, 1997).

HAMT refers to a situation where "the computer is responsible for producing the translation per se, but may interact with a human monitor at many stages along the way" (Slocum, 1995, p. 2). Generally, there may be three main stages involved with this type of translation. First, humans may pre-edit a text intended to be translated by machines. The texts, pre-edited or not, are then translated by machines and the output or draft is often post machine-edited by either a translator or someone highly proficient in the target language. One advantage of HAMT is its cost efficiency, as post-editing a translation may sometimes be better than translating from scratch (Garcia, 2011). Koehn (2009, p. 23) also argues that, "the efficiency rises with the quality of machine translation. If the machine translation system reliably brings the meaning across, the post-editor does not need to know the foreign input language."

MAHT, on the other hand, describes "a system wherein the human is responsible for producing the translation per se (on-line), but may interact with the system in certain prescribed situations" (Slocum, 1995, p. 2). The MAHT process involves translators working with the aid of tools such as online dictionaries, terminology banks, and translation memories. According to Hutchins (2012, p. 1), "the term computer-aided translation (CAT) is sometimes used to cover all these computer-based translation systems." The different tools are used with the intention of improving the efficiency and reducing the cost of translation. The use of these tools, some of which are free and open source, appears to have increased over the years. As Bowker et al. (2008, p. 27) have stated, "there is an increase use of computer-aided translation tools, and particularly of translation memories (TMs) in the translation profession." Despite the clear-cut terminological distinction between the two forms of MT, it is widely believed that "numerous tools integrate technologies that were once seen as belonging to one or the other category" (Palumbo, 2009, p.

23). For example, some translation memories are often associated with CAT, but they also integrate machine translation.

MT systems may be rule-based, example-based, statistical, neural or hybrid. Rule-based MT (RBMT) systems, "use knowledge in the form of rules explicitly coded by human experts, which attempt to codify the translation process" (Forcada et al., 2011, p. 605). The systems are based on a view of translation "as a process involving the analysis and representation of SL meaning, based on which a TL equivalent is generated" (Palumbo, 2009, p. 73). An example of an RBMT system is *Apertium,*[9] (a free, open-source MT system developed in Spain) and *Gram Trans*[10] developed by the Danish company, GrammarSoft Aps, and the Norwegian company, Kaldera Språkteknologi. *Gram Trans* specializes in the translation of Scandinavian languages.

Example-based MT (EBMT) systems make use of "a corpus or database of already translated examples, and involve a process of matching new input against this database to extract suitable examples which are then recombined in an analogical manner to determine the correct translation (Somers, 1999, p. 114). An example of an EBMT system is *OpenMaTrEx*[11] (Dandapat et al., 2010), a free, open-source MT system used at Dublin City University.

Statistical machine translation (SMT) is an approach, "characterized by the use of machine learning methods…[We] apply learning algorithms to a large body of previously translated text, known variously as parallel corpus [sic], parallel text, bitext [sic] …The [machine] is then able to translate previously unseen sentences" (Lopez, 2008, p. 8:2). As Palumbo (2009, p. 74) explains, algorithms match "the new SL segments to be translated with the SL segments and their TL equivalents contained in the corpus and then compute the likelihood that corpus-based TL

[9] Information available at https://www.apertium.org. Accessed on January 8. 2018.
[10] Information available at https://gramtrans.com. Accessed on January 2, 2018.
[11] Information available at http://openmatrex.org. Accessed on December 17, 2017.

equivalents are valid TL segments for the new text to be translated." Microsoft Translate is an example of a statistical MT system.

Hybrid MT systems combine two or more translation approaches with the goal of obtaining better results. In other words, several approaches are used within one MT system. An example of a hybrid MT system is TectoMT,[12] originally designed to translate English to Czech, then eventually developed to translate Portuguese to English, (Rodrigues et al., 2016). While each system has advantages and disadvantages, it is important to highlight the fact that MT systems have improved tremendously since they were first used (Koehn, 2009; Bowker, 2002).

The neural machine translation (NMT) system is currently applied by Google Translate and SYSTRAN. It was developed to replace the SMT system because it is believed to improve the quality of MT output. With the NMT system, machines are capable of learning millions of examples and relying on them to produce higher quality translations than other MT systems. Once the NMT system learns the examples, it is then possible to translate whole sentences, rather than segments of sentences at a time. It is also believed that NMT system can encode, rather than memorize parts of sentences. As Zhou et al. (2017, p. 378) maintain, "neural machine translation (NMT) becomes a new approach to machine translation and generates much more fluent results compared to statistical machine translation (SMT)." Despite the improved fluency, it is a well-known fact that "NMT has a problem to address translation adequacy especially for the rare and unknown words" (Ibid.).

It should be noted that researchers have other MT classification criteria. In fact, MT systems could equally be classified depending on the text type or end user. This type of classification distinguishes between specific-purpose systems, which are employed in the

[12] Information available at https://ufal.mff.cuni.cz/tectomt. Accessed on January 8, 2018.

translation of specialized subjects that have specific text types and genres (Byre, 2014), and general-purpose systems used for the translation of texts of a general nature. For example, TransLi is a statistical MT system specifically designed to automatically translate Canadian court judgments from English to French and vice versa (Farzindar & Lapalme, 2009). As far as the distinction based on the end-user is concerned, we can distinguish between stand-alone systems, such as SDL Trados, used mostly by professional translators some of who work as freelancers, and web-based systems, such as Google Translate, essentially designed for the public.

1.1.3) Instant messaging (IM)

IM has been defined as "a way of communicating with one or more people in real time" (Maximo & Edney, 2007, p. 7) with exchanges occurring via "an Internet protocol (IP)-based application that provides convenient communication between people using a variety of different device types" (Rittinghouse & Ransome, 2005, p. 3). For IM exchanges to take place, there need to be a combination of factors such as people (who speak the same or different languages); devices (desktop and laptop computers, mobile phones, tablets, and recently, smart watches); the Internet; and an IM application, (Bond et al., Correa, 2010; 2010; Crystal, 2006; Baron, 2004; Wood et al., 2003).

There have also been tools and applications specifically designed to facilitate the use of IM. These tools and applications are becoming common due to the growing popularity of IM and they facilitate IM exchanges in several ways. For instance, ZapTXT[13] is an IM tool that enables users to subscribe to blogs, job listings, news, etc. on their IM application, email or mobile phones. Another tool, RadiusIM[14], enables users to locate IM contacts based on their geographical location.

[13] Information available at http://zaptxt.com/. Accessed on December 3, 2017.
[14] Information available at http://www.radiusim.com/. Accessed on October 23, 2017.

The tool is capable of displaying the location of contacts on a Google map. As the list of IM devices has expanded, so has the list of tools: *IM History*,[15] *Zimbie*,[16] and *TwitterIM*.[17]

Due to the current widespread use of IM, research regarding the tool has increased across many disciplines and in language combinations. Though some researchers have found IM to be a contributing factor to various societal ills such as cyber bullying (Kowalski & Limber, 2007), it is worth noting that majority of IM research has underscored its usefulness in society (Behmke & Atwood, 2012; Junco & Cotton, 2011; Tagliamonte & Denis, 2008; Sotillo, 2006). Improvements in MT have now made it possible for IM users to communicate in various languages. This is because some IM clients such as Chatlingual and QQ Interational have successfully integrated translation software that can facilitate simultaneous exchanges among different users in multiple languages. The ultimate goal of IM translation is to break linguistic barriers that seem to impede communication among people speaking different languages often residing in different geographical locations.

1.1.4) English as a foreign language (EFL)

English as a foreign language (EFL) refers to the pedagogical instruction of English to learners whose native language is not English. It has also been defined as, "the learning of a non-native language in the environment of one's native language" (Tavakoli, 2013, p. 141). An example would be citizens of countries like China, Japan, or Saudi Arabia (non-native English-speaking countries) learning English in their home countries. FL learning is often taught and learned within a formal classroom context. A distinction is usually made between foreign language learning (FLL) and second language learning (SLL) which is "the learning of a non-native

[15] Information available at http://www.im-history.com/. Accessed on November 30, 2017.
[16] A service that enables bloggers to create and host their own IM bots and have interactive sessions with readers, etc.
[17] A simple tool that helps users twit via some IM platforms like Live Messenger.

language in the environment in which that language is spoken," (Tavakoli, 2013, p. 141) and which may not necessarily take place within a formal classroom setting. FL instruction is generally provided by native speakers (NS) and non-native speakers (NNS) with formal training in the teaching of the fundamental English language skills, which include listening, speaking, reading and writing (Verghese, 1989).

Over the years, different approaches and methodologies have been developed to teach English to speakers of other languages. These approaches and methodologies have often been developed "in response to increased demand for speakers of second and foreign languages" (Richards & Rodgers, 2014, p. 3) but also to other current factors including, "globalization, the advent of the Internet, and the global spread of English" (Ibid.). Some approaches are relatively new, while others have been used over the years, including the grammar-translation method (Richards & Rodgers, 2014; Dong-bo, 2004; Stevick, 1996), the direct method (Richards & Rodgers, 2014; Chang, 2011; Baumgardner, 2006), and the audio-lingual approach (Chang, 2011; Pica, 2000).

Approaches have also differed based on whether the focus is on the teacher, as in the teacher-centered approach, or on the learners, as in the learner-centered approach (Johnson, 2009). Similarly, some researchers (Richards & Rodgers, 2014) have recently discussed the importance of developing approaches based on the ability of the language to serve as a tool to promote interaction (interactional model) or based on the social context in which language is produced (sociocultural model). The communicative approach (Littlewood, 2010; Holliday, 1994) has been widely accepted and adopted in many countries. It is slowly being introduced in countries like China where predominantly teacher-centered approaches have been the norm for decades (Hinkel, 2011; Hu, 2002; Ellis, 1996; Anderson, 1993). The communicative approach takes into

consideration the context within which language is produced as well as its function. As Littlewood (2010, p. x) explains, "we begin to look not only at language forms, but also at what people do with these forms" when they engage in different forms of communication with others. The ultimate goal of the communicative approach is to prepare learners to use the language in different contexts and situations.

The action-based approach to language teaching is relatively new and may have evolved from the task-based approach. Promoted by CEFR (Common European Framework of Reference for Languages), the approach focuses on active language use to develop skills including listening, reading, speaking, and writing. According to the Council of Europe (2001, p. 9),[18] the action-oriented approach:

> views users and learners of a language primarily as 'social agents', i.e. members of society who have tasks (not exclusively language-related) to accomplish in a given set of circumstances, in a specific environment and within a particular field of action. While acts of speech occur within language activities, these activities form part of a wider social context, which alone is able to give them their full meaning. We speak of 'tasks' in so far as the actions are performed by one or more individuals strategically using their own specific competences to achieve a given result. The action-based approach therefore also takes into account the cognitive, emotional and volitional resources and the full range of abilities specific to and applied by the individual as a social agent.

With the action-oriented approach, "learners are, of course, the persons ultimately concerned with language acquisition and learning processes" (Verhelst et al., 2009, p. 141) via the active use of language in many different contexts. Furthermore, it is an approach which privileges learner autonomy and advocates for a framework where "learning precedes teaching and assessment," (Little, 2011, p. 382).

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[18] Information available at https://www.coe.int/t/dg4/linguistic/source/framework_en.pdf. Accessed on Jan. 12, 2018.

The current research project relied on the theory and principles of the action-based approach to FL learning. That explains why participants in the study were actively involved in a predominantly student-centered learning process. During the study, participants had several tasks which they accomplished depending on their degree of competence. IM provided the opportunity for participants to use language within given social situations and participants learned from their experiences.

1.1.5) Foreign language willingness to communicate (FL WTC)

FL WTC may be defined as, "the intention to initiate communication, given a choice," (MacIntyre et al., 2001, p. 369). Tavakoli (2013, p. 370) refers to WTC as, "an underlying continuum representing the predisposition toward or away from communicating, given the choice." MacIntyre et al. (1988, p. 547) outline the need to communicate in the FL when they define the concept of FL WTC as the, "readiness to enter into discourse at a particular time with a specific person or persons, using a[n] L2." From these definitions, we can summarize that WTC essentially entails: 1) the "predisposition" to communicate or not; 2) the "situation" under which communication occurs; 3) the "person" we communicate with; and 4) the "language" (most often the FL) of communication. These considerations reflect MacIntyre et al.'s (1988) perception of WTC as a situational, rather than a constant entity, as previously suggested by McCroskey (1987). This research project certainly takes these parameters into consideration, but goes further to include the communication tool and how participants use it.

The concept of WTC has been extensively researched in FL learning. Previous scholars identified WTC as a personality-based, trait-like predisposition (McCroskey & McCroskey, 1986; McCroskey & Baer, 1985) that remains stable across various communication situations (McCroskey & Richmond, 1999), and that is essentially limited to one language skill: speaking. MacIntyre et al. (1998), however, argued that WTC (especially in L2) ought to be treated as a

situational variable open to change across situations. They further explained that an individual's determination to enter into a conversation using a FL may depend on the time, place, context, and mood.

Researchers have provided many reasons to explain why learners are sometimes unwilling to communicate in a FL. Two of the arguably most widely researched reasons are lack of self-confidence and anxiety (Sampasivam & Clément, 2014; Dewaele et al., 2008; Derwing et al., 2008; Liu & Jackson, 2008; Tsui, 1996). Those who view WTC as a situational phenomenon argue that the level of anxiety manifested by a FL learner could be low at the beginning of a communication activity (such as when the learner finds it difficult to recall a particular word) but rise tremendously at a given period during the activity (Gregerson et al., 2014). Self-confidence, may be "based on a lack of anxiety combined with a sufficient level of communicative competence, arising from a series of reasonably pleasant L2 experiences" (McIntyre et al., 1998, p. 548). Lack of self-confidence, like anxiety, has been found to negatively impact WTC among FL learners (Saint Léger & Storch, 2009).

Apart from lack of confidence and anxiety, a learner's lack of WTC could also be caused by negative self-evaluation, discomfort when speaking with native speakers, fear of negative evaluation, low perception of linguistic accuracy (Ghonsooly et al., 2012; Peng & Woodrow, 2010; Liu, 2005) and international posture. In other words, the lack of, "interest in foreign or international affairs, willingness to go overseas to study or work, readiness to interact with intercultural partners" (Yashima, 2002, p. 57). Furthermore, Zheng and Goh (2015) and Zhong (2013) argue that for some FL learners, especially if they are Chinese, the unwillingness to communicate may be because they do not want to "lose face" or be perceived as showing off.

Research on WTC has also centered on the need to find ways to improve FL WTC. Some suggestions include: pairing students who do not speak the same first language during class activities (Zhong, 2013; Léger & Storch, 2009; Kang, 2005); designing action-oriented activities; enabling learners to plan an escape route; and assisting students to properly plan, prepare and rehearse language activities (MacIntyre, 2012). Other researchers have recommended that teachers profoundly understand the reasons why their students are unwilling to communicate and/or have learning anxieties prior to designing communication improvement-related activities, (Zhong, 2013).

Despite suggestions by researchers to improve FL WTC, it is important to note that technological advances in CMC may not have been sufficiently explored as an option that could improve FL WTC. Admittedly, some researchers, including Freiermuth and Jarrell (2006), have examined the usefulness of online chatting and identified anxiety, confidence, control, and power as factors that influence learners' WTC. They have then concluded that online chatting provides "a more comfortable environment than face-to-face conversations at enhancing [sic] students' willingness to communicate" (p. 189). The current project goes a step further to examine how FL WTC could be improved if learners are able to: 1) communicate with native and near-native English speakers; 2) use some of the latest communication technology tools; and 3) send machine-translated IM during communication and seek ways of overcoming obstacles they encounter in the process.

1.1.6) Opportunities to communicate in a foreign language (FL OTC)

An opportunity to communicate (OTC) may be considered a chance, an appropriate time, context, or situation during which an individual engages in communication with or without a tool. As far as FL learning is concerned, the notion of OTC has, essentially been explored as part of various concepts such as FL WTC. Despite the association of OTC with other concepts, a

considerable number of researchers (Alm, 2016) appear to agree with Badhaei et al. (2012, p. 12162), "that foreign language learners' levels of readiness to use opportunities to communicate in a foreign language account for their success in mastering the foreign language to a certain degree." The success in mastering a FL, according to Badhaei et al. (2012), may also translate into success in class and public examinations. They equally acknowledge the fact that seizing an OTC may depend on factors such as learners' motivation, familiarity with the topic of discussion, levels of confidence, and international posture. Some of these factors have also been identified as determinants of FL WTC thereby underscoring the close relationship between the two concepts. In the following paragraphs, we attempt to highlight the differences between the FL WTC and FL OTC within the context of this research.

In a nutshell, WTC refers to the intention to enter into a conversation given a particular situation or context, while OTC refers to actually exchanging information with or without a tool and/or via a specific platform. In other words, OTC means taking advantage of a situation and the tools or platforms available to communicate. With rapid technological development, these tools and platforms have increased. We can, therefore, agree that while OTC focuses on the *how* exchanges occur, WTC remains a conceptual entity that explores whether or not learners are ready to engage someone in a conversation at a particular place and context.

The desire to provide learners with ideal opportunities to use on FL appears to be one of the primary concerns of language teachers across the globe. As Lee (2002, p. 16) affirms, "the primary goal of foreign language (FL) teaching is to create a communicative environment in which learners express themselves in the target language." As a result, over the years, FL teachers have constantly sought better methods to put learners in a situation where they can use the FL both in and outside of the language classroom. Some teachers, for instance, use in-class presentations as

an opportunity for learners to improve communication in an FL. According to Brooks and Wilson (2015), oral presentations are student-centered activities which enable learners to practice all four language skills learned both in and outside of the classroom. They further argue that exchanges between learners during presentations are an OTC in the FL and may increase the motivation of learners.

With rapid technological advancements, teachers are seeking new, exciting, and innovative ways of helping learners communicate in FL. Learning activities have increasingly become student-centered and task-based, thus encouraging learner intuition and initiative. Lina Lee (2002, p. 17), for instance, has examined the use of synchronous electronic interaction to improve oral communication skills among learners and notes that, "during the online negotiation, learners are exposed to input, feedback, and output in a way similar to what they would experience through face-to-face interaction." O'Dowd (2011) has also emphasized the need for online cultural exchanges among learners located in different countries. He argues that telecommunication projects and activities ought to become a "normalised part of foreign language education" (p. 10). Other researchers who have offered learners the opportunity to use technology to improve WTC include Yang and Chen (2014), whose online technology-enhanced intercultural learning project led them to conclude that the platform was helpful especially because learners "acknowledged that they improved their knowledge of the varieties of English language use and culture, improved their vocabulary, writing, and technological abilities, and learned collaboration" (p. 72).

This study examines how the integrated IM translator could enable beginner EFL students to overcome communication obstacles while chatting with foreigners over a period of time. The IM translator assists learners to overcome linguistic hurdles while sending outgoing and receiving incoming messages. Understanding how learners take advantage of existing MT-based technology

to communicate in the FL is important because it highlights the connection between MT and FL learning, foregrounds a practice that appears to mirror the future of FL learning, and emphasizes the action-oriented approach to FL learning which, among others, advocates for self-reliance on the part of the learners.

1.2) Understanding IM

The first part of this chapter focused on the definition of important concepts that underlie this research project – CMC, IM, MT, EFL, FL WTC, and FL OTC. This section begins by examining three fundamental aspects of IM: the users, the language they employ, and some of the main IM clients currently available (companies that provide free and/or paid real-time IM translation services). This is followed by a brief description of the relationship between IM and FL learning, translation, and translation studies. Towards the end of the chapter, we attempt to assess the future of IM translation followed by a summary of the chapter.

1.2.1) Profile of IM users

Today, IM can be considered one of the most widely used methods of keeping in touch with friends, family, colleagues and classmates. IM has increased in popularity over the years becoming "one of the most recent manifestations of technologies, which reasonably could be used as a substitute for real-life human interaction" (Bardi & Brady 2010, p. 1722). Students constitute, arguably, the largest group of IM users because they sometimes depend on IM for curricular and extra-curricular activities (Jones, 2008). For example, Marianne Foley (2002), systems librarian at SUNY College, Buffalo, USA, has investigated the curricular use of IM to provide library referencing material to college students. As part of the findings, she (Ibid., p. 44) notes that:

> statistics show that two of the target populations, young people and students in cybraries, use the service heavily. Although the majority of patrons were on-campus, comments indicated that off-campus users included distance education students, another group the project had hoped to reach.

As Foley (Ibid.) found out, most of the users were happy with the service. “In fact, 71 percent declared themselves satisfied or better compared to 10 percent who registered some level of dissatisfaction.” Furthermore, the majority of users who said they were not satisfied with the service had tried to use it after work hours when it was shut down.

Other curricular uses of IM include online learning, where “students can stay in touch with their tutors and with each other while they are away from the classroom” (Kadirere, 2007, p. 2). Some teachers have created online forums where interactions in the classroom are often continued online in a chatroom-type environment where students can exchange ideas, ask, and answer questions and interact with their teachers (Yang & Chen, 2014; Baird & Fisher, 2005; Baron, 2004). Communication within these online groups is often instant, with members posting messages in turns in a single thread. Documents in various forms and photographs are also shared in this way with all members of the group. The size of each group depends on the number of students taking the course, but also on the IM client capacity (Behmke & Atwood, 2012; Kadirere, 2007). The most popular method of communication in these online classrooms is IM since most clients are able to bring together over a hundred users in a single group chat (QQ International can host 200 users at a time in a single chat group). Students also use IM to “communicate or locate other people while in indoor environments, for instance, in a meeting room, lecture theatre, or inside a large building” (Kadirere, 2007, p. 2).

As far as extra-curricular activities are concerned, IM is used in maintaining contact with parents and family members who may be far away, planning social activities, and other forms of entertainment (Flanagan, 2005; Baron, 2004). As Flanagan (2005) argues, IM is used in a variety of extra-curricular situations besides maintaining contact with families and friends. For instance,

students sometimes use it for entertainment purposes, including sharing music, jokes, recorded humorous activities, funny pictures, and stories. Besides serving as a platform through which users can interact with other users and develop friendships, IM also plays a large social gratification function (Ramirez et al., 2008). Social gratification is the deliberate use of different forms of social media to achieve specific goals and to satisfy specific needs (Ibid.). Social media gratification may often be characterized by users taking initiative and developing affinities with particular media while being fully aware of their media use to the extent that they can provide a fairly accurate description of their online activities (West & Turner, 2006).

Apart from students, businesses appear to rely considerably on IM. Investors, for instance, sometimes use IM in a variety of ways. Wood et al. (2003, p. 756) maintain that, "it is clear that many people in business are using IM and all the writers predict that such a usage will increase. This seems to be a natural extension of IM from the personal computing arena to the business world." IM is used to take stock of the market situation with a view to making informed investment decisions, luring new customers, signing up new clients, resolving customers' problems or communicating within companies, (Khang et al., 2012; Saavedra et al., 2011; Garrett & Danziger, 2007; Wood et al., 2003). Saavedra et al. (2011, p. 1) have examined how synchronous IM is used by stock traders to gauge the market situation prior to making important decisions:

> Analyzing empirical data on day traders' second-to-second trading and instant messaging, we find that the higher the traders' synchronous trading is, the less likely they are to lose money at the end of the day. We also find that the daily instant messaging patterns of traders are closely associated with their level of synchronous trading. This result suggests that synchronicity and vanguard technology may help traders cope with risky decisions in complex systems and may furnish unique prospects for achieving collective and individual goals.

Moreover, IM facilitates online shopping because buyers and sellers can easily exchange information on products and services prior to or after buying them. Online shopping has increased

in popularity over the years because it is convenient, and companies providing delivery services have become more efficient and reliable. Many online shopping sites now have applications with an integrated IM function capable of bringing together buyers, sellers, and delivery agents. Communication can be initiated before an item is bought, after it is bought, or while it is being delivered. Alibaba,[19] Jindong,[20] and Taobao[21] are all very popular Chinese online shopping sites with IM-based applications. These are some of the sites where Chinese students regularly shop. As China expands and continues to open its doors to foreign businesses, it may eventually be common for shoppers to rely on an IM translation application to contact foreign businesses or converse with foreign customers. Besides communicating with buyers, shop owners are increasingly using IM to maintain contact with employees in shops, provide real-time updates about business performance on particular days, and disseminate important business decisions (Flynn, 2004). As Vashee (2013) affirms, under such changing circumstances, "the strategic use of machine translation is one of the only ways that buyers and service providers can cost-effectively supplement human translation and scale up to meet this expanding demand" (p. 129).

Politics is another area where IM seems to have made remarkable progress. Harris Anita (2008), has examined the use of current technology including IM by women to express political positions, develop political identity, and construct new participatory political communities. She maintains that politicians use social media as a forum to express their agendas and canvass for support. While some platforms, such as Facebook, support IM, others, like Twitter, do not (Gerbaudo, 2012; Bennett, 2012; Lundby, 2009). It is probably fair to say that for political campaigns in countries like the United States, that depend largely on how well the grassroots are

[19] Information available at www.alibaba.com. Accessed on November 13, 2017.
[20] Information available at www.jd.com. Accessed on November 13, 2017.
[21] Information available at www.taobao.com. Accessed on November 13, 2017.

galvanized, the use of social media, including IM, could play a crucial role in shaping the outcome of elections. During the 2008 US presidential campaign, for instance, it was found that "e-mail was the preferred means of communicating political information followed by text and instant messaging" (Hendricks & Kaid, 2014, p. 5). Volunteers working for a campaign at the local, state, or national level use IM to stay in touch because information keeps changing, and regular updates need to be immediately disseminated across different geographical locations.

Studies have further found that IM use is common among adults and the elderly. Adults use IM for various reasons. Correa et al. (2010, p. 252) have investigated "ways in which Internet users socialize, connect, communicate and interact with each other via instant messaging and social networking sites" (p. 252). One of the findings of the studies was that, "the relationship between extraversion and social media use was particularly important among the young adult cohort." Van den Eijnden et al. (2008) and Bong et al. (2010) are among scholars who have investigated the relationship between adult IM use, the impact on their psychological well-being, and the development of compulsive Internet use. Philip Auter (2006), meanwhile, has examined the extent of gratification obtained by young adults from using IM, while Baird and Fisher (2005) have studied how adults use IM to keep up their social support network.

Finally, researchers have also focused on IM use among different genders. For instance, Naomi Baron (2004) and Fox et al. (2009) have investigated the linguistic profile of IM conversations in order to examine gender-based distinctions. They found disparities between male and female interlocutors in levels of message expressiveness. Naomi's (2004) analysis focuses on IM use between males and females based on four linguistic variables: individual turns, combining turns into conversational sequences, openings and closings, and conversation management. Baron (Ibid., p. 418) observes that:

> Whereas average turn length was similar across genders, the longest single turns in FF conversations were longer than those in MM conversations. The average FF conversation was longer (both in number of turns and in time) than the average MM conversation. Females took roughly twice as long (in number of turns and in time) to close conversations as did males.

As illustrated in this section, the use of IM is not exclusively limited to any group of people in any particular field or area. IM is increasingly popular with people of all ages, groups, and walks of life. It can, therefore, be predicted that its importance and influence in various domains may increase with time thereby opening up several avenues for further research (see Chapter 5, section 5.3 for more information).

1.2.2) IM language

IM makes it possible for interlocutors to exchange information from multiple locations while engaging in other kinds of offline activities such as "talking, watching television, [and] eating," (Baron, 2004, p. 399). The fact that interlocutors may be "buddies" and could have similar hobbies, share the same office (in the case of workmates), have a common ancestry, belong to the same ethnic group, etc. may influence their choice of words and the structure of their sentences. In addition to this, Baron (2004, p. 398) maintains that conditions may be different for each instance of communication and this "may, in turn, influence the character of language produced in that medium (e.g. formal versus informal, collaborative versus aggressive, verbose versus terse, edited versus scattershot, informative versus whimsical)." For instance, teenagers may tend to use one register of language during IM exchanges when they communicate with each other and a different register when they IM with their parents. Secondly, because of IM's specific characteristics, including potential for synchronicity, the language of IM is somewhat different from conventionally written language (Varnhagen, 2010).

The structure of IM sentences appears to differ substantially from the structure of formal written language. This is because users tend to break up their sentences into chunks of varying

lengths during both asynchronous and synchronous communication. The phenomenon is much akin to talking and listening at the same time as in oral conversation. Because of its unconventional nature, a certain terminology can now be used to categorize IM sentence patterns. Baron (2004) distinguishes between a *turn*, an *utterance*, a *sequence*, an *utterance chunking*, and a *closing*.

According to Baron (Ibid., p. 408), a *turn* is "a composition (i.e., by typing [sic]) and transmission of an instant message."[22] It should be noted that different terms have been used to describe the same concepts in IM. For example, Mackiewicz and Lam (2009, p. 419) use the term, *IM transmission* to refer to a turn. They define an *IM transmission* as, "one line from one participant that ends at the point the participant presses 'enter' and sends the transmission to his or her interlocutor."

An *utterance*, according to Baron (2004, p. 408), is the "rough equivalent of a sentence in IM." For example, "somebody ring me" (Ibid.). An utterance could be sent as a single structure or broken up into segments (utterance chunking). On the other hand, a *sequence* is "a number of IM turns in a row sent seriatim [sic] by the same interlocutor" (Ibid.). To illustrate, the following example is provided:

User A: Hey man
What's up
Seen Oliver.

The *sequence* in this example is made up of three *turns*.

Mackiewicz and Lam (2009, p. 419) employ the term *transmission sequence* to refer to the same concept, which they define as "a group of related transmissions strung together by one participant without intervening transmissions from another participant in the exchange." In this

[22] See Chapter 2, section 2.4.5 for details and Fig. 1 for a screenshot.

study, the same concept is referred to as 'ownership' since it provides a vivid picture of how participants are able to hold the floor during interactions.

Utterance chunking refers to, "breaking a single utterance into two or more turns," (Baron, 2004, p. 408). For instance,

> Speaker A: it must be nice
> to live in
> such a big city
> by yourself.

In this example, the *utterance* has been broken up and sent as four different turns. It is relevant to explain that, as far as this study was concerned, *utterance chunking* was not considered separate from turns, especially given that different chunks (like turns or sequences) were sent independently one after the other. It would also have been complicated to distinguish chunked sentences from "unchunked" sentences, especially given the unconventional nature of IM language.

As for *closing*, Baron (2004, p. 408) maintains that it is "a series of turns (between interlocutors) at the end of an IM conversation, beginning with one party initiating a closure of the conversation and ending with termination of the IM connection." To illustrate a closing, Baron (Ibid.) provides the example:

> User A: hey, I my time's up[23]
> User B: ttyl.[24]

Two other important characteristic features of IM language that have received considerable attention from researchers are cohesion and coherence. Cohesion has been defined as, "a property of the text…Cohesive devices, being on the surface of the text, can be observed, counted and analyzed and are, therefore, more objective" Tanskanen (2006, p. 21) than coherence devices.

[23] Indication to leave.
[24] *Ttyl* means Talk to you later.

Coherence, on the other hand, refers to "that which in a discourse connects statements with statements, statements with people, and people with other people. It is, in short, the 'glue' of text and conversation" (Erickson et al, 2002, p. 2). According to Tanskanen (2006, p. 21), "coherence is more subjective, and communicators may perceive it in different ways… There is an interplay between [the two phenomena] in that the presence of cohesive devices in a text facilitates the task of recognizing its coherence." Both cohesion and coherence are essential elements in IM exchange and their interplay could have significant effects on how meaning is negotiated.

Coherence and cohesion may be particularly useful in situations where employees work collaboratively on one project and simultaneously use IM to share ideas. This is partly because "participants appear to be aware that turns take different shapes in this medium and that turn-taking works in relation to the specific affordances of the tool" (Berglund, 2008, p. 23)." Therefore, users may need to have more than just casual knowledge of the tool and its functionality in order to take full advantage of its potential in synchronous interactions (Woerner et al., 2007). This partially explains why it was important in this study to select an IM client that majority of users were already familiar with.

IM language is characterized by the use of abbreviations, acronyms, emoticons, shortcuts, and unique spellings (Haas et al., 2011; Thorne & Black, 2007). Varnhagen et al. (2010) have built a corpus of IM language which has also been analyzed to develop an IM language taxonomy. They (Ibid., p. 722) underscore that:

> developing a taxonomy of ''new language'' use in instant messaging is important for understanding this different communication medium, observing its evolution over time, and comparing instant messaging with other forms of computer-mediated communication.

The taxonomy developed comprised three main features: shortcuts, pragmatic devices, and misspellings.

Table 1: Taxonomy of IM language developed by Varnhagen et al. (2010, p. 273)

Category	**Example**	**Example in context**
Short cuts		
Insider word	Hottie	MAKE OUT WITH THAT HOTTIE
Abbreviation	Feelin prolly	How r u feelin? You could prolly look them up on the net
Word combination	wanna gonna	i wanna sign up for the yhl i am gonna be gone sat and sunday
Acronym	bf omg	SHE HAS A BF omg that is terrible
Alphabet/letter	u 2day	what do u wanna talk about? did u go to skool 2day?
Phonetic	yer wat	You get yer stuff done tonight? Wat u doin?
Lower case	i elyssa	i almost cried r u talking to elyssa?
Contraction	im thats	im so excited thats not cool
Pragmatic devices		
Emotion word	hahahaha sooooo	hahahaha okay wow im sooooo glad
Emotion acronym	lol omg	lol im not talking to you omg for social we have to do this …
Upper case	THAT WASH	not THAT nervous though. u might have to actually WASH that sweater
Emotional punctuation	……. :)	so i was thinking …….. :) doo it hahah
Errors		
Typographical error	carzy frwnch	im too carzy just finished studying 4 frwnch
Misspelling	embarrasing	how embarrasing ….
	progect	it's for like a psychology progect

Christina Haas et al. (2011) of the University of Minnesota, USA, have also studied a 32,000-word IM corpus and suggested a 15-item taxonomy to better understand IM language. The

taxonomy includes different uses of punctuation to indicate pause and emphasis as well as dropped, repeated, and replaced letters. The 15-item taxonomy, they argue, provides cues about how messages could be interpreted. Their analysis equally focuses on features of eye dialect, slang, emoticons, and meta-markings as paralinguistic cues. For her part, Carmen Lee (2007) of the University of Lancaster, UK, has examined IM language choices among Hong Kong users and found evidence of invented Cantonese spellings, code-mixing, and a considerable use of emoticons, acronyms, and abbreviations.

Because of its unconventional nature, researchers have been interested in assessing the impact of IM on the academic performance of students who predominantly use it. As it stands, an examination of the relationship between IM language and formal academic language has revealed, to varying degrees, that IM language does not have a negative impact on formal language used in school (Fredriksson, 2015; Tagliamonte & Denis, 2008; Craig, 2003). Naomi Baron (2005, p. 31) argues that, "the shape of written language has always been much [sic] a product of social attitudes and educational values as of technology developments. IM is unlikely to play a significant role in altering writing standards." In the research they conducted, Tagliamonte & Denis (2009) argue that using non-standard linguistic forms demonstrated how users had a skilled command over the language and its manipulation. IM, on the contrary, is "not the ruin of this generation at all, but an expansive new linguistic naissance [sic]" (Ibid., p. 27). Varnhagen et al. (2010, p. 731) further confirm the assertion adding that:

> contrary to the dire prediction in the press and by some parents and teachers focusing on how instant messaging is ruining spelling and language development, we found few relationships between new language use and spelling ability … We are optimistic that spelling ability is not adversely affected by instant messaging.

1.2.3) IM and FL learning

The impact of IM on FL teaching and learning has continued to be of interest to researchers partly due to its popularity among students (Quan-Haase, 2008). Students use IM because of its synchronicity and the fact that it "simulates face-to-face conversation, particularly in its informality" (Godwin-Jones, 2005, p. 17). The informal nature of exchanges and the language used while communicating resemble oral conversation and could help students improve FL skills. Luis Guerra (2012, p. 1) affirms that with IM communication, "messages are typed, sent, and received instantaneously, bringing the electronic communication exchanges from the static to the more dynamic, and thus more closely resembling oral interaction." Consequently, some language teachers are increasingly aware of integrating IM technology into the classroom because of the apparent advantages it could provide. Researchers such as Gonzalez (2004, p. 57) believe that IM:

> provides the opportunity to interact and learn with and from people from different cultures and different native languages… While using these means of communication, students get prepared for the use of web tools, which is an added value for their future as professionals in any area.

In fact, the importance of IM exchanges is so crucial that "some language instructors are sending their students out to find IM partners, recognizing that this is a tool students know and like to use" (Godwin-Jones, 2005, p. 17).

Synchronous IM could also contribute in developing language skills because learners interact with real audiences as they simultaneously receive input and produce output, (Gonzalez, 2004). These exchanges may expose learners to FL vocabulary and sentence structures. Learners may also be able to improve their spoken English skills and also have the opportunity to receive instant and corrective feedback from interlocutors who, unlike in normal classroom settings, may be located in different countries and may be native speakers of the FL (Wu & Kawamura, 2012).

As a result of the advantages IM offers, researchers have become more interested in examining IM's impact on the teaching and learning of FL and its effectiveness as a communication tool. Research on the relationship between IM, FL, and culture has particularly focused on the development of linguistic skills, intercultural relationships, and behavioural patterns within the FL learning environment. Luis Guerra (2012), Fernandez and Yuldashev (2010), Mei-Ya Liang (2010), Yoon and Lee (2010), and David Craig (2003) have investigated the impact of IM on various aspects of FL learners' identity formation and the development of writing skills. The correlation between IM and behavioural tendencies, as well as sociocultural interactions among FL learners has equally attracted the attention of many researchers including Lim and Meier (2012), Thorne et al. (2009), Mahfouz and Ihmeideh (2009), and O'Dowd (2007).

In 1995, research conducted by Kern (1995) on the impact of synchronous CMC on language learning revealed that via IM, learners were capable of improving their language skills. Kern (1995, p. 470) stated that, "students' language output was at an overall greater level of sophistication in terms of the range of its morphosyntactic features and in terms of the variety of discourse functions expressed." Susana Sotillo (2005) has evaluated the use of text-based chat and audio features of IM to provide corrective feedback to EFL learners and found that:

> corrective feedback made available to L2 learners by their NS or NNS partners using Internet IM tools allows learners to detect a deviant use of a certain lexical, grammatical, or semantic form in their second language output, and research has shown that this may facilitate second language development.

According to Sotillo (2005), when corrective feedback is provided to learners, most of them tend to quickly integrate such feedback in their exchanges making language development, arguably, more effective than in traditional language classrooms where learners may not always have the opportunity to practice new language elements. Other researchers including Chun (1994) and Salaberry (2000) have also underscored the fact that communication via synchronous IM has

been a more productive FL platform than face-to-face communication undertaken in the language classroom.

Another area where the impact of IM may be felt strongly is long-distance virtual FL exchange platforms. Globalization has made it possible for people located almost anywhere in the world to communicate. Consequently, the ability to find language partners to learn and practice an FL or enrol in language courses is more feasible today than it was several decades ago. Those interested in studying the Jewish religion, for example, are able to learn the Torah in a variety of ways. They can ask "a 'rabbi' a question through e-mail, IM or participate in a real-time, online Torah chat with a virtual learning partner" (Goodman & Katz, 2004, p. 213).

As far as collaborative FL learning through virtual classrooms is concerned, it suffices to mention that several projects have been created within universities and colleges (Cziko, 2013; Kessler et al., 2012; Knutzen & Kennedy, 2012) to facilitate such endeavours. Telecollaboration projects, as they have come to be known (Helm, 2015; O'Dowd, 2011), essentially make use of synchronous and asynchronous communication in order to facilitate language learning among learners around the globe. As Kern (2015, p.198) remarks, despite shortcomings such as the movement of students within the context of student-exchange programs, and the inability of some universities to offer reliable telecollaboration tools:

> research studies have reported on the many outcomes of different telecollaborative projects, mainly in higher education contexts, such as increased motivation and linguistic output, gains in language development, accuracy and fluency, intercultural communicative competence, pragmatic competence, learner autonomy, online literacies, and multimodal communicative competence.

Furthermore, some companies, for commercial reasons, have designed platforms that bring together learners, teachers, and language partners with IM serving as the core data exchange component. Some of these projects include the Livemocha project (Islam, 2011) and the Montreal-

based virtual communication platform,[25] My Language Exchange. This platform serves as a web-based venue for learners of various foreign languages to interact with each other. Learners are brought together in virtual classrooms and they can exchange information orally, or over synchronous IM platforms based on a course outline and lesson plan developed to achieve set learning objectives. Learners are free to register online, pay the annual subscription of $24 USD, search for partners, and begin exchanging information. The integrated IM tool enables users to arrange chat sessions, store and retrieve their chat history, and easily insert accented characters. My Language Exchange seems to be a successful venture, as the website boasts of more than three million members from over 133 countries practicing over 115 different languages.[26]

The relationship between IM and language learning has actually gone beyond general considerations to focus on specific FL and culture-related concepts. For instance, Pin-hsiang Natalie Wu of Chien-kuo Technology University, Taiwan, and Michelle Kawamura of Ritsumeikan University, Japan, (Wu & Kawamura, 2012) have evaluated the use of IM to improve future WTC, intercultural communication, and cultural awareness. In their findings, they claim that IM "successfully increased students' willingness to communicate cross-culturally" (Wu & Kawamura, 2012, p. 838). Similarly, Lily Compton (2002) of Iowa State University has analyzed how IM could help students improve willingness to engage in FL oral interaction. In her conclusion (Ibid., p. 49), she maintains that online chatting "could be used to promote oral proficiency by increasing EFL learners' willingness to take risks through visual preparation, i.e. seeing and organizing their ideas in print and reducing their anxiety level." These studies both reveal the

[25] Information available at www.mylanguageexchange.com. Accessed on February 11, 2017.
[26] Information available at https://www.mylanguageexchange.com/Default.asp Accessed on February 11, 2017.

importance of integrating IM into the FL classroom and the potential benefits to learners especially with regards to improving WTC.

Even though the current research also seeks to investigate how IM could improve WTC among FL learners, there are significant methodological differences with previous studies that may need to be highlighted. First, unlike previous research (Wu & Kawamura, 2012) that evaluated real-time IM, the focus here is on real-time machine-translated IM. The inclusion of the MT component is an additional step introduced in the communication process which involves typing the outgoing message in Chinese, translating it into English before pressing the "send" button. Learners depart from a language they fully understand (their native language) and arrive at a target FL with MT helping (or not) to overcome various minor or major linguistic challenges. Secondly, unlike Wu & Kawamura (2012), whose sixty student participants were from Japan and Taiwan (both non-English speaking countries), EFL student participants in the current study communicate with both NS and NNS based in Canada, a foreign country. The distance between the two countries as well as the time difference could considerably reinforce the "foreign" element in the study and hopefully increase motivation. Furthermore, participants could be encouraged to pay more attention to exchanges, especially incoming messages, because they are sent by interlocutors with native or near-native proficiency in English. This is particularly relevant since the WTC level could depend on whether participants are communicating with native or non-native speakers of English (Bak, 2010).

1.3) MT, IM, and translation

In this section, the relationship between MT, IM, and translation, both in theory and practice, is analyzed. The section begins with a presentation of the main uses and challenges of MT, then an overview of real-time IM translation, followed by a discussion of the major IM

translation clients currently available. Thereafter, the attention shifts to IM and the translation practice with emphasis on how IM impacts the work and training of translators. The section that follows outlines the implications of IM translation in translation studies by examining concepts such as mobility, conflict, ethics, and MT post-editing. This section ends with a brief discussion on the future of IM translation.

1.3.1) Advantages, uses and challenges of MT

MT has been used by humans for decades because of its several benefits. Compared to humans, MT is faster. While humans could translate up to several thousand words a day, MT systems may do the same amount of work in minutes. The quality of MT output may not be as good as that of human translators, but in terms of speed, MT systems are considerably faster than humans. Secondly, MT systems are more affordable than human translators. The cost of hiring professional translators is high because in countries like Canada, translators are paid according to the number of words they translate. On the contrary, there are many MT applications that cost little or nothing to acquire or use. Google Translate is arguably one of the most popular and free web-based translation applications currently available. Given that some people require translations just to get the gist of a meaning, MT applications could be preferred to human translators because they are free, some are readily available, and they can produce fit-for-purpose translations which require minimal editing, can be produced fast and in large amounts (web pages, for example). Thirdly, MT systems are adaptable. They are capable of memorizing key terms and phrases in each industry for use in future translations. This means, the more they translate, the better they become (DeWitt, 2016). Fourthly, MT systems can translate multiple languages. The QQ International IM translator can translate over 50 language pairs. This is a number no human translator may ever able to acquire.

There are several reasons to explain why an increasing number of people are using MT today. There has been remarkable improvement in the quality of translation produced by different MT

systems. In addition, MT has several advantages over human translators and there has also been explosion in contents that need to be translated. Furthermore, the languages (European and non-European) in which information is disseminated, mostly online, have increased tremendously over the years making information available to an increasing number of people (Vashee, 2013). The use of MT in different areas (business, FL learning, etc.) and among different groups of people (translators, students, journalists, etc.) is due to the fact that MT stakeholders understand MT makes economic sense when "used in [the] translation of dynamic content that is continuously updated, in cases where speed and timeliness offer more value than perfect translation quality" (Vashee, 2013, p. 130). The fact that users are not always searching for a perfect translation quality has been one of the main reasons for the popularity of MT. In his discussion on translating by post-editing, Ignacio Garcia (2011, p. 229) argues that "the discourse around the 80s and 90s was around light post-editing to make machine-generated text comprehensible. Light post-editing may be pointless now for language pairs of which quality may already be good enough for *gisting*."

MT has also been partially responsible for the accessibility of information to a wider audience. From a linguistic standpoint, accessibility would refer to the ability to make information available to a wide audience of diversified users (citizens, students, those with hearing disabilities, etc.) with in their own languages (Matamala & Ortiz-Boix, 2016). To make this possible, some website construction companies such as WordPress[27] have developed translation-friendly approaches aimed at making contents available to most members of the society. The notion of translation accessibility appears to be gaining momentum nowadays as the quest to reach larger audiences intensifies (Matamala & Ortiz-Boix, 2016).

[27] https://torquemag.io/2018/02/wordpress-translation-accessibility-issue-dont-fall-behind/

However, despite its many advantages and uses, MT systems do have one major challenge. They are not as accurate as humans. They may be able to produce acceptable translations in certain domains (weather reporting and technical manuals), but the quality of translation obtained from MT systems is inferior to that of humans in many ways. Okpor (2014, p. 165) explains this by claiming that "natural languages are highly complex, many words have various meanings and different possible translations, sentences might have various readings, and the relationships between linguistic entities are often vague." The combination of various MT systems has been intended to minimize some of the challenges of MT systems. Though the endeavour has achieved remarkable progress, it is should be noted that that, for now, "there is no perfect approach" (Ibid.).

This study is undertaken with knowledge of the benefits and the drawbacks of MT systems. That explains why as part of the study, we intend to investigate some of the problems participants encountered while machine-translating IM and how they tried to resolve these problems (see Appendix I). Knowledge of their problems and solutions may deepen our knowledge of MT systems, concepts in FL learning, and translation studies, and provide useful information that could shape translation and FL training.

1.3.2) Real-time machine-translated IM

The popularity of IM and progress made in MT have been important contributing factors to the development of real-time machine-translated IM. The desire to break language barriers has increased with the urgency to disseminate information. One of the driving forces behind the development of machine-translated IM is the need for companies and organizations, in the face of globalization and increasing competition, to ensure that information exchange among various branches and offices located in different parts of the world is smooth and rapid. Jones and Parton (2008, p. 6) claim that, "by integrating machine translation with Instant Messaging, a new capability exists to allow groups made up of users, each of whom may speak a different language,

to communicate rapidly and informally." Motivation to use IM has increased, given that language barriers could create far-reaching inconveniences for businesses by impeding their ability to buy and sell goods and expand. For organizations, especially those involved in conflict zones, delaying the relaying of information for a few seconds could sometimes lead to fatal consequences (Jones & Parton, 2008).

Companies and organizations also prefer machine-translated IM because the use of human translators and interpreters could prove problematic in many regards. As far as companies, international organizations, or coalition forces are concerned, the hiring of translators and interpreters may be quite expensive. Some may refuse to be posted in dangerous areas and/or war zones. Secondly, translators or interpreters working real-time may not have adequate terminological competence in certain domains and may require additional time to familiarize themselves with job-related jargon. Furthermore, some companies may be unwilling to share confidential company information with "outsiders" (Feely & Harzing, 2003; Marschan-Piekkari et al., 1999) and third parties for security reasons. Given these inconveniences, it may be partially advantageous to exchange information using a real-time IM translation tool.

Real-time machine-translated IM has witnessed significant improvement over the years. Initially, it entailed the cutting and pasting of IM from an IM tool or text field into a separate machine translation program, which translated the message into the target language, which was then cut and pasted back on the IM tool before it was sent to the recipient. Then came the integration of servers in the IM network which made it easier and quicker to translate messages from a sender to a recipient. The sender keyed in the message, specified the destination language, and then sent the message to the server. The server, for its part, translated the message into the

specified target language, sent it back to the sender who then forwarded it to the recipient. However, this machine translation process has been criticized for various reasons:

> The time required to perform this process makes this implementation impractical for "real time" (instant) communication. This is because the procedure requires more processing and network resources to be expended, and also introduces extra hops between the client and destination device. Moreover, such systems limit the ability for a user to send messages to multiple users of different languages simultaneously (Seme, 2001, p.1).

Current real-time IM translation applications have been designed to instantly translate messages from one sender to one or multiple recipients in one or more target language(s). The fundamental difference between current IM systems and previous versions resides in the use of a content translation module which may be located at the source device (desktop, laptop, mobile, PDAs), and at the destination device. Seme (2003, p. 1) defines a content translation module as "a computer-executable module (e.g., DLL, exe), which contains instructions for translating messages from a …source device (source language) to a …destination device (destination language)." During the IM session, user profiles including information such as the language preferences are shared between the source and destination devices. Messages sent from the source device are then translated by the content translation module as per the information and settings of the destination device before they are forwarded to the recipient. In this way, the communication process is faster and occurs in real time (Seme, 2001). Alternatively, the content translation module could be located anywhere along the IM network. Once the source and destination user profiles have been exchanged and set within the translation module, it is possible to translate virtually any message and forward to the desired recipient. This also makes it possible to input a single message in a given language then have it translated and sent simultaneously to multiple users in multiple languages.

Though the use of real-time machine-translated IM could be challenging because cultural and time differences could occasionally be difficult to negotiate. However, at the international level, "the benefits of closer cooperation among countries focused on common goals make this technology worth the risk (Jones & Parton, 2008, p. 6). As the world becomes smaller due to globalization, breaking down linguistic barriers may bring together more communities for the mutual benefit of all. As Jones and Parton (2008, p. 6) further maintain with regards to IM, "being able to communicate easily to users of other nations may not only accomplish a common task, but also to establish relationships that benefit all participating countries." This probably explains why some companies have invested significantly in providing free and commercialized machine-translated IM platforms for IM users around the world. Some of these IM translation clients are outlined below.

1.3.3) An overview of some IM translation clients

The list of companies that provide real-time machine-translated IM services has been on the increase over the years. As more individuals and organizations tend to need and use IM for different purposes, companies have realized the need to increase and diversify the features offered on various IM applications. In this section, we examine some of the most popular real-time machine-translated IM clients currently available on the market based on the following criteria: price, device compatibility, languages offered, and group chat options. It is worth noting that only a limited number of IM translation features has been selected for consideration in this section based on their importance to the current study. For example, features such as voice and video calling, location, video, photo and contact sharing have not been included in the criteria though they are also important options to many IM users.

Price and number of users: The prices for IM translation applications and related services (premium services for some clients, for example) may be set as one-time payments or monthly

subscriptions. Clients who provide free and open-source IM translation applications such as Wechat, and QQ International may, arguably, be more popular among users than clients whose applications are expensive to acquire or those, like Sendboo, for which a charge is required to obtain upgraded services.

The number of IM users refers to subscribers (individuals and companies) that have registered and are actively using the IM translation application to communicate. The number of active subscribers is important for the current study because, to a certain extent, it could be considered as an indication of the overall satisfaction of users with the combination of features offered by the IM translation client. In this study, clients that provide free basic services, but paid upgraded services, sometimes known as VIP services, are classified as paid rather than service providers.

Device compatibility: Mobile devices are among the most widely used communication tools today (Duggan, 2015). This explains why it is relevant for a provider of IM services to make it possible for users to download and install the application on multiple devices. Mobile IM translation applications (particularly those available on smartphones) could be more convenient for users than applications that are solely available on desktop and/or laptop computers. Applications considered for this study were capable of offering IM translation on multiple devices that allowed participants to communicate from various locations.

Language combination: This refers to the number of source and target language combinations offered by IM translation clients. Language pairs are important because they could be directly linked to the client's level of popularity among users, based on the assumption that more language combinations may translate into more potential users. Furthermore, the languages offered may, arguably, justify the popularity of certain IM translation applications in different parts

of the world. The number of languages offered was definitely important, but the language pairs (which languages could be translated into which) was paramount. Furthermore, the translation process per se was of considerable importance in this study. The selection of an IM translation tool for this project depended on answers to the following questions: At what point during the process are messages translated? Are they translated before they are sent, or after they are sent? Do senders view their translated messages? Can they modify them? Is there a chat history? How long can conversations be stored? Can the chat history be downloaded or exported? If so, in what formats? These questions were crucial because the decision to use a client for this project hinged on the possibility of viewing SL and TL translations, downloading and installing the IM application, and storing messages for eventual analysis.

Group chat option: This refers to the availability of an option that allows users to simultaneously communicate with multiple users in a single chat window. With a group chat option, users can view who is online, share photos, files, and videos, leave voicemail, and also exchange IM. Similarly, users can sometimes invite other users to join the conversation. This feature is essential because during the current study, exchanges took place between two IM users, but a silent monitor was added to each pair to download machine-translated IM for analysis. This way, participants were free to focus on their conversation as naturally as possible. IM translation clients that did not possess the group chat feature were not considered appropriate for the research.

After briefly outlining the IM translation selection criteria, the section below presents a select number of clients that were considered for the study. It is important to note that the IM clients introduced in the following section do not, in any way, represent the total number available on the market at the current time. However, they are among some of the most widely used based on their number of active subscribers and the array of features they offer. A brief description of

each (Wechat, QQ International, Skype Translator, VoxOx, Sendboo, Chatlingual, Lringo) shall lay out their strengths and weaknesses and highlight their suitability, or lack thereof, for the project.

1.3.4) Wechat

Wechat is a free messaging application developed by Tencent Company Ltd., a China-based social networking solution provider that also owns QQ (International). It is popular in China and increasingly popular in various countries in the world such as South Africa and Brazil (Shih et al. 2015). It has many convenient features for its predominantly Chinese user-base. Some of these include free texting, voice and video calling, file sharing, and multiple payment options. For most Chinese users, Wechat does what credit cards do in the West. As an IM translation platform, users can also exchange various sorts of information, and share pictures and files in multiple formats. They can also translate incoming messages, shop online, and send and receive money (for user accounts set up in China, South Africa and Brazil), etc. It is currently used by over 800 million people, most of who live in China. Like Facebook, it has a public platform for sharing information (e.g. posting pictures and receiving feedback from friends). Designed for group chats of up to 100 users, Wechat currently supports 21 languages and can be used on mobile devices, laptop and desktop computers. The conversation history can be stored indefinitely but may not be downloaded even though messages can be individually forwarded to other users.

As far as IM translation is concerned, messages are not translated prior to sending. Users can, however, translate incoming messages depending on the language setting on their device. For instance, if a user's language setting is English, then incoming messages can solely be translated into English. This means users cannot translate from one language to another by simply selecting a language pair of their choice. To translate an incoming message, all the user needs to do is to press and hold the message then select "translate" from the drop-down menu. Though Wechat can be considered a relatively useful IM client, it is not suitable for this project because messages are

not translated before they are sent. Secondly, machine-translated messages are not visible to both the senders and recipients and the conversation history cannot be downloaded and or exported.

1.3.5) QQ International

QQ is undoubtedly one of the most popular IM clients in China, with about 861 million active user accounts in the first quarter of 2017. The platform has an average 266 million users simultaneously logged on every day.[28] It has features similar to Wechat's, such as IM, voice and video calling, voice messaging, IM translation, location-based search (for the version downloaded and installed in China), file and picture sharing, group chat (up to 200 users in one group), and money transfer options. A chat history can also be kept for an indefinite period of time and can either be downloaded and or exported. (See chapter 2, section 2.1 for more details and why it was chosen for this study).

1.3.6) Skype Translator

Skype is one of the largest communication platforms for individuals and companies in the world. It offers numerous features including voice and video calling, IM, file, picture and screen sharing. Most of the features are free for subscribers during individual and group exchanges. Skype is also a platform through which some teachers organize classes in various subjects (Eaton, 2012).

Skype Translator was first launched in 2009 and has become increasingly popular since then. It currently allows users to translate IM in over 50 different languages. Though it is more popular due to its voice-to-voice and voice-to-text translation solutions, Skype does have an IM translation option that also supports group chats. The translation process per se is a little different from that developed by QQ International. The chat window has a translation icon that, once turned on, can translate messages prior to sending. The recipient does receive a translated version of the

[28] Information available at https://www.tencent.com/en-us/system.html. Accessed on December 15, 2017.

SL message but may obtain the original message, if they so choose, by pressing and holding the translation. Sent and received messages cannot be edited by either the sender or the recipient and do not appear side-by-side. As a matter of fact, they are mutually exclusive, meaning that only one version of the message (either the translated or untranslated version) is displayed at a given time. The conversation history can, however, be stored and retrieved, downloaded, and/or exported. The service is free among Skype users and appears quite user friendly. However, even though it is available for Windows 7, 8 and 10, as well as Android and iOS, it is not available on Mac computers, thereby limiting its suitability for this project.

1.3.7) Lringo

Like QQ International, Wechat, and Skype Translator, Lringo is an IM application with a translation option. It is a free cross-platform application (supporting chatting from the application's website[29] and a user's mobile device) that facilitates machine-translated IM in 27 languages. When conversation takes place on the Lringo web-based platform, the messaging history is not saved and cannot be downloaded or exported. As a matter of fact, once users log out, their data is virtually lost. On the mobile device, however, the conversation history is saved but it cannot be exported or downloaded. Furthermore, during IM exchange, a sender does not view and cannot modify the translated version of their messages as the translation occurs after the message has been sent. The recipient, on the other hand, sees both the original message and the translated version displayed side by side.

Lringo's smartphone and tablet applications support group chatting but its website version does not. This means in order to communicate with multiple users, interlocutors have to open many chat windows at the same time. This is a major inconvenience. Furthermore, Lringo is only

[29] Information available at www.lringo.com. Accessed on February 21, 2017.

available on android devices, meaning that in countries like China where the iPhone and Mac operating systems are quite popular, Lringo may find it difficult to compete with bigger providers such as Wechat and QQ.

1.3.8) Chatlingual

Chatlingual is a multilingual real-time IM translation client that facilitates IM exchanges 66 languages. Though the application supports conversations among individual users, it is intended mostly for companies that can take advantage of the platform to provide multilingual services to current and prospective clients. Chatlingual supports group simultaneous and multilingual IM translation sessions. This means a user can communicate simultaneously with multiple users who all speak different languages. Translation into the target language(s) is done based on the language choice on each user's setting. This makes it possible for a single message to be translated into multiple languages and for multiple users. Moreover, translated messages appear side-by-side with original messages, offering convenience to anyone who may want to compare real-time machine-translated output to original messages.

However, despite the advantages, Chatlingual has a few drawbacks. First, unlike Skype Translator, QQ International, Wechat and Lringo, it is not a free open-source IM translation application. There is a 14-day trial period, at the end of which users are expected to pay to continue using the service. Furthermore, there is no specific payment amount. Customers pay depending on individual business needs and the projected number of customers and clients. Secondly, Chatlingual does not have applications that can be downloaded and installed on either mobile devices or desktop and laptop computers. This means all communication takes place via the web-based application on the company's website. This could be challenging for Chinese users whose government Internet firewall makes browsing on some foreign websites difficult and almost

impossible. Finally, Chatlingual appears more to be a business-to-business (B2B) rather than a peer-to-peer (P2P) IM translation solution provider.

1.3.9) VoxOx

VoxOx is a free open-source IM translation service provider that also offers VoIP web-based phone calls to both land and fixed phones around the world. VoxOx subscribers can also send and share files and photos, make video calls, send voice messages, and apply for fixed contact phone numbers in the USA. Its universal IM and SMS translator enables users to translate up to 50 languages in real time using devices equipped with either a Mac or a Windows operating system. VoxOx can also be used to translate IM on users' Facebook and Twitter accounts, as the developer has sought to make it a one-stop-shop for most IM platforms. Users can set up the application in such a way that translated messages are seen before or after they are transmitted. Like QQ International, users may choose to view only incoming translated messages.

However, despite its many apparent advantages, messages cannot be stored and retrieved at a later date, nor can they be exported in any file format. Furthermore, users are required to pay for the suite of services provided by XoxOx including fax, telephone calling, and video conferencing with up to twenty attendees. Furthermore, according to reviews by users, the application constantly crashes and, though it can translate IM on other platforms such as Skype, those platforms need to be running as well. [30] Having other IM applications running simultaneously appears to be redundant and considerably reduces the importance of XoxOx as a one-stop-shop platform for its users. Some users have complained that having multiple applications running at the same time with VoxOx is unnecessary and that the application constantly crashes (Hoover, 2010).

[30] Information available at http://lifehacker.com/5474677/voxox-translates-foreign-language-instant-messages-on-the-fly. Accessed on May 23, 2017.

1.3.10) Sendboo

Sendboo is an IM application for mobile devices that allows users to communicate in real time by exchanging (machine-translated) IM. Users can also share videos, pictures, and audio files as well as provide information about user location. Exchanges can be done simultaneously between two users or among a group of users. The application is also able to translate IM in real time among 30 different languages. A chat history, created when users communicate, can be exported, downloaded and/or deleted whenever the user prefers. Sendboo, i.e. the basic application, can be freely downloaded and installed on Apple mobile devices (notably iPhone and iPod touch) that run the iOS 5.0 or later versions.

However, Sendboo Plus, the premium ad-free version, costs US$3.99 per year which could be a substantial amount for some users such as students or those in the low-income bracket. The application is designed for use on mobile devices that run iOS, basically limiting it to those who can afford Apple products. Furthermore, since messages are translated after they are sent, it is not possible for senders to view the machine-translated version of their messages. Similarly, Sendboo does not display both the original and machine-translated messages.

Table 2: Summary of the main IM translation applications

Client	Users (in million) As of Feb. 16, 2017	Languages	Price	Mobile compatibility	Incoming/outgoing translation	Group IM function
Wechat	About 800 +	21	Free	Computer Mobile devices Applications	Long press on received message to have it translated. Messages can be stored but cannot be downloaded to a computer, for instance.	Available with password for private chat groups
QQ International	861	50	Free	Computer Mobile devices Applications	Translate IM first, then sent to recipient. Possibility to save, download, and share messages.	Yes Maximum of 20 users

Skype Translator	Unavailable	51	Free Skype to Skype	Computer Mobile devices	Translate then send – can only see one message at a time. Capable of storing and retrieving messages.	Unavailable
Lringo	Unavailable	27	Free	Computer Mobile devices Applications	Translation done after message is sent. Messages can't be stored.	Yes
Chatlingual	Unavailable	50+	Free 14-day trial	Computer Mobile devices	Incoming message translations. Sender does not see their messages and translation. Messages can be stored and retrieved.	Yes
VOXOX	Unavailable	About 50	Calling/Texts IM etc. are free.	Computer Mobile devices	Only one person uses IM translation	Unavailable
SENDBOO	Unavailable	30	Premium account costs USD$3.99 a year.	Computer Mobile devices	Message is sent then translated prior to reception.	Yes

1.4) IM and translators

IM and translation do have similarities and have actually complemented each other even before the introduction of real-time machine-translated IM. Similarities include the fact that both translation and IM are concerned with information exchange, be it within the same language as in intra-lingual translation (Cutter, 2005) or among multiple languages as in inter-lingual translation. Both IM and translation have benefited from current advances in technology as both translators and IM users sometimes use similar devices (computers, laptops, and smartphones). Furthermore, the relationship between translation and IM has become even more profound with advances in MT and the popularity of IM in modern society.

One area where IM and translation intersect is in the way translators exchange work-related information. Professional translators use different media to exchange information. These include email, IM, and telephone. IM is sometimes used for information exchange among (freelance) translators and their clients, colleagues, editors, project managers, and revisers, who may or may not be working on the same project (Gil & Pym, 2006). There are many reasons why translators

may want to reach out to other team members working on the same project. They may want to resolve terminological problems, discuss project formatting, deadlines, professional development meetings, and other job-related issues. Karamanis et al. (2011, p. 16) maintain that in typical localization processes, decisions about terminology are "viewed as being made by a terminologist at the client's site and recorded in a glossary." However, in reality, translators tend to contact the client as a last resort, rather soliciting help from colleagues. As far as establishing contact with colleagues is concerned, "email and instant messaging work well in the collocated [sic] settings (Ibid.).

IM could further be used as a quality assessment collaboration tool among translators, especially those working on the same project. According to Karamanis et al. (2011, p. 9), the collaborative effort among translators sometimes expands when quality needs to be maintained:

> Face-to-face communication is facilitated by the physical arrangement: Several translators share a desk and face each other. Email and instant messaging (e.g. when a team member is not immediately available or when the translator wants to send them a problematic segment) are blended with verbal exchanges.

This type of collaboration may not only be limited among translators, but with recent advances in technology, it can be argued that different means of initiating contact now exist between clients, project managers, and translators, especially when it comes to translating large projects (Gil & Pym, 2006). MT solution providers, and other software developers appear to have understood the need to enhance collaboration among translators. As a result, they have begun integrating an IM option in translation solution suites. The SYSTRAN suite 8,[31] Fluency,[32] and

[31] Information available at http://www.systransoft.com/translation-products/server/systran-enterprise-server/ Accessed on June 14, 2017.

[32] Information available at https://www.westernstandard.com/Fluency/Collaboration.aspx. Accessed on May 12. 2017.

SDL Trados,[33] for example, come with various collaboration options for translators and project managers including IM. SYSTRAN has taken significant strides towards achieving cross-border real-time communication during translation. It provides a centralized server on site and offers real-time translation of documents in all file formats. At the same time, collaboration among translators working as a team on a given project is ensured via a variety of media including real-time IM. The example of SYSTRAN may possibly be emulated by future software providers, since translation has fully become a collaborative activity in the new age of globalization, localization, and technological innovation. If machine-translated IM is useful for translators, then maybe translation training programs ought to consider introducing this tool in the training environment. See discussion on collaboration in Chapter 4, section 4.3.4.

Apart from facilitating the work of translators and managers working on translation projects, machine-translated IM could prove very useful in some crisis situations. The use of text messages during a well-known crisis has proven the extent to which similar forms of communication, including IM, could be utilized to save lives. During the Haitian earthquake crisis of January 12, 2010, text messages sent from affected places were translated and transmitted to emergency responders so that the limited resources available could be properly channelled to areas that needed the most help. "It was the only emergency reporting and response service available to people within Haiti following the earthquake. According to the responders, it saved thousands of lives and directed the first aid to tens of thousands" (Munro, 2010, p. 3). Today, organizations like Doctors without Borders and other emergency relief organizations use real-time machine-

[33] Information available at http://www.sdl.com/cxc/language/translation-productivity/studio-groupshare/?InterestProfile=LTTranslatorProductivity. Accessed on May 34, 2017.

translated IM to communicate with victims of various disasters, as well as frontline staff with whom they may not share a common language (Chau, 2013).

1.5) IM translation and translation studies

Recent developments in Translation Studies reflect an increasing range of facets and situations of translation. Research in the field has evolved from largely product to more process-based (Saldanha & O'Brien, 2013) and there is a growing focus on the analysis of translation as a cognitive, social situated, and technologically supported activity. Researchers are increasingly concerned with observing translation and interpretation in authentic (often workplace) such as home offices, transcreation enterprises, and churches (Risku et al., 2017).

Moreover, there is a growing focus on the evaluation of MT (cf. Way 2017) and the acceptability of various levels of translation quality for different points of view and users. User-centred evaluation of, for example, MT output (Bowker & Buitrago, 2015; Bowker, 2009) is being used as a complement to other measures including human and automatic evaluations (Way, 2009; 2017). There is also increasing focus on non-professional translation (O'Hagan, 2011), collaborative or "hive" translation, volunteer translation organizations (Translators Without Borders[34]) and individuals (McDonough, 2015), and its relevance in the field and for professional translators.

So, this project ties in with a situated, social, and process-based analysis of MT in an authentic setting, looking at the acceptability and usability of MT in a given context, for non-professional use. It also brings in elements of human-computer interaction given that "the profession has changed over time and has become almost symbiotic with the 'machine' (used

[34] https://translatorswithoutborders.org

synonymously here with 'computer')" (O'Brien, 2012, p. 102). In this project, we examine the usability of MT for IM communication in a given situation and the implications for translation studies. In the section that follows, the focus is on how real-time machine-translated IM contributes to advancing the discourse on translation studies, especially translator training (Gil & Pym, 2006) and ethics (Baker & Baier, 2010).

1.5.1) IM translation and translator training

Many translation scholars appear to agree that, nowadays, technology and translation are inseparable, and that future translators may need to be tech savvy in order to survive in a fast-evolving discipline (Gil & Pym, 2006; Bowker, 2002). Technology has facilitated the work of translators in several ways. For example, translation memories, together with bilingual corpora, have remarkably eased terminological research for translators (Bowker, 2002). Other translation software (SDL Trados, SYSTRAN, Déjà Vu, etc.) have made it possible for translators to avoid retranslating repetitive sections of texts and rather focus on areas being translated for the first time (Bowker, 2002). Technology has also encouraged collaboration among translators as a single text can be shared among various translators who may, sometimes, reside in different parts of the world. As a matter of fact, Gil and Pym (2006, p. 6) maintain that, "of all the tools, the ones that are specifically designed to assist translators are undoubtedly those concerning memory." They further affirm that electronic technologies affect virtually all aspects of the translator's work. One of the results of advances in translation technology is the general understanding that translators need to diversify their skills set in order to adapt to changing market conditions.

As a response to these changes, translation schools and programs have begun to integrate translation technology into their programs, as they realize the need to train well-rounded translators to meet the increasing demands of the profession. Most professional training institutions agree that knowledge of translation technology is relevant for trainees and Bowker et al. (2008) have

emphasized several challenges faced by institutions as they weigh different translation tools and platforms that could be integrated into the training environment. Some of the challenges include how to balance academic and market priorities, the number of tools to use in translation classrooms, how easily the tools can be learned, and how employers perceive certain tools.

Given its importance in many areas (collaboration among translators, commerce, conflict areas, peace missions, and refugee resettlement), it may be time for translation scholars to start reflecting on how to introduce IM translation as a tool in the training environment. IM translation is a relatively new phenomenon, and it may follow the trail of IM (which is very popular in the world today) to become one of the leading translation tools in the future. Currently, for example, IM translation is witnessing a breakthrough in combat areas where IM applications appear to offer more advantages than human translators (Jones & Parton, 2008).

The first advantage is the risk factor. Translators and interpreters working at the forefront of wars take a considerable amount of risk on a daily basis. With IM translation, the number of humans hired to translate and interpret may decrease, while the volume of translation and interpretation done may increase. With IM, it suffices for each soldier to carry a small device (a smartphone, for instance) that can instantly translate outgoing and incoming messages. Secondly, using IM translation could speed up exchanges between various parties involved and subsequently lead to quicker decision making. Jones and Parton (2008, p. 6) of the MITRE Cooperation, one of the companies that has developed products for translating IM (TrIM), have discussed the vitality of IM multilingual communication in areas of the world where coalition forces are involved in different combat missions:

> Our experiences using translated IM and fielding it for use in coalitions comes through the use of a prototype developed at The MITRE Corporation called Translingual Instant Messaging (TrIM). TrIM consists of an IM protocol developed within MITRE integrated with commercially available translation systems. The experience from these

> operations has been invaluable in learning about translated Instant Messaging, its strengths and limitations, and how it can be best used within coalition operations.

Jones and Parton have thus underscored the importance of communicating in different languages, especially with regards to making crucial decisions on which lives may depend during active combat. They have also noted that "by providing a means to determine a person's availability, ask a quick question, and maintain continuing relationships with others, IM fills an important role" (2008, p. 10). IM helps to keep troops from different linguistic backgrounds together and ensure unity in times of global crisis.

IM translation has also proven useful for those fleeing from war zones. The recent influx of refugees mostly from Syria into Europe and other countries around the world has meant that more Arabic-speaking translators and interpreters had to be hired to facilitate refugee integration in their new environments. Apparently, there was a shortage of translators and interpreters to meet these demands. As Darren et al. (2016) reported, some of the appointments between arriving refugees and immigration authorities in Greece were arranged via Skype using the integrated real-time machine-translation feature that offers both voice-to-voice, text-to-text, and voice-to-text translation options.

As Martha Tennet (2005, p. 21) puts it, "the importance of incorporating real world criteria within a curriculum for translator education and training cannot be underestimated. Trainee translators need to be prepared for the conditions they can expect to find in their future working environment." This argument has been reinforced through our findings in the current project and discussed further in Chapter 4, section 4.3.2.

1.5.2) IM and translation ethics

Ethical considerations have frequently been central as far as translation and interpretation are concerned. Discussions have often focused, on the accountability of translators and interpreters,

especially as they become increasingly cognizant of the role they play today. Baker & Baier (2011) argue that the work performed by translators and interpreters is under greater scrutiny today compared to a few decades ago. This scrutiny comes mostly from the media and those who hold power in various countries. They provide examples of cases related to the wars in Afghanistan, Iraq, and Kosovo. Accountability, for translators and interpreters, means, "they are increasingly held responsible for the consequences of their behaviour and, therefore, have to reflect carefully about how their decisions, both textual and non-textual, impact the lives of others" (Ibid., p. 3). Ethics of accountability require that translators and interpreters be capable of justifying a decision to themselves and to anyone else who happens to raise questions.

The justification of decisions made by translators appears to be one of the underpinnings of the translation practice dating back to the early biblical translations. Questions surrounding fidelity to either the ST or the TT led translation scholars to adopt different methods of translating, as well as take different positions vis-à-vis the text being translated. For example, should the translator move the text away from the SL and culture towards the TL and culture or vice versa (Venuti, 1998)? Should the translator maintain the SL structure and perform a literal translation, or should they feel free to alter and modify the TT (Schleiermacher, 2012; Berman, 1984)? To this apparently confusing situation, we must add codes of ethics formulated by various institutions to promote their own agendas, to which translators must, sometimes unwillingly, adhere. Professional translation associations also ensure that translators and interpreters maintain certain moral and professional standards by establishing codes of ethics by which they expect members to abide. The American Translators Association Code of Ethics and Professional Practice stipulates on its webpage that members shall "convey meaning between people and cultures faithfully, accurately… Represent our [sic] qualifications, capabilities, and responsibilities honestly and work

always within them."[35] The code of ethics for the Association of Translators and Interpreters of Ontario (ATIO) goes further, to discuss how members should behave to protect the public by acting with integrity, and maintaining "appropriate boundaries between themselves and their clients."[36] Besides the ethical codes established by associations, translators often work within geographically confined environments and could be subjected to other influences from governing institutions.

In totalitarian regimes, sometimes a national propaganda campaign may be underway to promote a specific agenda, thereby creating an unhealthy environment for translators and interpreters to work independently. Under such circumstances, various forms of punishment could be meted out to translators and interpreters who defy authority (Baker & Baier, 2011). There are examples to illustrate this phenomenon. In some circumstances, Mona Baker (2010, p. 198) argues, "the perception of radical difference between *us* and *them* […] leaves members of each society, including translators and interpreters, little or no room for manoeuvre - no room to negotiate a more tolerant, more accommodating relationship." This is the case with regard to the US War on Terror, which has actually seen translators punished in one way or the other for sympathizing with those accused or for being on the side of terrorists. Emily Apter (2005) of the Department of French at New York University, USA, has recounted the treatment of translators following the events in New York on September 11, 2001. Apter (Ibid., p. 2) tells the story of Sibel Edmonds, a Turkish translator and whistleblower, who was fired from her FBI post after revealing the low level of professional linguistic competence at the Bureau. The employer accused her of "putting diplomacy and national security at risk." Similarly, Mohammed Yousry, an Egyptian-born translator was

[35] Information available at https://www.atanet.org/governance/code_of_ethics.php. Accessed on Nov. 25, 2017.
[36] Information available at https://atio.on.ca/wp-content/uploads/bsk-pdf-manager/Code_Ethics_EN_(1)_19.pdf. Accessed on Nov.15, 2017.

hired by the lawyer representing Sheik Omar Abdel Rahman, who was "on trial for masterminding the first World Trade Center bombing and for conspiring to mount attacks on other prominent U.S. institutional sites" (Ibid., p. 2). Mohammed Yousry was convicted for supporting terrorism when it was found he had translated a letter from Abdel Rahman, even though no other evidence was found linking him to any act of terrorism. These examples illustrate the risk translators take while they work, and the dangers they may face in situations where they follow their conscience.

The emphasis on accountability, honesty, and integrity for professional translators appears to partially explain the increasing calls for the reinforcement of ethics training in translation and interpretation programs (Corsellis, 2005; Arrojo, 2005). Generally, based on professional codes of ethics, translation and interpretation ethics courses teach students to be accountable and to remain neutral when translating or interpreting. However, as explained below, professional translators themselves, do not all agree on the usefulness of a code of ethics for the profession. As a matter of fact, present-day translators find themselves in a dilemma as a consequence of globalization and the development of communication technology. As Baker & Baier (2011, p. 2) argue:

> This process is made increasingly difficult today by an intense push for globalization in all walks of life, a rampant corporate culture, a growing sense of social injustice within and across communities, and a re-emergence of aggressive political ideologies that have initiated or re-ignited violent conflict in many parts of the world.

Venuti (2012, p. 487), for his part, believes that, "such codes don't take into account the cultural and political hierarchies in the interpreting [or translating] situation," and could lead the translator or interpreter to abandon their own beliefs and convictions.

Furthermore, in a study undertaken on 17 different professional codes of ethics, Dolmaya (2011) maintains that there is no difference between translator and interpreter codes of ethics and codes for other service-providing professions. In addition to this, professional codes of ethics for translators and interpreters are sometimes conflicting, lack clarity, and often do not address some

of the problems translators encounter in their profession, such as rates and professional development. Dolmaya (2011, p. 45) also underlines a rather critical issue that codes of ethics do not currently address - the use of technology:

> None stipulate how translators can make ethical choices with respect to the technology they might need in their practice, yet translators are increasingly using and being asked to use CAT software. In addition, guidelines about ethical advertising are perhaps not detailed enough to cover newer, electronic formats, such as emails, discussion forums and search engine ad words.

MT appears to mark a turning point in the ethical debate in translation and interpretation studies for a number of reasons. Firstly, accountability, which is the cornerstone on which ethical values are constructed, no longer lies solely with individual translators. Actually, machines are an integral part of the translation process today and it could be difficult to clearly define the role and responsibilities of the translator. Who would authorities or even the general public hold accountable for a mistranslation by an IM translation software whose output has not been vetted by a trained translator? This question is pertinent given that IM translation tools have the potential of being used in very strategic situations, such as combat. Would it be the translation user, sender, or the MT service provider? Should the responsibility be shared, especially given that the MT output depends on the input and the omission of a single word or letter could, sometimes, alter the MT output? It appears as if IM translation may be capable of shifting the responsibility away from translators, especially for those who may be working in totalitarian regimes.

Secondly, the translation playing field seems to place professionals in a disadvantaged position. Some IM translation applications enable the users to post-edit machine-translated messages before they are sent to other users. All that seems needed to be able to translate are a device (a computer, a smartphone, a tablet, etc.) connected to the Internet and full knowledge, some knowledge, or even no knowledge of the target language. In other words, the prerogative to

translate no longer resides only with the trained and certified translator. It is difficult to tell whether, or to what extent, ethical concerns are taken into consideration when translation is done within this context. Admittedly, quite often, the translation may not be done by professional translators, may not be paid for, and may not be intended for professional consumption. That notwithstanding, we need to acknowledge the fact that there is translation (the transfer of meaning from a source to a target language) occurring. It appears that if professional translators engage in IM translation, where they modify a machine-translated IM, they are, by default, expected to respect their professional code of ethics. What we do not know at this point, is whether non-professional translators are held to any ethical standards at all. If not, then as far as non-professional translation is concerned, the playing field does not seem level for all players.

Thirdly, it may also be important for professionals, especially those working in countries with authoritarian regimes, to understand when to use translation technology to facilitate their work, but also to protect themselves. This situation, in my opinion, ought to be a focal point in the ethical debate among translators. For example, if the possibility exists, a crowdsourcing project could be launched to translate a book, a document, or other information that may be considered controversial by those in power. Translators working on such projects should not be expected to respect their professional code of ethics because the laypeople involved in the same project do not respect any code of ethics. If this were to happen, then MT or IM (in the case where there is no MT post-editing) could, arguably, become a platform that serves to liberate the translator not only from his or her ethical dilemma, but from the heavy hand of those in power, and the punitive action of domineering organizations with specific agendas.

The main argument here is that with the recent development in translation technology, there is a need to rethink the concept of ethics within the profession of translation and interpretation.

Professional associations may need to address the ethical void that exists in most codes of ethics regarding the use of translation technology (Dolmaya, 2011). Associations may also need to establish a new set of ethical guidelines for professional translators working with, or within non-professional environments, for example, when they participate in crowd sourcing endeavours. As for trainee translators and interpreters, it may be useful to ensure they understand various translation contexts (professional and non-professional), the extent to which they need to be guided by professional ethics, and, depending on their locations, when to use technology in ways that prevent them from becoming the target of those in power.

1.6) The future of IM translation

Real-time IM translation has been presented by its developers as one of the major ways of breaking language barriers for some government agencies, companies, and individuals. Currently, few IM clients translate over 60 languages, so it is possible to speculate that the number of language combinations offered may increase in future. For example, Javanese, one of the official languages spoken by approximately 84 million Indonesians is not among the 50 IM languages available on Skype translator. This is also true for languages such as Bengali, spoken by approximately 196 million inhabitants of Bangladesh. As IM translation increases in popularity, it is normal to project an increase in its number of users and languages, including oral languages spoken in countries such as Indonesia, Nigeria, and Vietnam.

IM translation may also be used in its current form, but with a shift in context and platform. Live chat interactions are currently used by some companies to provide services, and machine translating them could provide access to new markets for multiple companies that use this service. As a matter of fact, some companies are currently providing paid live chat translation services for

companies that require them. The UK-based company, *WhosOn*,[37] specializes in offering live chat translation services in 42 languages to interested companies. The chat interface makes it possible to visualize both the source and targets texts.

Companies are attracted to the live chat translation service for several reasons: live chats are inexpensive, efficient, easily available, and have the potential to improve customer satisfaction (Turel & Fisk, 2013). Furthermore, lengthy wait times on the phone may be avoided as the customer can multitask during chat sessions. The number of companies providing multilingual live chat customer services has increased significantly in the last couple of years. Examples include: Safaba Translation Innovation,[38] a Pittsburgh-based international provider; Freshdesk,[39] an Australia-based company with offices in Germany, India, the UK, and the USA; and Zoho SalesIQ,[40] a US-based company with branch offices in Australia, China, Indian, Japan. Singapore, and the UK.

Another platform where IM translation is expected to make an appearance is in the area of wearable devices. This is because of "the popularity of personal tracking devices" (Ye et al., 2014, p. 3123) and the speed at which wearable devices are becoming mainstream. For instance, Lodgar, a Japan-based company has developed a wearable USB-like device called *ili* which is capable of translating speech in three languages: Chinese, English, and Japanese. According to Nadya Agrawal of the Huffington Post, the device can be worn around the neck and does not require any Internet or cellular connection to work, making it usable almost everywhere - up in the mountains or in the subway where there is no network. The gadget "pulls from a database of words and

[37] Information available at https://www.whoson.com. Accessed on January 2, 2018.
[38] Information available at http://www.safaba.com. Accessed on February 21, 2017.
[39] Information available at http://freshdesk.com. Accessed on July 12, 2017.
[40] Information available at http://www.zoho.com. Accessed on May 21, 2017.

phrases for its translations… Logbar promises that it will eventually be able to translate French, Thai, Korean, Spanish, Italian, and Arabic" (Agrawal, 2016, n. p.).

Similarly, Waverley Labs, a Manhattan-based company, is currently working on a wearable earpiece, the Pilot, which "listens in to a conversation and communicates with your smartphone to give you a close-to-real time translation" (Blain, 2016, n. p.). With an increasing interest in translation, it may not be an overstatement to suggest that wearable device manufacturers will attempt to make translation a regular feature on future devices with the aim of expanding their respective market shares. As Blain (2016, n. p.) muses, "Is real-time translation technology ready to make the leap into the big time yet? The proof will be in the pudding. But enough of the pieces are moving into place to suggest that the language barrier may finally be broken."

The area of online education may also benefit from the development of IM translation. Courses, particularly translation and interpretation courses, offered by universities such as the University of Toronto[41] in Canada and the University of Birmingham in the UK,[42] provide students the opportunity to communicate online via Internet blogs and IM, as well as threaded discussions in virtual classrooms. Students enrolled in these courses are translation students; IM, among others, facilitates discussions and other forms of information sharing on translation course contents. Given the popularity of online learning and teaching and advances in MT, it is possible to project that future virtual classrooms may target students residing in different countries of

[41] Information available at http://learn.utoronto.ca/courses-programs/online-distance-learning/online-and-distance-pdf-courses-in-languages-translation. Accessed on June 18, 2017.
[42] Information available at http://www.birmingham.ac.uk/postgraduate/courses/distance/lang/translation-studies.aspx. Accessed on June 18, 2017.

different linguistic backgrounds, with IM translation playing a major role in facilitating the exchange of information and negotiation of meaning.

1.7) Conclusion and research questions

Chapter one began with a definition of the main concepts of this research: CMC, MT, IM, EFL, FL WTC, and FL OTC. After defining the concepts, IM was examined in greater detail with a focus on the profile of users, the peculiarities of IM language, and the impact of IM on FL learning. The section that followed analyzed the relationship between IM and translation, beginning with an assessment of real-time machine-translated IM and a brief overview of major IM translation clients (Chatlingual, Lringo, QQ International, Sendboo, Skype Translator, VoxOx, and Wechat). Thereafter, the relationship between IM translation and translation (practice) was examined. The discussion centered on the way IM translation has and continues to revolutionize the work environment and work process of translators. After analyzing the relationship between IM and translation, we underlined the impact of IM translation on translation studies (as a discipline) by focusing on specific translation studies concepts including conflict, ethics, mobility, and translator training. The chapter ended with an assessment of the future of IM translation.

In the chapter that follows, we build on the research described in this chapter to examine the research questions and test the hypotheses set out in the introduction. The research questions are:

- Do beginner EFL learners believe real-time machine-translated IM helps them improve WTC, and does the real-time IM translator provide them with OTC in English? If so, does the WTC level correspond to WTC score and data of actual exchanges?
- Do learners encounter problems while using the IM translator and what strategies do they use to overcome such problems?

- What implications are there for MT, FL learning, and IM?

The research questions were formulated based on the following hypotheses:

- beginner EFL students would perceive WTC (both the score and level) to be lower at the beginning of the study than at the end of the study;
- the IM translation option would provide learners OTC in English with their Canada-based interlocutors;
- participants with access to the IM translation option would be able to exchange more IM, initiate conversation, engage in synchronous conversation, perform more tasks and discuss more topics than participants with no access to the IM translation option;
- participants with the IM translation option would receive more requests for paraphrase, repetition and explanation than participants communicating without the help of the IM translation option.

Chapter 2 presents the methodology adopted in this research project. It outlines the different steps that were taken to recruit participants, prepare them for data collection, and actually collect the data. The chapter also outlines how participants exchanged IM during the study and how the corpus created was analyzed to answer the main research questions and confirm or refute the hypotheses.

Chapter 2: Methodology

This chapter describes the criteria adopted in selecting both the translation tool for the research and participants based in China and in Canada. It should be noted that the IM communication with participants based in Canada was a complementary, optional activity, that loosely paralleled class content and objectives. It served to further develop EFL skills for participants who were interested and signed up to participate. Consequently, the mid- and end-of-term assessments of participants was not based on their performance during the current project.

In this chapter, we begin by presenting the IM tool used in this project and advancing reasons for its selection. Next, we discuss the selection criteria for both China-based and Canada-based participants before outlining the procedure adopted in gathering and analyzing data. The last section of the chapter discusses the limitations of the methodology.

2.1) Application choice

QQ International was retained as the real-time machine-translated IM client for this research because of the unique advantages it had over other currently available IM clients. The advantages ranged from how long and how popular it has been on the market, to how well the application is designed to handle the translation process, and the availability of features required for this project. QQ International is widely used in China and is gaining popularity around the world. With approximately 800 million[43] active users, it is one of the primary applications Chinese people use to communicate. Its first version was released in February 1999, almost 19 years ago.

[43] Information available at http://qqchat.qq.com/about.html. Accessed on August 20, 2017.

Currently, it has 6 language interfaces (English, French, German, Japanese, Korean, and Spanish). QQ International can instantly translate messages between more than 50 language pairs.

Unlike some IM clients such as Chatlingual, Lringo, Sendboo, Skype Translator, and Wechat, that also offer a built-in translation option, QQ International is designed to display both the SL and TL messages. This means users can simply type a message and have it machine-translated before pressing the "send" button. The desktop version of the application is developed in a way that senders can modify translated messages before sending. Modified or improved messages are fed into the system with the intention of improving the overall quality of the MT system. However, once sent, a message cannot be altered by a recipient. Recipients who do not fully understand the messages received in a given language can simply have them translated into a language they understand, depending on their application settings. Incoming messages can be machine-translated by rolling the finger over the messages (on a smart device). For those using a laptop or desktop computer, the cursor needs to be placed over the message and right-clicked. Thereafter, the option "translate" can be selected from the drop-down menu.

Another important feature of QQ International is the possibility users have to store messages for relatively long periods, and the many sharing options. QQ International's messages can be stored for as long as the account remains active, and the chat history can be downloaded and/or exported. There is also a cloud storage option to ensure that the chat history remains available and can be downloaded whenever and wherever needed. For privacy reasons, access to the conversation history can be restricted with a password. It is also free and can easily be downloaded and installed on multiple devices including desktop computers, some laptop

computers, tablets, and smartphones.[44] For these reasons, QQ International was retained as the most suitable IM application for this research project.

2.1.1) Compatibility of the IM tool

Despite the choice of QQ International as the preferred IM tool for this project, we would like to outline a few compatibility problems we encountered with the IM translator and which influenced how participants were grouped (see section 2.2 below). The QQ IM translator could not fully function on Apple laptop and desktop computers (see limitations of the methodology on section 2.5). Therefore, participants who owned Mac desktop and laptop computers were able to translate incoming IM but were unable to translate outgoing IM. On the contrary, participants with other laptop and desktop computer brands (Lenovo, Dell, Samsung, HP, etc.) and operating systems (Linux, Windows, etc.) were all capable of translating both incoming and outgoing IM.

As far as the use of mobile devices (smartphones and tablets) was concerned, all participants were able to translate incoming messages but were unable to translate outgoing messages irrespective of the operating system (Android, iOS, Symbian, etc.) of the device they owned. Therefore, in order to exchange machine-translated outgoing messages, the sole option participants had was to use a non-Mac desktop or laptop computer.

2.2) Participant selection

Two groups of participants based in China and Canada were recruited for the study. The first group, based in China, was made up of young Chinese students studying English as a FL while the second group were native and near-native speakers of English based in Canada, who were

[44] QQ IM translation is not available on some devices. See discussion on limitations of the methodology for details.

volunteering for the project.[45] The section below discusses the selection criteria for both groups of participants.

China-based participants: A total of 22 Chinese speakers (Mandarin, as first language), who were all full-time freshman students enrolled in Shanghai International Studies University (SISU) for the 2016/2017 academic year, were recruited to participate in the study. SISU admits students into its programs based on the score candidates obtain after taking the national standardized college entrance examination. The students were enrolled to study English, were in my class, and were considered as beginner students within the context of this research. This was principally because we believed they would require the help of an IM translator[46] to fully express certain ideas and procedures in English. Examples of these procedures included how to describe recipes and cultural festivals such as the Chinese New Year celebration. Furthermore, most of them had little previous experience communicating with foreigners with the help of an IM translator.

Participants were also selected based on age. Participants were between 18 and 21, an age group that keeps abreast with evolving technology and could easily learn to use and adapt to new technology (Abeele & Keith, 2011; Lloyd et al., 2006). Moreover, because they belonged to the same age group and had lived in China all their lives (mostly in and around Shanghai), they were assumed to have similar experiences about life and Chinese culture. They all grew up seeing foreigners in Shanghai and had some exposure to western culture via movies and/or travel. They all owned and used smartphones and had access to desktop and/or laptop computers that could

[45] The project was approved by the Research Ethics Board (REB) of the University of Ottawa and the School of English Studies, SISU. See approval certificates on pages 262, 263, and 264.
[46] Participants with the IM translation option will be used in this study to refer to participants who had the IM translator and could use it to translate both incoming and outgoing messages.

both be used during the study. Participants had the QQ International application downloaded and installed on both their smartphones and computers to facilitate communication at all times during data collection.

Furthermore, participants were selected based on their understanding and experience with IM. They were required to complete a questionnaire before the study in which they were asked multiple questions to build a profile of their IM use, including:

- *How often do you use English in your daily activities?*
- *Do you send and receive instant messages (IM)?*
- *Who would you say you IM with most?*
- *Do you sometimes exchange IM with various people at the same time?*
- *Approximately, how much time do you spend a day exchanging IM?*
- *Which of the following IM applications do you use: QQ, Wechat, Lringo, Chatlingual, Skype, Sendboo, or VoxOx?*
- *How often would you say you IM in English?*
- *Have you ever used machine translation (MT) to convert a text (e.g. a message, email, document or web page) from one language into another?*
- *Have you used the translation function of your IM application? How often ?*

According to the answers obtained from the questionnaire, all participants sent and received IM daily and regularly; they all messaged in Chinese and seldom in English; used QQ or Wechat when they sent and received IM; and chatted often will friends and classmates, followed by family members. The majority of participants also indicated that they spent over an hour sending and receiving IM a day. Furthermore, they seldom or never chatted with strangers online. As far as MT

and IM translation are concerned, most of the participants declared that they had used MT – mostly Baidu Translate and Youdao – to help them with school work. They had little knowledge of Google Translate, Systran, and Microsoft Translate. However, most of them had used the IM translation function on QQ and Wechat to translate incoming messages from English to Chinese. Answers from the questionnaire were useful in providing additional background information about participants and verifying relative homogeneity that helped to support data analysis and methodological choices.

Canada-based participants: The second group of participants was made up of 8 native and near-native English-speaker volunteers based in Canada. They were either all born in Canada or had spent at least 10 years in the country. They all had sufficient knowledge of Canada to be able to exchange basic information with China-based participants. This included sharing information about their lives and experiences, as well as elementary knowledge of Canadian cultural practices, geography, and history. Canada-based volunteers did not belong to the same age group and were all under 40 years old. Four of the participants were in their mid-20s, one was in his early 30s, and three were in their late 30s. They all owned and could use smartphones. They also had experience using modern technology since they were conversing in English only, they had the option to download and install QQ International solely on their cell phones.

Canada-based participants were recruited via social media. A recruitment text was posted on Facebook and friends were invited to either sign up or spread word about the project to their friends. Those who volunteered to participate were retained based on whether they were native or near-native speakers of English, residents in Canada, interested in learning about other cultures, experienced in exchanging IM with friends and family, and capable of sparing approximately 10 minutes a day to converse with their partners based in China. Furthermore, participants were made

aware of the time difference between their interlocutors and the fact that sometimes, exchanges would take place outside normal working hours. Finally, they had to be able to successfully download and install QQ International on their devices, including smartphones and/or computers.

2.3) General framework for gathering data

This section analyzes how data was gathered for this project. It begins by examining the pairing of participants and the preparatory work undertaken towards data collection. This was followed by a presentation of how participants exchanged data on their phones, laptop, and desktop computers prior to the analysis of data gathered to determine FL WTC and FL OTC. For FL WTC, the analysis centres on the initial and final questionnaires while for FL OTC, the focus is on both the initial and final questionnaires, and on the history of actual exchanges that took place among participants.

2.3.1) Questionnaire development and administration

Two questionnaires were developed for this project. One was administered at the beginning of the project and the other at the end of the project. Both questionnaires were hosted on the Fluid Survey[47] website and links were sent to participants before and after data collection. The questionnaires were designed to answer the research questions and confirm or refute hypotheses set out at the beginning of the study and outlined in section 1 of the introduction. Details about the initial and final questionnaires are presented below in sections 2.3.4 and 2.4.3.

[47] Information available at www.fluidsurvey.com. Accessed on October 23, 2017.

2.3.2) Data collection

This section begins with an explanation of how participants were paired and how data was collected during the study. The duration of the study, as well as topics and tasks around which IM conversations centred have also been outlined.

2.3.3) Pairing of participants

China-based participants were divided into two groups depending on the brand of computer they owned (see section 2.1.1 above). Concretely, seven participants communicated without the IM translator while nine participants communicated with the help of the IM translator. As the population was already relatively homogeneous (as established by the questionnaire), this was not considered to lead to unacceptable skewing of data.

After downloading and installing the QQ International application on their computers and smartphones, participants were paired prior to the commencement of exchanges. Each Canada-based participant was randomly matched with at least one China-based participant. Canada-based participants were then requested to invite their China-based participant to form a pair. For those who had more than one China-based partners, each of the latter was invited separately. Therefore, if the Canada-based participant had three partners, then three separate pairs had to be formed. This ensured there was only dyadic conversation among participant pairs. After setting up the pairs, Canada-based participants invited a silent moderator to join each pair. The job of the silent moderator was limited to downloading the data of exchanges, ensuring that participants did not disclose personal information, and did not discuss Chinese politics.

2.3.4) Introductory meeting and questionnaires

An introductory session was organized for Chinese beginner EFL students before the study began. The aim of the meeting was to explain the research project to participants and answer

any questions they had. The session was organized during class time at SISU's Songjiang suburban campus. Besides asking questions, students also discussed and agreed on topics they were interested in talking about during the study. The topics, for the most part, had a direct bearing on the syllabus for the writing course, which focused on descriptive and narrative essays. The topics included a general discussion of hobbies, shopping, and travelling, as well as specific tasks on cultural-related topics such as the Chinese New Year, food and recipes, and stereotypes. Participants were also provided with the link to the initial questionnaire and were also assisted with downloading and installing the IM translation tool on their smartphones and laptop computers.

The initial questionnaire was completed prior to the commencement of exchanges. The initial questionnaire focused on the attitude of participants with regards to IM, the language they use when they IM, and their knowledge of IM translation. It also intended to assess participants' perception of their own WTC level and to calculate their WTC score.

At the end of the study, participants were sent another link to the final questionnaire. This questionnaire (which was more detailed than the initial one) required participants again to indicate what they perceived to be their WTC level. They were again required to indicate their WTC score based on the 20-item scale suggested by McCroskey (1985) which was then used to calculate their WTC score. In addition to this, participants were asked about the problems they had encountered while using the IM translator and what they had done to resolve them. They were also asked whether, and if so, how they felt the problems encountered had affected their conversation. The final questionnaire was useful in determining the WTC score and WTC level of participants at the end of the study. It also helped to indicate whether participants believed the IM tool was useful during exchanges. Furthermore, the final questionnaire provided some of the data which was used

to compare WTC perception with the data of actual IM exchanges to better understand the connection between the WTC and OTC.

2.3.5) Exchanges

IM exchanges took place from December 8, 2016 to March 7, 2017. However, during the Christmas holiday (December 22, 2016 to January 06, 2017), which also coincided with the end-of-semester examinations at SISU, participants were discouraged from chatting. As participants conversed, the silent moderator periodically downloaded the conversation history. Topics participants had agreed to talk about and the tasks they had to do were spread throughout the duration of the study (see Appendix E).

While participants communicating without the IM translation option sent and received messages in English only, those with the IM translation option had the option to use or not to use it during the first three weeks of exchanges (from December 8, 2016 to January 6, 2017, with a temporary pause between December 22, 2016 and January 6, 2017). During the two weeks that followed, between January 14 and January 31, 2017, participants communicating with the IM translator were encouraged to use it for all exchanges but were discouraged from using it between February 1 and February 17, 2017. Finally, from February 18 to March 7, 2017, they were, once again, provided with the option to use or not to use the IM translator while communicating. In total, therefore, participants with the IM translator had the option to choose whether or not to use it during the first three weeks and last three weeks of the study. On the contrary, they had two weeks during which they were encouraged to use the IM translator, followed by two weeks during which they were encouraged not to use the IM translator. The main reason for alternating the use of the IM translator was to ensure that students tried both options, could make informed choices, and also be able to compare communication with and without the IM translator.

The conversation history of participants together with data obtained from answers to both questionnaires made it possible to determine whether participants with the IM translation option took advantage of the tool to improve OTC and whether there were changes in WTC level and WTC score at the end of the study. Furthermore, it was possible to investigate the extent to which the lack of the IM translator may have affected the way participants without the IM translator communicated.

The IM exchange procedure was relatively simple. Messages in English were exchanged in the same way IM is exchanged on most messaging platforms, with the sender typing the message then pressing the "send" button to have it transmitted. However, when China-based participants had to send machine-translated messages, the procedure was slightly longer. The message was input in Chinese, then participants pressed the "translate" icon located near the "send" button to have the message translated into English. After that, both the original message in Chinese and the translated version in English were transmitted to the corresponding Canada-based participant.

Participants were encouraged to engage in both synchronous and asynchronous communication, but there were no specific time slots allocated for synchronous exchanges because of the time difference between Canada and China. On the contrary, participants were encouraged to mutually agree upon a time to converse based on their availability. Given the time difference and the fact that participants, at times, had to adjust their daily routine to initiate communication, synchronous exchanges were assumed to provide an indication of the willingness of participants to communicate in English.

2.3.6) Discussion topics and themes

Discussion topics and themes for use in both the EFL course in which the participants were enrolled and the research were selected during the introductory meeting. Participants were asked

to select and vote topics and themes they were interested in talking about. The themes and topics were expected to complement programmed writing activities for the semester. Since the focus of the writing course was on narrative and descriptive essays, participants were encouraged to suggest topics that would include instances of narration or description. It was assumed that participants would be encouraged to converse with their Canada-based partners mostly because of their interest in the topics and themes chosen. Consequently, participants were not graded based IM exchanged during the study but rather on separate in-class assessments. This was principally to ensure that participants did not feel coerced to participate in the project. They were encouraged to participate in the project because it provided them a further opportunity to reinforce narrative and descriptive skills they acquired in class.

Participants discussed several topics of general interest, but also were required to do specific tasks during the study. The first topics participants freely talked about were shopping habits and tourism. This was during the first three weeks of the study from December 8, 2016 to January 14, 2017 (with a break between December 22, 2016 and January 6, 2017). Canada-based participants were asked to focus the conversation on China's tourist attractions or their home towns. They also asked their China-based partners general questions about shopping habits and were tasked to describe an item they had bought recently. Specifically, they were asked the following questions: *Where do you typically go shopping? What do you generally shop for? How big are your shopping malls? Which mall do you normally go to? Can you describe the mall to me briefly? What was the last item you bought there? Could you describe exactly what it is and how it looks?*

Next, participants focused their conversation on their leisure activities with discussions about movies, travel, etc. After that, they discussed the Chinese New Year (which was being celebrated at the time) with special emphasis on how the festival was observed by participants and

their families. Later, participants were asked to describe the recipe of one of the dishes they had eaten or cooked during the Chinese New Year. They were asked the following questions: *You just celebrated the Chinese New Year. What activities did you do? What was the most memorable moment? Which meals did you eat? Can I have the recipe of one of your meals, so I can cook for myself?*

Finally, participants talked about nationalities and were specifically asked to discuss the differences between Canadians and Americans. Specifically, they were asked the following questions: *How many people have you met from different countries and what do you think about them. Also, what would you say is the difference between Canadians and Americans?*[48]

Canada-based participants were encouraged to seamlessly introduce the questions during conversations in order not to disrupt the flow of exchanges. One other reason for gradually introducing the questions was to ensure that the conversation appeared natural, was less overwhelming, and China-based participants did not feel like in an examination situation. The themes added more purpose to the discussions, reinforced some of the topics participants discussed during the study, and complemented descriptive and narrative writing tasks students undertook during the semester.

2.4) Data analysis

The data gathered was analyzed to determine whether real-time machine-translated IM helped improve WTC among participants, and whether participants took advantage of the IM translation option to enhance interpersonal communication during the study. While the analysis to determine FL WTC concentrated on responses to the questionnaires, analysis to determine FL OTC focused

[48] Note: participants had chosen to talk about this during the introductory meeting.

on both the initial and final questionnaires, and the actual data of exchanges in order to determine how participants used the tool to communicate. In other words, while FL WTC was considered a purely conceptual phenomenon that evaluated the "if" factor (if there is the opportunity, will participants communicate?), FL OTC was deemed more practical, focusing on the 'how' factor (at a given opportunity, how do participants take advantage to communicate?) and drawing from the main elements that characterized their conversations. This section outlines how data was analyzed to determine FL WTC and FL OTC.

2.4.1) Analysis of data to determine FL WTC

This section introduces McCroskey's WTC scale and outlines how it was used to measure the WTC perception of participants. This is followed by a brief presentation of how WTC was determined by assessing the data gathered from participants' answers to the initial and final questionnaires.

2.4.2) McCroskey's WTC scale

Participants who responded to both the initial and final questionnaires were asked to rate their predisposition to communicate in various situations based on the 20-item WTC scale suggested by McCroskey (1992). The scale was developed essentially by crossing three commonly known types of recipients (acquaintances, friends, strangers) with four common communication contexts (dyad, group, meeting public) in an attempt to reproduce a cross-section of the various possible communication situations with which individuals may come in contact (McCroskey & Richmond, 1987).

The items on the scale represent various situations where participants may choose to enter into communication or keep silent. Participants determine their WTC by entering a score, between 0 and 100, in the spaces provided (see Appendix K for the complete scale). The minimum WTC

score is 0 while the maximum is 100. Of the 20 items on the WTC scale, 8 are used to distract attention from the scored items. This means the 8 items do not carry significant weight, as opposed to the remaining 12 which generate a total of 4 context-type scores and 3 receiver-type scores. It is possible, by analyzing data obtained from the estimate, to have context-type (group discussion, interpersonal, meetings, and public speaking) and receiver-type (acquaintance, friend, and stranger) sub-scores. According to McCroskey and Richmond (1987, p. 135), the WTC level can be obtained as follows:

> **Context-type sub-scores**:
>
> ***Group Discussion***: Add scores for items 8, 15, and 19; then divide by 3.
>
> ***Meetings***: Add scores for items 6, 11, and 17; then divide by 3.
>
> ***Interpersonal***: Add scores for items 4, 9, and 12; then divide by 3.
>
> ***Public Speaking***: Add scores for items 3, 14, and 20; then divide by 3.
>
> **Receiver-type sub-scores:**
>
> ***Stranger*:** Add scores for items 3, 8, 12, and 17; then divide by 4.
>
> ***Acquaintance***: Add scores for items 4, 11, 15, and 20; then divide by 4.
>
> ***Friend*:** Add scores for items 6, 9, 14, and 19; then divide by 4.
>
> *To compute the total WTC score, add the sub scores for **stranger**, **acquaintance,** and **friend**. Then divide by 3.*

According to McCroskey and Richmond (Ibid.), all scores calculated should be in the 0 to 100 range. They (Ibid.) further distinguish the following numeral values that indicate high or low communication intentions in various situations.

Table 3: High and low WTC indication

	High WTC	**Low WTC**
Group discussion	>89	< 57
Meetings	> 80	< 39
Interpersonal Conversation	>94	<64

Public speaking	>78	<33
Stranger	>63	<18
Acquaintance	>92	<57
TOTAL WTC	**>82**	**<52**

Data obtained from participants of the current study, specifically on interpersonal communication, has been analyzed following the approach suggested by McCroskey & Richmond (1987).

It is important to acknowledge that the WTC scale is principally oriented towards face-to-face communication, which does not perfectly reflect the context in which participants communicate in this project. Furthermore, some elements of the scale match synchronous communication (items 1, 2, 4, 5, 7, 9, 10, 12, 13, 16, and 18) while other elements address group (items 3, 8, 14, 15 19, and 20) and meeting (6, 11, and 17) scenarios all of which have no direct connection with computers.

However, there are several reasons why we used McCroskey's (1992) WTC scale for our data collection and analysis. Firstly, according to McCroskey (1992, p. 20), the WTC scale is highly reliable because studies have found "the estimates of internal reliability of the total score on the instrument to range from .86 to .95 with a modal estimate of .92. Estimates generated from data collected in other cultures have been consistent with those obtained in the U.S." The scale is also considered to be highly valid based on the content, especially the fact that it appears at face value to "measure the construct which it purports to measure" (Ibid., 1992, p. 20). The construct for this scale is an orientation towards communication when given the opportunity. The scale is also considered valid because of its predictability, which is the possibility of scores obtained from measuring WTC to reflect real behaviour. The predictive validity of the scale is based mostly on research undertaken by various scholars (Peng, 2013; Ghonsooly et al., 2012; Zakahi &

McCroskey, 1989; Chan & McCroskey, 1987) highlighting the corroboration between scores obtained from measuring FL WTC and the actual behaviour of respondents.

Secondly, the scale has been used extensively over the decades to determine FL WTC among various learners in different parts of the world including the Middle East (Ghonsooly et al., 2016; Modirkhameneh & Firouzmand, 2014); Europe (Cetinkaya, 2005); North America (Chan & McCroskey, 1987); and Asia (Peng & Woodrow, 2010; Yashima, 2012). In addition, there is an existing, validated Chinese version (Peng & Woodrow, 2010) of the scale that was used directly in this project, thereby avoiding any adaptation that could potentially be invalidated.

Thirdly, McCroskey's WTC scale has been employed by many researchers some of who have modified or adapted the scale according to the questions and scope of their research. For instance, Modirkhameneh and Firouzmand (2014, p. 1137) modified the scale in order to investigate students' WTC inside and outside of the classroom. They maintain:

> The 27 items of this instrument composed of statements concerning one's feelings about communication in four basic skill areas (speaking, reading, writing, and listening), measuring students' willingness to speak in class, to read in class, to write in class, and to comprehend in class.

One of the main strengths of the WTC scale appears to be the ease with which it can be adapted to suit different research and epistemological needs. As Graham Robson (2005, p. 117) concurs, some researchers have modified the WTC "by using items that reflect class activities and real-world activities that students might engage in." Through our review of available literature, we found that the WTC scale has continued to be relevant mostly due to its applicability. That may partially explain why researchers have not developed an alternative WTC scale which is authoritative and englobing enough to replace the scale suggested by McCroskey.

Finally, our analysis does not entirely rely on the 20 items on the WTC scale since our focus is on interpersonal IM exchanges (as opposed to communication within groups and meetings). To determine WTC perception, we examine the WTC level and WTC score. The level is obtained by analyzing the answers provided by participants in the initial and final questionnaires while the score is obtained by calculating their responses to the 20-item scale suggested by McCroskey (1992). Furthermore, the WTC level and WTC score of each participant are compared with the actual data of IM exchanges in an attempt to obtain a complete and credible indication of participants' WTC.

2.4.3) Initial and final questionnaires

The initial and final questionnaires were analyzed to determine how beginner EFL students perceived their WTC before and after the study. In the initial questionnaire, participants were asked to say whether they were *not willing to communicate* (NWTC), *a little willing to communicate* (LWTC), *somewhat willing to communicate* (SWTC), *willing to communicate* (WTC) or *very willing to communicate* (VWTC) in English. Responses to this question were compared with responses to similar questions in the final questionnaire where participants, having experienced what it was to communicate using IM with native and near-native speakers of English, were asked whether they believed they were *not willing to communicate* (NWTC), *a little willing to communicate* (LWTC), *somewhat willing to communicate* (SWTC), *just willing to communicate* (JWTC), *willing but not very willing to communicate* (WNWTC) or *very willing to communicate* (VWTC) in English. Participants had an additional option (WNWTC) in the final questionnaire. Therefore, in our analysis of responses, we considered that SWTC in the initial questionnaire would be equivalent to SWTC and JWTC in the final questionnaire.[49] Consequently, if a

[49] See section 2.5 for a discussion on the limitations of the methodology.

participant was SWTC in the initial questionnaire and JWTC in the final questionnaire, we did not consider that to reflect an improvement in the WTC score.

The responses were compared, and participants whose WTC level had increased by the end of the study were distinguished by placing a positive sign (+) next to their names (see Table 4 for details). Those who had a lower WTC level at the end of the study had a negative sign (—) placed next to their names while those that had no considerable increase or decrease were not identified with any sign at all.[50]

Data obtained during the initial and final questionnaires was also compared with actual conversation data. The intention was to determine whether or not the WTC level corresponded with WTC score, and also reflected the volume of real-time (machine-translated) IM exchanged by participants.

2.4.4) Analysis of data to determine FL OTC

In order to determine whether participants took advantage of the IM translator during exchanges, a comparison of the participants' data with and without the translation option was undertaken for various conversation aspects. However, prior to analyzing the conversation history, it was important to determine whether participants perceived the IM translation option to be useful (or not useful) during the exchanges by examining responses to the final questionnaire.

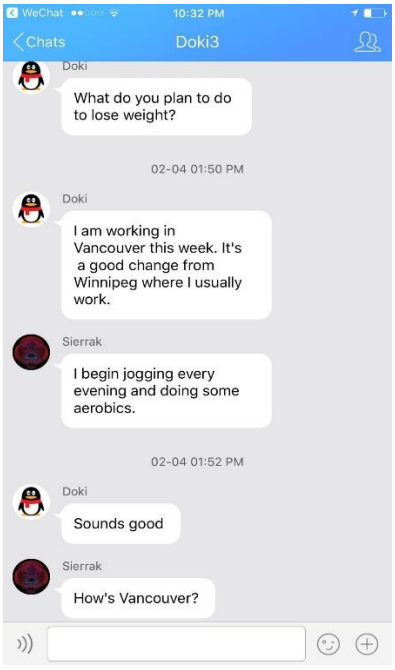
Analysis of the conversation history of participants was based on number of words and turns exchanged, ownership, conversation enhancement, synchronous exchanges, clarification questions, repetitions and requests for explanation, as well as pre-determined topics and tasks. The conversation aspects were selected based on how crucial they were in shaping exchanges and

[50] See Chapter 3, Table 3 for details.

foregrounding the usefulness of the IM translator. The analysis of various conversation aspects was intended to highlight whether, and if so, how, the IM translation option offered OTC for participants who used it during the study.

2.4.5) Number of words and turns: To understand whether participants with the IM translation option conversed more or less than participants without the IM translation option, the number of words exchanged for each participant with and without the IM translation option was counted and totalled. This was followed by a count of the turns exchanged by participants communicating with and without the IM translation option. The term *turn*, for the purpose of this project, refers to a word, one or several emojis, a sentence or a series of sentences sent in one chunk (as one whole or in one shot) during exchanges. For instance, the screenshot of this exchange between Doki (based in Canada) and Sierrak (based in China) comprises five turns, three from Doki and two from Sierrak.

Figure 1: Screenshot of conversation turns



After analyzing the number of words and turns exchanged by participants, a list of top, average, and bottom performers was established. It was, therefore, easy to determine which participants, with or without the IM translation option, ranked among the top performers.[51] For some participants, an analysis of the history of exchanges led to case studies intended to better understand and explain their performances.

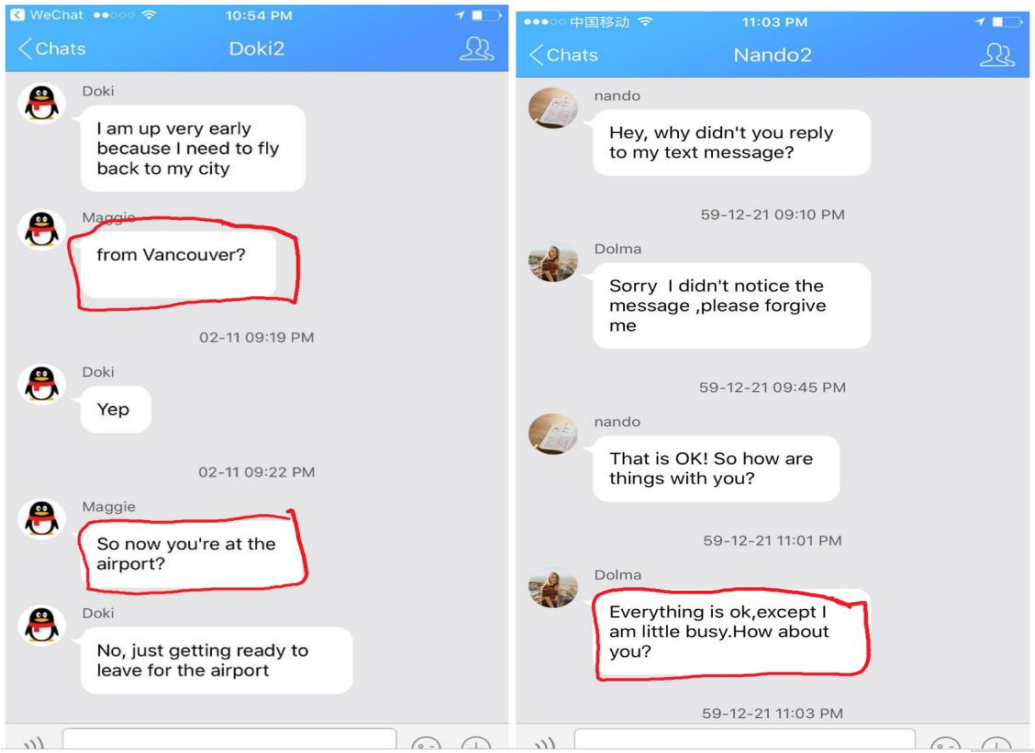
2.4.6) Incoming message translation and usefulness of the IM translator: QQ International enables IM users to translate incoming messages into a language they understand. Therefore, in the final questionnaire, it was important to ask participants how often they used the IM translator for incoming messages. The question participants were asked was, *"How often would you say you translated incoming messages?"* and they were expected to answer by choosing whether they *always, mostly, often, seldom, hardly* or *never* translated incoming messages. They were further asked how useful they thought it was to translate incoming messages: *extremely useful, very useful, useful, somewhat useful, a little useful* or *not useful at all*.[52]

By stating how often they translated incoming messages and how useful they thought the translation was, it was possible to understand the role the IM translator played, even for those participants who did not have the possibility of sending machine-translated IM. However, the data of machine-translated incoming messages was not available for analysis because such translations occurred on participants' individual devices and could not be tracked by the silent monitor. We had to rely solely on the perception of participants to fully understand the extent to which the IM translator was used in this situation.

[51] See Appendix C for a detailed ranking according to turns exchanged.
[52] See Appendix B for details about the usefulness of the IM translation option.

2.4.7) Conversation enhancement: Conversation enhancers refer to words, sentences, and other forms of utterances that were employed mostly by China-based participants to trigger further conversation. For example, they had started a conversation, responded to an incoming turn with a question, or simply asked a question that needed a response (not a rhetorical question, for instance). These were considered conversation enhancers. Below are examples of conversation enhancers:

Figure 2: Screenshot of conversation enhancement



Concretely speaking, the data was analyzed to identify and rank participants based on the number of conversation enhancers each participant produced.[53] Conversation enhancers were not only an indication of participants' WTC; they also provided an opportunity to determine which group of participants, those with or without the IM translation option, performed better in keeping

[53] See Appendix F, for a detailed ranking of participants according to how they enhanced exchanges.

the conversation alive. Definitely, this was in combination with the number of words and turns exchanged.

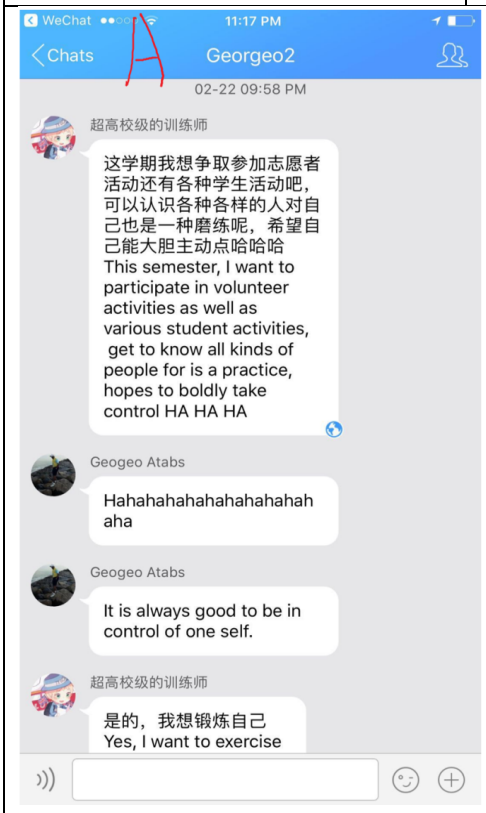
2.4.8) Synchronous exchanges: A synchronous exchange was considered as conversation that took place in real time with participants exchanging turns at less than 60-second intervals. The QQ International IM platforms makes it possible to measure synchronous conversation using date/time sequences. Generally, if one user sends a message and receives a reply in less than 60 seconds, then the outgoing and incoming turns are not separated by a date/time sequence. On the contrary, if the response is received after 60 seconds (i.e. from the 61st second after sending), the outgoing and incoming turns are separated by a date/time sequence. Figure 3 below illustrates a synchronous (screenshot A) and an asynchronous conversation (screenshot B with three date/time sequences).

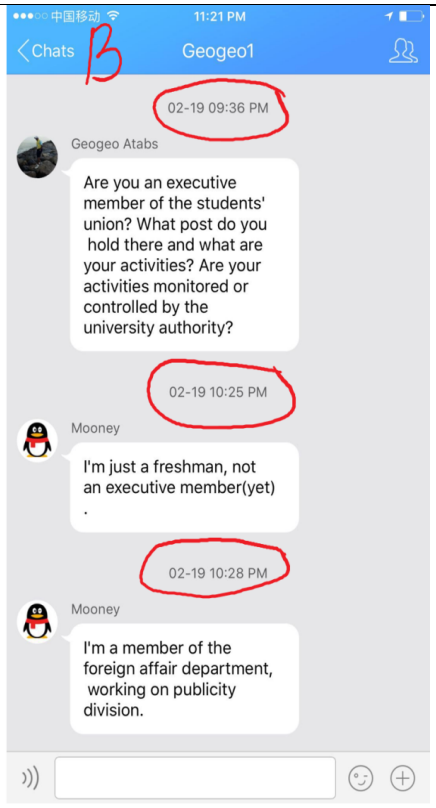
On screenshot A, there is no date/time sequence between the conversation of George and Chaoguo because all outgoing and incoming turns were sent and received within 60 seconds of each other. In this study, such fast-paced turns are considered synchronous communication.

On the contrary, on screenshot B, as we can see, the turn from George was sent on February 19 (2017) at 9:36 pm. Since Mooney did not reply until 10:25 pm, there was a date/time sequence between the first and second turn. Mooney sent a third turn shortly after at 10:28 pm but since there was an interval of over 60 seconds, the system automatically generated a date/time sequence between the second and third turns.

Figure 3: Screenshot of date/time sequence

A	B



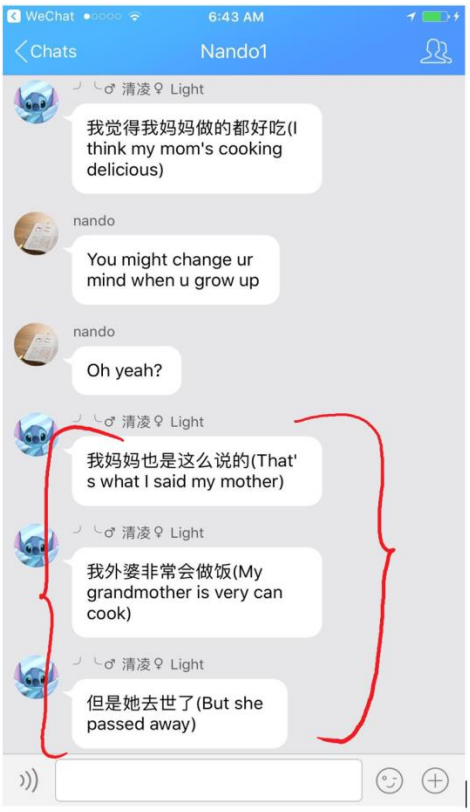


It was necessary to take into consideration the extent to which participants engaged in synchronous exchanges because this indicated not only the WTC, given the time difference between the two groups of participants, but also the extent to which participants were able to take advantage of the IM translation option while communicating synchronously. The analysis indicated both the number of synchronous turns exchanged and how many of those turns were machine-translated[54].

[54] See Appendix G for details on synchronous exchanges.

2.4.9) Ownership: This study investigated whether participants, particularly EFL student participants, took ownership during exchanges. Ownership was measured based on the number of times participants held the floor (Baron, 2004) during synchronous conversation. It was measured by counting the number of subsequent outgoing turns a China-based participant sent before obtaining a response from the Canada-based interlocutor during synchronous conversation. Given that synchronous exchanges are rapid, and turns are generally shorter with some consisting uniquely of an emoticon, we decided that a minimum of 3 turns, sent seriatim, would count as one instance of ownership. Below is example of how P8 (Hunter), a China-based participant, took ownership during a synchronous exchange with Nando:

Figure 4: Screenshot to show ownership turns



Evaluating ownership was relevant because this also shed light on synchronous communication and eventually on participants' WTC. Ownership also helped in determining the

extent to which participants may have benefitted from the IM translation option, because it was possible to tell whether participants translated or did not translate turns during ownership. Furthermore, the ranking of participants according to the number of ownership turns[55] clearly showed which participants, with or without the IM translation option, performed better in this conversation aspect.

2.4.10) Clarification questions, paraphrases, and requests for explanation: One of our assumptions at the beginning of the study was that, of the two groups, participants with the IM translation option would receive more requests for explanation and repetition and might be frequently required to paraphrase their sentences. Therefore, the conversation history of participants was analyzed with a view to confirming the assumption. Clarification questions referred to questions asked when a participant did not fully understand the meaning of a word, a sentence or any other utterance. One reason for analyzing clarification questions, paraphrases, and requests for explanation was to investigate whether there was evidence to suggest that participants encountered difficulties during exchanges as they claimed in the final questionnaire. Secondly, it was important to evaluate the extent to which participants endeavoured to resolve the problems they encountered. Thirdly, it was relevant to understand whether these problems affected IM exchanges and how participants felt about them.

A request for explanation referred to questions asked by Canada-based participants in order to solicit more information based on the initial utterance or a translated IM. In other words, these were requests asked as a result of incomprehension arising from a translation, the language used, or cultural difference. A paraphrase was the rephrasing of a sentence or utterance in a way to bring

[55] See Appendix H for details on ownership.

out its meaning. And a clarification question was asked when a participant did not understand the IM messages and requested specific information or a reformulation of the message. This happened both for machine-translated and non-translated messages.

In our analysis, all clarification questions, requests for explanation, and paraphrases were counted for participants with and without the IM translation and compared. This provided us with information on which group received more requests and provided more paraphrases.

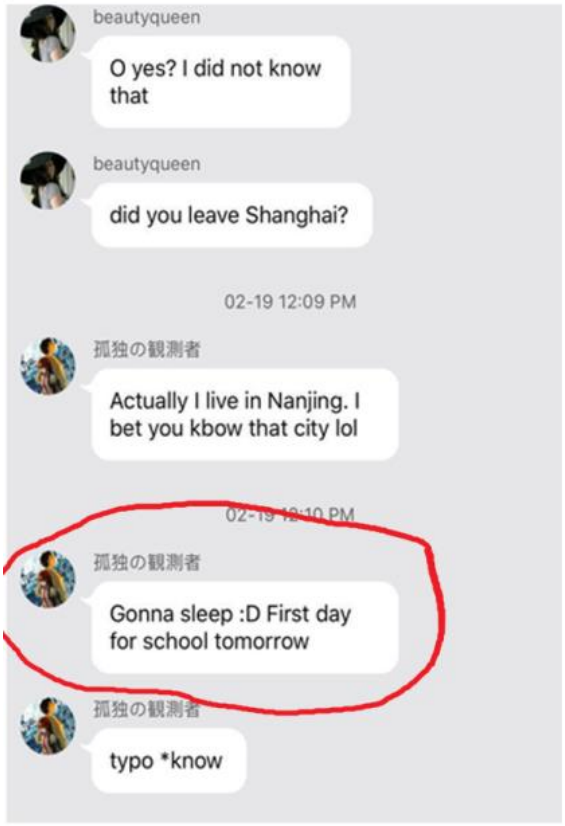
2.5) Limitations of the methodology

The methodology of this study was adopted with the intention of obtaining the best possible results in order to determine whether using the IM translator enabled EFL beginner students to improve FL WTC, and whether participants took advantage of it to communicate in English. However, it is important to acknowledge potential methodological shortcomings of the study.

Firstly, though QQ International was retained for the uniqueness of some of its features, it is worth noting that it had certain drawbacks. The translation option has not been fully developed on mobile devices. Though participants could translate incoming messages by slightly rolling a finger over the message, it was not possible to key in the message and have it translated before sending to other interlocutors. Therefore, all machine-translated outgoing messages were sent from either a laptop or desktop computer. This may have had an impact on the total number of words and turns exchanged by participants with access to the IM translator. Furthermore, the translation option was not available on Mac laptop computers made for the Chinese market. As a result, students that owned this brand of computer were forced to communicate without the translation option. The advantage they had, however, was that they could communicate on the fly using just a smartphone, while those with access to the IM translation option had to use their laptops when sending translated IM.

The time difference between Canada and China was another limitation to the study. The difference may have had a bigger impact on synchronous exchanges since, on several occasions, participants had to discontinue chatting because one of the interlocutors had other commitments. The morning in Canada coincided was the evening the evening in China, so while Canada-based participants were getting ready for work, China-based participants were getting ready for bed and vice-versa. This, sometimes, made it difficult for participants to have sufficient time to converse. In Figure 5, Cordell, based in China, had to stop chatting with Beautyqeen, based in Canada, because he needed to go to bed.

Figure 5: Screenshot to show the effect of time difference during exchanges



Furthermore, the timing was unavoidably awkward. As a result, data collection (initially planned to start in September 2016) started in December 2016, coinciding with Christmas and New

Year festivities for Canada-based participants and end-of-semester exams, then the Chinese New Year festival, for China-based participants. The coincidence made it practically impossible for participants to communicate for about two weeks (from December 22, 2016 to January 6, 2017). However, despite this delay, it was still possible to gather enough data from the conversation history of participants for analysis, partly because more of the exchanges took place at the beginning and towards the end of the study.

In addition, the options participants had to choose to indicate their WTC score at the beginning and at the end of the study were not exactly the same (see section 2.4.3). The inclusion of an extra option (WNWTC) in the final questionnaire may not have provided a very accurate indication of participants' WTC score, especially for those participants who chose this option and had chosen WTC in the initial questionnaire. However, few participants actually went from WTC in the initial questionnaire to WNWTC in the final questionnaire. Besides, there were other parameters to determine whether or not participant's WTC increased or not during the study.

QQ International also allows users to post-edit machine-translated messages. The edited messages are fed back into the MT system with the intention of helping the system learn and improve. Participants were expressly instructed during the introductory meeting not to post-edit translated messages, as doing so might compromise the data. This was because Canada-based participants were told to ask clarification questions and request explanations and paraphrases if they did not understand the meaning of any IM. However, there was no mechanism on the translation tool to track or verify whether any participants attempted to post-edit machine-translated messages. We can only trust that no participants altered machine-translated outgoing messages.

Not all participants were able to complete questionnaires for the study. This was because Internet connectivity was unreliable on the SISU's suburban campus in Songjiang. In addition, the questionnaire was hosted by www.fluidsurvey.com, a foreign website. In China, some foreign websites are banned (Google, YouTube, Facebook, WhatsApp, etc.) while others are simply difficult to access. Despite the difficulty, only a few participants finally gave up on the questionnaires. Some actually completed them after multiple attempts.

As a doctoral thesis, the scope of the study was naturally limited. Given a larger scope, it may have been possible, for instance, to recruit more participants and carry out the study over a longer duration. As for IM exchanges, while all efforts were made to keep the conversation as natural as possible, participants required some guidance and had to use technology in certain ways because the study took place in a pedagogical context, in which students were carrying out course tasks. Participants with the IM translation option were encouraged to machine-translated IM only at certain periods during the study. In addition, they were not allowed to use the voice and video options and could not take pictures and send to recipients. This, however, was in order to ensure that data was available in words and not in sound, and that translated IM could be displayed for analysis.

2.6) Conclusion

This chapter essentially examined the methodology adopted in the study. It began with an explanation of the decision to use QQ International as the IM application for the study then went on to discuss the recruitment of participants in China and in Canada. Thereafter, the focus shifted to data collection and analysis to determine FL WTC and FL OTC. While FL WTC was measured based on how participants responded to the initial and final questionnaires, FL OTC was measured by examining the conversation history of participants with a focus on words and turns, outgoing

messages, synchronous communication, enhancement, ownership, clarification questions, paraphrase, and explanation.

The chapter that follows analyzes data gathered during the current research. The data is made up of turns of (machine-translated) IM conversations between China-based EFL students and native and non-native English speakers based in Canada. The analysis helps to support our hypothesis that real-time machine-translated IM helps to improve FL WTC and that the IM translator provides EFL learners the OTC in English.

Chapter 3: Analysis of data

The findings obtained by analyzing data from the initial and final questionnaires, as well as the conversation history of participants, intend to answer the main research questions of this project. Concretely, the findings presented in this chapter will confirm whether 1) participants believe that real-time machine-translated IM improved their WTC, and 2) the IM translation tool provided OTC in English. Other findings that are relevant to our understanding of the perception of WTC include whether the WTC level corresponds to the WTC score of participants, and whether both the WTC level and WTC score reflect the number of words and turns exchanged by each participant. We are also interested in examining the problems participants faced while conversing and what they did to resolve these problems. The analysis in Chapter 3 serves as a prelude to our discussion of the implications of the findings in Chapter 4.

The initial and final questionnaires enabled participants to indicate whether they felt more or less willing to communicate at the end of the study. The findings presented below in section 3.1 are a comparison of the two questionnaires in order to determine whether WTC level and WTC score increased or decreased for individual participants during the study. While section 3.1 examines participants' WTC perception (WTC level and WTC score) based on the initial and final questionnaires, section 3.2 investigates how participants perceived the IM translation tool and measures how it offered them OTC in English. To fully determine whether participants took advantage of the IM translator, as well as how they did so, various aspects of their conversation history are examined: the number of words and turns exchanged; the percentage of turns translated; the tasks/topics discussed; the number of requests for explanation, repetition and paraphrase; how they enhanced exchanges; and how they took ownership during the conversation. The findings are mainly presented as a ranking of participants according to various conversational aspects. The aim

is to determine whether top performers in each category communicated with the help of the IM translation option and whether there is evidence in the conversation history to suggest the tool contributed to their performance.

3.1) Findings with regard to WTC perception

The WTC perception was determined by examining the WTC level and WTC score before and after the study. Participants were asked to specify their WTC level and WTC score before and after the study. The difference in the level and score before and after helped to determine whether each participant's WTC perception. The detailed WTC scale suggested by McCroskey (1987) has been described in Chapter 2, section 2.4.2 and in Appendix K.

3.1.1) Finding 1: Increased WTC level for participants with IM translation option

Table 4 below ranks participants according to their differences in the WTC level before and after the study. The results were obtained after participants were asked the following questions in the initial and final questionnaires: *Generally speaking, what would you say at this point about your willingness to communicate in English?* The options participants had to respond to this questions in the initial and final questionnaires are presented in Chapter 2, section 2.4.3.

Column E indicates the increase or decrease in WTC level for each participant and by how much. For example, P9 (Yeah) was SWTC during the initial questionnaire and improved (3 levels) to VWTC in the final questionnaire. That is why he has 3+ in column E. The *o* sign means the WTC level remained the same after the study while a negative (-) sign indicated a decrease in the WTC level at the end of the study.

Table 4: Individual variation in WTC level before and after the study

A	B	C	D	E
Participants with the IM translation option				
No.	**Name**	**WTC level before study**	**WTC level after study**	**Difference (+/-)**
P9	Yeah	SWTC	VWTC	3+
P6	Chaoguo	WTC	VWTC	2+
P3	Ngoger	SWTC	WNVWTC	2+
P5	Cordell	WTC	VWTC	2+
P1	Sierrak	WTC	WNVWTC	1+
P2	Dorothy	VWTC	VWTC	o
P7	Mooney	VWTC	VWTC	o
P8	Hunter	VWTC	VWTC	o
P4	Maggie	VWTC	WNVWTC	1-
Participants without the IM translation option				
No.	**Name**	**WTC level before study**	**WTC level after study**	**Difference (+/-)**
P10	Cartaria	WTC	WNVWTC	1+
P11	Vesper	n/a	VWTC	o
P12	Chen Holiday	WTC	JWTC	o
P13	Amyy	VWTC	VWTC	o
P14	Fish	VWTC	VWTC	o
P15	Cassie	WTC	JWTC	o
P16	Daisy	VWTC	VWTC	o

The most important finding from the data (column E) indicates that 5 out of 9 participants who communicated with the help of the IM translator believed their WTC level improved at the end of the study. By contrast, only 1 of the 7 participants who communicated without the help of the IM translator believed their WTC level improved towards the end of the study. Admittedly, this finding does not clearly illustrate whether the IM translation option influenced the decision of participants in any way. However, as far as WTC perception is concerned, the finding partially contributes to answering the fundamental research question, "Do beginner EFL learners believe that real-time machine-translated IM helps them improve their WTC?" According to this finding, the answer is "yes," but mostly for participants who communicated with the help of the IM translation option. This finding is complemented by the data in section 3.2 below, which examines

the perception of participants towards the IM translator and analyzes the data from their conversation history.

The data also indicates that not all participants who communicated with the IM translation option believed their WTC improved or remained stable during the study. This is the case with P4 (Maggie), who indicated in the final questionnaire that she was frustrated as a result of the problems she encountered with the IM translation tool. She mentioned that the IM option produced inconsistent translations. In order to resolve this problem, she had to search for the correct equivalents in English and this slowed down her pace of communication. The problems she encountered may have contributed in decreasing her WTC level (see Appendix I for problems participants encountered with the IM translator and how they resolved them).

3.1.2) Finding 2: Overall increase in individual WTC score

As far as WTC scores are concerned, it is important to specify that the findings presented here focused on data of interpersonal exchanges, because participants communicated in pairs rather than in groups. Information on WTC scores for meetings and group discussion is presented in Appendix A. The table below presents and compares WTC scores based on interpersonal communication among Canada-based participants and China-based participants with and without the IM translation option. The score for interpersonal communication was obtained by adding the total of items 4, 9, and 12 on the 20-item scale suggested by McCroskey (1992). Items 4, 9, and 12 are probabilities of (a) talking with an acquaintance while standing in line (item 4), (b) talking with a friend while standing in a line (item 9), and (c) talking with a stranger while standing in line (item 12). Participants are expected to enter a numerical value between 0 (lowest probability) and 100 (highest probability). The total score (out of 300) was divided by 3 to obtain the aggregate score out of 100. The difference between the WTC score before and after the study is presented in Table 5 below.

Table 5: WTC score for interpersonal exchanges before and after the study

A	B	C	D	E
Participants with the IM translation option				
No.	**Name**	**WTC score before study**	**WTC score after study**	**Difference(+/-)**
P1	Sierrak	37	33	-4
P2	Dorothy	100	89	-11
P3	Ngoger	20	63	43
P4	Maggie	30	32	2
P5	Cordell	37	82	45
P6	Chaoguo	50	60	10
P7	Mooney	100	93	-7
P8	Hunter	72	93	21
P9	Yeah	23	83	60
Participants without the IM translation option				
No	**Name**	**WTC score before study**	**WTC score after study**	**Difference(+/-)**
P10	Cartaria	0	70	70
P11	Vesper	na	97	na
P12	Chen Holiday	70	87	17
P13	Amyy	70	53	-17
P14	Fish	27	87	60
P15	Cassie	37	77	40
P16	Daisy	0	83	83

As the table indicates, a considerable number of participants (with and without the IM translation option) had a higher WTC score after the study than before. These include 6 of the 9 participants who had access to the IM translation option and 5 of the 6 participants without the IM translation option who responded to this question. The data also shows that 4 participants, one who communicated with the IM translator (P9) and three who communicated without the IM translation option (P10, P14 and P16) had a difference in WTC score of 60 points or above. However, the data of actual exchanges (see Table 6 below) indicates that only two of them, P9 (Yeah) and P14 (Fish) ranked among the top participants in terms of overall WTC (when different conversation aspects are considered). See Chapter 4, Section 4.1.3 for detailed information.

Three participants (P1, P2, P7) who communicated with the IM translation option had a lower WTC score at the end of the study, as opposed to only one participant (P13) who did not have access to the IM translation option. How could this decrease in WTC score be explained for participants with the IM translation option? If this group of participants had a higher overall WTC

level (see Finding No. 1, section 3.1.1 above), why would more of them have a low WTC score? To better understand the change in WTC score, responses for the initial and final questionnaires for two of the participants P1 and P13 are presented blow. The post-study WTC scores for P2 and P7, in contrast, are still comparatively higher than most participants and may not warrant further analysis at this point.

Case Study 1: P1 (Sierrak)

This case study seeks to explain why P1(Sierrak), who ranked among the top performers and who believed her WTC level had improved during the study, had a lower WTC score at the end of the study.

According to her responses to the initial questionnaire, P1 (Sierrak) had prior experience with machine-translated IM. Despite being able to send and receive machine-translated IM, she claimed she had never exchanged IM in English and had never exchanged IM with foreigners or people she did not know. Talking to a stranger for the first time and using machine-translated IM could, therefore, have had an impact on Sierrak's WTC.

Furthermore, she appeared to have had considerable problems with the IM translation option. For instance, she stated that there were times she felt her partner's messages either did not make sense or sounded odd. She also maintained that sometimes she did not immediately understand the meaning of her partner's messages, partially because there were inconsistencies with the machine-translated IM.

The problems had a negative impact on her IM exchanges. For example, because she was sometimes misunderstood, P1 (Sierrak) claimed she sometimes felt embarrassed, frustrated, and even offended. It is, however, interesting to learn that even though she encountered all these problems, she never once thought of giving up the conversation and would recommend the IM

translator to other users. She claimed she did not know how to resolve the problems she encountered, but continued to use the translator and endeavoured to figure out the meaning of some of the imperfect translations that she obtained for her incoming messages. The history of her exchanges shows that Sierrak exchanged 2,303 words with her partner and ranked among the top performers. A detailed analysis of Sierrak's WTC score for interpersonal exchanges reveals the following:

Table 6: Detailed analysis of Sierrak's interpersonal WTC score

Item no.	**Situation**	**Pre-study response**	**Post-study response**
4	Probability to talk to an acquaintance in line	10	20
9	Probability to talk to a friend in a line	0	60
12	Probability to talk to a stranger in a line	100	20
Total		110	100
WTC (total /3)		**36.7**	**33.3**

Sierrak's probability to speak with strangers decreased from 100 points at the beginning of the study to 20 points at the end of the study. It is possible to surmise, in this case, that the lack of experience conversing with strangers, possibly aggravated by some of the problems encountered with the IM translation tool, had a negative impact on her WTC score and possibly her overall WTC. Her inability to find ways to resolve the problems she encountered with the IM translator may have added to her woes and contributed to lower her WTC score at the end of the study. Finally, although she had problems with the tool, it is important to note that she continued using it. (See implications of this finding in chapter 4, section 4.2.1).

Case study 2: P13 (Amyy)

In her responses to the first questionnaire, Amyy claimed she was an IM user and even though she predominantly sent and received IM in Chinese, there were times she conversed in English and with foreigners, strangers, and people she had met online. She almost always conversed using QQ and had experience using the QQ IM translator. She had also used other MT platforms including Baidu Translate, Google Translate, SYSTRAN, and Youdao[56]. According to Amyy, Baidu Translate, Google Translate, and Youdao produce very good quality translations and have been useful to her. She also occasionally uses Skype Translator. Given such a comparatively rich experience with MT and IM translation, it would probably have been advantageous for Amyy to communicate with the help of the IM translator. Unfortunately, she had a Macbook designed for the Chinese market, whose operating system was not compatible with QQ IM translator. She could only use the translation function on a mobile device for incoming messages, and this may partially have eroded her WTC and negatively influenced her WTC score at the end of the study (see Chapter 2, section 2.5 for limitations of the study).

P13 (Amyy) further encountered some problems while conversing with her partner. Her responses to the final questionnaire suggest she sometimes had delays because she had to look up words to express her ideas. She also believed her partner sometimes did not fully understand her meaning, and she thought there were times both her messages and those of her partner sounded odd. She claimed to have experienced difficulties installing the software on her laptop and there were times the application stopped functioning. These difficulties affected her exchanges in several ways. For instance, she sometimes had to repeat herself and spend additional time trying to

[56] Youdao is a popular Chinese-developed search engine that also offers machine translation options similar to Google Translate.

understand the meaning of incoming messages. She also felt embarrassed and frustrated when these problems occurred. The table below breaks down her WTC score in order to understand and possibly explain her performance at the end of the study.

Table 7: Detailed analysis of Amyy's interpersonal WTC score

Item no.	**Situation**	**Pre-study response**	**Post-study response**
4	Probability to talk to an acquaintance in line	60	50
9	Probability to talk to a friend in a line	100	60
12	Probability to talk to a stranger in a line	50	50
Total		210	160
WTC (total /3)		**70**	**53.3**

The major change in Amyy's data is the "probability to talk to a friend in a line," which reduced from 100 points in the initial questionnaire to 60 points in the final questionnaire. Amyy claimed, overall, that she was satisfied with the exchanges she had with her partner and that they mutually ended up understanding each other. Consequently, we can deduce that apart from the one considerably lower score, any other possible reason for the reduction in her WTC score may have been the absence of the IM translator. The number of words she exchanged during the study (854 in total) is further evidence of her lack of willingness to communicate.

3.1.3) Finding 3: WTC level, WTC score and IM data exchanged

The analysis of the data revealed that for most participants, WTC levels did not reflect WTC score and the number of words exchanged. That means not all participants who claimed to

be VWTC had a score high enough to back the claim. The table below presents the WTC level, WTC score, and the total number of words exchanged (for interpersonal communication) for all participants who communicated with and without the IM translation option.

Table 8: Differences in pre- and post-study WTC level, score, and words exchanged

A	B	C	D	E
Participants with the IM translation option				
No.	**Name**	**Pre/post-study WTC level differe**	**Pre/post study WTC score differ**	**Words exchanged**
P1	Sierrak	+	4	2,303
P2	Dorothy	o	-11	821
P3	Ngoger	+	43	2,741
P4	Maggie	-	2	2,246
P5	Cordell	+	45	1,335
P6	Chaoguo	+	10	4,353
P7	Mooney	o	-7	2,861
P8	Hunter	o	21	1,279
P9	Yeah	+	60	2,671
Participants without the IM translation option				
P10	Cartaria	+	70	432
P11	Vesper		na	2,060
P12	Holiday	o	17	381
P13	Amyy	o	-17	854
P14	Fish	o	60	3,825
P15	Cassie	o	40	444
P16	Daisy	o	83	74

For both the pre- and post- study WTC level and WTC score, a negative (-) value means a decrease at the end of the study; a zero (o) sign means there was no change in the WTC level or score during the study and number preceded by no sign means there was a positive WTC level or WTC score at the end of the study.

The table compares the difference in WTC level and WTC score before and after the study as well as the actual number of words exchanged during the study. The main questions that this table intends to answer is whether the WTC level of participants corresponds to their WTC score and number of IM exchanged. Secondly, who among the participants had a higher WTC score, a

higher WTC level at the end of the study and also ranked among the top performers in terms of words exchanged?

We can deduce from the data that less than half of the participants had a positive difference in both WTC score and WTC level. As a matter of fact, apart from P3, P5, P8, P9, and P10 who had a positive WTC level difference and a positive WTC score difference, all other participants either had a similar pre/post-study WTC level difference and positive (+) post-study WTC score difference (P8, P12, P14, P15, and P16) or a similar pre/post-study WTC level and negative (-) post-study WTC score difference (P2, P7, and P13).

When we examine whether a high WTC level and/or score at the end of the study translated to a high volume of IM exchanges for participants, the statistics appear to show a disparity between participants with and without the IM translation option. The data also indicates that the majority (4 out of 5) of the participants who had a positive WTC score difference and a positive WTC level difference communicated with the help of the IM translation option. These participants are P3, P5, P6, and P9. These participants also exchanged a comparatively high number of IM, as they ranked among the top performers in the category of words and turns exchanged.

One of our research questions at the beginning of the study was to investigate whether the WTC score and WTC level corresponded with actual data of IM exchanges. The findings here help to partially answer this question. The data on Table 8 above indicates that the WTC score and WTC level corresponded with actual IM exchanges mostly for participants who communicated with the help of the IM translation option.

3.1.4) Finding 4: Delayed communication for participants without the IM translator

Most participants who communicated without the IM translator believed they were unable to converse fast enough with Canada-based interlocutors because they had to look up the translation of certain words. Participants were asked in the final questionnaire: *"What are some of*

the problems you encountered while exchanging IM? and *How often?* They were provided with several options from which to choose including, "*I was slow in responding because I had to look up the translation of some words*." They were further asked to determine how often (*often, sometimes, rarely*, and *never*) they encountered this problem. As indicated in Table 9 below, the majority of the participants who communicated without the IM translation option maintained that they experienced some form delay during exchanges because they had to look up the translation of certain words.

Table 9: Delay for participants without the IM translation option

Participants without the IM translation option		
No.	**Name**	**Response**
P10	Cartaria	Often
P12	Holiday	Often
P13	Amyy	Often
P14	Fish	Sometimes
P15	Cassie	Sometimes
P16	Daisy	Sometimes
P11	Vesper	Rarely

Participants with the IM translation option		
No.	**Name**	**Response**
P1	Sierrak	Rarely
P2	Dorothy	Rarely
P6	Chaoguo	Rarely
P5	Cordell	Never
P4	Maggie	Sometimes
P3	Ngoger	Sometimes
P9	Yeah	Sometimes

A comparison of the two tables indicates that participants who did not communicate with the help of the IM translation option spent more time looking up the translation of certain words. Consequently, the pace of their conversation was comparatively slower than for participants who had access to the IM translator.

Based on this finding, we can suggest that with the IM translation tool, participants may have been able to instantly translate some of their messages rather than having to consult alternative sources. Consequently, this may have increased the pace of their exchanges with

Canada-based participants, which, in turn, may have had a positive impact on their overall WTC. This finding illustrates the overlapping nature of OTC and WTC, as the ability or inability to translate using IM could potentially affect the speed at which participants communicate and consequently affect their WTC.

It should, however, be noted that the analysis of data presented above is essentially based on how participants answered both questionnaires. It is important to note that there could be other reasons for such a difference, including, how communicative Canada-based interlocutors were and how each pair coped with the time difference between China and Canada. These experiences may have also had an overall effect on their WTC. The findings in this section should, therefore, not be considered as final; rather, they rest on complementary findings, discussed in the sections that follow (3.2 below).

3.2) Findings with regard to OTC

This section begins with a presentation of findings that show the extent to which participants believed that the IM translator helped them communicate in English. Thereafter, the conversation history of participants with and without the IM translation option is analyzed in order to illustrate how the IM translation tool provided OTC during exchanges. The analysis intends to help determine whether the IM translator enabled those participants who used it to exchange more messages, take ownership during exchanges, do more tasks, engage in more synchronous exchanges, enhance the conversation, and respond to requests for repetition, paraphrase, and explanation.

3.2.1) Finding 1: Participants believe the IM tool enhanced communication

To determine the perception of participants with regards to the usefulness of the IM translation option, China-based participants were asked to respond to several questions in the final

questionnaire. Participants were asked the following question: *Overall, do you think the translation option increased or may have increased your chances to communicate*? An analysis of the responses of participants indicate that all participants, including those with and without the IM translation option, believed QQ International IM translator either increased, or would have increased their chances to communicate in English. Therefore, the answer for all participants to this question was *yes*. Then, participants were asked: *How often did you use the MT function in QQ International in the study?* Participants had to reply to the question by choosing one of the following six options: *always, mostly, often, sometimes, rarely* and *never*. Participants' responses, which are presented in detail in Appendix B, indicate the following:

Table 10: Frequency of IM translation use by all participants

Option	**No. of participants for each option**	**Participants with the IM translation option**	**Participants without the IM translation option**
Always	9	P1, P5, P6, P7, P8	P10, P11, P12, P16
Mostly	3	P2, P3	P13
Often	2	P9	P15
Sometimes	2	P4	P14

The diagram above shows that 9 of the 16 respondents indicated that they used the IM translation option *always*. This list includes four participants (P10, P11, P12, and P16) who used the IM translator exclusively to translate incoming messages, as they could not use it to send outgoing messages. The data further indicates the following: 3 of the 16 respondents indicated that used the IM translation option *mostly;* 2 of the 16 respondents indicated they used the IM translation option *often;* and 2 of the participants claimed they used it *sometimes*.

Finally, participants were asked the following question: *Overall, how would you rate the usefulness of the translation option?* Participants were expected to choose from six options – *extremely useful, very useful, useful, somewhat useful, a little useful* and *not useful at all*. The diagram below is a summary of participants' responses.

Table 11: Usefulness of the IM translation option

Option	**No. of participants for each option**	**Participants with the IM translation option**	**Participants without the IM translation option**
Extremely useful	1		P11
Very useful	5	P3, P5, P9	P13, P16
Useful	4	P1, P6, P7	P10
Somewhat useful	4	P2, P4, P8	P14

The diagram reveals that 1 participant (who paradoxically, used the IM translator uniquely to translate incoming messages) believed that the IM translation option was *extremely useful* while the majority of participants (9 out of 14) of the participants[57] believed that the IM translation option was either *very useful* or *useful*. On the contrary, 4 participants including 3 (highlighted) that had access to the IM translation option, felt that the IM translation option was only *somewhat useful* during exchanges. In order to understand why 3 of the 4 respondents with access to the IM translation option indicated that the IM translator was only *somewhat useful* during exchanges, it may be necessary to take a closer look at one of the participant's responses in the following case study.

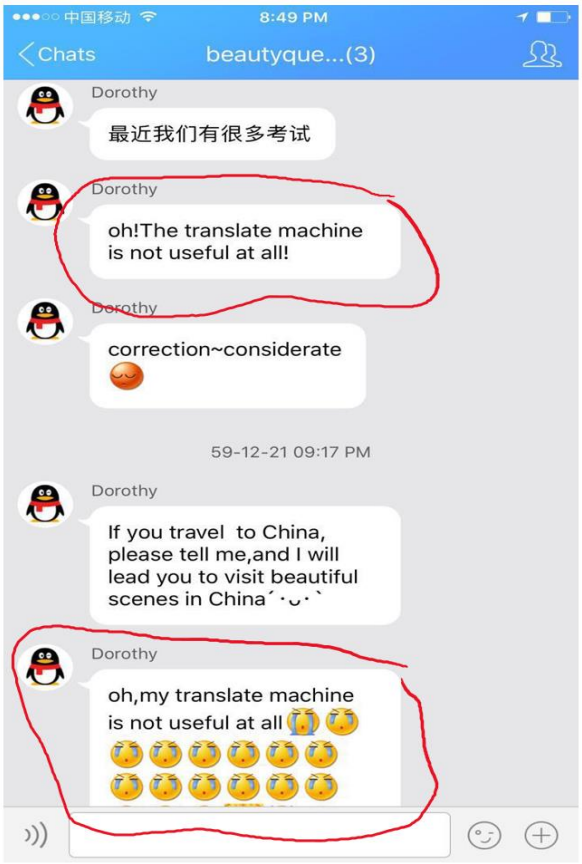
[57] Note: P1 to P9 are participants who communicated with the IM translation option while P10 to P16 communicated without the IM translation option.

Case study 3: P2 (Dorothy)

From her responses, Dorothy believed the IM translation option increased her chances to communicate in English with her Canada-based interlocutor. She also claimed to have used it most of the time during exchanges (probably to translate incoming messages). The question is, if she used it *mostly*, why did she not think it was, for instance, *very useful*, given that she claimed it increased her chances to communicate? To answer this question, we believed it was necessary to closely analyze Dorothy's responses in the final questionnaire and the history of her exchanges with Beautyqueen, her Canada-based interlocutor.

Further analysis of Dorothy's responses revealed some of the fundamental problems encountered by respondents with the IM translation option. When asked whether she encountered difficulties using the IM translation option, she responded by saying the IM translator could not translate her thoughts well. She also claimed that she *sometimes* rejected some translations the MT system proposed. According to her, *sometimes* the problems she encountered frustrated and offended her. Here is an excerpt from her conversation history:

Figure 6: Screenshot to Dorothy's frustration with the IM translation option



However, unlike other respondents with similar issues who tried to find various ways of resolving them, Dorothy did not appear to search for alternative ways of overcoming these challenges. When asked how the problems she encountered with the IM translator affected her messages, she simply replied, *I won't use it anymore*. Furthermore, when she was asked, in the final questionnaire, what she had done to overcome the challenges she faced with the IM translator, she responded, *I still cannot find a solution*.

There are many possible reasons to explain Dorothy's behaviour with regards to her use of the IM translation option: She may have initially considered the IM translation tool as a panacea for her communication problems; perhaps she was simply reluctant to seek ways to solve the problems she was facing with the tool; she may have been in no hurry to respond; or she had no

one to ask for help. What we do know, however, is that these problems certainly appear to have had an impact on her perception of the IM translation tool, and may have partially been responsible for the comparatively low number of words and turns she exchanged during the study. In other words, the problems may have contributed in decreasing her overall WTC in English.

Dorothy's example illustrates the relationship between CMC, especially IM exchanges, with the expressive function of language suggested in Jakobson's (1960) communication model. Dorothy uses the expression "oh" twice, followed by emoticons, an interesting element of CMC, to show how disappointed she is because she is unable to adequately translate outgoing messages. This example partly highlights the challenges of integrating technology into FL learning with diverse types of learners. The implications of this finding are discussed in Chapter 4, section 4.2.1, with suggestions on how FL teachers could use technology (MT in this case) in the language environment with diverse learner profiles. Also see Chapter 4, section 4.2.3 and Appendix I for details and a summary of problems encountered by participants.

3.2.2) Finding 2: Number of words and turns exchanged

A total of 16 participants exchanged IM with Canada-based participants. Table 12 below is a ranking[58] of participants based on the number of words and turns they exchanged. There are top performers (over 2,000 words), average performers (between 1,000 and 2,000 words), and bottom performers (under1,000 words).

[58] It should be recalled that apart from participants P1 to P9, no one else had access to the IM translation option for outgoing messages.

Table 12: Ranking of participants based on words exchanged

No.	Name	Words
Top Performers (over 2,000 words exchanged)		
P6	Chaoguo	4,353
P14	Fish	3,825
P7	Mooney	2,861
P3	Ngoger	2,741
P9	Yeah	2,617
P1	Sierrak	2,303
P4	Maggie	2,246
P11	Vesper	2,060
Average Performers (1,000 to 2,000 words exchanged)		
P5	Cordell	1,335
P8	Hunter	1,279
Bottom Performers (under 1,000 words exchanged)		
P13	Amyy	854
P2	Dorothy	821
P17	Infinite	574
P15	Cassie	444
P10	Cartaria	423
P12	Chen Holiday	381
P18	Dolma	248
P19	Popcorn	146
P16	Daisy	74

The data indicates that 6 out of the 8 top performers and both average performers all communicated with the IM translator whereas, only 2 top performers (in light green colour) had no access to the IM translation option. Furthermore, the majority of the bottom performers (8 out of 9 participants) exchanged IM without the help of the IM translator. The data shows that participants with the IM translation option clearly outperformed participants without the IM translation option in terms of words exchanged during the study. It also comes with little surprise that the only participant with the IM translator who ranked among the bottom performers is P2 (Dorothy). See case study 3, section 3.2.1, for possible explanation.

Turns exchanged: The table below presents the ranking of the top and average performers based on the number of turns they each exchanged. This helps to portray the connection between

the number of words exchanged and the frequency of communication. Actually, the more turns exchanged suggests how often participants kept in touch during the study. The table below goes further to break down the turns for each pair of participants illustrate whether it was the Canada-based or China-based participant who dominated the conversation. Participants with and asterisk (*) against their numbers sent more outgoing turns than they received incoming turns. In this section, we try to be brief by focusing on the top and average performers. A detailed ranking of all participants including bottom performers is available in Appendix C.

Table 13: Ranking of top and average participants based on turns exchanged

No.	Name/Ranking	Total turns	Incoming	Outgoing	words exchanged
P3	Ngoger	482	250	232	2,741
P6*	Chaoguo	450	202	248	4,353
P9*	Yeah	413	185	228	2,617
P14	Fish	352	204	148	3,825
P4*	Maggie	244	114	130	2,246
P7	Mooney	232	117	115	2,861
P1	Sierrak	224	125	99	2,303
P8	Hunter	199	101	98	1,279
P5	Cordell	140	75	65	1,335
P11*	Vesper	99	38	61	2,060

According to the table, P14 and P11, the only two participants in this category who did not use the IM translation option, had a less impressive performance and dropped a few spots when compared with others (see Table 13 above). Specifically, P14, who ranked second based on words exchanged, dropped to the fourth spot in terms of turns exchanged. P11 who ranked eighth according to words exchanged dropped to the 10th spot in terms of turns exchanged. Though P6 drops from first spot (words exchanged) to second spot (turns exchanged), she still leads with regards to outgoing turns.

Tables 12 and 13 above appear to confirm one of the main hypotheses, which suggested that participants with access to the IM translation option would exchange more IM during the study. The information presented in the two tables above shows that participants with the IM translation option generally exchanged more words and turns than participants who did not have access to the IM translation option. One of the main reasons participants with the IM translation option were able exchange more (machine-translated) IM than participants without the IM translation may be the fact that the tool provided them more OTC. For example, they could overcome some of the linguistic barriers they encountered during exchanges.

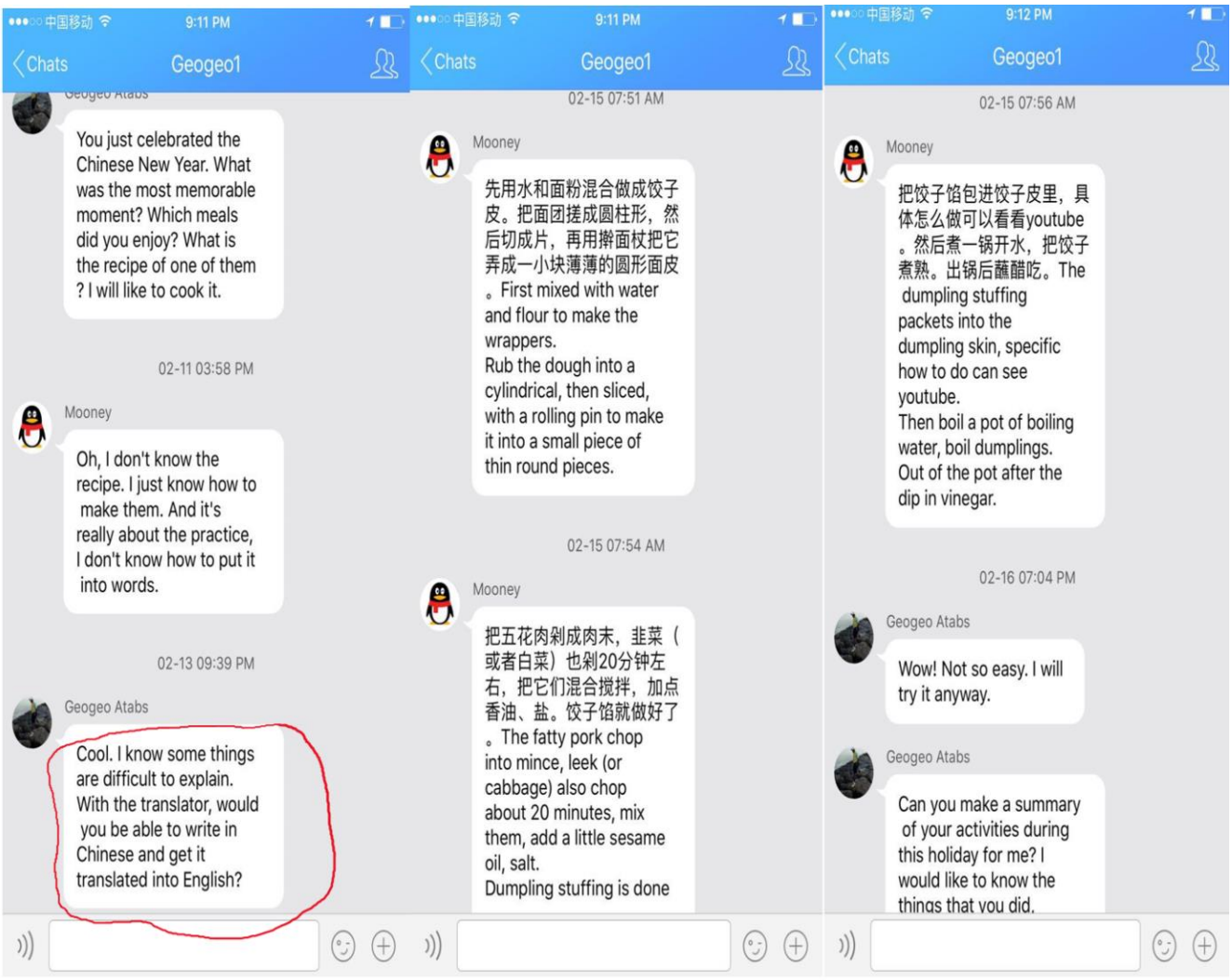
Below are two examples taken from excerpts of the conversation between Jeff, who conversed with P3 (Ngoger) and George, who conversed with P8 (Mooney). The examples depict how both Ngoger and Mooney were able to take advantage of the IM translation option during exchanges.

Figure 7: Conversation on stereotypes

03-03 03:29 PM	
Ngoger: *What do you think of Chinese people?*	***Jeff:*** *What did you hear? I am curious.*
Jeff: *haha*	***Ngoger:*** *wait.*
Jeff: *I didn't see that coming.*	***Ngoger:*** *i translate*
Ngoger: *See that coming?*	***Ngoger:*** *我听说中国人总是喜欢在一个新的国家聚在一起，在自己之间做生意，恨别人，肮脏，夺走当地人的工作。煮太多的食物，气味(I heard that Chinese people always like to get together in a new country, between their business, and hate others, dirty, take local work. The food, smell of cooked too much)*
Jeff: *Yea. I mean I didn't know you will ask that.*	
Ngoger: *Ok. But can you tell me?*	***Ngoger:*** *Is that true?*
Ngoger: *because I hear many stories about Chinese people.*	

Ngoger took advantage of the real-time IM translation option at a time he was, probably, not sure how to express his idea in English. He even announced his intention to his partner, Jeff, prior to using the IM translator.[59]

Figure 8: Screenshot of how IM translator is used to describe recipe



[59] In this example, Ngoger, the China-based participant and student, is referring to stereotypes or prejudices about Chinese people, not asking how they are in reality.

In the second example above it is the Canada-based interlocutor (George) who suggests to his partner, P8 (Mooney), to use the translator when she is apparently unable to describe a recipe to him. Here are excerpts of their conversation:

Besides demonstrating the use of the IM translator to overcome linguistic challenges, this data also reveals that both the number of words and turns exchanged are useful in determining WTC. This is because turns provide a better indication of whether the Canada-based or China-based participant did more of the talking. Of the 4 participants who sent more outgoing turns than they received incoming turns, 3 had access to the IM translation option while 1 did not. This is another instance where participants with the IM translation option outperformed participants without the IM translation option. Arguably, outgoing turns could indicate FL WTC. The findings here help to shape our discussion in Chapter 4, especially with regards to the introduction of MT in the classroom and the determination of learner profiles. See Chapter 4, sections 4.2.1 and 4.2.3 for details.

3.2.3) Finding 3: Outgoing messages translated

The data on Table 14 below indicates that P6, P3, and P9, who all communicated with the help of the IM translator, sent over 220 outgoing turns. Statistics, available in Appendix C, indicate that while P6 translated 82% of her outgoing messages, P9 and P3 translated 67% and 47% of their outgoing messages, respectively. It can therefore be suggested that the translation option contributed, to a certain extent, in facilitating the number of outgoing messages.

Table 14: Outgoing turns translated

No.	**Name**	**Outgoing turns**	**% of outgoing turns translated**
P6	Chaoguo	248	82 %

P9	Yeah	228	47 %
P14	Fish	148	
P4	Maggie	130	35 %
P7	Mooney	115	17 %
P1	Sierrak	99	56 %
P8	L. Hunter	98	35 %
P5	Cordell	65	55 %
P11	Vesper	61	
P2	Dorothy	44	7 %

The table above indicates that all participants with the IM translator sent machine-translated IM during exchanges. P6 topped the table with the highest percentage of translated outgoing IM followed by P1 and P9. On the other hand, P7 and P2 ranked bottom on the percentage of machine-translated IM.

This data shows the importance and usefulness of the IM translator to participants who used it to send outgoing messages. The data also indicates that no participant who communicated with the help of the IM translation option translated all outgoing messages. From the data, we can confirm that the IM translation option helped to overcome linguistic challenges, eased communication, and presumably increased the WTC of these participants. The data also indicates that participants did not overly rely on the IM translator, and may have used it only when they needed to. The implications of these findings are discussed in Chapter section 4.2.1.

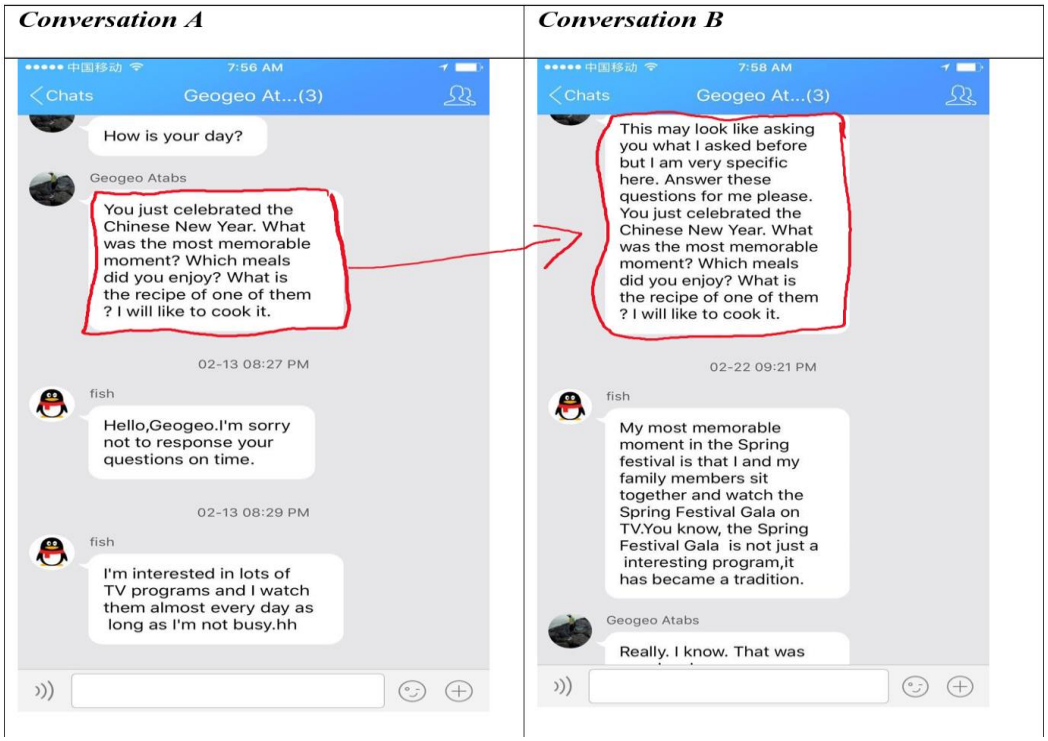
To better understand how the absence of the IM translation option affected participants during the study, we present two case studies below P11 (Fish) and P14 (Vesper). Only these two

participants communicated without the help of the IM translator and ranked among the top performers in terms of words exchanged.

Case study 4: Fish

To better understand how the absence of the IM translator may have affected some participants, it may be necessary to take a closer look at P14 (Fish), who ranked among the top performers in terms of words exchanged. Though Fish ranked second in terms of the number of words exchanged during the study, the history of her conversation shows that, compared to others, she did not send an impressive number of outgoing messages. She ranked 4th with regards to outgoing messages (148 of the total 352 turns exchanged with her partner), had no ownership turns at all during conversations, and ranked 7th in the category of synchronous exchanges. In terms of turn frequency, she sent 42% of the total number of turns she exchanged with her Canada-based partner. Data from her conversation history also indicates that despite her apparently communicative nature, she tended to avoid answering some task-related questions. This happened several times during the study. Below is an example:

Figure 9: Screenshot of Fish avoiding a question



From an epistemological standpoint, the conversation between George and Fish underscores the conative function of Jakobson's (1960) communication model. The conative function, it should be noted, refers to aspects of the language aimed at creating certain responses from the addressee (Tribus, 2016; Chandler & Munday, 2011). From the discussion above, when asked in Conversation A to respond to a series of questions relating to the Chinese New Year, Fish chooses to answer some and leave out others, especially the one about the recipe of a dish she made. George, her Canada-based interlocutor, is obliged to ask the questions again later and even insist on getting a response.

Case study 5: Vesper

The example of P11 (Vesper), who believed herself to be VWTC by the end of the study, also indicates how the absence of the translator may have negatively affected her ability to communicate. Vesper ranked 8th in terms of the number of words exchanged but fell to the 10th

position in the ranking of participants with the most outgoing turns exchanged (130 outgoing turns). In the excerpt below, P11 (Vesper) complained that she was unable to keep conversing because she could not install the IM translation on her computer, *"Hey Brabrando! Sorry for not replying you for such a long time. I couldn't use the translator on my computer, so I didn't send you any message."* P11 (Vesper) was one of the participants who owned a MacBook laptop computer on which the QQ International IM translation application could not function. Despite her inability to send machine-translated messages, she ranked among the top performers in terms of words and turns exchanged. We can only speculate that if she had access to the translator, her performance may have been much better.

This finding partially suggests that the IM translation tool provided participants with the tool, more OTC than participants who had no access to the IM translation tool to send outgoing messages. The finding, combined with others, further suggests that WTC could improve because the participants had better OTC. The implications of this finding, especially with the overall performance of participants who conversed with the help of the IM translation option are discussed in Chapter 4, sections 4.1.3, and 4.2.3.

3.2.4) Finding 4: Conversation ownership[60] during synchronous exchanges

Table 15 below illustrates how long participants were able to "take and hold the floor" (Baron, 2004, p. 400) during exchanges. The table ranks participants according to the consecutive number of turns each participant was able to send during synchronous communication before receiving a response from their interlocutor based in Canada. It should be recalled that participants had to send three or more consecutive turns for them to be considered as an instance of ownership. See Chapter 2, section 2.4.9 for details.

[60] See Chapter 2, section 2.4.9 for more information on conversation ownership.

Table 15: Ranking of participants according to conversation ownership[61]

No.	Name	Turns (times)	Total
P6	Chaoguo	6 turns x 1	6
		4 turns x 5	20
		3 turns x 1	3
P9	Yeah	5 turns x 1	5
		3 turns x 11	33
P3	Ngoger	4 turns x 4	16
		3 turns x 19	57
P17	Infinite	3 turns x 4	12
P7	Mooney	3 turns x 2	6
P10	Cartaria	3 turns x 2	6
P8	Hunter	3 turns x 2	6
P1	Sierrak	3 turns x 1	3
P5	Cordell	3 turns x 1	3

Data from Table 15 above indicates that the majority of participants who had ownership during exchanges also had access to the IM translator. This data helps to answer one of the two main research questions which sought to understand whether the IM translation would offer OTC in English.

As indicated on the table above, 7 of the 9 participants in this category communicated with the help of the IM translator, while only 2 (P17 and P10, highlighted in the table) did not use the IM translator. While those with the translation tool, including P6, P9, and P3, exchanged four or more consecutive turns, and can be considered the top performers in this category, the rest of the participants (P17[62], P7, P10, P8, P1 and P5) exchanged a maximum of 3 consecutive turns respectively.

[61] No other participants, apart from those in this table, had ownership turns.

[62] P17 and P10 did not rank among the top performers when we considered the words and turns exchanged but had ownership turns when they communicated. Both participants mainly communicated synchronously.

There is evidence from the data of exchanges to suggest that some of the participants took advantage of the IM translation option to send uninterrupted turns. For example, an evaluation of the conversation history of P1 reveals that 2 of her 3 consecutive turns were translated. As for P7, half of her conversation ownership turns (3 turns) were translated, while for P9, a total of 36 of his 57 consecutive turns were translated. This finding suggests that in the category of ownership, not only did participants with the IM translator perform better than participants without the IM translator, they also took advantage of the OTC offered by the IM translation tool at their disposal.

3.2.5) Finding 5: Conversation enhancement

We identify conversation enhancers as words and expressions that helped to trigger further exchanges between participant pairs or outgoing messages that solicited a response from the interlocutor. See Chapter 2, section 2.4.7 for further details. In this section, we analyze and rank participants according to the number of conversation enhancers they used. Secondly, we examine their conversation history to determine whether the IM translation option contributed to this aspect of their performance.

Table 16: Ranking of top participants according to number of conversation enhancers

No.	Name	No. of conversation enhancers
P3	Ngoger	51
P9	Yeah	50
P4	Maggie	32
P14	Fish	26
P6	Chaguo	19
P7	Mooney	10
P1	Sierrak	9

The data indicates that among the 7 performers in this category, 6 had access to the IM translation option. P3 topped the ranking with 51 enhancers, followed closely by P9 and then P4, who actually ranked 7th in terms of words exchanged. On the contrary, P14 and P7, who ranked second and third in terms of words exchanged, did not perform as highly in terms of conversation enhancement. The full table of how participants enhanced exchanges is available in Appendix F.

Further analysis of the conversation history of P3 (Ngoger) and P9 (Yeah), the best performers in this category, shows that neither enhanced the conversation during the weeks that participants were encouraged not to communicate with the IM translation option. For both participants, this means conversation enhancement took place when they had the opportunity to choose between the IM translator or not. We can argue, therefore, that having the IM translation option possibly increased their ability and willingness to communicate. This finding, among others, helps to deepen our understanding of the concept of WTC and of the profile of interlocutors. See Chapter 4, sections 4.2.3 and 4.2.4 for details.

Finally, our analysis of conversation enhancers foregrounds the referential function underlined in the communication model of Jakobson (1960). The referential function refers to the thing "spoken of" (Jakobson, 1960, p. 355). In other words, it is the context of the conversation and takes into account the conversation topic and its validity within the context of the conversation (Hébert, 2011).

3.2.6) Finding 6: Pre-selected topics/tasks

Participants had a certain number of tasks to complete, as well as topics to discuss during the study. The topics and tasks were spread over the period of the study, with two tasks or topics assigned during the weeks that participants had the option to choose whether or not to use the IM translation option. One task or topic was assigned to participants during the two weeks they were required either to use the translation option or to communicate without it. Pre-selected topics and

tasks reflect the conative function of language suggested in Jakobson's communication model. For example, during an exchange between Nando (based in Canada) and P8 (Light Hunter, based on China), the latter attempts to persuade Nando saying, "你也应该去看看权力的游戏(You should also look at the game of thrones)." Nando, for his part, replies "I will look it up today and maybe start watching it tomorrow." Furthermore, the description of some festivals ultimately had an influence on the addressees: when participants were asked to describe the recipe of a dish they ate during the Chinese New Year, some Canada-based participants declared their intention to prepare the said dishes (see Figure 8). The complete table of tasks and topics, including the weeks in which they were assigned, has been provided in Appendix D. Below is the ranking of the top 10 performers in the category of tasks and topics:

Table 17: Ranking of top 10 participants according to turns of tasks/topics

Name	**Total outgoing turns**	**% of turns translated during weeks IM was optional**	
Ngoger	136	47%	
Chaoguo	81	82%	
Mooney	79	24.10%	
Yeah	76	60.90%	
Maggie	73	46.20%	
Fish	62		
Sierrak	39	81.50%	
Dorothy	31	19.30%	
Cartaria	28		
Vesper	24		

The table shows, once again, that the majority (7 out of 10) of the top participants in this category communicated with the help of the IM translation option. The analysis indicates that the top 5 performers all used the IM translation option. Furthermore, the majority of the tasks (4 out

of 6) were assigned at times when participants could choose whether to use the IM translation option.

According to the information on the table above, apart from P7 (Mooney) and P2 (Dorothy), who respectively translated 24.10% and 19.30% of their messages when they had the option to use the IM translator, other participants with the translation option sent over 45% of machine-translated IM when they had to discuss specific topics or perform specific tasks. This is evidence that the IM translator offered them the OTC by helping to facilitate exchanges when participants discussed the pre-assigned tasks and topics. We can deduce, therefore, that participants were able to overcome linguistic challenges during exchanges and, therefore, improve WTC in English. It should be recalled that OTC are associated with how participants communicated while WTC referred to the possibility of entering into a conversation at a given moment. In this situation, using the IM translator to communicate is believed to have played a role in increasing participants' WTC.

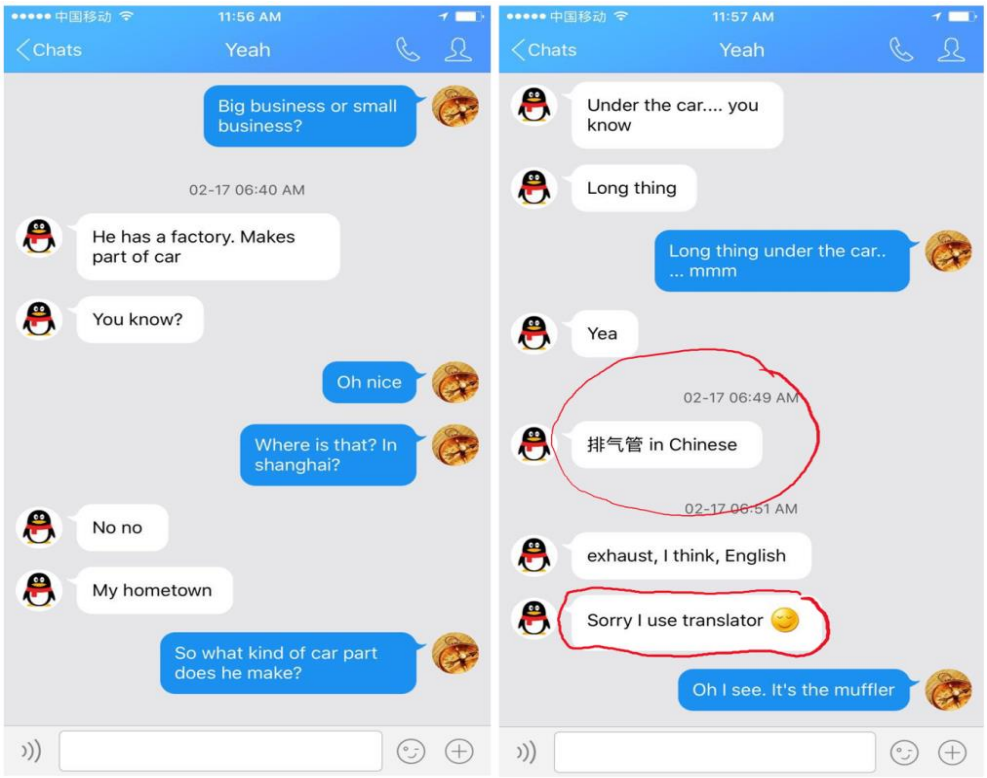
Data in Appendix 5 further suggests that the IM translation was so important for pre-assigned topics and tasks that some participants continued to use it even during the weeks that they were not expected to. For instance, while P7 (Mooney) did not translate any messages during the first three weeks of exchanges that corresponded to Task 1 and Task 2, she used the IM translator during the fourth and fifth weeks (Task 3) when participants with access to the IM translator were encouraged to use it, but also during the sixth and seventh weeks (Task 4) when participants with access to the IM translator were encouraged not to use it. Mooney was the only participant who used the IM translation option exclusively for tasks and related conversations.

Though she did not fully respect the guidelines of the study, her action helps to highlight the crucial role the IM translation played in enhancing communication at times participants may have been confronted with linguistic challenges. Mooney's action further confirms one of our

hypotheses that suggested participants would use the IM translator during pre-selected tasks and topics.

We present this exchange between P9 (Yeah) and Jeff to illustrate how participants used the IM translation option to resolve linguistic challenges. Yeah is talking about his father's business[63] to Jeff:

Figure 10: Screenshot of Yeah's use of the IM translation



From the conversation, we realize that Yeah decided to translate, even when he was not encouraged to, after struggling to explain a 'muffler' to Jeff, his Canada-based interlocutor. He starts off saying, *under the car, you know …the long thing*, and then announces he had just translated the word using the IM translator, *sorry I use translator*. This is a typical example of how participants took advantage of the IM translation option during the study.

[63] Screenshot from Jeff – Canada-based interlocutor and partner of Yeah.

This excerpt is also important because it further illustrates how machine-translated IM can help to bridge cultural differences and provide new OTC because in this example, they discuss not just business but also language. While the IM tool translated the Chinese word, *排气管*, as "exhaust" (British English, according to the Canada-based participant), Jeff referred to it as the *muffler*, as it is popularly known in North America. Jeff further clarified the difference between British and American English before the discussion refocuses on Yeah's father and his business. Here is the exchange between the two interlocutors:

Figure 11: Screenshot to show the usefulness of the IM translator during exchanges

The example shows that with the IM translation option, participants were able to translate words they did not understand in order to keep the conversation alive. This, arguably, would have

increased their willingness to communicate, especially if the conversation was about a subject of interest to both participants.

3.2.7) Finding 7: Synchronous exchanges

The importance of synchronous exchanges within the context of this study cannot be overemphasized. As started earlier in Chapter 2, section 2.4.3, synchronous IM are akin to face-to-face exchanges (Godwin-Jones, 2005, p. 17). They are particularly informal and can be said to bring the IM exchanges close to the fundamental premise underlying McCroskey's concept of WTC, where communicating takes place with people at various locations (with a friend while standing in a line, with a waiter, a family doctor, etc.). Therefore, synchronous exchanges serve to narrow the theoretical and conceptual gap between the current study, Jakobson's (1960) communication model, and McCroskey's WTC concept which both emphasize the verbal aspect of communication. The only difference is that while McCroskey based his concept on assumptions and probabilities, this study examines the concept based on perception and real-time technology-based exchanges among participants.

Table 18: Ranking of top China-based participants according to synchronous exchanges

No	Name	Total synchronous turns by China-and Canada-based participants	Total synchronous turns by China-based participants	Percentage of translated synchronous turns by China-based participants
P3	Ngoger	427	220	41 %
P9	Yeah	344	228	50 %
P6	Chaoguo	233	122	92 %
P8	Hunter	165	77	40 %
P1	Sierrak	127	56	59 %
P4	Maggie	113	56	46 %

The table above shows the ranking of participants according to the total number of synchronous turns exchanged by both Canada-based and China-based participants, then by only China-based participants, and the percentage of translated synchronous turns sent by only China-

based participants. The table ranks participants who exchanged over 100 synchronous turns, and the data shows that all participants in this category had access to the IM translation option.[64] The data also reveals that, apart from P4, who fell just below this threshold, all top performers in this category spent over 50% of their time communicating synchronously. In fact, the 6 China-based top performers machine-translated 55% of all synchronous messages. Finally, the data proves that the IM translation option was often used during synchronous exchanges. In fact, real-time machine-translated IM accounted for over 40% of total exchanges for participants in this category. As participants use the IM translation to improve their chances to communicate, we can assume that this helped to improve their WTC.

3.2.8) Finding 8: Repetition, paraphrase and explanation

It was assumed at the beginning of this study that while the IM translator would offer OTC to participants using it, there might still be times when participants misunderstand each other due to the quality of machine-translated messages (See Chapter 2, section 2.4.10). We hypothesized that this would eventually lead to repetition, paraphrasing, and requests for explanation (See Introduction, section 3). It should be noted that requests for repetition, paraphrase, and explanation were expected from Canada-based participants to China-based participants and vice versa. But there were no such requests from China-based participants. Therefore, Table 19 below represents requests solely from Canada-based participants to China-based participants.

[64] See Appendix G for a complete table of synchronous exchanges (for top and bottom performers).

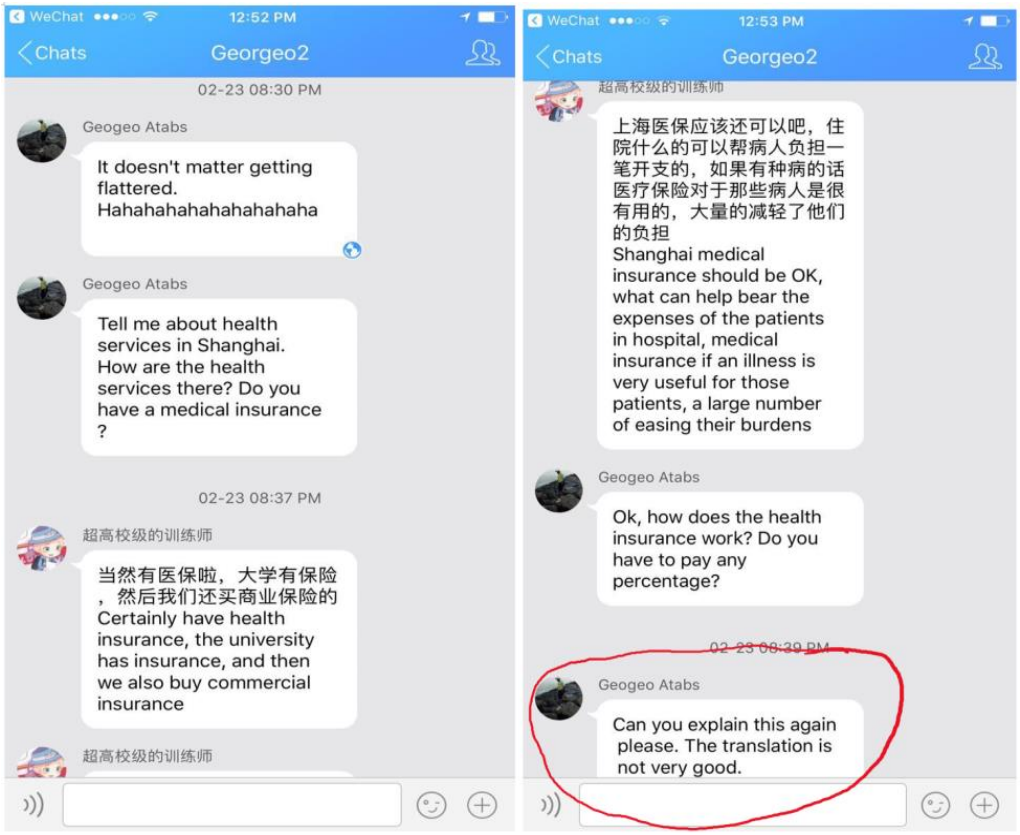
Table 19: Ranking of participants according to number of requests for repetition, paraphrase, and explanation

No.	Name	Paraphrase	Repetition	Explanation
P6	Chaguo	3	2	4
P3	Ngoger	4	na	2
P9	Yeah	2	na	2
P14	Fish	1		
P2	Dorothy	1		
P10	Cartaria	1		

The data indicates that of the 6 participants who either paraphrased, repeated, or explained their outgoing messages, 4 (i.e. 67%) used the IM translation option. Furthermore, the only two (pink rows) participants in this category who did not use the IM translator both had only one instance of paraphrase. This finding partially confirms the hypothesis outlined at the beginning of the study, but also suggests that paraphrasing and explaining were two strategies adopted by participants to overcome linguistic and cultural obstacles during the study. See Chapter 4, sections 4.2.1 and 4.3.1.

This finding also reveals that linguistic and perhaps cultural obstacles encountered during exchanges were essentially due to the poor quality of the IM translation option. Example 1 below illustrates the point being made here. It is an excerpt of the conversation between P6 and George, during which George asks for the explanation of a machine-translated IM he does not understand.

Figure 12: Request for explanation



In the example above, George does not understand the machine-translated IM, so he asks P6 (Chaoguo) if she can explain the idea. It is important to note that by reformulating the Chinese sentence, Chaoguo is able to produce a version whose translation appears satisfactory to George.

Here is how the conversation continues between the interlocutors:

Figure 13: Continuation of request for explanation

This example illustrates that participants used the IM translation option in their attempt to repeat, paraphrase, or explain themselves. Requests for paraphrase, repetition and explanation partially highlight the emotive function in Jakobson's (1960) model, which focuses on the attitude of the addresser towards what is expressed using various linguistic features including those employed for emphasis. Figure 13 also indicates how participants resolved MT-related problems and how they negotiated meaning using various methods. We can also deduct that if participants were able to satisfactorily resolve communication problems, then their overall WTC may have increased in the process.

It should be noted that China-based participants indicated in the final questionnaire that they employed various strategies to resolve machine translated problems. They were asked the

following question: *Were you able to find ways of dealing with the problems with the MT*? All participants (except 1) said they tried to resolve the problems they encountered while using the IM translation option. Their strategies included: using an alternative MT software (Baidu Translate); repeating the question using different words; explaining by using different words; extracting culture-bound words and explaining them individually; providing more contexts for the SL to improve MT output; and writing simple sentences. See Chapter 4, sections 4.1.2 and 4.3.1 for further discussion on the implications of this finding.

3.2.9) Finding 9: Participants' use of the IM translation option

In this section, we investigate how participants, especially those with the IM translation tool, used the IM translation option during exchanges. In other words, did participants rely heavily on the IM translation, or did they only use it when they needed it? Furthermore, we intended to confirm one of the hypotheses formulated at the beginning of the study stating that participants would use the IM translation more at the beginning and gradually decrease their dependency on the IM translation option towards the end of the study. Table 20 below shows the result of our data analysis uniquely at the beginning and end of the study.

Table 20: Percentage of IM translation during study optional use of tool

No.	Name	Optional use of IM translator (Dec. 8 - 22, 2016 and Jan. 6 - 13, 2017) Tasks 1 and 2	Optional use of IM translator (Feb. 18 – March 7, 2016) Tasks 5 and 6	Difference in % of IM use during the first and last three weeks of the study
		% translated	% translated	% decrease ⇩ % increase ⇧
F6	Chaoguo	98 %	61 %	37 % ⇩
P3	Ngoger	96 %	13 %	83 % ⇩
P9	Yeah	67 %	54 %	13 % ⇩
P7	Mooney	0 %	47 %	47 % ⇧
P4	Maggie	46 %	44 %	2 % ⇩
P5	Cordell	82 %	0 %	82 % ⇩
P1	Sierrak	82 %	n/a	n/a
P2	Dorothy	0 %	na	na

In Table 20 above, the percentage of IM use is calculated for participants who conversed with the use of the IM translator. The periods represented are December 8 to 22, 2016, and January 6 to 13, 2017 which were the first three weeks of the study and February 18 to March 7, 2016. Participants had two tasks to perform during the first three weeks and a similar number during the last three weeks. The table also indicates the percentage of IM translated during the first three weeks and the last three weeks. Finally, the difference between the initial use (during the first three weeks) and final use (during the last three weeks) is calculated. The difference makes it possible to determine whether participants increased or decreased their dependence on the IM translation option use as the study progressed.

The table reveals that participants with the IM translator started off translating most of their IM. For instance, P6 translated up to 98 % of her messages during the first three weeks of the study,

while P3, P1, P5, and P9 translated 96 %, 82 %, 82 %, and 67 % of their outgoing messages, respectively.[65] However, as the study progressed, the percentage of real-time machine-translated IM appears to decrease. A comparison between the percentage of translated IM at the beginning and towards the end of the study shows a general decrease in the use of the IM translator. P3, for example, reduces the use of the IM translator by 83 %, while P5 decreased by 82 %.

While the data indicates that most participants, in conformity with our hypothesis at the beginning of the study, reduced their dependence on the IM translator as the study progressed. Another important finding from this data is that participants tended not to over-rely on the IM translation option. As a matter of fact, no participants translated all outgoing messages during the weeks they were encouraged to use the IM translation option. On the other hand, some participants continued to use the IM translation option, especially for tasks, during the weeks they were discouraged from sending machine-translated IM. The implication of this selective use of the tool is discussed in Chapter 4, sections 4.2.0 and 4.2.3.

3.3) Conclusion

In Chapter 3, the findings obtained from our evaluation of the responses to the initial and final questionnaires revealed that majority of participants who communicated with the IM translation option believed their WTC level improved at the end of the study. As far as the WTC score was concerned, the majority of participants with and without the IM translator had a higher score after exchanging IM with their partners based in Canada. The data highlighted the fact that both the WTC level and WTC score contributed to a better understanding of the WTC perception. Furthermore, the availability of the IM translator appeared to have a higher impact on WTC level

[65] P2 did not translate any messages during the first three weeks but she translated 17 % of her messages during 4th and 5th weeks, when participants were encouraged to use the IM translation option.

than on WTC score. The data of exchanges further revealed that all participants (with and without the IM translator) believed being able to translate either incoming messages and or outgoing messages helped improve their chances to communicate in a FL. However, participants who did not have access to the IM translator felt the speed with which they communicated was considerably reduced, because they had to look up the translation of some words.

An assessment of the history of exchanges revealed that the IM translation tool offered those participants who used it FL OTC. According to the findings, participants with the IM translation tool outperformed those without the translation tool in many conversation aspects. Unlike participants without the IM translation option, those who had access to the translation tool were able to exchange more words and turns, take ownership during exchanges, engage in more synchronous exchanges, spend more time on discussing the topics and tasks, and employ words and expressions that helped to trigger, develop or sustain the conversation. They received more requests to paraphrase, repeat, or explain themselves which made it possible for them to create further OTC with the help of the IM translation option.

The findings essentially answered the two fundamental research questions and confirmed some of our hypotheses. They also shed a substantial amount of light on the concept of WTC, especially in a communication technology-mediated landscape, and illustrated that machine-translated IM could provide an opportunity for learners to express themselves and improve their FL WTC. As we illustrate in the next chapter, these findings have far-reaching implications, not only for how the WTC concept can be understood and (re)defined, but also for FL learners' profiles, course contents, and translation studies.

Chapter 4: Discussion and implications

The previous chapter presented the findings obtained by analyzing the initial and final questionnaires, as well as assessing the conversation history of participants. According to the findings, participants generally had a higher WTC score at the end of the study. However, the WTC level improved more for participants who communicated with, as opposed to without, the IM translation option. The findings also revealed that participants who communicated with the aid of the IM translator took advantage of the tool during the conversation. As a result, they exchanged more words and turns, took ownership, enhanced the conversation, engaged in more synchronous exchanges, and spent more time on pre-selected tasks and conversation topics. Furthermore, they repeated, paraphrased, and explained themselves more often than participants without the IM translation option, thereby taking advantage of the OTC offered by the tool. See Chapter 3, section 3.2.8 for details.

Chapter 4 examines the implications of the findings for FL pedagogy, MT, and translation studies. As far as FL pedagogy is concerned, the discussion focuses on the conceptual framing for WTC, the profile of learners, the usefulness of integrating MT in the FL learning environment, the exposure of learners to elements of the foreign culture, and the possibility of recycling learner data for pedagogical purposes. As for MT and translation studies, the discussion highlights the need for increased collaboration across disciplines, the possibility of obtaining bilingual machine-translated data generated by learners for in-class training, and the debate revolving around how to use these kinds of tools in the translation classroom or to produce translations that are “fit for purpose”. The chapter ends with a summary of the main implications discussed.

4.1) Implications of the findings for the conceptual framing for WTC

The concept of WTC (see Chapter 2, section 2.3.1) was developed with the initial assumption that communication would, for the most part, take the form of face-to-face exchanges in different contexts and situations. Technological development and innovation, it appears, played a small part in shaping the development of the concept at the time. This may explain why McCroskey's 20-item measurement scale of WTC largely relied on the physical presence of interlocutors. However, technology has revolutionized today's communication landscape, and appears to have broadened perspectives and our understanding of the concept of (interpersonal) WTC.

4.1.1) Perception versus reality

One of the main contributions of technology to our understanding of the concept of WTC is that it accentuates difference between perception and reality. The findings gathered from the study revealed the discrepancy between the WTC level, the WTC score, and the actual interpersonal exchanges between participants (see Chapter 3, Findings 1, 2, and 3.) Contrary to McCroskey's (1992, p. 18) logic, the findings indicated that respondents were not always "aware of their approach/avoidance tendencies." For instance, some participants, such as P10 (Cartaria), P13 (Amyy), and P16 (Daisy) all believed they were VWTC, while in fact they ranked among the bottom performers in numbers and turns exchanged. This was the overarching revelation regarding participants who did not use the IM translation option during the study. The findings suggest that participants in this category were quite confident about their WTC level before the study, and yet did not exchange enough information to be ranked among the top performers. In fact, the findings appear to corroborate the thesis of MacIntyre et al. (1998), who view WTC as a situational variable that changes depending on the context and situation. See Chapter 1, section 1.1.4. According to MacIntyre (1998, p. 546), "situational influences (e.g., desire to speak to a specific person,

knowledge of the topic, etc.) [sic] are seen as more transient and dependent on the specific context in which a person functions at a given time." This suggests that real-time machine-translated IM, on its own, may not necessarily improve learners' WTC. Rather, as the study proved, other factors such as learners' ability or inability to overcome linguistic challenges (See Chapter 3, Case Studies 1, 2, and 3) have a strong influence.

Furthermore, the findings confirm studies that have proven perception to be different from reality in several circumstances. As Koch (2010, n. p.) remarked:

> Our conscious perception of the world, though relatively stable, is not static. We are incapable of being fully objective, even in our most mundane observations and impressions. Our awareness of the objects around us is informed and fine-tuned by any number of transient factors—our strength and energy levels, our sense of confidence, our fears and desires. Being human means seeing the world through your own, constantly shifting, lens.

Based on our analysis of both the questionnaires and the history of interpersonal exchanges among participants, it may be suggested that an assessment of WTC perception should not rely solely on the answers of respondents on the 20-item WTC scale at a given time. Rather, the perception of respondents could be obtained at different times (at the beginning and at the end of a study, for example), over a given period of time, and matched against related data drawn from actual exchanges (see 4.1.2 below for a detailed discussion). This is especially true because technology appears to have an impact on WTC, hence the need to revisit McCroskey's WTC conceptual framework.

4.1.2) Revisiting the definition of WTC

The current technology-based communication landscape may have partially undermined the premise on which McCroskey (1992) based the concept of WTC. Technology has made it both possible and easy for people from different parts of the world to communicate. The physical

distance among interlocutors has, arguably, been compensated for by the communication tools that make real-time information exchange possible. Consequently, interlocutors no longer need to line up to communicate: they no longer need to have face-to-face exchanges, and they do not even need to speak the same language. This implies that in order to properly assess someone's WTC, it is necessary to not only measure their own perception of their WTC, but also analyze their actual communicative efforts when given an opportunity. Additionally, both the communication tool being used and their knowledge of how to use it may be influencing factors. Some modern communication tools include smartphones, tablets, desktop and laptop computers, and fixed and portable digital devices that can record and transmit sound. These devices are impactful because WTC no longer depends uniquely on the predisposition to enter into communication. Given today's communication tools, it may not be possible to fully describe the concept of WTC without taking into consideration co-existing OTC.

Furthermore, some of the premises on which previous scholars based the concept of WTC may not have the same validity in today's world. For instance, McCroskey (1992) argued that introversion was one of the main causes of WTC. He claimed that, "introverts tend to be less sociable and less dependent on others' evaluations than more extroverted people … Introverts are often characterized as quiet, timid, and shy" (Ibid., p. 138). He further argued that introverts have a tendency to withdraw from communication. The association of WTC with fear and communication apprehension was also reinforced by McIntyre (1994, p. 137-138) who claimed that, "people are willing to communicate to the extent that they are not apprehensive about it and perceive themselves to be capable (competent) of effective communication." While this assertion may be true, especially for face-to-face communication, research has proven that online communication can enable users to overcome shyness, and improve how they communicate.

Research conducted by Campbell et al. (2006, p. 79) on the usefulness of online chatting systems for users with a shy personality showed that:

> Chat functions may provide those who are socially fearful with a means to approach their social phobia and adjust their behaviour. Therefore, the results of this study suggest that Internet use could be a means to cope with social phobia. Once the user isolates a specific use of chat online, he or she may rehearse their social behaviour to better approach face-to-face interaction in the future.

Today's computer-mediated communication context definitely has its own drawbacks (including online communication apprehension by some users). However, the argument that shyness and apprehension during face-to-face exchanges leads to an unwillingness to communicate may need to be re-evaluated and re-contextualized.

The notion of "community" has also changed with technology (Freiermuth & Jarrell, 2006). Communities that existed prior to the evolution of communication technology are not the same as the communities we have today. While McCroskey (1992) probably based his concept of "community" on the dominance of face-to-face communication, IM "is a phenomenon that is also helping to foster a greater sense of 'online community' that no other application has done previously" (Kadirire 2007, p. 2).

The findings from the research confirm Kadirire's assertion. Some participants, including P11 (Vesper) and P14 (Fish), who both claimed to be VWTC and had a WTC score of 97 and 87 respectively, ranked among the top performers for words and turns exchanged. However, the analysis of their conversation history reveals that, comparatively, they participated in less synchronous communication: the type of exchange that most resembles face-to-face conversation. On the contrary, P3 (Ngoger), and P9 (Yeah), who believed they were both SWTC at the beginning of the study, were among the top performers with regard to synchronous exchanges (87 % and 83 % respectively). It should be noted that

these two participants both communicated with the IM translation option. It also appears from the data gathered that being part of the online community partially helped to improve their WTC level, which rose by the end of the study from SWTC to WNWTC for P3 and from SWTC to VWTC for P9. See Chapter 3, section 3.1.1 for more information on WTC level.

This finding, therefore, seems to support the fact that, with the current communication landscape, unwillingness to engage in face-to-face exchanges may not always be tantamount to an unwillingness to converse within an online community (either one-on-one or as part of a larger group).

4.1.3) Different parameters for measuring WTC

Integrating MT and IM in the language classroom may deepen our understanding and lead to new ways of measuring the concept of WTC. Based on our analysis of data gathered during the study, examining WTC in the light of OTC has increased the perspectives from which to appraise the WTC concept. For instance, it is possible to break down the communication activity into various aspects. These aspects are specifically related to interpersonal communication rather than to meeting or group discussion as in McCroskey's complete model. The communication aspects have been retained because we believe they are a good reflection of how participants communicated with and without the IM translation tool. We believe that conversation aspects should be evaluated based on the focus of each research project, participants involved, and the nature of exchanges.

The findings indicated that the performance of participants was not identical in all conversation aspects. For instance, some participants who ranked among the top performers with respect to words and turns exchanged did not have a similar performance for conversation

enhancement, ownership, synchronous conversation, etc. Table 17 has details of participants' performance in each conversation aspect. Therefore, in order to clearly understand each participant's overall WTC, we decided to rank the top ten performers according to 7 different conversation aspects (ownership[66]; conversation enhancement;[67]synchronous exchanges; requests for explanation, paraphrase, and clarification; and pre - selected tasks/topics). Each aspect carried a total of 10 points, so 7 conversation aspects had a total of 70 points.

The top performer, per conversation aspect, was awarded 10 points while the bottom performer was awarded 1 point. P1 (Chaoguo), for instance, ranked as top performer in terms of number of words exchanged, outgoing messages, and conversation ownership. P14 (Fish) exchanged many words but did not take ownership during synchronous exchanges. The final ranking, according to our approach, is presented below:

[66] The number of 3 or more consecutive turns sent by China-based participants during synchronous exchanges.
[67] Turns and or sentences that either initiated or triggered further conversation.

Table 21: Measurement of WTC based on different conversation aspects

No.	Name	Points earned per category (Rank no. 1 =10 points, Rank No. 10 = 1 point)								
		No of words	Total turns	Outgoing turns	Conversation ownership	Conversation Enhancement	% of Synch. exchanges	Tasks and topics	Total WTC score	Final Ranking
P3	Ngoger	7	10	9	9	10	9	10	64	1
P6	Chaoguo	10	9	10	10	6	8	9	62	2
P9	Yeah	6	8	8	8	9	10	7	57	3
P7	Mooney	8	5	5	6	5	2	8	39	4
P14	Fish	9	7	7	0	7	3	5	38	5
P4	Maggie	4	6	6	0	8	5	6	35	6
P1	Sierrak	5	4	4	2	4	6	4	29	7
P8	Hunter	1	3	3	3	1	7	0	18	8
P5	Cordell	2	2	2	5	2	1	2	16	9
P11	Vesper	3	1	1	0	3	0	3	11	10
Participicants not among the top 10 performers for words and turns exchanged										
P17	Infinite				7		4			
P10	Cartaria				4			5		
P2	Dorothy							5		
P13	Amyy							1		

This approach also helps to determine the overall performance of each participant. The table provides detailed information on the interpersonal communication pattern of each participants, which clearly reflects their overall WTC. According to this measurement approach, P3 (Ngoger) had the highest WTC, based on his performance in the different conversation aspects. The two participants who communicated without the help of the IM translation option, P14 and P11, ranked 5th and 10th respectively. It is worthy to note that they ranked 2nd and 7th respectively with regard to the number of words exchanged during the study.

From the above analysis, we propose revisiting and complementing the definition of WTC by adding certain aspects of actual conversation including: how interlocutors respond to IM; how long they hold the floor during conversations; who initiates conversation; and who engages in synchronous exchanges. It should be emphasized that these aspects may depend on the communication tools or platform. Our approach to define WTC is more broad-based than

McCroskey's (1998) approach, which relied solely on the likelihood of entering into a face-to-face conversation at a given time and place.

4.2) Implications of the findings for FL pedagogy

In section 4.1, we discussed the implications of the data analysis for our understanding of the concept of WTC. In this section, we outline the implications of the findings for FL teaching and learning. In particular, our discussion focuses on the necessity of integrating MT and IM in the FL learning environment, the ability to understand learners' profiles, the possibility of recycling learner data for pedagogical purposes, and the likelihood of exposing learners to a foreign culture.

4.2.1) MT and IM use in the FL learning environment

Our analysis led us to conclude that MT and IM might support FL acquisition in a context where language learners are users of technology and social media. Findings 1, 2, 3, 4, and 5 all suggest that, in today's learning environment, technology and FL pedagogy may hardly be separated from one another. By making it possible to further understand the concept of WTC, MT, and IM underscore the validity of integrating FL learning and technology, especially among today's beginner FL learners. According to Garcia and Pena (2011, p. 472), "how widespread the use of MT may be in the beginner and intermediate classroom is not known, but as MT technology continues to improve, it cannot but grow. MT for language learning is a theme that can no longer be ignored." Our analysis corroborates this view, and illustrates that MT and IM could improve the way we understand certain concepts in language learning and suggest new ways of evaluating and measuring improvements. Moreover, our analysis of the questionnaires concurs with a study conducted by Ana Nino (2009, p. 253) that surveyed the impression of language learners and

trainers on the relevance of CALL[68] and concluded that, "the use of MT and free online MT in FL learning was perceived as an innovative and positive learning experience both by language tutors and language learners."

Another important reason to integrate MT and IM in the FL classroom is that while learners may use MT during exchanges, they may not exclusively depend on it. An examination of the data of IM exchanges revealed that participants selectively used the IM translation tool. In particular, they tended to rely on the tool to overcome linguistic and cultural barriers if they were not sure how to express a certain expression or word in English. Understandably, some participants relied heavily on the IM translation option during exchanges. These included P1 (Sierrak) and P6 (Chaguo), who, respectively, translated 80% and 81% (see Appendix E for more information) of their exchanges during the weeks they were encouraged to use the IM translation tool. For other participants, the use of the IM translator appeared to be limited to cases when they encountered some form of difficulties of a linguistic or cultural nature (when they lacked the English equivalent of a Chinese word, or when they had problems explaining a recipe or festival in English). This may partially explain why P8 (Mooney) and P1 (Chaoguo) used the IM translator during the period they were encouraged not to send machine-translated messages. See Chapter 3, section 3.2.9 for more information. It should be noted that no participant translated all outgoing messages, even during the weeks that they were encouraged to use the IM translator. The finding suggests that while FL learners may use MT, they do not entirely depend on it, or may become addicted to using it during exchanges.

[68] CALL is the acronym for computer-assisted language learning.

As evidenced in the findings, technology could be introduced in the FL classroom because learners appear to have control over the tools they use. In our case, MT is used as a means to an end, rather than an end in itself. Like other online platforms such as blogs (Alm, 2010, p. 75), IM provided beginner learners, "control of their interactions and reduced their anxiety." The IM translation option enabled participants to overcome linguistic and culture-bond challenges as in the example below where P9 (Yeah) used the IM translation option to obtain the TL equivalent of *排气管* (exhaust/muffler) in English. See Chapter 3, section 3.2.6 for more information and a screenshot of the exchange.

In the conversation that ensues, P9 (Yeah) and his Canada-based interlocutor discuss the cultural differences that could be differentiated by using specific English words. Cultural differences could sometimes pose a problem to FL learners. Wang (2011, p. 224), who discusses the relevance of cultural knowledge to FL learners in China, maintains that it is impossible to teach FL learners all the differences between American and British cultures, so "any approach, which accelerates students to grasp [sic] the knowledge of English - the language itself - and culture, so as to improve their comprehensive English capacity, should be adopted" (p. 224).

P8 (Mooney), for her part, mostly relied on the IM translator for specific tasks. The tasks she translated were recipes and other culture-bound exchanges. As Appendix E shows, she only used the IM translation option for Tasks 4, 5, 6, and 7. This also explains why she used the IM translation option even during weeks 6 and 7, when participants were discouraged from send machine-translated IM. Her selective use of the IM translator suggests that FL learners do have control over their tool and the exchanges, not vice versa.

Furthermore, according to our analysis, FL learners continued to use the IM translation tool despite the quality of messages translated. In the final questionnaire, participants were asked specifically, "*Did you ever have problems in communicating using the QQ International MT function during the study?"* Of the 15 respondents who used the MT option for outgoing and/or incoming messages, 8 confirmed they had problems, while 7 said they did not encounter problems. Some of the problems included inconsistent translations, the inability to translate culture-bound words, incorrect grammar, and incorrect syntactic structures.

The fact that majority of the participants continued to use the IM translation option even though they understood their machine-translated IM were not of a superior quality helps us to understand the attitude of FL learners towards technology (MT in particular). As Pym (2013, p. 19) concurs, "It has long been recognised that the beliefs and attitudes of learners constitute a key element in L2 acquisition." When learners understand that technology may not provide all the answers to their communication problems (see Appendix B), they may be encouraged to improvise, or find alternative solutions to overcome the challenges they encounter.

Because learners, and sometimes language teachers, may be unable to fully explore MT tools used in the language classroom, we propose the following strategies: 1) seek advice from translation experts on how learners could cope with MT-related challenges; 2) design tasks and activities that take learners needs and profiles, as well as knowledge of MT tools, into account; and 3) develop and harness those skills that learners are already exhibiting when they communicate. Finding 9 shows that FL learners understand the need to occasionally modify SL sentence structures, explain, paraphrase, and repeat utterances in an effort to overcome some of the linguistic problems encountered while using the IM translation tool during the study. Therefore, FL trainers may need to reinforce these skills in our technology-driven classrooms.

4.2.2) Recycling learner-generated data for pedagogical purposes

During the study, participants, especially those who communicated with the help of the IM translation option, generated a corpus that could be useful for language teachers. The corpus, which was essentially the conversation history of interlocutors, could be reused as authentic material and/or recycled for the teaching of FL. The relevance of learner-generated data in FL cannot be overemphasized. The data is authentic and, according to Jacobson et al. (2003, p. 1), is comprised of materials "which are used in classrooms in the same way they would be used in real life."

Participants in this study collectively created a corpus of 29,585 words that could be explored by language teachers for various purposes. Learner data may be particularly useful in China, where the communicative and action-centred approaches to teaching English have not completely taken root and FL teachers, "do not have the security of the textbook since they must select, adapt, and invent materials they use" (Anderson, 1993, p. 473). Using recycled learner data has a number of advantages: 1) there is the possibility of selecting conversation topics that are of interest to learners; 2) mistakes or errors made reflect areas that learners need to improve upon; 3) teachers do not need to spend time searching for materials to use in class; 4) depending on conversation topics, learners may be exposed to aspects of the FL culture; and 5) because they can spend less time searching, reviewing, editing, and selecting teaching materials, teachers can focus on the weaknesses of individual learners, among others (Hamed & Hilal Al, 2014; Caws & Hamel, 2013).

Additionally, the history of exchanges among participants could be explored by the language teacher in a variety of ways to enhance teaching and learning. Learner data could be useful in teaching vocabulary (unfamiliar words and concepts). An example from our data analysis is when Jeff and Yeah discuss the "muffler," (Chapter 3, section 3.2.6). Learners could also be

asked to identify and correct various errors. These could be collocational, grammatical, semantic, and structural errors in the corpus of real-time machine-translated messages. For example, they could be asked to examine the sentence, *"But he is very generous, taught me how to jump some Latin American songs,"* and identify collocation and punctuation errors.

Figure 14: Screenshot to illustrate MT quality

The conversation history of machine-translated IM between participants could also serve as material for the teaching of FL grammar. Learners, could be asked to identify wrong tenses and correct them individually, in groups, or in pairs. They could also be asked to identify and correct grammatical and/or syntactic errors such as the following: *"Here the Colombian was one I have ever seen. Last year I have a roommate from Colombia. His voice is very big, listening to music to loud music."* Learners may, be expected to work individually, in groups, or in pairs in order to modify the sentence as follows: "*I have seen a Colombian. Last year I had a roommate from Colombia. He had a loud voice and he listened to very loud music."* When learners generate and explore material they created themselves, they "increase engagement in the course content, as well as provide a network of knowledge transfer" (Baird and Fisher, 2005, p. 14).

4.2.3) Knowledge of learners' profiles

Our data analysis of how participants used the IM translation tool as OTC illustrates aspects or areas of the conversation participants preferred and/or where they produced more exchanges. Chapter 3, section 3.2 (Findings 1 to 7) provided information that could help understand how each participant performed in each aspect of the conversation. This information could be useful in understanding FL learner profiles. According to Finding 7 (Chapter 3, section 3.2.7), P3 (Ngoger) and P9 (Yeah) produced considerably more synchronous exchanges (which resemble face-to-face communication). In fact, during the study, they spent 88.60% and 83.30% of their time, respectively, chatting synchronously. We could also argue the case that top performers in this conversation aspect preferred communicating synchronously, given the time difference between Canada and China and the availability of both participants. It should also be noted that in order to engage in synchronous exchanges, participants had to ensure that they were available at certain times of the day, something that was not always possible given the schedule of interlocutors.

On the contrary, some participants, such as P11 (Vesper), who ranked among the top performers in terms of words and turns exchanged, produced less synchronous than asynchronous IM and presumably preferred the latter. Based on the findings, we could conclude that while P9 (Yeah) and P3 (Ngoger) belong to that group of interlocutors who may be more likely to engage in face-to-face communication, where short and rapid answers may be required, P11 (Vesper) belongs to the category of interlocutors who may rather prefer to listen to others and reflect before responding.

Similarly, based on our analysis of how participants enhanced their IM exchanges, some learners could be better than others at sustaining a conversation by triggering further exchanges - i.e., asking questions to initiate exchanges or ending their answers with a question to continue the

discussion. Table 22 below summarizes aspects of the conversation which reflect the top 10 participants' strengths and weaknesses.

Table 22: Areas where top ten performers focused their exchanges

No	Name	Strong	Average	Weak
P6	**Chaguo**	words/turns/tasks/synch. ownership/enhancement	enhancement	-
P14	**Fish**	words/turns/enhancement	-	tasks/ownership/synch.
P7	**Mooney**	words/ownership/tasks	turns/enhancement	synch.
P3	**Ngoger**	words/turns/enhancement Synch. /ownership/tasks	-	-
P9	**Yeah**	Words/turns/enhancement synch. /ownership/tasks	-	-
P1	**Sierrak**	Words	ownership/synch.	turns/enhancement/tasks /synch.
P4	**Maggie**	enhancement/words	tasks/turns/synch.	ownership
P11	**Vesper**	words	-	turns/enhancement/ ownership/tasks/synch.
P5	**Cordell**	words	ownership/tasks	turns/enhancement/ synch.
P8	**Hunter**	words	ownership/synch.	tasks/enhancement/ turns/

According our data analysis, the top 10 performers in terms of turns exchanged performed as indicated on Table 22 above. The information indicates their strong, average, and weak areas. Words exchanged was considered a strong area for all participants on this table. In other conversation aspects, strong areas were those areas where participants ranked among the top 4. If they ranked 5^{th} or 6^{th}, we considered that to be their average area and if they ranked between the 7^{th} and 10^{th} position, we viewed that as their weak area.

The data indicates that only P3 and P6 had no average and weak areas. In fact, both participants ranked among the top 4 in all conversation aspects. P6 had just one area where she was average. On the contrary, the two participants (P14 and P11) who did not use the IM translator manifested a considerable degree of weakness in many areas. While P14 had three strong areas and three weak areas, P11 had one strong area and 5 weak areas.

Knowledge of the strengths and weaknesses of FL learners could be crucial in facilitating the design of pedagogic interventions particularly tailored to meet specific learner needs. Such interventions could either be in the form of various in-class activities or take-home tasks. Furthermore, such interventions could actually be designed based on learner-generated data as well as online via CALL (Caws & Hamel, 2013).

4.2.4) Possibility of exposure to a foreign culture

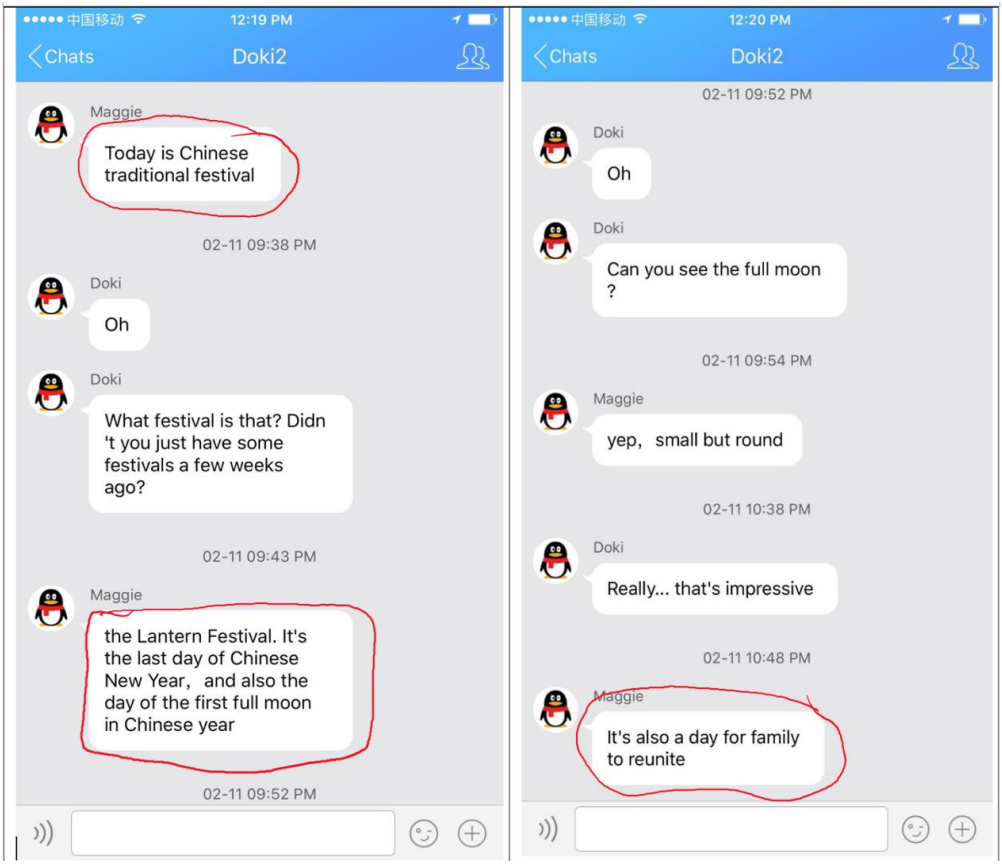
Our analysis of the data revealed that communicating with the help of the IM translator could expose learners to the foreign culture. Learning the FL culture is important because, as Yang and Chen (2014, p. 57) maintain:

> In classroom settings, non-native English-speaking teachers, often teaching in Chinese, typically struggle to teach pragmatic competence. Lacking extensive knowledge of the English pragmatic system, these teachers often focus their teaching on textbooks to help students perform well on their exams.

Textbooks alone, do not integrate sufficient cultural knowledge into the language classroom. In fact, several researchers (Yang & Chen, 2014; Wang, 2011) argue that textbooks, especially those used in China, provide insufficient knowledge regarding Anglo-American cultural practices. Some researchers believe that, depending on the type of activity and learning outcomes, online communication could, in some cases, move learners closer to the FL culture than learning in a

traditional classroom setting. Cziko (2013, p. 38), believes that "electronically linking distant pairs of learners who are learning each other's languages is an obvious way to improve knowledge of foreign languages and cultures." Helm (2015, p. 197) also highlights the importance of "engaging classes of geographically dispersed learners in online intercultural exchange using Internet communication tools for the development of language and/or intercultural competence." The findings from this study appear to confirm these assertions and a body of research well captured by Lewis and O'Dowd (2015) and Wu and Kawamura (2012). Below are three examples of how cultural knowledge was exchanged among participants during the study.

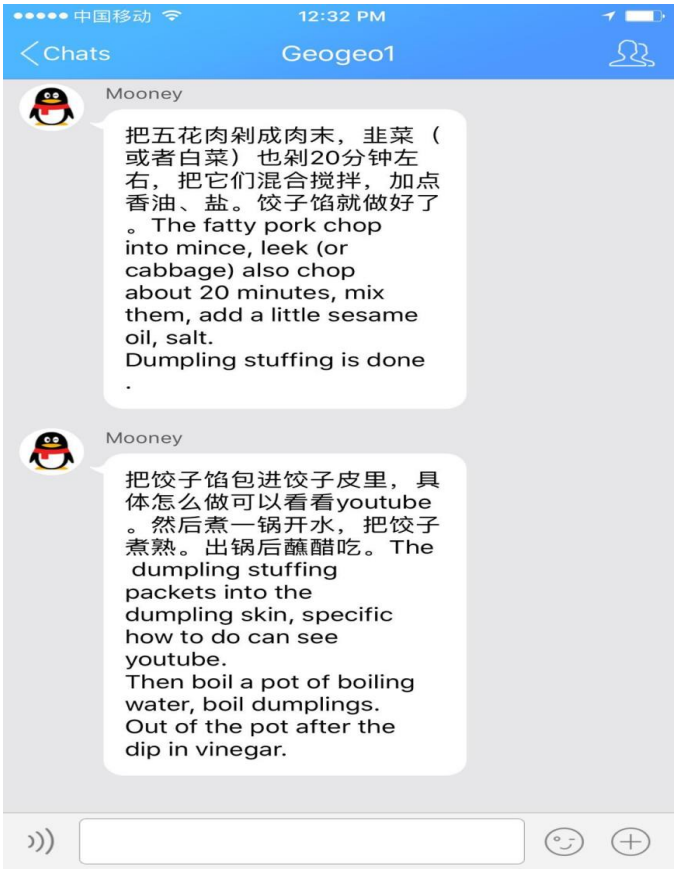
Figure 15: Screenshot of the conversation about the Chinese New Year



In this example, Maggie explains the meaning of the Lantern Festival including the day of the festival, its meaning, and what makes it different from the Chinese New Year, which is usually

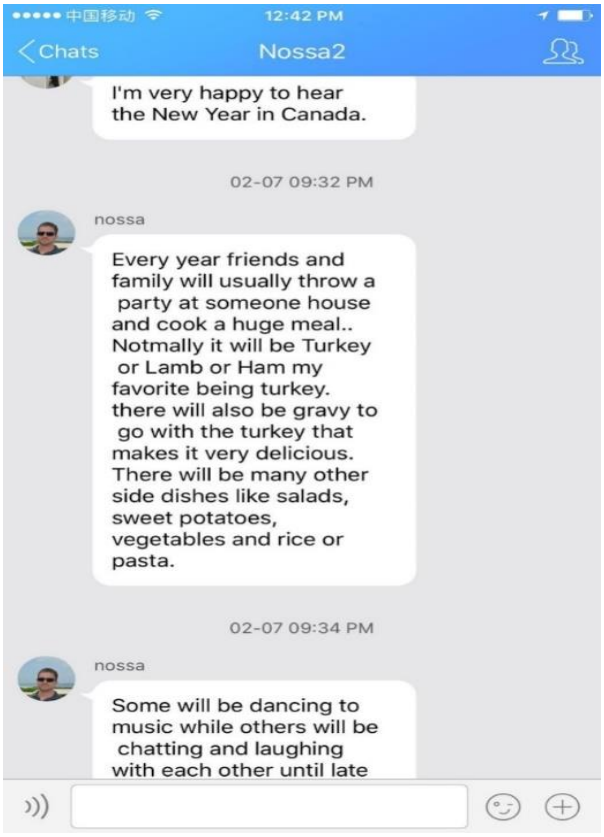
celebrated a few weeks earlier. Synchronous exchanges of this nature enabled the Canada-based participant to ask pertinent questions in real time, such as, “Can you see the full moon?”

Figure 16: Screenshot of the machine-translated recipe



Using the IM translation option, P8 (Mooney) is able to describe how to prepare one of the main dishes commonly eaten in her hometown during the Chinese New Year. Chinese cuisine is, one of the most outstanding displays of Chinese culture and this example demonstrates how the real-time IM translation option offered an OTC by making it possible for the FL learner to share this information with her Canada-based partner. According to Mooney, it would not have been possible to explain the preparation of this dish without the help of the IM translation option. This culture-bound machine-translated IM exchange is important in this context because it appears to complement information that had been shared on how the New Year is celebrated in China.

Figure 17: Screenshot of an explanation of how Christmas is spent in Canada



In this example, Nossa shares his Christmas activities with his China-based partner. He tells her what he eats (turkey), how it is prepared, and talks about other Christmas activities. Researchers (Byram et al., 2002; Cziko, 2013; Yang & Chen, 2014) have agreed that learning the foreign culture is advantageous to learners in many ways. Learners may acquire knowledge of culture-bound expressions, vocabulary use in specific contexts, foreign traditions and practices, and the behaviours of other people around the world. This could help them when they communicate, as they may learn to accept different behaviours, perspectives, and values.

Furthermore, some non-native FL teachers may not be aware of these cultural practices, let alone be able to explain them to EFL learners. The information exchanged is credible and, quite often, based on personal experiences. In addition, instead of reading from a textbook, participants

are in a position to ask questions when they feel the need. In addition, the learning environment is laid back, low-stress, and learner-centered. It is the ideal environment recommended for the action-oriented approach to learning a FL (see Chapter 1, section 1.1.4). Learners are exposed to specific sentence structures, colloquial expressions, or vocabulary not typically found in textbooks (*throw a* party, *a huge* meal, there will also be *gravy to go with* the turkey). Finally, FL teachers could use culture-related information as material for further learning. For instance, they could either ask learners to study the vocabulary used in explaining specific cultural practices, compare cultural festivals in two countries, or simply use the material to develop other skills, including preparing short oral presentations in class.

4.3) Implications of the findings for translation studies

Section 4.2 above focused on the implications of the findings for FL learning. In this section, we examine the implications of the findings on translation practice and translation studies. The discussion focuses on how machine-translated IM emphasizes the interdisciplinary nature of translation studies, and fosters the discussion on the tools to use and contents to teach in the translation classroom.

4.3.1) The interdisciplinary nature of translation studies

The findings comfirm the long-held view that translation studies is essentially an interdisciplinary area of study. The study underscores the relationship between translation, WTC, and communication theories and models. The study is grounded on Jakobson's communication model and through our analysis, it has been possible to demonstrate the relationship between CMC (specifically IM translation), and certain language functions suggested by Jakobson (1960). The functions include the emotive (section 3.2.8); referential (section 3.2.5); expressive (section 3.2.1); and conative (sections 3.2.3 and 3.2.6).

Furthermore, the findings highlight the relationship between translation and the concept of WTC. It should be noted that without MT, the concept of WTC may not have had any bearing on translation studies. Our analysis has portrayed the far-reaching nature of MT and displayed how it could serve as a link between translation and other disciplines. At the same time, MT has also broadened the frontiers of the translation discipline by providing possible avenues for both professional, and non-professional translators to interact. As Mona Baker (2014, p. 21) asserts:

> Globalization has brought with it a major technological revolution that has enabled the emergence of a non-hierarchical, participatory culture in which numerous individuals, both translators and non-translators, collaborate to produce free translations for public consumption.

Given the multidisciplinary nature of their domain, professional translators and translation scholars may now look beyond the initial confines of their discipline in search of areas that may have been influenced directly or indirectly by translation technology. This would mean undertaking investigative research aimed at understanding, assessing, and evaluating the contribution of MT to concepts, practices, and procedures in other disciplines. This may lead to cooperative or joint projects that, in Berman's (1994) thinking, take translation to other disciplines, and/or bring other disciplines to translation. In other words, translators would need to both make incursions into other fields and also remain tolerant of the introduction of ideas from other areas and disciplines, thereby broadening the base of the field and increasing its depth and reach. As Anthony Pym (2013, p. 5) rightly puts it, "now, there is nothing wrong with drawing on other disciplines; interdisciplinarity is a very healthy thing."

Our analysis of the data has suggested that IM translation could improve our understanding of concepts in different areas where MT could simultaneously be tested. For instance, Wu and Kawamura (2014) are among scholars who had previously examined the impact of IM on WTC as a phenomenon in FL acquisition. Without examining the role of MT, their study had no connection

with translation studies. However, with the development of MT and its integration into the IM platform, translation and FL acquisition are drawn closer. Our data analysis revealed that, for interpersonal communication, it is possible to gain a better understanding of the profile of FL learners depending on the context, situation and tool used in communicating. Furthermore, it was possible to test MT in a completely novel setting (using concepts from other disciplines) and with participants who had little to no background in translation. Such findings may be useful in understanding the new dimensions of automatized translation undertaken by amateurs where "the user provides his or her feedback, and at times attempts to improve the performance of the MT results - without there being any specific translation training involved, based on linguistic intuition" (Gambier, 2014, p. 4). Understanding how untrained translators in various disciplines perceive and use current translation technology tools may have far-reaching implications on the translation discipline, especially with regards to translator training and how the discipline, in general, adjusts to current and future challenges, such as the development and application of MT for non-professional translation and user-centered MT evaluation.

4.3.2) Tools to use and contents to teach in the translation training environment

The usefulness of the IM translator in redefining the concept of WTC and the role it could play in helping us understand concepts in various disciplines has implications for translation pedagogy. In particular, IM translation contributes in advancing the conversation on course content and the tools to use in translation training programs. Firstly, given the importance of IM and the volume of research undertaken on its implications in academics, it may be time to consider adding the IM translator to the number of tools currently being used or tested in translation training environments. The IM translator serves as a platform for learners to acquire (machine-translated) cultural information, and also provides material for teaching translation.

Secondly, IM translation applications, including the QQ translator, are user-friendly, free open-source tools that could be easily integrated in the translation training environment. Mona Baker (2014, p. 26) maintains that institutions have begun seriously considering what tools to use in the translation classroom because "the impact of new media cultures and new technologies on all aspects of translation and interpreting is among the most promising new lines of research in the field." Additionally, Bowker et al. (2008) affirm that the increasing demand for CAT tools in translation training environments means that institutions are looking for low-cost open-source tools that can be integrated in the language classroom. They argue that the integration of tools in the classroom depends on the need to balance academic priorities with market needs (Ibid., p. 31), the ease with which the tools can be learned (Ibid., p. 34), as well as their portability, and accessibility (Ibid., p. 38). Though Bowker et al. (2008) go on to discuss available training resources, it is important to note that their tool selection criteria partially fits the characteristics of the QQ IM translator, which is free, open-source, portable, accessible, and has the possibility of facilitating translation among a multitude of different languages.

In addition, as translation and technology both evolve, translators have to grapple with different text types (Pym, 2006). IM could arguably be considered a unique text type given its unconventional language and syntactic structure (see Chapter 1, section 1.2.2). The need for translators to train for all text types is more important than ever. This is because with technology, the way people use language is constantly changing. Sometimes there are restrictions on the number of words that can be written at a given time (as in Twitter, IM) and sometimes, it is the nature of the conversation that may not warrant the use of complete sentences and conventional vocabulary (like in IM). Therefore, understanding the different text types may be useful for translating students to understand and appreciate MT output. Teaching students these text types

and understanding how MT systems handle them could be useful in a training environment, as it prepares students for the future.

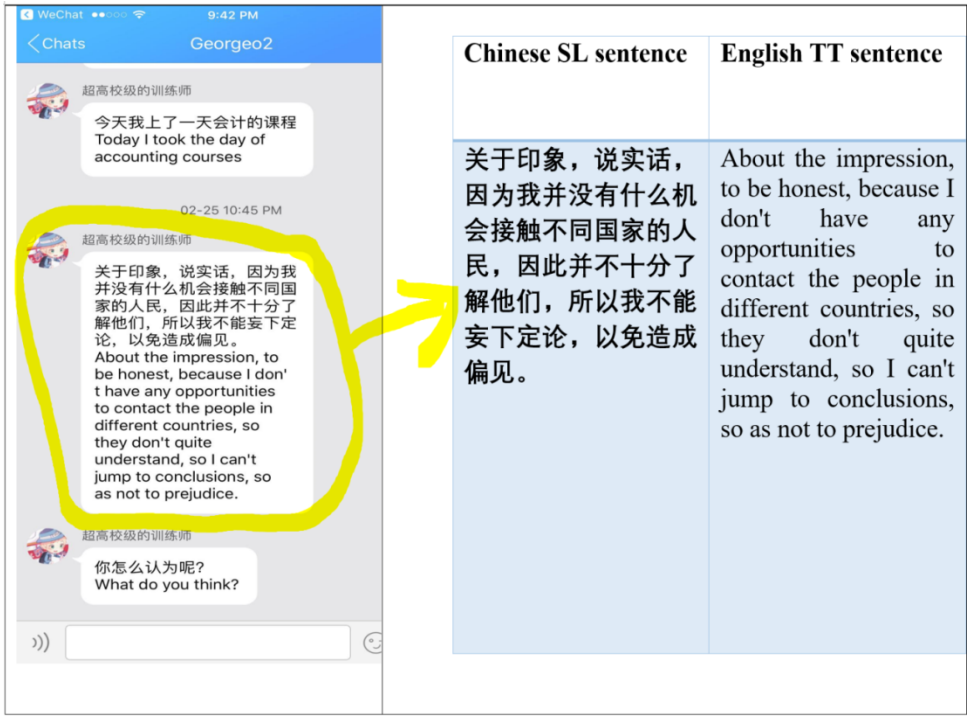
Furthermore, MT training currently focuses on the applicability of translation tools in the training environment and relies on MT post-editing to improve the quality of machine translation output. With IM translation, the possibility of editing a draft output does not always exist. If the ultimate goal of MT has always been to produce target texts that do not need to be revised, i.e. FAHQT, then translator training programs may want to start examining ways of training translators to thrive in an environment where MT post-editing may no longer be the focus. Machine-translated IM therefore appears to be a useful starting point.

As far as training students to explore the IM translation option is concerned, the focus could be on how to use the tool in a way to obtain the best possible translation, and on various ways to pre-edit messages before they are input into the MT system (see pre-editing the source language input below). Once translators understand the notion of writing for the MT system, they could then teach it to IM users in other disciplines, in companies, and institutions. If IM users can use a language that computers understand, that may help improve MT output for all users.

Our data analysis found that it may be possible for real-time machine-translated IM to generate material for a variety of in class and outside of class activities. The data of bilingual and monolingual exchanges gathered during the study could be recycled in the learning environment to deepen trainees' understanding of IM translation, and provide raw data for training exercises. Learner-generated data could help develop or strengthen the pre- and post-editing skills of trainees. In the example below, we illustrate how trainers could use the bilingual corpus generated during exchanges as authentic teaching material in a variety of ways.

Example: In this example, trainee translators could be asked to compare and improve the meaning, punctuation, and structure of the following source and target text sentences:

Figure 18: Example of machine-translated IM for pedagogical purpose



Trainee translators could examine the structure of the sentence, by assessing how punctuation marks segment different ideas in the source and target sentences. As the table below illustrates, the commas and the period are used to separate sections of the source text that correspond to the meaning intended to be conveyed. On the contrary, the use of the comma to separate different segments of the TT may have to be modified in order to bring out its full meaning, especially when we consider that the last three segments (apart from the last, which begins with *so as*) all begin with the word, *so*.

Figure 19: Analysis of machine-translated IM for pedagogical use

Source text	**Target text**
关于印象,	About the impression,
说实话,	to be honest,
因为我并没有什么机会接触不同国家的人民,	because I don't have any opportunities to contact the people in different countries,
因此并不十分了解他们,	so they don't quite understand,
所以我不能妄下定论,	so I can't jump to conclusions,
以免造成偏见.	so as not to prejudice.

Therefore, students could be asked to restructure the segments to foreground the meaning, and also to improve the way that commas are used in the target sentence. For example, trainee translators could suggest that segments 5 and 6 be merged as follows, *so it can be prejudicial to jump to conclusions.* This suggestion eliminates one comma (,) and helps to make the meaning clearer.

Similarly, trainee translators could be asked to evaluate the TL sentence to determine how the use of personal pronouns may have caused a shift in meaning in the third segment. The pronoun *他们* in the SL segment, *因此并不十分了解他们* means *them*, so the segment ought to have read, *so I don't quite understand them*. Unfortunately, *them* is machine-translated as *they* in the TL segment. Furthermore, its position in the sentence has shifted and its grammatical role has changed from an object to a subject pronoun, thereby altering the meaning. While the SL segment

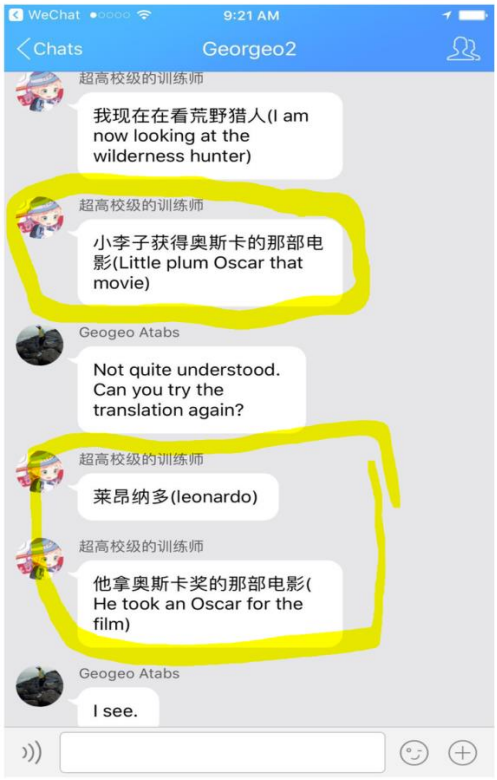
says the *speaker* does not understand *people in foreign countries*, the translation of the segment in the TL segment appears to indicate the reverse: according to the TL segment, it is *people in foreign countries* who do not understand.

4.3.3) Pre-editing the SL input and training students to write for MT

One of the major findings of the study was that participants were able to improve translation output by modifying sentences before they are input into the MT system thereby, applying some principles similar to those applied in controlled language. According to Mitamura (1999, p. 1), controlled language helps to "achieve consistent authoring of source texts and to encourage clear and direct writing… [It is] also used to improve the quality of translation output." The importance of teaching trainee how to write for MT today seems to be increasingly urgent, especially as MT appears to be gaining popularity in translation studies and other disciplines.

In the final questionnaire, some participants in the study maintained that modifying the sentence they input into the MT system enabled them to resolve some of the translation problems they encountered while using the tool. The importance of applying principles of controlled language is illustrated in the following exchange between George and P6 (Chaoguo). They are talking about Leonardo Di Caprio and the Oscar he won in 2016:

Figure 20: Example of writing for MT



In the exchange above, George, the Canada-based participant appears not to understand the original translation of the Chinese sentence, *小李子获得奥斯卡的那部电影*. This is probably because the way *奥斯卡 (Oscar)* was expressed in the original SL sentence made it impossible for the machine to render it as *Oscar* in the TL sentence. George notices that the sentence does not make sense and asks Chaoguo to, *try the translation again*. P6 (Chaoguo), for her part, appears to realize the source of the problems because she decides to drop the first portion of the original sentence *小李子*, introduce *莱昂纳多/Leonardo* and then re-express the last portion of the sentence that contained the Oscar he won, *他拿奥斯卡奖的那部电影/ He took an Oscar for the film,* as a separate turn. She also leaves out *Di Caprio* possibly because there is no equivalent in the Chinese language or because she senses the MT system may not be able to translate it accurately.

Chaoguo edits the SL sentence in order to improve the quality of MT output and render the sentence more comprehensible. This is one of the strategies that some participants who machine-translated outgoing messages claimed to have adopted. Accordingly, the strategy seems to work because the second machine-translated output appears to be more meaningful than the previous one. George, the Canada-based interlocutor, is then able to connect the two ideas – *Leonardo*, in one turn and, *he took an Oscar for the film*, (he won an Oscar for that movie) in the second turn.

It should be recalled that in the example above, George, the Canada-based participant, indicated that the initial machine-translated IM was incomprehensible, and asked Chaoguo to try the translation once more. This was, however, not always the case during the study. In fact, some China-based participants relied on their own instincts to identify and improve upon poorly machine-translated texts. Consequently, they sought to improve the TL turn by re-writing or editing the SL turn. Here is an example during an exchange between Sierrak and Doki:

Figure 21: Another example of writing for MT

Sierrak probably felt that the machine-translated TL sentence was not appropriately translated because, in the first translation, the MT system had considered "bat" as a verb (to strike at the ball with the bat), instead of a noun (the kind of racket used in playing table tennis). Sierrak anticipated that her fellow interlocutor would not understand what she was referring to. Instead of waiting for Doki to ask what she meant, she took it upon herself to restructure the Chinese SL sentence in order to improve the TL rendition. Consequently, the segment, *using time playing a ball* which did not seem to convey the intended idea, was modified by changing the Chinese portion of the sentence from *两个人隔着网用**拍子**来回打一个插满羽毛的小球*, to *两个人隔*

*着网用**球拍**来回打一个插满羽毛的小球*. The change of one vocabulary item from *拍子* to *球拍* made it possible for the machine to offer a clearer SL segment for the Canada-based interlocutor. Hence, even with basic knowledge of the TL, it may be possible for learners to improve upon the quality of MT output without formal training in translation. In the two examples above, both participants pre-edited the source text in an effort to improve the machine-translation of the target text. In both cases, it is possible to see that their action helped to enhance the quality of MT output.

These examples confirm the usefulness of writing for MT, and the need to introduce some form of these strategies in the training environment. It is also plausible that certain elements of controlled language may be integrated in strategies that help to improve the quality of machine-translated texts. These strategies may not only be useful for FL learners but those in other disciplines such as journalism and media studies, where students interact with different communication tools and may sometimes need to machine-translate texts. Since editing the SL input may have a direct influence on the TL meaning, trainers may focus on aspects of the SL such as the length of sentences, spellings, capitalization, style (formal or informal), and punctuation (Takako et al., 2007). In addition, training my focus on the creation and use of short, one-idea sentences which machines could reliably translate. Elements of SL likely to have an effect on MT output could also be distinguished. For instance, as Mitamura (1999) recommends, "wherever possible, the use of determiners should be encouraged. On the other hand, the use of pronouns and conjunctions are limited, since they increase the potential ambiguity in syntactic analysis" (p. 47). In addition, Takako et al. (2007) maintain that the MT language combination needs to be taken into account when controlled language is applied in MT and this is vital knowledge for trainee translators. They maintain, for instance, that the Arabic language does not tend to use hyphens (-).

Therefore, “when hyphens get transferred to the target [language], the translation must be significantly reworded. Moreover, if the words on either side of the hyphen are not translated correctly, or at all, MT quality suffers” (Ibid., p. 5). Takako, et al. (2007) also discuss how common prepositional clauses in English like, “on the web,” (Ibid.) could easily lead to ambiguity in the Chinese language. Developing language skills with the intention of writing for MT could be advantageous to trainees not only in obtaining improved MT output, but also in reinforcing their knowledge of the differences between the source and target languages.

4.3.4) Collaboration

The importance for translators to collaborate with professionals in various fields cannot be overemphasized. The rapid development of information and communication technology has merged disciplines and trades alike. Translators do use different software to translate, but information technology experts may be needed when these software malfunction. Therefore, trainee translators need to be taught the skills to work with a diverse group of experts and professionals.

More importantly, there is a need for collaboration among scholars from disciplines that are increasingly overlapping. Collaboration could be facilitated by equipping current trainees with the skill set needed in a global, fast-changing, and technology-driven workplace. As Gambier (2014, p. 6) maintains:

> productivity, accessibility, quality, collaborative flux have become all the more tightly intertwined; rather than focusing on debating the tension or presumed opposition between professionals and amateurs, it would seem more urgent and opportune to organize a dialogue among translators and technology providers.

Collaboration with researchers and professionals in other fields may be beneficial for translation and translation studies and can take various forms. For instance, translation

professionals could be invited to co-teach or give lectures in other fields where MT is used. These may include organizing lessons or seminars for students from other disciplines such as FL teaching or journalism and mass media studies. Secondly, professionals may conduct joint research in areas of common interest or jointly teach courses which have significant overlaps, for instance, teaming up with a media studies professional to teach a course that includes the use of MT to achieve various pedagogical and non-pedagogical goals (Gambier, 2014). To emphasize the need for collaboration in this new age of MT, Vashee (2013, p. 146) affirms:

> Machine translation is emerging as a mature technology and becoming a standard component of translation workflows for certain types of projects and customers. As such, new career paths are opening up (PEMT, engine development and tuning; etc.). Greater dialogue is needed between practitioners, researchers, trainers and educators to identify and develop relevant skill sets and best practices.

4.3.5) Translation quality

The ability for professional and non-professional translators to translate using MT applications, some of which are readily available, has partially led to the consumption of unedited machine-translated content. Admittedly, some MT output is intended only for *gisting* and, therefore may not need to be post-edited by trained translators. In fact, MT is popular today because of its ability to produce fit-for-purpose translation (see Chapter 1, section 1.3.1). In other words, the quality of MT output is good enough for particular purposes. Ana Niño (2008, p. 30) confirms that:

> despite its general low quality, online MT is freely available, operates in real-time and has been primarily used to access the increasingly large amount of information in languages not known to the user (assimilation) and also to aid communication through quick translation of web pages, emails or chat room dialogues from and into a wide range of languages (communication).

Our data analysis appears to corroborate the assertion that machine-translated texts do not always have to be edited by translation professionals in order for users, especially IM users, to

successfully communicate. The example below is an illustration of fit-for-purpose MT. It in a conversation between George, based in Canada, and P6 (Chaogao).

Figure 22: Screenshot of the quality of MT output

Several decades ago, when MT was at its early stage of development, renditions such as, *Good refuelling*! *Busy these days can have a good rest*! may probably have been considered nonsensical and deemed meaningless by translators. The expectation was to always obtain a well-thought-out translation, preferably done by a professional translator. However, today, there seems to be greater tolerance for low-quality machine-translated texts, and a high propensity to accept or even work with "wrongly translated" sentences and other low-quality translations. This is because the expectation of interlocutors in some contexts appears to be different. Participants seem to require just enough information to be able to keep the conversation alive, rather than professionally translated target sentences (Vashee, 2013; Garcia, 2011). In fact, in the example above, the

Canada-based interlocutor replied with, *Got it now,* and goes ahead to provide a better way of expressing the sentence, *Sure, I will rest when I am done with my work.*

Given that the China-based interlocutor is learning EFL, this alternative and comparatively better way of expressing the idea, seems to be a useful alternative for the FL learner. It is also a good demonstration of the many ways that MT tools can be utilized productively in a language classroom. In fact, this example underscores one way of turning low-quality MT output into a useful resource for learning a FL. If Canada-based participants in the study occasionally and proactively modified or improved machine-translated sentences, FL learners could simultaneously take advantage of the translation tool to learn and improve their language skills. This practice may further prove to be time-saving, as learners who may have wanted to consult specialized resources to obtain the correct grammatical or lexical structure of the sentences may no longer need to do so.

The fact that some machine-translated text types do not need to be post-edited by professionals could be beneficial for the translation profession (schools, professional associations, individuals) in several ways. Firstly, it may be necessary to identify and categorize texts that either do or do not need to be post-edited. Distinguishing text types into these broad categories may make it possible for training programs to tailor their training needs to meet specific outcomes. Consequently, trainees could be taught specific skills for working with such texts. Secondly, since translators do not have to post-edit all text types, training may focus on other skills, besides translation, that the modern-day professional needs. These skills may be needed in new and emerging areas upon which the future of the profession seems to depend. As Koponen (2016, p. 143) claims, "the increased use of machine translation and post-editing work flows has already changed the role of humans and machines in the field, and will likely continue to do so." Examples of emerging areas in the translation industry where additional skills may be needed include project

management, collaboration (especially where several professionals may be needed to work on projects), acquiring technical knowledge about MT tools (ability to troubleshoot and repair some translation tools), and assisting MT software developers to create and test new products (Pym, 2006). After all, if the machines are taking care of the translation, then humans could as well do something else.

4.3.6) MT post-editing[69]

As MT evolves, it is becoming increasingly necessary to ask whether or not the quality of machine-translated texts might correspondingly improve. The logical answer would be the affirmative, given that MT systems, especially hybrid, neural, and statistical, are designed to "learn" from the feedback they receive from user edits. However, we do understand that machine-translated texts can be pre-edited and post-edited by professionals and non-professionals. When editing is performed by professionals, MT systems could learn and improve output. However, if editing is done by non-professionals, some of who may have limited knowledge of the TL, this may pose a challenge to the MT systems. In their discussion of how to improve MT feedback that comes mainly from crowd sourcing, Formiga et al. (2015, p. 160) remark that user feedback "is sometimes a proper post-edition, but frequently it is partial, contains errors, or it is simply a piece of unrelated text. The challenge in this particularly noisy setting lies in how to be able to filter out part of the noise and select the potentially useful translation edits." One of the main challenges also seems to be the speed at which systems could possibly integrate any suggested changes. Because no matter how quickly they return, users always expect improved results based on their input. As Formiga et al. (2015) state, MT providers want to ensure that the system does not

[69] See Chapter 1, sections 1.5.1, 1.5.2, and 1.5.4 for the discussion on IM translation and ethics, mobility and conflict.

continue to repeat the same mistakes. At the same time, they want MT systems to provide improved results, and engage users by reacting quickly (if not instantaneously) to their feedback (p.160).

Some IM translation clients, including QQ International, do offer users the opportunity to edit machine-translated IM. While this could provide an opportunity for MT systems to learn and improve output, the problem here appears to be the unconventional nature of IM language (see Chapter 2, section 1.2.2). With IM, meaning appears to be deconstructed and strewn around the conversation in the form of linguistic and paralinguistic cues, including acronyms, contractions, emojis, misspellings, and pictures. This alone could be problematic for machines, which are not typically designed for such language. If machine-translated IM were post-edited by professionals, the changes could be integrated into the MT system and used to improve subsequent translations. But when machine-translated IM is post-edited by non-professionals and is fed back into the MT system, there is a likelihood (however slim) that the MT system will apply feedback from real-time machine-translated IM on other text types that are characteristically different. In the long run, MT output could be negatively affected.

There are several ways to avoid this problem. Firstly, IM translation providers could make it impossible for users to edit translated content. This would mean that MT systems would continue to function the way they do now. Secondly, MT providers could design a system uniquely for IM translation which takes into account the unconventional nature of IM language. Thirdly, current MT systems could be modified to translate IM. Lastly, IM language could be standardized for all users so that machines can be "trained" to accurately translate it. This may also make it easier for the MT output to be edited.

4.4) Conclusion

Chapter 4 examined the implications of the findings presented in the previous chapter. The first discussion focused on how machine-translated IM enables us to deepen our understanding of the WTC concept and the importance, in today's communication platform, of taking into account various OTC that exist when analyzing WTC. This is because the tools used in communication could play an important role in how, or even if, we communicate. Furthermore, our findings suggested that the definition of WTC may need to be revisited, especially given the fact that, during the study, WTC perception (WTC score and WTC level) did not often correspond with the actual number of IM exchanges by participants. In other words, after analyzing the data of exchanges, we found that the WTC perception of participants did not always correspond to data of actual exchanges. A further implication of the findings that warrants revisiting the concept of WTC was the fact that with technology, many aspects of the conversation can be identified and measured. In fact, the findings revealed that IM exchanges comprised of several different aspects (synchronous exchanges, conversation enhancement, ownership, number of turns and words, etc.) which, individually and collectively, presumably influenced the way participants communicated and had an impact on their WTC. Basing a definition of WTC on just one of these aspects could be misleading.

The findings also had far-reaching implications for the teaching of FL. We were able to deduce, from our analysis, that MT and IM ought to be encouraged and used in the FL classroom. Some of benefits of using machine-translated IM in the language classroom included recycling learner data for various activities, gathering valuable information about individual learner profiles, and exposing learners to their FL's corresponding culture.

The last section of Chapter 4 discussed the impact of the findings on translation studies, with a focus on how machine-translated IM could extend the horizons of the profession by serving as a bridge to other disciplines. As for translation pedagogy, we focused on both the need to consider introducing the IM translator as one of the tools in the training environment and on its use as a generator of authentic training material. Furthermore, we discussed the relevance of pre-editing SL texts for IM translation, the importance of collaboration among professionals, the willingness that appears to have accompanied advances in MT technology to consume low quality translation, and the challenge of introducing machine-translated IM feed back into MT systems. The next chapter is the conclusion of our study and avenues for further research that do exist.

Chapter 5: Conclusion

The first part of Chapter 5 summarizes the main research questions, hypotheses, and the methodology adopted in this project. It further recapitulates the findings obtained and the implications of the findings for the conceptual framing of WTC, FL learning, and translation (theory and practice). The second part of the chapter sums up the limitations of the methodology adopted, the contribution of the project to knowledge and theory formation, and avenues for further research.

5.1) Summary of thesis

This research project, which was epistemologically grounded on the communication model of Roman Jakobson (1960), was undertaken with the goal of answering two main questions: 1) do beginner EFL learners believe that real-time machine-translated IM improves their WTC, and 2) does the real-time IM translator offer learners OTC in English? We also investigate whether the WTC level and WTC score reflected the actual amount of IM data exchanged by participants, whether participants encountered any problems while exchanging machine-translated IM, and how they attempted to resolve the problems (see Appendix I).

Research questions were formulated based on the hypotheses that participants would have a higher WTC perception (both the WTC level and WTC score) at the end of the study and that the IM translator would offer participants OTC in English during the study. Therefore, participants with access to the IM translator were expected to exchange more IM (both number and turns), trigger more exchanges, have more ownership, engage in more synchronous communication, and perform better in pre-selected tasks and topics than participants without the IM translation option.

We further assumed that participants with the IM translation option would paraphrase, explain and repeat themselves more than participants without the IM translation option.

A total of eight volunteers (NS and NNS of English) were recruited in Canada and paired with 16 beginner EFL students from SISU, Shanghai, China. They exchanged synchronous and asynchronous IM for a period of ten weeks. While nine of the China-based participants communicated with the help of the IM translator, seven others conversed without using the IM translator. Participants were also requested to answer two questionnaires, one at the beginning and the other at the end of the study. The methodology was adopted with the intention of determining the WTC perception of participants by evaluating their answers to the initial and final questionnaires. Meanwhile data gathered during IM exchanges between participant pairs was analyzed to determine whether the IM translator offered participants OTC in English.

The WTC perception of participants was obtained by separately evaluating their WTC score and WTC level which was obtained by requesting participants to indicate, in the initial and final questionnaires, whether they were VWTC, WNWTC, WTC, JWTC, SWTC, and NWTC (see Chapter 2, section 2.4.2). Their responses at the beginning and at the end of the study were compared to determine whether the WTC level increased or decreased for each participant. The WTC score was obtained by requesting participants to provide a numerical value (between zero and one hundred) of their WTC score based on the scale adopted by McCroskey (1992). We determined the FL OTC by examining the final questionnaire and the history of exchanges among participants based on various conversation aspects which included, the number of words and turns exchanged, (see Chapter 2, section 2.4.5), incoming message translation (Chapter 2, section 2.4.6), conversation enhancement (see Chapter 2, section 2.4.7), synchronous exchanges (see Chapter 2,

section 2.4.8), ownership (see Chapter 2, section 2.4.9), and requests for clarification, paraphrase and explanation (see Chapter 2, section 2.4.10).

Findings from our analysis indicated considerable links with some functions of language suggested in Jakobson's communication model. The findings also showed that there was an overall increase in the WTC score for all participants (Chapter 3, section 3.1.1) at the end of the study. However, the WTC level increased more for participants with the IM translation option as opposed to participants without the IM translation option (see Chapter 3, section 3.1.2). Our data analysis also indicated that the WTC level and WTC score corresponded with data of actual IM exchanges more for participants with, than participants without, the IM translation option (see Chapter 3, section 3.1.3). Participants who communicated without the IM translation option believed that they had delays because they needed time to look up the translation of words during exchanges. We presume some of these factors had an impact on the way participants communicated and also on their overall WTC.

Our analysis to determine OTC focused on different conversation aspects that were presumed to demonstrate how the IM translator offered participants OTC. Our data analysis indicated that the majority of participants, with and without the IM translation option, believed that the IM tool enhanced their ability to communicate during the study (see Chapter 3, section 3.2.1). However, participants with the IM translator performed better than participants without the IM translator in the following conversation aspects: number for words and turns exchanged (see Chapter 3, section 3.2.2); conversation ownership during synchronous exchanges (see Chapter 3, section 3.2.4); conversation enhancement (see Chapter 3, section 3.2.5); pre-selected tasks and topics (see Chapter 3, section 3.2.6); synchronous exchanges (see Chapter 3, section 3.2.7); and repetition, paraphrase and explanation (see Chapter 3, section 3.2.8). Finally, we examined the percentage of

outgoing messages translated (see Chapter 3, section 3.2.3) during the weeks participants had the option to communicate with or without the IM translator (see Chapter 3, section 3.2.9) and found that participant relied on the IM translator more at the beginning than at the end of the study.

The findings had important implications for the conceptual framing for WTC, FL pedagogy, and translation studies. As far as the conceptual framing for WTC is concerned, we discussed the difference between perception and reality (see Chapter 4, section 4.1.1), suggested a revisiting of the definition of WTC (see Chapter 4, section 4.1.2), and considered different parameters for measuring WTC (see Chapter 4, section 4.1.3). With regards to FL pedagogy, the findings advance the debate on MT and IM use in the FL training environment (see Chapter 4, section 4.2.1), underscore the need to recycle learner data for pedagogical purposes (see Chapter 4, section 4.2.2), highlight various learner profiles (see Chapter 4, section 4.2.3), and stress the need to expose learners to the foreign culture (see Chapter 4, section 4.2.4). With regards to translation studies, our findings enabled us to illustrate the interdisciplinary nature of translation studies (see Chapter 4, section 4.3.1), enhance the debate on technology tools to use and content to teach in the translation training environment (see Chapter 4, section 4.3.2), and underscore the need to train students on how to write for MT (see Chapter 4, section 4.3.3). Finally, our findings provided a concrete basis for further discussions on concepts such as collaboration (see Chapter 4, section 4.3.4), translation quality including fit-for-purpose MT (see Chapter 4, section 4.3.5), and post-editing (see Chapter 4, section 4.3.6).

5.2) Summary of limitations

In this section, we discuss the methodological and technical limitations of this project. We summarize the limitations previously outlined in Chapter 2, section 2.5, then discuss other limitations related to the scope of this research. Firstly, it should be recalled that participants could

not translate outgoing messages when they communicated using their mobile devices, as well as Apple laptop and desktop computers. On the contrary, they participants could translate incoming messages. Secondly, some participants had problems completing the questionnaire because the Internet connection was poor on campus (SISU suburban campus in Songjiang, Shanghai) and because the questionnaires were on a foreign website which was sometimes difficult to access in China. Thirdly, the time difference between Canada and China occasionally made it difficult to initiate or continue synchronous exchanges. Fourthly, data collection unavoidably delayed because it took a substantial amount of time to obtain the necessary authorizations from the University of Ottawa, Canada, and Shanghai International Studies. It is important to note that the data obtained, as well as the number of participants in the study, should not be considered as a representation of what typically occurs when users send and receive IM because communication was guided during the study: participants had specific topics to discuss and tasks to do. In addition, they were discouraged from sending emoticons, pictures, recorded video, and voice messages.

Furthermore, the study examined only interpersonal WTC, so the findings obtained by analyzing the data of exchanges do not, in any way, reflect WTC for group discussion and meetings. In addition, we cannot pretend to have explored all elements of the corpus we collected. For instance, the focus of the thesis was not the quality of machine-translated IM. As a result, we were careful in avoiding any analysis that directly involved the quality of MT output, unless it had an influence upon our variables of interest: WTC and OTC.

Furthermore, the research focused on a small sample group of participants, most of who communicated with the same partners during the study. The small size of the group, the short duration of the study (10 weeks), the limited scope, and small number of Canada-based participants

influenced our findings and our analysis. We do acknowledge that under a different set of circumstances, our data, analysis, and implications may not have been exactly the same.

Finally, we admit that some participants continued to use the IM translator during the weeks they were discouraged from sending machine-translated messages. We acknowledge this could have an impact on our overall analysis and findings. However, as Appendix J indicates, participants concentrated their conversations during the first and last three weeks of the study. In fact, 79% of their exchanges occurred during this period. On the contrary, 10% of their exchanges occurred when participants were discouraged from using the IM translator. Furthermore, only 2 participants actually exchanged machine-translated IM during this period. Therefore, we believe that the impact on our data is not crucial enough to significantly alter our findings and their implications on our understanding of WTC, FL learning and MT.

5.3) Contribution to knowledge and avenues for further research

Despite the limitations outlined above, this research project helped to bridge the gap between IM, MT, and FL learning by reinforcing our understanding of FL WTC and FL OTC. It further highlighted the expanding impact of MT both in translation studies and in FL learning environments. The project also illustrated that MT could serve as the link between translation and other disciplines while deepening our understanding of concepts in areas which would otherwise appear unrelated to translation studies.

The usefulness of IM in the language classroom has been assessed by many scholars (Tagliamonte & Denis, 2008; O'Dowd, 2007; Lloyd et al., 2006; Sotillo, 2006), but relatively few studies have undertaken the task of assessing the impact of real-time machine-translated IM on FL learning, especially with a focus on WTC. This study, therefore, helped to bridge this gap. The study also helped to improve our understanding of how different communication technology tools

could offer OTC in a FL. Finally, the study helped to assess the efficacy of MT in a new domain and by a novel group of users (untrained translators).

Future researchers in this area could undertake a comparative and contrastive study by examining other aspects of WTC: group communication and meetings. Such a study would complement the results obtained in the current project and, hence, provide an overall picture of the relationship between IM translation and WTC. Additional research could examine the relationship among the same concepts using intermediate or advanced EFL students located in the same or different countries. Furthermore, a comparative study could be done with a different IM translation tool such as Skype Translate. For instance, this may be helpful in highlighting and comparing the techniques used by learners in overcoming linguistic and non-linguistic obstacles. A similar research project could focus on the quality of MT output, rather than on a concept in a particular field, or could assess how trainees learn how to write for MT with the intention of improving MT output. Finally, future research could focus on conversations that occur within the suite of features typically offered by different IM clients, such as voice and video calling or voice messages.

The impact of IM translation may be further investigated in certain areas and among different groups of people. Areas where the impact may be felt include businesses, some of which are already using IM translation to reach out to customers. Researchers could focus on several aspects: the profile of customers, their perception of IM translation, the types of tools used, the language combinations, and the quality of MT produced.

Researchers could also focus on the perception and or use of IM translation among different genders, age groups, and students in other disciplines (not just language learners). Aspects worthy of research could include the reasons for using IM translation, how it is used, the profile of IM

translation users, and the perception of users. Researchers could also concentrate on machine-translated messages and their effects on users.

Real-time machine-translated IM is a relatively new phenomenon and therefore provides scholars with many exciting avenues for research in translation studies and other domains. Future research could build on our current project to broaden the field of translation, and also provide translation scholars the opportunity to shape and reshape the discipline, hopefully alongside or in tandem with contributions in various forms from other disciplines.

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APPENDIX

Appendix A: Interpersonal, group and meeting WTC score compare

Participants		WTC Interpersonal			WTC Group			WTC Meeting		
No	Name	Pre	Post	Diff	Pre	Post	Diff	Pre	Post	Diff
P1	Sierrak	37	33	-4	10	53	43	43	47	3
P2	Dorothy	100	89	-11	100	88	-2	100	73	-27
P3	Ngoger	20	63	43	27	63	36	20	63	43
P4	Maggie	30	32	2	30	45	15	0	33	33
P5	Cordell	37	82	45	40	97	57	50	97	47
P6	Chaoguo	50	60	10	50	67	17	70	60	-10
P7	Mooney	100	93	-7	100	100	0	100	97	-3
P8	Hunter	72	93	21	90	100	97	-3	77	-20
P9	Yeah	23	83	60	27	50	23	13	33	20
Participants without the IM translation option										
P10	Cartaria	0	70	70	0	90	90	3	85	82
P11	Vesper	na	97	na	na	100	na	na	97	na
P12	Ch. Holiday	70	87	17	80	93	13	58	75	17
P13	Amyy	70	53	-17	77	70	-7	80	67	13
P14	Fish	27	87	60	43	93	50	60	97	37
P15	Cassie	37	77	40	40	88	48	50	81	31

Appendix B: Participants' perception of the usefulness of the IM translation option

Perception of participants on the usefulness of the IM translation option									
Particpants with the IM translation option									
No	**Name**	**Usefulness**	**Increase ex**	**Regularlity**	**Comment**				
P1	Sierrak	useful	Yes	always					
P2	Dorothy	somewhat u	Yes	Mostly	It should be improved				
P3	Ngoger	Very useful	Yes	Mostly	Quite good though a few problems of meaning				
P4	Maggie	somewhat u	Yes	Sometimes					
P5	Cordell	Very useful	Yes	Always	Grammar is only a little bit correct				
P6	Chaoguo	Useful	Yes	Always	Needs improvement				
P7	Mooney	Useful	Yes	Always					
P8	Hunter	somewhat u	Yes	always					
P9	Yeah	Very useful	Yes	Often	Some sentences not well translated but it				
					good generally speaking				
Particpants without the IM translation option									
P10	Cartaria	Useful	Yes	Always	No comment!				
P11	Vesper	Extremely u	Yes	Always					
P12	Chen Holida	I didn't tran	na	Always					
P13	Amyy	Very useful	Yes	Mostly	It's a good chance to communicate with others in English.				
P14	Fish	somewhat u	Yes	Sometimes					
P15	Cassie	Very useful	Yes	Often	Some idioms don't make sense				
P16	Daisy	Useful	Yes	Always	useful and quite convenient to use but nends				
					improvement to reduce misunderstanding.				

Appendix C: Ranking of participants based on turns and percentage of IM exchanged by China-based participants

No.	Name/Ranking	Total turns	Incoming	Outgoing	% turns for China.b part.
P3	Ngoger	482	250	232	48.10%
P6	Chaoguo	450	202	248	55.10%
P9	Yeah	413	185	228	55.20%
P14	Fish	352	204	148	42%
P4	Maggie	244	114	130	53.30%
P7	Mooney	232	117	115	49.60%
P1	Sierrak	224	125	99	44.20%
P8	Hunter	199	101	98	49.20%
P5	Cordell	140	75	65	46.40%
P11	Vesper	99	38	61	61.60%
P2	Dorothy	97	53	44	45.40%
P17	Infinite	83	50	33	39.80%
P13	Amyy	63	29	34	54%
P10	Cartaria	60	28	32	53.30%
P15	Cassie	29	18	11	37.90%
P12	Chen Holiday	25	14	11	44%
P19	Popcorn	20	13	7	35%
P18	Dolma	19	13	6	31.60%
P16	Daisy	10	7	3	30%

Appendix D: Ranking of participants according to performance with regards to various tasks/topics

		Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	
	Name	**Tourism**	**Shopping**	**Leisure activities**	**Chinese New Yea**	**Recipe**	**Stereotypes**	**Total**
		Dec. 8-22	**Jan. 6 -13**	**Jan. 21**	**Feb.02**	**Feb-22**	**Feb. 27**	
		Week 1, 2	**Week 3**	**Week 4**	**Week 6**	**Week 9**	**Week 10**	
P3	**Ngoger**	39			69		28	**136**
P6	**Chaoguo**	30	11	7	14	18	1	81
P7	**Mooney**		14	9	22	14	20	**79**
P9	**Yeah**		19	22		8	27	**76**
P4	**Maggie**	23	18		22	10		**73**
P14	**Fish**	17	18	1	16	2	8	**62**
P1	**Sierrak**		12	10	17			**39**
P2	**Dorothy**		12		5	4	10	**31**
P10	**Cartaria**	18					10	**28**
P11	**Vesper**				4	10	10	**24**
P5	**Cordell**		2	11	4		4	**21**
P13	**Amyy**	2		2	1	2		**7**
P12	**ChenHoliday**			1				**1**
P18	**Dolma**							**0**
P17	**Infinite**							**0**
P15	**Cassie**							**0**
P19	**Popcorn**							**0**
P16	**Daisy**							**0**
P8	**Light Hunter***							**0**
	Total	**129**	**106**	**63**	**174**	**68**	**118**	**658**

Appendix E: Tasks and topics discussed

No	Name	Optional use of IM trans (Dec. 2-22) Task 1 and 2		Compulsory use of IM tr. (Jan.14-31) Task 3		No use of IM tr. Feb.1 – Feb. 17 Task 4		Optional use of IM tr. Feb. 17 – March 7		comment
		Outgoing turns	*% translated*	*Outgoing turns*	*% translated*	*Outgoing turns*	*% translated*	*Outgoing turns*	*%translated*	
P6	Chaoguo	67	98.40%	90	81.10%	51	78.40%	67	61.20%	translated turns during non optional use of translator were for tasks
P9	Yeah	228	67.10%					199	54.80%	
P3	Ngoger	97	95.90%					135	12.60%	
P7	Mooney	53	0%	38	65.80%	21	71.40%	55	47.30%	all translated turns were tasks/topics
P4	Maggie	97	46.40%	na	na	29	0%	9	44.40%	
P5	Cordell	65	81.50%	4	0%	2	0%	9	0%	
P8	Hunter	98	34.70%	na	na	na	na	na	na	
P1	Sierrak	66	98.50%	5	80%	30	0%			
P11	Vesper	36						25		No access to translator
P14	Fish	101		13		10		25		No access to translator

Appendix F: Ranking of participants according to the number of conversation enhancers

No.	Name	No. of enhancers	
P3	Ngoger	51	
P9	Yeah	50	
P4	Maggie	32	
P14	Fish	26	
P6	Chaguo	19	
P7	Mooney	10	
P1	Sierrak	9	
P11	Vesper	5	
P5	Cordell	5	
P8	Hunter	5	
P2	Dorothy	4	
P17	Infinite	4	
P10	Cartaria	3	
P12	Holiday	1	
P18	Dolma	1	
P19	Popcorn	1	
P16	Daisy	1	
P15	Cassie	0	

Appendix G: Ranking of participants according to synchronous exchanges

No	Name	Total syn/asyn	Total turns syn	% of sync	Turns by participants
		Total turns	**# of sync. Turns**	**% of sync. Exchanges**	**# or words per turn**
P3	Ngoger	482	427	88.60%	5.7
P9	Yeah	413	344	83.30%	6.3
P6	Chaguo	450	233	51.80%	9.7
P8	Hunter	199	165	83.90%	6.4
P1	Sierrak	224	127	56.70%	10.3
P4	Maggie	244	113	46.30%	9.2
P14	Fish	352	86	24.40%	10.9
P17	Infinite	83	76	91.60%	6.9
P7	Mooney	232	69	29.70%	12.3
P5	Cordell	140	67	47.90%	9.5
P11	Vesper	99	40	40.40%	20.8
P10	Cartaria	60	19	31.70%	7.1
P13	Amyy	63	11	17.50%	13.5
P18	Dolma	19	4	21.10%	13.1
P12	ChenHoliday	25	2	8%	15.2
P19	Popcorn	20	-	0%	7.3
P2	Dorothy	97	-	0%	8.5
P16	Daisy	10	-	0%	7.4
P15	Cassie	29	-	0%	15.3
	Total	3241	1,783		

Appendix H: Ranking of participants according to various conversation categories

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	*Words*		*Number of turns*		*Turns -Ch.b. participant*		*ownership*		*Conversation Enhan*		*% of translated turns*		*Synchronous Exchanges*		
2	*Rank*	*Words*	*Rank*	*Total*	*Rank*	*Total*	*Rank*	*Turns*	*Rank*	*Number*	*Rank*	*%*	*Rank*	*Total turns (%)*	
3	*Chaguo**	4,353	*Ngoger**	482	*Chaguo**	248	*Chaguo**	1 x 8 turns. 1 x 6 turn	*Ngoger**	51 (22%)	*Chaguo**	82%	*Yeah**	228	
4								5 x 4 turns. 12 x 3 turns							
5	*Fish*	3,825	*Chaguo**	450	*Ngoger**	232	*Ngoger**	4 x 4 turns 19 x 3 turn	*Yeah**	50 (22%)	*Yeah**	67%	*Ngoger**	220	
6	*Mooney**	2,861	*Yeah**	413	*Yeah**	228	*Yeah**	11 x 3 turns	*Maggie**	32 (25%)	*Sierrak**	56%	*Chaguo**	122	
7	*Ngoger**	2,741	*Fish*	352	*Fish*	148	*Infinite*	4 x 3 turns	*Fish*	26 (18%)	*Cordel**	55%	*L.Hunter**	77	
8	*Yeah**	2,617	*Maggie**	244	*Maggie**	130	*Mooney**	2 x 3 turns	*Chaguo**	19 (7%)	*Ngoger**	47%	*Sierrak**	56	
9	*Sierrak**	2,303	*Mooney**	232	*Mooney**	115	*Cordel**	2 x 3 turns	*Mooney**	10 (9%)	*Maggie**	35%	*Maggie**	56	
10	*Maggie**	2,246	*Sierrak**	224	*Sierrak**	99	*Cartaria*	2 x 3 turns	*Sierrak**	9 (9%)	*Light Hunter**	35%	*Infinite*	50	
11	*Vesper*	2,060	*Light Hunter**	199	*Light Hunter**	98	*Light Hunter**	1 x 3 turns	*Vesper*	5 (8%)	*Mooney**	17%	*Fish*	41	
12	*Cordel**	1,335	*Cordel**	140	*Cordel**	65	*sierrak**	1 x 3 turns	*Cordel**	5 (8%)	*Dorothy**	7%	*Mooney**	32	
13	*Light Hunter**	1,279	*Vesper*	99	*Vesper*	61			*Light Hun*	5 (5%)			*Cordel**	31	
14	*Amyy*	854	*Dorothy**	97	*Dorothy**	44			*Dorothy**	4 (9%)			*Vesper*	19	
15	*Dorothy**	821	*Infinite*	83	*Amyy**	34			*Infinite*	4 (12%)			*Cartaria*	9	
16	*Infinite*	574	*Amyy*	63	*Infinite*	33			*Cartaria*	3 (9%)			*Amyy*	6	
17	*Deft*	444	*Cartaria*	60	*Cartaria*	32			*Amyy*	3 (9%)			*Dolma*	1	
18	*Cartaria*	423	*Deft*	29	*Deft*	11			*ChenHolic*	1 (9%)			*ChenHoliday*	1	
19	*ChenHoliday*	381	*ChenHoliday*	25	*ChenHoliday*	11			*Dolma*	1 (17%)			*Popcorn*	0	
20	*Dolma*	248	*Popcorn*	20	*Popcorn*	7			*Popcorn*	1 (14%)			*Dorothy*	0	
21	*Popcorn*	146	*Dolma*	19	*Dolma*	6			*Daisy*	1 (33%)			*Daisy*	0	
22	*Daisy*	74	*Daisy*	10	*Daisy*	3			*Deft*	0 (0%)			*Deft*	0	
23	*Total*	29,585		3,241		1,605									

Appendix I: Problems with machine-translated IM and how participants attempted to resolve them

No.	Name	Problems	Solution	Perception
Participants with the IM translation option (translated both incoming and outgoing messages)				
P9	Yeah	Didn't translate all sentences. Culture words were not translated.	Ask and answer more questions/explain again in different ways.	Was good in general but the people developing need to improve it.
P8	Mooney	It won't function sometimes.	Write in English simply/try to use it again later.	Amazing but won't function sometimes.
P6	Chaoguo	It needs improving, can't translate everything. Fails during conversation.		Further deve#lopment needs to to be achieved to make it better.
P3	Ngoger	Problems understanding my meaning. Sometimes doesn't work.	Write the words differently/ change the sentence.	Quite good but not for mobile.
P2	Dorothy		I still can't find a solution.	I think it should be improved.
P5	Cordell	The grammar of the sentences is wrong.	Explain cultural terms perfectly to the translator.	Easy to use and I like it.
P8	Hunter	Doesn't know some words. Weird sentences sometimes.		No comment.
P4	Maggie		Ask the question again/use Baidu Translate to help.	
Participants without the IM translation option (translated incoming messages only)				
P13	Amyy			It is useful to communicate with others in English.
P16	Daisy	Couldn't understand the details of what others were talking about.	Enlarge my vocabulary, set up more context for the translator to choose	Useful to communicate and convenient. No translation on Mac.

			different words in different contexts.	
P15	Cassie	Some idioms don't make sense.	Learn to express myself better from books, shows and other people's conversations.	We can't translate on Mac.
P10	Cartaria			Apple system cannot use the translator.

Appendix J: Turns exchanged according to IM translator use

No.	Name	Total Turns	Turns between Dec.08 – Dec. 22, 2016, and Jan. 6 – Jan. 13, 2017	Turns between Jan.14 – Jan. 29, 2017	Turns between Jan.30 – Feb. 13, 2017	Turns between Feb. 14 – March 7, 2017
			Optional IM use	IM use	No IM use	Optional IM use
P3	Ngoger	482	198	--	--	284
P6	Chaoguo	450	134	161	88	67
P9	Yeah	413	214	6	--	199
P4	Maggie	244	160	--	75	9
P7	Mooney	232	53	76	48	55
P1	Sierrak	224	131	5	88	--
P5	Cordel	140	119	4	2	15
P8	Light Hunter	199	197	1		1
P2	Dorothy	97	33	39	1	24
Participants without the IM translator						
P14	Fish	352	246	28	26	52
P11	Vesper	99	70	-	1	28
P17	Infinite	83	83			
P13	Amyy	63	41	5	17	-
P10	Cartaria	60	48	1	-	11
P15	Cassie	29	27	1		1
P12	ChenHoliday	25	25			
P19	Popcorn	20	20	-	-	1
P18	Dolma	19	19	-	-	-
P16	Daisy	10	8	1	-	1
	Total	3,241	1,826	328	346	748
	Percentage		56%	10%	11%	23%

Appendix K: 20-item WTC proposed by McCroskey

The 20 items are presented as follows:

_____1. Talk with a service station attendant.

_____2. Talk with a physician.

_____3. Present a talk to a group of strangers.

_____4. Talk with an acquaintance while standing in line.

_____5. Talk with a salesperson in a store.

_____6. Talk in a large meeting of friends.

_____7. Talk with a police officer.

_____8. Talk in a small group of strangers.

_____9. Talk with a friend while standing in line.

_____10. Talk with a waiter/waitress in a restaurant.

_____11. Talk in a large meeting of acquaintances.

_____12. Talk with a stranger while standing in line.

_____13 Talk with a secretary.

_____14. Present a talk to a group of friends.

_____15. Talk in a small group of acquaintances.

_____16. Talk with a garbage collector.

_____17. Talk in a large meeting of strangers.

_____18. Talk with a spouse (or girl/boyfriend).

_____19. Talk in a small group of friends.

_____20. Present a talk to a group of acquaintances.

Appendix L: Initial questionnaire (English version)

uOttawa

Title: ***Real-Time Machine-Translated Instant Messaging: A New Technology-based Approach in Foreign Language Learning***

Thank you for participating in the study! Before continuing, please read the letter of information. This questionnaire should take you approximately 10 minutes and will help us better understand you and your needs.

What is the username you chose for the study? Your QQ Username?

_____

Section 1: General information about instant messaging habits/practices.

In this first section of the questionnaire, you will be asked to provide information regarding your IM habits, the language(s) you understand and use for IM exchanges. The information may be useful in determining your suitability to participate in the research project.

i) Please tell us what languages you speak and write, and at which level.

Language	**Level**			
	Beginner	**Intermediate**	**Upper intermediate**	**Advanced**
Chinese				
English				
Other (please specify)				

ii) How often do you use English in your daily activities?

always	
mostly	
often	
sometimes	
rarely	
never	

iii) Do you own a smartphone? Yes/No

iv) Do you send and receive instant messages (IM)? Yes/No

v) *Do you sometimes exchange IM with various people at the same time?* Yes/No

vi) How often would you say you IM in the following languages?

Language	**Always**	**Often**	**Sometimes**	**Seldom**	**Never**
Chinese					
English					
Other					

vii) Approximately, how much time do you spend a day exchanging IM?

a. Less than 15 minutes
b. Between 15 minutes and 1 hour
c. More than 1 hour

viii) Who would you say you IM with most?

Family members	
Teachers	

Friends and classmates	
Strangers and people I meet online	
Workmates	
Other	

ix) Which of the following IM applications do you use? Check all that apply.

- Facebook Messenger
- Skype messenger
- QQ
- WeChat
- Lringo
- Chatlingual
- Vox Xox
- Other (please specify) _____

x) How often would you say you use the IM application (s) indicated above? (Options auto-populated from previous question)

IM app.	**always**	**mostly**	**often**	**sometimes**	**rarely**	**never**
Facebook Messenger						
Skype Mess						
QQ						
WeChat						
Lringo						
Chatlingual						
Vox Xox						
Other						

xi) Would you be willing to download and install QQ International on your smart phone and to use it for the purpose of this research?
Yes/No.

Section 2: Machine translation (MT)

i) Have you ever used machine translation (MT) (e.g. Bing translator, Systran) to convert a text (e.g. a message, email, document or web page) in one language into another?

Yes / No

[All following questions appear only if respondent answers yes]

ii) Which system(s) have you used? How often?

	Often	Sometimes	Rarely
Bing			
Systran			
Baidu			
Youdao			
Other			

iii) Which other systems have you used?

[Appears if respondent answers "Other"]

iv) What language combinations and directions have you used MT in? (check all that apply)

- English to Chinese
- Chinese to English
- Another language to Chinese
- Chinese to another language
- Another language to English
- English to another language
- Between two other languages

v) If you use MT with another language/other languages, please indicate which one(s) here.

[Will appear if the respondent chooses an option containing "another language"]

vi) What have you used MT for? (Check all that apply)

- Sending messages (e.g. emails, instant messages, text messages)
- Reading messages (e.g. emails, instant messages, text messages)
- Reading documents (e.g. reports, articles, essays)
- Producing documents (e.g. reports, articles, essays)
- Reading Web pages
- Other

vii) What other things have you used MT for?

[Appears if respondent answers "Other"]

viii) Who do you use MT to produce messages or documents for? (Check all that apply)

[Appears if the respondent chooses an option with sending/producing]

- Family
- Friends
- Teachers
- Colleagues/classmates
- Other

ix) What other people have you used MT to communicate with?

[Appears if the respondent chooses an option with sending/producing]

[Appears if respondent answers "Other"]

x) How would you rate the quality of the translations produced by the system(s) you have used?

[Note: question will be populated with only the system(s) respondents have used]

	excellent	very good	good	fair	poor	don't know
Bing						
Systran						
Baidu						
Youdao						
Other						

xi) Please explain your answers above.

xii) How would you rate the usefulness of the MT for you, as you have used it?
[Note: question will be populated with only the system(s) respondents have used]

	Very useful	Useful	Not very useful	Not at all useful	Don't know
Bing					
Systran					
Baidu					
Youdao					
Other					

xiii) Please explain your answers above.

Section 3: A little bit about you

i) What is your sex?

Male ⬭ Femal⬭ You don't have an option that applies to me. I identify as (please specify) _____".

ii) How old are you today?

a) Between 18 -24 ⬭
b) Between 24 – 30 ⬭
c) Over 30 ⬭

Section 4: Willingness to Communicate

In this section of the questionnaire, you will be required to answer questions regarding your willingness to communicate in different situations in English.

i) Generally speaking, what would you say at this point about your willingness to communicate in English?
I am:

extremely willing	

very willing	
willing	
somewhat willing	
a little willing	
not willing	

ii) Imagine you need to speak English in the following situations. Indicate in the space at the left of the item what percent of the time you would choose to communicate. (0 = Never to 100 =Always).

a) _____ Talk with a service station attendant.
b) _____ Talk with a physician.
c) _____ Talk to a stranger (English native speaker).
d) _____ Talk with an acquaintance while standing in a line.
e) _____ Talk to a salesperson in a store.
f) _____ Talk in a large meeting of friends.
g) _____ Talk with a police officer.
h) _____ Talk in a small group of strangers (English native speakers).
i) _____ Talk with a friend while standing in a line.
j) _____ Talk with a waiter/waitress in a restaurant.
k) _____ Talk in a large meeting of acquaintances.
l) _____ Talk with a stranger while standing in line.
m) _____ Talk with a secretary.
n) _____ Present a talk to a group of friends.
o) _____ Talk in a small group of acquaintances.
p) _____ Talk to a garbage collector.
q) _____ Talk in a large meeting of strangers (English native speakers).
r) _____ Talk with a spouse (or girl/boyfriend).
s) _____ Talk in a small group of friends.
t) _____ Present a talk to a group of acquaintances.

Thank you for participating in the study!

Appendix M: Initial Questionnaire (Chinese version)

课题名称：实时机器翻译辅助即时通讯——基于科技新方法，提升二语沟通意愿。

感谢您对本次研究的支持！作答前，请阅读问卷说明。填写本问卷大概需要10分钟，此问卷能帮助我们更好地了解您以及您的需求。

为参与此课题，您选择的用户名是： _____

第一部分:关于即时通讯习惯/做法的基本信息。

请您提供基本信息，包括您的即时通讯习惯，您在即时通讯交流中能理解和使用的语种。这些信息有助于判断您是否适合参加此课题。

xii) 请说明您能用哪些语种进行口头交流和写作，并注明该语种的熟练程度。

语种	熟练程度			
	初学者	中等水平	中上水平	高级水平
汉语				
英语				
其他（请注明）				

xiii) 您在日常生活中经常使用英语吗？

一直	
经常	
有时	
偶尔	
从不	

xiv) 您使用智能手机吗？ 是/否

xv) 您是否发送和接收即时信息？ 是/否

xvi) *有时您会在同一时间跟不同的人通过即时信息进行交流吗？* 是/否

xvii) 您经常使用以下语种发送即时消息吗？

语种	一直	经常	有时	偶尔	从不
汉语					
英语					
其他					

xviii) 您每天大概花费多长时间通过即时消息进行交流？

a. 少于15分钟

b. 15分钟到1小时之间

c. 超过1小时

xix) 您向谁发送即时消息最多？

家庭成员	
老师	
朋友和同学	
陌生人和网友	
同事	
其他	

xx) 您使用以下哪些即时通讯工具？请勾选所有符合选项。

- Facebook Messenger
- Skype网络电话翻译
- QQ
- 微信
- Lringo
- Chatlingual
- Vox Xox
- 其他（请注明）_____

xxi) 您经常使用上面勾选的即时通讯工具吗？

即时通讯工具	一直	经常	有时	很少	从不
Facebook Messenger					
Skype mess					
QQ					
微信					
Lringo					
Chatlingual					
Vox Xox					
其他					

xxii) 您愿意载并安装QQ国际版，并为了参与此课题而使用它吗？是/否。

第二部分:机器翻译

xiv) 您曾经使用过机器翻译（如：必应翻译，Systran）把以某种语言的文本（如：短信，邮件，文件或者网页信息）转换成以另外一种语言的文本吗？

是/否

[此问题仅在受访者勾选“是”的情况下出现]

xv) 您使用过哪个或哪些机器翻译工具？您经常使用吗？

	经常	有时	很少
必应			
Systran			
百度			
有道			
其他			

xvi) 您还使用过哪些其他机器翻译工具？[此问题仅在受访者勾选“其他”的情况下出现]

xvii) 在使用即时通讯时，您曾选择过哪些语言组合和方向的机器翻译？（请勾选所有符合选项）

- 英译汉
- 汉译英
- 其他语种译成汉语
- 汉语译成其他语种
- 其他语种译成英语
- 英语译成其他语种
- 其他两语种之间互译

xviii) 如果您所使用的机器翻译涉及到其他语种，请在此处注明。[此问题仅在受访者勾选 “其他语种” 的情况下出现]

xix) 您使用机器翻译的目的是什么？（请勾选所有符合选项）

- 发送信息（如：邮件，即时信息，文本信息）
- 阅读信息（如：邮件，即时信息，文本信息）
- 阅读文件（如：报告，论文，散文）
- 撰写文件（如：报告，论文，散文）
- 阅读网页信息
- 其他

xx) 您还使用机器翻译做过什么？

[此问题仅在受访者勾选“其他”的情况下出现]

xxi) 您使用机器翻译撰写信息或文件的发送对象是谁？（请勾选所有符合选项）

[此问题仅在受访者勾选“发送信息”的情况下出现]

- 家人
- 朋友
- 老师
- 同事/同学

- 其他

xxii) 您对其他哪些人使用过机器翻译？

[此问题仅在受访者勾选“发送信息”的情况下出现]

[此问题仅在受访者勾选“其他”的情况下出现]

xxiii) 您觉得，使用过的即时通讯机器翻译输出的译文质量如何？

[注：此问题仅适用于受试者"使用过的即时通讯系统"]

	非常好	好	一般	差	不确定
必应					
Systran					
百度					
有道					
其他					

xxiv) 请简要说明上述答案。

xxv) 您如何评价您使用过的机器翻译效果？

[注：此问题仅适用于受试者"使用过的即时通讯系统"]

	非常有用	有用	不太有用	完全没用	不确定
必应					
Systran					
百度					
有道					
其他					

xxvi) 请简要说明上述答案。

第三部分:您的个人信息

iii) 性别：

男女其他不予回答 ⬭ ⬭ ⬭

iv) *年龄：*

d) 18 -24岁 ⬭

e) 24 -30岁 ⬭

f) 30岁以上 ⬭

第四部分:交流意愿

该部分需要您根据不同情境下使用英语进行交流的意愿程度进行回答。

iii) 总体来讲，目前您对用英语进行交流持什么态度？

非常愿意	
愿意	
不一定	
不愿意	

iv) 假设在下列情境中，您需要用英语进行交流。请在各项左边的空格里，填写您愿意用英语进行交流的时间百分比。（0到100代表从“从不”到“总是”）。

u) _____ 与加油站的工作人员交谈

v) _____与医生交谈

w) _____与英语是母语的陌生人交谈

x) _____ 与排队时偶然认识的人交谈

y) _____与商店的售货员交谈

z) _____在与一大拨朋友聚会时交谈

aa) _____与警务工作人员交谈

bb) _____在一小群以英语为母语的陌生人中交谈

cc) _____排队时与朋友交谈

dd) _____与餐馆的服务生交谈

ee) _____在一大拨熟人面前说话

ff) _____排队时与陌生人交谈

gg) _____与某个秘书交谈

hh) _____在一大拨朋友面前演讲

ii) _____ 在一小群熟人面前说话

jj) _____ 与清洁工交谈

kk) _____在一大群以英语为母语的陌生人地面前交谈

ll) _____ 与配偶（或男/女朋友）交谈

mm) _____ 在一小群朋友面前说话

nn) _____在一大拨熟人面前演讲

感谢您参与此次研究！

Appendix N: Final Questionnaire (English version)

uOttawa

Title: *Real-Time Machine-Translated Instant Messaging: A New Technology-based Approach in Foreign Language Learning*

Thank you for participating in this study! Before continuing, please read the letter of information. This questionnaire should take you approximately 20 minutes to complete.

Final Questionnaire

Introduction: This questionnaire seeks to find out your perception about the IM exchanges, with or without the translation option, you had during the study.

Enter your username: _____

SECTION 1*(for all EFL participants)*

i) Did you use the IM translation application during the research?
Yes
No

ii) Have you used the QQ International instant messaging (IM) MT function outside the study?
Yes

No

iii) Have you used other MT functions integrated into other IM systems?
Yes

No

SECTION 2

Willingness to Communicate Scale

In this section of the questionnaire, you will be asked to answer questions regarding your willingness to communicate in different situations in English

i) Generally speaking, what would you say at this point about your willingness to communicate in English ?

I am:

Very willing	
Willing but not very willing	
Just willing	
Somewhat willing	
A little willing	
Not willing at all	

ii) Imagine you need to speak English in the following situations. Indicate in the space at the left of the item what percent of the time you would choose to communicate. (0 = Never to 100 = Always)

	% before study		**% after study**
1		Talk with a service station attendant	
2		Talk with a physician	
3		Talk with a stranger (English native speaker)	
4		Talk with an acquaintance while standing in a line	
5		Talk to a salesperson in a store	
6		Talk in a large meeting of friends	
7		Talk with a police officer	
8		Talk in a small group of strangers (English native speakers)	
9		Talk with a friends while standing in line	
10		Talk with a waiter/waitress in a restaurant	
11		Talk in a large meeting of acquaintances	

12		Talk with a stranger while standing in line	
13		Talk with a secretary	
14		Present a talk to a group of friends	
15		Talk in a small group of acquaintances	
16		Talk to a garbage collector	
17		Talk in a large meeting of strangers (native English speakers)	
18		Talk with a spouse (or boy/girlfriend)	
19		Talk in a small group of friends.	
20		Present a talk to a group of acquaintances.	

Opportunities to communicate

iii) How often would you say you translated incoming messages.

always	mostly	often	sometimes	rarely	never

iv) How useful was it to translate incoming messages?

extremely useful	very useful	useful	somewhat useful	a little useful	not useful at all

v) Overall, how would you rate the usefulness of the translation option?

extremely useful	very useful	useful	somewhat useful	a little useful	not useful at all

vi) Overall, do you think the translation option increased your chances to communicate?

Yes

No

vii) Do you have any comments you would like to share regarding the IM translation tool?
_Some of the sentences were not well translated. But it was good in generally speaking.

SECTION 3: MT

i) How often do you use the MT function in (an) IM system(s)?

	always	mostly	often	sometimes	rarely	never
QQ International in the study						
QQ International outside the study						
Skype Translator Skype						
Other IM MT functions						

ii) What language combinations and directions have you used MT in an IM system for? (check all that apply)
xxiii)
- English to Chinese
- Chinese to English
- Another language to Chinese
- Chinese to another language
- Another language to English
- English to another language
- Between two other languages

iii) If you use MT in IM with another language/other languages, please indicate which one(s) here.

[Will appear if the respondent chooses an option containing "another language"]

iv) Do you speak or read the other language(s) that you use MT to or from?
No

Yes

[Appears if the respondent chooses an option containing "another language"]

v) What have you used MT in an IM system for? How often?

	Always	Often	Sometimes	Rarely	Never
Sending messages					
Reading messages					

vi) Who have you used MT in an IM system to produce messages for? (Check all that apply)

[Appears if the respondent chooses an option with sending]

- Family
- Friends
- Teachers
- Colleagues/classmates
- Partner in the study
- Other

xxiv) What other people have you used MT to communicate with .

[Appears if the respondent chooses an option with sending/producing]

[Appears if respondent answers "Other"]

vii) How would you rate the quality of the translations produced by the system(s) you have used?

[Note: question will be shown only if the students have used the systems]

	Very useful	useful	Not very useful	Not at all useful	don't know
QQ International	2	9	3		
Skype Translator					7
Other IM MT functions					

viii) Please explain your answers above.

ix) How would you rate the usefulness of the MT for you, as you have used it?

[Note: question will be populated with only the system(s) respondents have used]

	Very useful	Useful	Not very useful	Not at all useful	Don't know
QQ International QQ					
Skype Translator Skype					
Other					

xxv) Please explain your answers above

x) Did you ever have problems in communicating using the QQ International MT function during the study?

[Appears if the respondent answers Yes to the question about using QQ International in the study]

xi) What kinds of problems did you have with the machine-translated messages? How often?

	Often	**Sometimes**	**Rarely**	**Never**
My partner's message(s) did not make sense				
My partner did not understand my messages.				
My partner misunderstood my messages.				
I misunderstood my partner's messages.				
My partner's messages sounded odd.				
My partner seemed to think my messages sounded odd.				
I was offended by my partner's messages or				

how they were expressed.				
My partner seemed to be offended by my messages or how they were expressed.				
I noticed translation inconsistencies.				
I couldn't translate some of my IM.				
The application was too slow.				
The application often stopped functioning.				
I had to reinstall application more than once.				
Other				

xii) What other problems did you have with machine-translated messages?
[Appears if the respondent chooses "Other" above]

xiii) What effect(s) did the problems have on your communication? How often
[Appears if the respondent chose anything but Never in one of the questions above.]

	Often	**Sometimes**	**Rarely**	**Never**	**Don't know**
The messages were hard for me to understand.					
The messages were hard for my partner to understand.					
I had to repeat myself or rephrase my messages.					
My partner had to repeat themself or rephrase their messages.					
It took a lot of time for us to understand each other.					

I was not able to get my idea across properly.					
My partner was not able to get their idea across properly.					
My partner and I managed to understand each other enough to continue conversing.					
We eventually gave up on understanding each other and changed the subject					
We eventually gave up on understanding each other and stopped messaging					
Even if the messages sounded odd, I still understood what my partner was trying to say.					
Even if the messages sounded odd, my partner still understood what I was trying to say					
My partner and I solved problems fairly quickly.					
I got tired of having to deal with problems.					
Using the MT was helpful for me.					
Despite the problems, I sent more messages because I could use the MT.					
I did not enjoy my conversation because of the problems.					
My partner did not seem to enjoy the conversation because of the problems.					
I felt embarrassed when the problems happened.					
I felt frustrated when the problems happened.					
I felt anxious about sending messages because of the problems.					
I thought the problems were amusing.					

I enjoyed the conversation, despite the problems.					
The problems did not really affect how I felt about the conversation.					
I wanted to stop communicating because of the problems.					
The problems affected how I felt about my partner in a negative way.					
The problems brought me and my partner closer together.					
Using the MT was not worth it to me.					
I ended up guessing at what my partner wanted to say.					
Overall, I am satisfied with the MT translation of my messages.					
I sent fewer messages because of the problems.					
I could have done a better job of understanding the messages myself.					
I could have done a better job of writing the messages myself.					
I ended up rejecting the translations and writing the messages myself.					
Other					

vix) What other effects did the problems with machine-translated messages have?

[Appears if the respondent chooses "Other" above]

vx) Were you able to find ways of dealing with the problems with the MT?

xvi) What were your solutions or strategies?
[Appears if the respondent answers Yes to the question above.]

xvii) Would you continue to use MT in IM systems after the study, if you were continuing to message in English?

Appears if the respondent answers Yes to any use of MT in IM.]

xviii) Would you recommend that others use MT in IM systems if they were messaging in English.

xxvi)

[Appears if the respondent answers Yes to any use of MT in IM.]

xix) Do you have any other comments about using the MT in QQ International in the study? If so, you can add them here.

[Appears if the respondent answers Yes to using MT in QQ International in the study.]

SECTION 3 (when you communicated without the IM translation application)

i) What are some of the problems you encountered while exchanging IM? How often? Check the options that apply.

	Often	Sometimes	Rarely	Never
I didn't have enough words to express myself.				
I was slow in responding because I had to look up the translation of some words.				
My partner's message(s) did not make sense.				
My partner did not understand my messages.				
My partner misunderstood my messages.				
I misunderstood my partner's messages.				

My partner's messages sounded odd.				
My partner seemed to think my messages sounded odd.				
I was offended by my partner's messages or how they were expressed.				
My partner seemed to be offended by my messages or how they were expressed.				
The application was too slow.				
The application often stopped functioning.				
I had to reinstall application more than once.				
Other				

ii) If you encountered any other problems, please describe them here.

iii) What effect(s) did the problems have on your communication? How often?

[Appears if the respondent chose anything but Never in one of the questions above.]

	Often	**Sometimes**	**Rarely**	**Never**	**Don't know**
The messages were hard for me to understand.					
The messages were hard for my partner to understand.					
I had to repeat myself or rephrase my messages.					

My partner had to repeat themself or rephrase their messages.					
It took a lot of time for us to understand each other.					
I was not able to get my idea across properly.					
My partner was not able to get their idea across properly.					
My partner and I managed to understand each other enough to continue conversing.					
We eventually gave up on understanding each other and changed the subject.					
We eventually gave up on understanding each other and stopped messaging.					
Even if the messages sounded odd, I still understood what my partner was trying to say.					
Even if the messages sounded odd, my partner still understood what I was trying to say。					
My partner and I solved problems fairly quickly.					
I got tired of having to deal with problems.					
I did not enjoy my conversation because of the problems.					
My partner did not seem to enjoy the conversation because of the problems.					
I felt embarrassed when the problems happened.					
I felt frustrated when the problems happened.					

I felt anxious about sending messages because of the problems.					
I thought the problems were amusing					
I enjoyed the conversation, despite the problems.					
The problems did not really affect how I felt about the conversation.					
I wanted to stop communicating because of the problems.					
The problems affected how I felt about my partner in a negative way.					
The problems brought me and my partner closer together					
I ended up guessing at what my partner wanted to say/					
Overall, I am satisfied with my messages					
I sent fewer messages because of the problems					
Other					

iv) What other effects did the problems with messages have/

[Appears if the respondent chooses "Other" above]

v) Were you able to find ways of dealing with the problems with the messages/ xxvii)

xxvii) What were your solutions or strategies?

[Appears if the respondent answers Yes to the question above.]

vi) Why do you choose not to use the MT functions of an IM system?

[Appears if the respondent answers No to any use of MT and IM]

Thank you, once more, for participating.

Appendix O: Final Questionnaire (Chinese version)

课题名称：*实时机器翻译辅助即时通讯：基于科技新方法，提升二语沟通意愿。*

感谢您对本次研究的支持！作答前，请阅读问卷说明。填写本问卷大概需要20分钟。

结束阶段问卷

导语：本次问卷旨在了解您对本课题中即时通讯（是/否使用机器翻译功能）的看法。

用户名： _____

第一部分*（请所有英语非母语的参与者回答）*

xxviii) 本课题中，您是否使用了即时通讯的机器翻译功能？
是____/否_____。（此题答案不同，随后的问卷内容有所不同）

xxix) 在本课题之外，您是否使用过QQ国际版即时通讯的机器翻译功能？
是/否

xxx) 您是否使用过其他即时通讯系统自带的机器翻译功能？
是/否

第二部分在不同情境下的交流意愿（请两组英语非母语的初学者回答）

该部分需要您根据不同情境下使用英语进行交流的意愿程度进行回答。

xxxi) 总体来讲，目前您对用英语进行交流持什么态度？

非常愿意	
愿意	
不一定	
不愿意	

假设在下列情境中，您需要用英语进行交流。请在表格左右两栏填写您愿意用英语进行交流的时间百分比。（0到100代表从“从不”到“总是”）

	%研究前		% 研究后
1		与加油站的工作人员交谈	
2		与医生交谈	
3		与英语是母语的陌生人交谈	
4		与排队时偶然认识的人交谈	
5		与商店的售货员交谈	
6		在一大拨朋友聚会时说话	
7		与警务工作人员交谈	
8		在一小群英语为母语的陌生人面前说话	
9		排队时与朋友交谈	
10		与餐馆的服务生交谈	
11		在一大拨熟人面前说话	
12		排队时与陌生人交谈	
13		与某个秘书交谈	
14		在一大拨朋友面前演讲	
15		在一小群熟人面前说话	
16		与清洁工交谈	
17		在一大拨以英语为母语的陌生人面前说话	
18		与配偶（或男/女朋友）交谈	
19		在一小群朋友面前说话	
20		在一大拨熟人面前演讲	

第三部分（请使用即时通讯翻译功能的英语非母语参与者回答）

xxxii) 您经常使用即时通讯系统的翻译功能吗？

	经常	有时	很少
在本项目过程中使用QQ国际版			
在本项目外使用QQ国际版			
Skype网络电话翻译			
其他即时通讯的翻译功能			

xxxiii) 在使用即时通讯时，您曾使用机器翻译处理过哪些语种？（请勾选所有符合和选项）

- 英译汉
- 汉译英
- 其他语种译成汉语
- 汉语译成其他语种
- 其他语种译成英语
- 英语译成其他语种
- 其他语种之间互译

xxxiv) 如果您使用机器翻译辅助即时通讯，涉及到英语或汉语之外的语种，请注明。

[此问题仅在受访者勾选“其他语种”的情况下出现]

xxxv) 使用机器翻译过的其他语种，您会讲或读（该语种）吗？

[此问题仅在受访者勾选“其他语种”的情况下出现]

xxxvi) 您使用即时通讯机器翻译功能的目的是什么？您经常使用吗？

	总是	经常	有时	很少	从不
发送信息					

阅读信息					

xxxvii) 您通常给谁发信息时会使用即时通讯的机器翻译功能？（请勾选所有符合选项）

[此问题仅在受访者勾选“发送信息”的情况下出现]

- 家人
- 朋友
- 老师
- 同事/同学
- 参与本项目的伙伴
- 其他

xxxviii) 与哪些其他人交流时使用过机器翻译？

[此问题仅在受访者勾选“发送信息”的情况下出现]

[此问题仅在受访者勾选“其他”的情况下出现]

xxxix) 您觉得，使用过的即时通讯机器翻译输出的译文质量如何？

[注：此问题仅在受访者“使用过即时通讯机器翻译”的情况下出现]

	非常好	好	一般	差	不确定
QQ国际版					
Skype网络电话翻译					
其他即时通讯的机器翻译					

xl) 请简要说明上述答案。

xli) 您如何评价您使用过的机器翻译效果？

[注：此问题仅在受访者“使用过的即时通讯机器翻译”的情况下出现]

	非常有用	有用	不太有用	完全没用	不确定
QQ国际版					

Skype网络电话翻译					
其他					

xlii) 请简要说明上述答案。

xliii) 参与本课题过程中，您使用QQ国际版的机器翻译功能交流时，曾遇到过什么问题吗？

[以下问题仅在受访者使用过QQ国际版的情况下出现]

是/否

xliv) 关于机译信息，您遇到过哪些问题？您经常遇到吗？

	经常	**有时**	**很少**	**从未**
对方的信息不知所云				
对方无法理解我的信息				
对方会误解我的信息				
我误解了对方的信息				
对方的信息读起来奇怪				
对方似乎觉得我的信息读起来奇怪				
对方信息的内容或信息的表达方式冒犯了我				
我的信息内容或信息的表达方式好像冒犯了对方				
我发现翻译前后不一致				
我无法将自己发送的某些信息翻译成英文				
机器翻译运行太慢				
机器翻译经常卡住				

我不得不一次又一次重装翻译应用程序				
其他				

xlv) 关于机翻信息，您还遇到过哪些问题？

[此问题仅在受访者勾选“其他”的情况下出现]

xlvi) 这些问题对您的交际产生了哪些影响？您经常遇到吗？

[受访者在上述问题中没有勾选“从不”的情况下出现。]

	经常	**有时**	**很少**	**从未**	**不确定**
我很难理解对方的信息					
对方很难理解我的信息					
我不得不重复自己说过的话或者重新措辞					
对方不得不重复他说过的话或者重新措辞					
我们要花很长时间才能理解彼此的意思					
我无法清楚表达自己的观点					
对方无法清楚表达自己的观点					
我和对方都尽量充分理解对方，以便进一步沟通					
我们最终不能理解对方的意思，只好转移话题					
我们最终不能理解对方的意思，交流中止					
尽管对方的话有些奇怪，我还是能够明白他想说什么。					
尽管我的话有些奇怪，对方还是能够明白我想说什么。					
我们很快就解决了交流问题					
我对处理这些问题感到厌烦了					
使用机器翻译对我有帮助					

尽管存在某些问题，但借助机器翻译，我发了更多信息					
由于存在某些问题，我并不喜欢这种交流					
由于存在某些问题，对方似乎并不喜欢这种交流					
当交流出现问题时，我感到尴尬					
当交流出现问题时，我感到沮丧					
由于这些问题，我在发送信息时感到焦虑					
我认为这些问题很有趣					
尽管存在某些问题，我还是喜欢这种交流					
这些问题并不会影响我对这种交流的感受					
由于这些问题，我不愿再继续交流下去					
这些问题让我对对方产生了不好的看法					
这些问题让我和对方更加亲近了					
使用机器翻译对我来说没有帮助					
我最后不得不靠猜测来了解对方想要表达的意思					
总的来说，我对机翻的信息感到满意					
由于这些问题，我发的信息越来越少了					
我本来可以更好地理解那些信息					
我本来可以更好地表达我的意思					
我最终不再使用机器翻译，而是自己写信息					
其他					

xlvii) 机器翻译存在的问题还有哪些其他影响？

[此问题仅在受访者勾选“其他”的情况下出现]

xlviii) 您是否能够找到解决机器翻译存在问题的方案？

是/否

xlix) 您的解决方案是？

[此问题仅在受访者勾选“是”的情况下出现]

l) 本课题结束之后，如果仍需要用英语发送/接收信息，您还会继续使用即时通讯的机器翻译功能吗？

[此问题仅在受访者勾选“是”的情况下出现]

是/否

li) 如果有人需要用英语发送/接收信息，您会建议他们使用即时通讯的机器翻译功能吗？

[此问题仅在受访者勾选“是”的情况下出现]

是/否

lii) 您对本课题中的QQ国际版机器翻译还有其他看法吗？如果有，请补充。

[此问题仅在受访者在课题中使用过QQ国际版机器翻译的情况下出现]

第三部分（不使用即时通讯系统翻译功能的英语非母语参与者请回答）

v) 您对即时通讯的机器翻译功能总体印象如何？

非常有用	
有用	
一般	
没用	

vi) 在使用即时通讯系统交流时，您遇到过哪些问题？您经常遇到吗？勾选所有符合的选项。

	经常	有时	很少	从不

在表达自己意思时我常常词穷				
因为需要查找某些单词，我回复很慢				
对方的信息不知所云				
对方无法理解我的信息				
对方会误解我的信息				
我误解了对方的信息				
对方的信息读起来奇怪				
对方似乎觉得我的信息读起来奇怪				
对方信息的内容或信息的表达方式冒犯了我				
我的信息内容或信息的表达方式好像冒犯了对方				
机器翻译运行太慢				
机器翻译经常卡住				
我不得不一次又一次重装翻译应用程序				
其他				

vii) 如果您还遇到过其他问题，请说明

viii) 这些问题对您的交际产生了哪些影响？您经常遇到吗？

[此问题仅在受访者在上述问题中没有勾选“从不”的情况下出现。]

	经常	**有时**	**很少**	**从未**	**不确定**
我很难理解对方的信息					
对方很难理解我的信息					

我不得不重复自己说过的话或者重新措辞					
对方不得不重复他说过的话或者重新措辞					
我们要花很长时间才能理解彼此的意思					
我无法清楚表达自己的观点					
对方无法清楚表达自己的观点					
我和对方都尽量充分理解对方，以便进一步沟通					
我们最终不能理解对方的意思，只好转移话题					
我们最终不能理解对方的意思，交流中止					
尽管对方的话有些奇怪，我还是能够明白他想说什么。					
尽管我的话有些奇怪，对方还是能够明白我想说什么。					
我们很快就解决了交流问题					
我对处理这些问题感到厌烦了					
由于存在某些问题，我并不喜欢这种交流					
由于存在某些问题，对方似乎并不喜欢这种交流					
当交流出现问题时，我感到尴尬					
当交流出现问题时，我感到沮丧					
由于这些问题，我在发送信息时感到焦虑					
我认为这些问题很有趣					
尽管存在某些问题，我还是喜欢这种交流					
这些问题并不会影响我对这种交流的感受					

由于这些问题，我不愿再继续交流下去					
这些问题让我对对方产生了不好的看法					
这些问题让我和对方更加亲近了					
我最后不得不靠猜测来了解对方想要表达的意思					
总的来说，我对机翻的信息感到满意					
由于这些问题，我发的信息越来越少了					
其他					

liii) 机器翻译存在的问题还有哪些其他影响？

[此问题仅在受访者勾选“其他”的情况下出现]

liv) 您是否能够找到解决机器翻译存在问题的方案？

是/否

lv) 您的解决方案是？

[此问题仅在受访者勾选“是”的情况下出现]

ix) 您为何不使用即时通讯的机器翻译功能？

[此问题仅在受试者就“是否使用机器翻译和即时通讯系统”一题选择“否”的情况下出现]

再次感谢您对本次研究的配合与支持！

Approvals

Authorization from Office of Research Ethics and Integrity

File Number: 06-16-42 **Date (mm/dd/yyyy):** 11/11/2016

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

Ethics Approval Notice

Social Science and Humanities REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

First Name	Last Name	Affiliation	Role
Elizabeth	Marshman	Arts / Translation	Supervisor
Marie-Josee	Hamel	Arts / Second Language Institute	Co-investigator
Ben	Li	Arts / Translation	Co-investigator
Kizito	Tekwa	Arts / Translation	Student Researcher

File Number: 06-16-42

Type of Project: PhD Thesis

Title: Real-Time Machine Translated Instant Messaging: A New Technology-based Approach to improving Second Language Willingness to Communicate

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
11/10/2016	11/09/2017	Approval

Special Conditions / Comments:

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File Number: 06-16-42 **Date (mm/dd/yyyy):** 11/11/2016

Université d'Ottawa University of Ottawa
Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

This is to confirm that the University of Ottawa Research Ethics Board identified above, which operates in accordance with the Tri-Council Policy Statement (2010) and other applicable laws and regulations in Ontario, has examined and approved the ethics application for the above named research project. Ethics approval is valid for the period indicated above and subject to the conditions listed in the section entitled "Special Conditions / Comments".

During the course of the project, the protocol may not be modified without prior written approval from the REB except when necessary to remove participants from immediate endangerment or when the modification(s) pertain to only administrative or logistical components of the project (e.g., change of telephone number). Investigators must also promptly alert the REB of any changes which increase the risk to participant(s), any changes which considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project and safety of the participant(s). Modifications to the project, including consent and recruitment documentation, should be submitted to the Ethics Office for approval using the "Modification to research project" form available at: http://research.uottawa.ca/ethics/submissions-and-reviews.

Please submit an annual report to the Ethics Office four weeks before the above-referenced expiry date to request a renewal of this ethics approval. To close the file, a final report must be submitted. These documents can be found at: http://research.uottawa.ca/ethics/submissions-and-reviews.

If you have any questions, please do not hesitate to contact the Ethics Office at extension 5387 or by e-mail at: ethics@uOttawa.ca.

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Authorization from the School of English Studies, SISU, China

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AUTHORIZATION TO CONDUCT RESEARCH AT SISU

November 10, 2016

TO WHOM IT MAY CONCERN

This letter serves as authorization to Mr. Kizito TEKWA, PhD candidate at the School of Translation and Interpretation (STI), University of Ottawa, who currently works at Shanghai International Studies University (SISU), to use some of his students enrolled in his English Writing course as participants in his PhD research , "Real-Time Machine-Translated Instant Messaging: A New Technology-Based Approach Toward Language Learning."

Mr. Kizito TEKWA is fully aware that any research conducted at SISU must be in accordance with the laws of the People's Republic of China.