

**Taming Translation Technology for L2 Writing: Documenting the Use of Free
Online Translation Tools by ESL Students in a Writing Course**

Reza Farzi

Thesis submitted to the
Faculty of Graduate and Postdoctoral Studies
in partial fulfillment of the requirements
for the Doctorate in Philosophy degree in Translation Studies

School of Translation and Interpretation

Faculty of Arts

University of Ottawa

© Reza Farzi, Ottawa, Canada, 2016

Abstract

The present study explored the use of translation technology in second language (L2) writing by English as a Second Language (ESL) students at the University level. The appropriate role of translation, and specifically translation technology, in L2 curricula has been the subject of theoretical and practical debate. In order to address knowledge gaps relevant to this debate, the present study sought to document students' current use of translation technology, specifically free online translation (FOT) tools, and their opinions about these tools. The study's mixed-methods design included video observations and questionnaires regarding FOT use completed by 19 university students enrolled in a high intermediate-level ESL course. Semi-structured follow-up interviews were conducted with the six participants who were observed using FOT tools extensively on the video recordings. Results showed that high intermediate-level ESL students have a primarily positive attitude toward FOT tools. In addition, the majority of students reported using such tools regularly, even though only about one third of the students were actually observed using the tools significantly in the video recordings. Results are discussed in the context of the ongoing debate over whether and how translation technology should be used in L2 classrooms.

Résumé

La présente étude examine l'utilisation des technologies de la traduction par les étudiants du niveau universitaire inscrits à un cours d'anglais langue seconde (ALS) lorsqu'ils rédigent un travail dans une deuxième langue (L2). Le rôle approprié de la traduction, et particulièrement des technologies de la traduction, dans les programmes de L2, a fait l'objet d'un débat théorique et pratique. Afin de combler les lacunes dans les connaissances pertinentes pour ce débat, la présente étude cherche à documenter l'utilisation actuelle des technologies de la traduction par les étudiants, notamment les outils de traduction accessibles gratuitement en ligne, et leurs opinions sur ces outils. Les méthodes de conception mixtes de cette étude comprenaient des observations vidéo et des questionnaires relatifs à l'utilisation des outils de traduction accessibles gratuitement en ligne remplis par 19 étudiants universitaires inscrits à un cours d'anglais langue seconde de niveau intermédiaire avancé. Des entrevues semi-structurées de suivi ont été menées avec les six participants observés pendant qu'ils utilisaient les outils de traduction accessibles gratuitement en ligne, de manière intense, sur les enregistrements vidéo. Les résultats ont montré que les étudiants d'ALS de niveau intermédiaire avancé ont essentiellement une attitude positive envers les outils de traduction accessibles gratuitement en ligne. De plus, la majorité des étudiants ont déclaré qu'ils utilisaient de tels outils régulièrement, bien qu'environ un tiers seulement des étudiants aient été effectivement observés en train d'utiliser ces outils de façon significative dans les enregistrements. Les résultats sont

discutés dans le contexte du débat en cours quant à savoir si et comment les technologies de la traduction devraient être utilisées dans les cours de L2.

Table of Contents

Abstract..... ii

Résumé iii

Table of Contents v

List of Tables viii

List of Figures..... ix

Acknowledgements x

Chapter 1: Introduction 1

 1.1 General Overview..... 1

 1.2 Origins of the Thesis 1

 1.3 Background of the Problem..... 3

 1.4 Statement of the Problem 6

 1.5 Purpose of the Study..... 6

 1.6 Significance of the Study..... 8

 1.7 Research Questions 9

 1.8 Hypotheses 11

 1.9 Assumptions 13

 1.10 Definition of Key Terms 14

 1.10.1 EFL..... 14

 1.10.2 ESL..... 14

 1.10.3 CALL..... 14

 1.10.4 FOMT/FOT tools..... 14

 1.10.5 FL..... 15

 1.10.6 L1/L2..... 15

 1.10.7 MT..... 15

 1.11 Outline of the Thesis 15

Chapter 2: A Review of the Literature 16

 2.1 Introduction 16

 2.2 Teaching Writing to Second Language (L2) Learners 17

 2.2.1 Learning to write in a second language (L2)..... 18

 2.2.2 The role of one’s first language (L1) in second language (L2) writing..... 19

 2.2.3 The role of translation in second language (L2) writing. 33

 2.2.4 Attitude and language learning and teaching. 44

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

2.3 Translation Technology in L2 Classrooms.....	48
2.3.1 Computer-assisted language learning (CALL) and teaching second language (L2) writing.	49
2.3.2 Machine translation (MT).....	51
2.3.3 Machine translation (MT) and second language (L2) teaching and learning.	66
2.3.4 The role of post-editing.	77
2.3.5 Students' attitudes towards translation technology in the second language (L2) classroom.	79
2.4 Summary	82
Chapter 3: Methodology.....	85
3.1 Introduction	85
3.2 Research Objective and Questions	85
3.3 Research Design	86
3.3.1 Advantages and disadvantages of the mixed methods approach.....	88
3.3.2 More on the design and nature of this study.....	89
3.4 Data Collection.....	90
3.4.1. Participants.	91
3.4.2 Observations of writing tasks.	97
3.4.3 User satisfaction survey.....	102
3.4.4. Semi-structured interviews.	104
3.4.5 Learner multimodal corpus (collected data).....	105
3.5 Data Analysis	106
3.5.1 Observation analysis.....	107
3.5.2 Questionnaire analysis.....	111
3.5.3 Interview analysis.....	112
3.6 Action Research	113
3.6.1 The need for action research.....	114
3.6.2 Conducting action research.	116
3.6.3 Action research and second language teaching.	117
3.6.4 Problems faced in action research.	122
3.6.5 Conclusion.....	124
3.7 Ethical Considerations.....	124
Chapter 4: Results.....	127
4.1 Introduction	127
4.2 Observation (Videos) Analysis.....	127

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

4.2.1 Extent of FOT tool use by students.	127
4.2.2 Purposes for FOT tool use by students.	128
4.2.3 Effectiveness parameters.	129
4.2.3 Efficiency parameter.	132
4.3 User Satisfaction Analysis.....	135
4.3.1 Self-reported use of FOT tools by language learners.	135
4.3.2 User satisfaction.	142
4.4 Semi-Structured Interviews Analysis	153
4.4.1 Analysis strategy for interview data.	154
4.4.2 Themes evident in semi-structured interviews.	154
4.5 Comparison of Observed and Self-Reported FOT Tool Use.....	164
4.6 Combining Questionnaire and Interview Responses.....	166
Chapter 5: Discussion, Recommendations, and Conclusions	167
5.1 Introduction	167
5.2 Research Question 1: Documentation of FOT Tools Use	168
5.2.1. Extent of FOT tool use by students.	169
5.2.2. Purposes for FOT tool use by students.....	170
5.2.3. FOT tools used.	173
5.2.4. The role of post-editing.	173
5.3 Research Question 2: Effectiveness and Efficiency of FOT Tools Use	175
5.3.1 Effectiveness of the FOT tools.	175
5.3.2 Efficiency of FOT tool use.	177
5.3.3 Associations between effectiveness and efficiency.	178
5.3.4 An illustrative case study.....	179
5.4 Research Question 3: Satisfaction of Participants with FOT Tools	184
5.4.1 Overall satisfaction.	184
5.4.2 Benefits and drawbacks of tools.....	186
5.5 Contributions of the Study.....	188
5.6 Limitations of the Study	190
5.7 Implications for Future Studies	191
5.8 Conclusion.....	195
References	197
Appendices.....	225

List of Tables

Table 1 Participants' Distribution by Age	92
Table 2 Participants' Distribution by Gender	93
Table 3 Nationality and First Language of Participants	94
Table 4 Participants' Writing Proficiency Level at the Beginning of Data Collection	96
Table 5 Spearman coefficients of correlation between FOT tool use parameters	135
Table 6 Frequency of FOT Tool Use in the Preceding 12 Weeks	138
Table 7 Language Direction Usually Used FOT Tools	139
Table 8 Purposes for FOT Tool Use	140
Table 9 Statements About FOT Tool Use in L2 Writing.....	141
Table 10 Overall Usability of Free Online FOT Tools in L2 Writing.....	143
Table 11 Satisfaction and Frequency of Using FOT Tools	145
Table 12 FOT Tools Satisfaction and Observed FOT Use	146
Table 13 Satisfaction with FOT Tools by Participant Age.....	147
Table 14 Satisfaction with FOT Tools by Participant Gender.....	148
Table 15 FOT Tool Use Purposes and Participants' Satisfaction.....	149
Table 16 Benefits of Free Online FOT Tools for L2 Writing.....	152
Table 17 Disadvantages of Free Online FOT Tools for L2 Writing.....	153
Table 18 Interview Themes: Participant and Writing Background	156
Table 19 Interview Themes: FOT Tool Use	158
Table 20 Interview Themes: General Assessment of FOT Tools.....	161
Table 21 Interview Themes: FOT Tools for Language Learning.....	163

List of Figures

Figure 1. Data collection procedure..... 91

Figure 2. Screencastomatic: the Video Screen Capture Tool. 99

Figure 3. Data analysis procedure..... 107

Figure 4. The overall use of FOT tools in completing writing tasks. 128

Figure 5. Median values of effectiveness and efficiency parameters. 133

Figure 6. Participants’ Satisfaction with Free Online Translation (FOT) Tools. 144

Acknowledgements

A Ph.D. is a long and arduous journey that cannot be completed without help and encouragement from many individuals. It would be virtually impossible to list all those who have supported me throughout these years. I, therefore, wish to thank everyone who helped me to get to this point.

I would like to express my deepest gratitude to my advisor, Dr. Luise von Flotow, whose guidance and encouragement helped me throughout the years of my doctoral studies. I would not have been able to complete this dissertation without her unwavering support and invaluable help. I will always be grateful to her for her inspiring method of supervision as well as her flexibility, kindness and understanding.

I would also like to sincerely thank my co-supervisor, Dr. Marie-Josée Hamel, for generously providing me with valuable feedback and insightful comments. I deeply appreciate her considerable input in this thesis and her support over the years.

Special thanks go to the examiners committee—Dr. Waldenor Moraes, Dr. Francis Bangou, Dr. Malcom Williams, and Dr. Jean Quirion— for reviewing my thesis with a fine-tooth comb. Their feedback has been tremendously constructive.

I would like to express my genuine appreciation to my ESL 500 students, the participants of this study, who helped me conduct this research. This study would have not been possible without their willingness to participate in my research project.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

My warmest thanks also go to my colleagues and friends in the English Intensive Program, the Official Languages and Bilingualism Institute of the University of Ottawa, and the School of Translation and Interpretation and to my other friends who have always supported me wholeheartedly.

To my family and in-laws, thank you for always being there for me and being so amazing. Mom and dad, words fail to express how grateful I am to you for all the sacrifices you have made for me.

Last but not least, I would like to express my deepest appreciation to my wife, my best friend and the love of my life. Marji, your unconditional love, endless patience, and great understanding make me feel the luckiest man on this planet. Thank you for always standing by my side.

Chapter 1: Introduction

1.1 General Overview

The present study is designed to explore a possible reconciliation between two approaches to second language learning that have historically been in conflict with one another: the current second language acquisition (SLA) theories and the notion of using translation as a learning tool in the second language (L2) classroom. To seek common ground between the two approaches, and explore possible new roles for translation in L2 teaching, this study explores the potential contribution of free online translation (FOT) tools in the process of L2 learning. Specifically, after reviewing the relevance of machine translation (MT) and free online (machine) translation (FOT) tools to the learning and teaching of L2 writing, the study will examine students' use of FOT tools, the tools' effectiveness, and students' perceptions of the tools. Based upon these results, recommendations will be made regarding the future of FOT tool use in L2 classrooms. This study is, therefore, embedded in the field of Human-Computer Interaction (HCI) (see Baecker et al., 1995; Dix et al., 2004) since its primary focus is on whether and how students use—interact with— FOT tools in L2 writing.

1.2 Origins of the Thesis

As an ESL instructor with more than two decades of teaching experience, I developed an interest in the topic when I noticed that the English as a second language (ESL) students would sometimes use FOT tools to translate words, phrases and even

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

sentences from their L1 into English or vice-versa. My interest grew more intense when some of my colleagues also confirmed that their students were using—or at least they thought their students were using — these tools to complete their writing assignments, despite official warnings against using such tools in coursework. It seems that such warnings frequently fall on deaf ears due to the prevalence of FOT tools. Even though many L2 teachers have frowned upon this new development, the actual effect on students remains unknown.

This investigation was developed against the backdrop of decades of criticism targeting the use of translation in L2 teaching and learning— criticism that pushed translation off the map in many language classes (see Brown & Principles, 2001; Larsen-Freeman & Anderson, 2011). It was a criticism that stood in contrast to my personal experience as an English as a second language (ESL) teacher as well as to certain studies done in linguistics, education and translation studies departments on the applicability and even necessity of translation in language learning and teaching (Richmond, 1994; Anderson, 1995; Lewis, 1997; Shei, 2002; McCarthy, 2004; Somers, Gaspari; Niño 2006; Niño 2008 & Garcia & Pena, 2011). As a Translation Studies (TS) graduate student and an ESL teacher at the University of Ottawa, I have had the opportunity to conduct an academic investigation into the use of FOT tools in ESL writing classrooms, in an attempt to begin answering the question of whether such tool use is, as many have assumed, detrimental to students' learning, or whether it may instead be beneficial.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Unlike previous reconciliatory endeavors, I do not mediate between the two theories involved (SLA and translation), nor do I manipulate either side's principles. Instead, I document the behavior and attitudes of a group of L2 learners towards available online translation tools in order to determine whether it is possible to resolve the conflict between the two approaches to L2 learning.

1.3 Background of the Problem

On the one hand, theories of SLA opposing the use of translation have been high-profile for the greater part of the 20th century (Richards & Rodgers, 1986). At the end of 19th century, a group of linguists from Germany, Britain, and Denmark who also had foreign language teaching experience formulated ideas against using translation in language classes and emphasized instead the importance of spoken language. In light of these ideas, there came about a radical shift from written language and deductive teaching of grammar to use of the oral language as a means of FL teaching. These ideas became known as the 'Reform Movement' (Howatt & Widdowson 2004, pp. 187-209), and as part of this movement, translation was pushed into the background in L2/FL teaching (Cook, 2010). Next there came a lengthy period of silence on the topic, followed by the development of more recent ESL/EFL methods that lead to the further invisibility of translation in the L2 classrooms. Further description and discussion of these 20th century trends in teaching are presented in Ch. 2.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

On the other hand, the advent of free online translation (FOT) tools, such as Google Translate, Babelfish and Bing, has added a new dimension to L2 teaching and the L2 classroom. As these tools have become more efficient over the last few years, L2 students have been increasingly using them for various purposes ranging from translating a single word to translating entire paragraphs between their L1 and L2. Yet relatively little is known about the effects that the use of FOT tools may have on students' L2 learning and/or their L2 writing.

Over the past two decades, a number of studies have examined the application of machine translation¹ (MT) tools in L2 teaching and learning (Richmond, 1994; Anderson, 1995; Lewis, 1997; Shei, 2002; McCarthy, 2004; Somers, Gaspari; Niño 2006; Niño 2008 & Garcia & Pena, 2011). These investigations² study various aspects and/or outcomes of using MT tools and yield rather diverse results.

Some studies demonstrate that MT systems have pedagogical use in L2 classrooms (Richmond, 1994; Anderson, 1995; Lewis, 1997). Richmond (1994), for instance, focuses on the linguistic and grammatical practices with MT tools that could improve L2 students' awareness of "grammaticality". Other studies reveal that

¹ Machine translation (MT) is the forerunner of what is referred to as free online translation (FOT) in this thesis.

² These investigations will be discussed thoroughly in section 2.3 of Chapter 2: A Review of the Literature.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

incorporating MT-based activities into L2 classrooms has educational value for L2 learners and pedagogical implications for L2 teachers (Shei, 2002; Kliffer, 2005; Niño 2008). Similarly, Lewis (1997) states that MT is a useful tool in language teaching environments and that language teachers and learners should have access to affordable MT tools (p. 256).

Other studies, however, identify detrimental effects of using MT tools in the L2 classroom and translation courses (McCarthy, 2004; Somers, Gaspari & Niño 2006). In fact, Somers et al. (2006) focus on the problem of using free online machine translation (FOMT) tools to translate sentences in L2 courses. They assert that using FOMT tools in translation and L2 courses is detrimental because such translations are dishonest and plagiaristic. McCarthy (2004) believes that these tools make fair assessment of language and translation competence very challenging.

One of the most widely researched areas in MT in recent years has been the use of editing (often referred to as pre-editing or post-editing) as a mechanism for making MT a useful pedagogical component of L2 education (see Arenas, 2008; Guerberof, 2008 & 2009; Garcia, 2009; Popović & Hermann, 2011; Moran, Lewis & Saam, 2014 & O'Brien & Moorkens, 2014). For instance, Niño (2008) explores the use of MT post-editing in the FL classroom for the purposes of providing guidelines on how to use raw MT output as input for foreign language (FL) written production. Similarly, Shei (2002) examines the use of MT in L2 learning and teaching, and concludes that pre-editing is an effective task

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

that can enhance MT use, translation skills and L2 competence. Whether the effects of MT tools are deemed positive or negative, McCarthy (2004) reminds FL teachers that we cannot turn a blind eye to the widespread presence of MT, especially free online translation (FOT) tools, nor can we expect our students to avoid it as an easy solution to their [out-of-class] assignments.

1.4 Statement of the Problem

The focal problem that has inspired this research was twofold: a gap in the studies conducted in this field, as described above, and a serious issue that I witnessed in students' ESL writings. Specifically, I noticed rather serious vocabulary and grammatical errors that seemed to show that some students translate literally segments of text written in their L1. Looking further into the problem, I realized that they use FOT tools to translate texts written in their L1 and submit the assignments without even post-editing the translated texts. I have even caught some students in the act of using FOT tools while completing in-class writing assignments in the computer labs, despite having been firmly warned not to do so. In individual conversations with the students in question, I learned that many of them believed that FOT tools made things easier for them and helped them come up with "better sentences" in English.

1.5 Purpose of the Study

Based upon the observed problem outlined in section 1.4, combined with the review of the literature presented in section 1.3 (and discussed in more detail in Chapter

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Two), I decided to investigate students' use and perceptions of FOT tools. An evaluation of students' claims that they produce better essays in English with the help of FOT tools, or in other words, an evaluation of whether or not FOT tools "should" be used, is not the focus of the present study. Instead, based on the assumption that FOT tool use is widespread with or without support from instructors, I focus on documenting actual tool use by students and investigating the ways in which tools are used appropriately or inappropriately by students. My three related aims have been to establish the kinds of use to which these tools are put, to assess the efficiency and effectiveness³ of tool use, and to consider ways in which the proper use of such tools might be fruitfully integrated into the ESL writing classroom. Specifically, the study examines whether high-intermediate or advanced ESL students use FOT tools while producing English written texts, and if so, how effectively and efficiently they employ such tools. In addition, the study investigates ESL learners' satisfaction with FOT tools.

The current study uses a mixed methods design (Creswell, 2003; Creswell, 2009; Teddlie & Tashakkori, 2003 & Teddlie & Tashakkori, 2009). A mixed methods research

³ In the context of this thesis, the term *efficiency* refers to the amount of time a participant spends interacting with FOT tools and whether this interaction results into a translated segment. The term *effectiveness* refers to the degree of success in using FOT tools. These two terms are focus of the second research question and will be further discussed in the Methodology chapter.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

design uses both quantitative and qualitative data to address a research problem more fully (Creswell, 2003). The data can be collected either concurrently or sequentially, and are integrated during the research process (Creswell et al., 2003). Mixed methods designs are used to fulfill two different purposes: to gain a better understanding of an issue and to validate research results obtained through different methods (Sandelowski, 2003, as cited in Dörnyei, 2007, p. 164). The justification for combining qualitative and quantitative methods lies in the use of both methods to enhance and complete work on the details and intricacies of the research structure. The combination of quantitative and qualitative approaches generates more comprehensive analyses and hence more valid results (Greene, Caracelli, & Graham, 1997 & Teddlie & Tashakkori, 2009).

1.6 Significance of the Study

The present study is expected to contribute to the field of translation research and to the teaching of FLs in a variety of ways. First, the results of this study will build and expand on prior research documenting the use and pedagogical effectiveness of MT Tools in the classroom. As described above, there is a gap in the research on MT tools (including FOT tools) pertaining to students' actual use of these tools as well as students' perceptions of these tools. Regardless of the actual effects of such tools on students' writing, understanding students' *beliefs* about these effects and their resultant use of the tools is a critical step in establishing a complete picture of the tools' role in ESL and other FL instruction.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Second, the current study is expected to illustrate the effectiveness of FOT tools for a group of ESL students. With its mixed methods approach, the study will be especially effective in this area by combining observations of students' tool use and students self-reported perceptions of the tools' effectiveness. The results will therefore provide a baseline for further investigations into ways of increasing the effectiveness of students' FOT tool use, such as through training in appropriate FOT tool use for L2 students.

Finally, in addition to its contributions to the academic literature on FL learning and the role of MT and FOT tool use in such learning, the study is expected to contribute in practical ways to the experience of L2 teachers. Anecdotally, many ESL and other FL instructors have noticed that their students use these tools regardless of instructors' admonitions. The results of this study are expected to provide information that can help instructors better understand the role of FOT tools in students' L2 writing and the reasons why students persist in using these tools. Based on this knowledge, instructors will be better able to decide whether and how to allow tool use in their classrooms, or even to incorporate the appropriate use of such tools explicitly into their L2 curricula.

1.7 Research Questions

Based upon the previously described review of the literature and identification of the problem to be addressed by the present study, three specific research questions have been formulated. The research questions address the three main areas of this investigation

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

into FOT tool use by students: (1) a description of students' actual use of FOT tools, (2) an investigation into the effectiveness of such use, and (3) an analysis of students' satisfaction with the tools.

The first research question is designed to provide documentation of students' actual tool use that will not only fill the gap in the current literature but also provide the foundation for the two subsequent questions. Documenting students' use of FOT tools in their L2 writing when such use is not restricted is expected to give both researchers and instructors a better understanding of the role such tools realistically play in students' unsupervised L2 writing. Therefore, the first research question reads:

1. If second language (L2) learners resort to FOT tools while completing writing tasks, how do they use such tools?

The second research question builds upon the first by examining the effectiveness of the tool use documented by question one. If, as expected, question one establishes that students frequently use FOT tools in their L2 writing, then understanding whether or not they use these tools effectively – that is, differentiating whether their use of tools improve their L2 writing - is important both for the academic literature and for FL instructors. In addition, the efficiency of students' FOT tool use – that is, how quickly students obtain appropriate translated segments from FOT tools – is important to understanding the role that FOT tools currently play, and could play, in L2 learning. Therefore, the second research question reads:

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

2. How effectively and efficiently do learners in the L2 writing classroom use FOT tools?

Finally, the third research question builds upon the other two by investigating students' satisfaction with FOT tools. In an investigation into the role that FOT tools play in L2 learning, understanding students' perceptions of these tools plays a critical role.

Therefore, the third research question reads:

3. How satisfied are learners with using FOT tools for L2 writing?

1.8 Hypotheses

Based upon both the review of the literature and my personal observations, as described above, four hypotheses have been developed regarding the anticipated results of the study.

1. Many L2 learners use FOT tools while completing writing tasks.
2. L2 learners use FOT tools more efficiently than effectively.
3. There is not necessarily a significant correlation between effectiveness and efficiency of FOT tool use.
4. L2 learners are generally satisfied with using FOT tools.

The first hypothesis states *Many L2 learners use FOT tools while completing writing tasks*. This study is expected to confirm and document the anecdotal observations of L2 instructors that FOT tool use is common among L2 learners. Combining observations of students engaged in writing tasks with students' self-reports of their own

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

tool use is expected to create a credible and comprehensive description of the rates of L2 students' FOT tool use.

The second hypothesis states that *L2 learners use FOT tools more efficiently than effectively*. When students' use for FOT tools is examined to assess the extent to which tool use results in appropriate translations (effectiveness) within a reasonable amount of time (efficiency), efficiency is expected to be high while effectiveness will be somewhat lower. That is, students are expected to obtain satisfactory translations rather quickly, but these translations are not necessarily expected to improve the quality of their L2 writing.

The third hypothesis states that *There is not necessarily a significant correlation between effectiveness and efficiency of FOT tool use*. The examination of students' effectiveness while using FOT tools will incorporate three distinct indicators of effectiveness: accuracy, variety, and communication. It is not expected that there will be significant correlations among these indicators nor between effectiveness and efficiency. In other words, a student whose FOT tool use is effective at accurately translating text is not necessarily expected to also be effective at increasing the quality of her communication and vice versa.

The fourth and final hypothesis centers on students' satisfaction with FOT tools. Overall, students' self-reported satisfaction with the tools is expected to be relatively high. Based upon conversations with students regarding their FOT tool use, many students seem to believe that these tools improve their L2 writing. Therefore, students

are expected to indicate relatively high satisfaction with the tools. Thus, the fourth hypothesis states *L2 learners are generally satisfied with using FOT tools*.

1.9 Assumptions

In the context of this study, several assumptions have been made. These assumptions cannot be confirmed, but are believed to be valid. Nevertheless, it is important to explicitly acknowledge them prior to considering the conduct and results of the study.

The first assumption is that participation in the study itself will not substantially influence participants' behavior or attitudes regarding FOT tools. Specifically, I assume that while recording the completion of their writing assignments, participants behave as they normally would and that their behavior and attitudes (towards FOT tools) will not be influenced by any external factors, including participation in the present study. Although it is possible that students will behave differently than they normally would due to their knowledge that they are being recorded, they will be explicitly instructed to behave as normally as possible and that FOT tool use is allowed.

The second, similar, assumption is that participants will answer truthfully and accurately the survey questions based on their personal experience with FOT tools in the writing course. Although it is not generally possible to assess participants' truthfulness in any self-report study, there is no reason in this case to believe that participants will be intentionally misleading in their reports regarding FOT tool use. Furthermore, the

combination of observational and self-report components to the study will help to validate the truthfulness of participants' self-reported responses.

1.10 Definition of Key Terms

The following terms are used throughout the thesis, and are defined below.

1.10.1 EFL.

EFL is abbreviation for English as a foreign language. It refers to teaching or learning English in a community where the medium of instruction and communication within the country is not English.

1.10.2 ESL.

ESL is abbreviation for English as a second language. It refers to teaching or learning English by non-native speakers in a community where the medium of instruction and communication within the country is English.

1.10.3 CALL.

The acronym stands for computer-assisted language learning. It refers to using a computer in teaching and learning a second or foreign language.

1.10.4 FOMT/FOT tools.

FOMT stands for free online machine translation. FOT is the abbreviation for free online translation. The terms FOT tools and FOMT tools are used interchangeably throughout the paper to refer to software available free of charge on the Internet that can be used to translate text from one language to another automatically.

1.10.5 FL.

FL as used in this thesis stands for foreign language.

1.10.6 L1/L2.

In the context of this study, L1 refers to a person's first (or native) language, and L2 refers to a person's second language.

1.10.7 MT.

MT refers to machine translation, which is the translation of texts by a computer or online program without a human translator partaking.

1.11 Outline of the Thesis

This dissertation consists of five chapters. Chapter One provides a background and introduction to the study, states its research problem, and outlines its purposes and components. The major research questions are also formulated in this chapter. Chapter Two offers a literature review, discussing the key concepts employed in the study and outlining existing research on teaching second language writing in general, and the use of translation technology in L2 classrooms. Chapter Three is the methodology chapter, where the methods and materials used for data collection and analysis are described. In Chapter Four the data collected for this study are analyzed, and the results are presented in detail. Finally, Chapter Five discusses the findings of the study, presents some conclusions and puts forward some recommendations for further research.

Chapter 2: A Review of the Literature

2.1 Introduction

This chapter explores the extensive literature of different fields related to the present study. Although little research has yet examined FOT tools, the subject of the present study, two distinct areas have been singled out for their conceptual relevance to the present study: literature on teaching writing to L2 learners and literature on the use of translation technology in L2 classrooms.

Section 2.2 reviews the literature available on teaching writing to L2 learners. Chapelle and Jamieson (2008) emphasize that writing is an essential language skill for L2 learners, especially for those who study at L2-medium universities. L2 students in this setting use L2 writing for regular (nonacademic) communication such as email as well as for academic purposes such as writing examinations, reports, term papers and academic articles. Teaching this skill efficiently and effectively is of paramount importance for L2 teachers. Literature regarding the overall process of learning to write in a second language is briefly reviewed, followed by discussions of the role that one's first language (L1) plays in writing in an L2 and the role that direct translation plays in writing in an L2. In spite of translation having been rejected as a teaching tool in L2 classrooms over the past few decades, it continues to be used by both L2 students and teachers. The presence of translation in FL classes has drawn attention to the question of how translation, as a tool, can be most useful in the teaching/learning processes.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Following the review of the literature on teaching L2 writing, section 2.3 focuses on the role of translation *technology* in the L2 classroom. The last decade has witnessed research initiatives focused on understanding how translation through technology can improve the learning experience of FL students. Although FOT tools, one of the latest manifestations of translation technology and subject of the present study, have not specifically been the subject of extensive research as of yet, many of their predecessors have been. Therefore, the history of MT technology is reviewed and a description of some types of currently available tools is presented. Following this description, the role that technology, and MT tools in particular, can and should play in L2 classrooms is considered by reviewing research on their use in L2 learning. The effectiveness of MT in creating comprehensible text is considered, along with its effectiveness in improving students' L2 writing skills. Finally, the specific role of post-editing machine-translated text is discussed, as are students' attitudes towards the use of technology in their L2 courses.

2.2 Teaching Writing to Second Language (L2) Learners

Within the field of second- or foreign-language learning, writing in the L2 is considered a crucial skill. Writing skills in one's L1 can both help and hinder the process of learning to write in a FL. Whether direct translation from one language to another is helpful or harmful in learning to write in an L2 has been the subject of much scientific

and pedagogical debate, which serves here as background for the question of whether FOT tools in particular can be useful in L2 classrooms.

2.2.1 Learning to write in a second language (L2).

The systematic study of L2 writing is a fairly young discipline (Leki, Cumming & Silva, 2008). It gained the status of an autonomous field of research only during the 1970s and early 1980s (Matsuda et al., 2003), yet theoretical reflections and experimental research into L2 writing actually date back to as far as the early 1960s (Matsuda 2012, p. 300). Similar to L1 writing, L2 composition is, following Leki et al. (2008, p. 118), a complex process that requires skills including “revision, planning, general composing processes, formulation, translation, restructuring, dictionary use, audience and purpose, editing, linearization/verbalization, monitor use, first language use, text generation, backtracking, fluency/pausing, thinking, topics and prompts, problem solving, idea generation, processing, rereading, metacognitive strategies, goal setting, organizing, and drawing”. Krapels (1990, pp. 37-56) provides an in-depth overview of L2 writing process research in *Second Language Writing: Research Insights for the Classroom*, an influential book edited by Barbara Kroll (1990).

Given that the focus of this study is on translation technologies and their application to L2 writing pedagogy, this review of literature is focused on the interaction between L1 and L2 in advanced L2 writing. The following section reviews the available

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

evidence regarding how L1 linguistic knowledge and writing practices impact the way L2 students organize, prepare and produce their writing assignments.

2.2.2 The role of one's first language (L1) in second language (L2) writing.

Based on work by Matsuda (2012) and others, there is no question that students' L1s are present to varying degrees in their L2 learning experiences and in writing activities in particular. A number of studies demonstrate that almost all L2 writers use their L1s while writing in the L2 to a greater or lesser degree depending on their proficiency level in L2 (Krapels, 1990; Uzawa, 1996; van Weijen, van den Bergh, Rijlaarsdam, and Sanders, 2009; Wang and Wen 2002; Woodall, 2002). Van Weijen et al. (2009) provide a brief summary of the studies that have focused on the motives underlying the use of L1 in L2 writing by adult learners. Preparing, producing ideas or actual written content, checking for the meaning of new vocabulary, and solving other linguistic problems are among the variety of reasons why L2 writers may revert to their L1 while producing an L2 written text. Silva argues, however, that although there are correlations between first and second language writing (1997, p. 209), "L2 writing is strategically, rhetorically and linguistically different in important ways from L1 writing" (1993, p. 669). The specific role played by one's L1 in L2 writing, especially among L2 learners, is considered here in three sections. First, theoretical models with application to the current question are reviewed. Next, the benefits and drawbacks of relying on an L1 when writing in an L2 are considered. Potential benefits include the transfer of writing

skills between the two contexts, whereas a drawback is the potential interference of the L1 when writing in the L2.

2.2.2.1 Theories highlighting the role of L1 in L2 writing.

One way of understanding the role of one's L1 in learning a L2 is by considering what various theoretical models have to say on the issue. Kaplan's (1988) comprehensive theory of contrastive rhetoric— first proposed in 1966—and the various theories upon which it was built provide a framework from which to consider the role of L1 in L2 writing.

Simply put, Kaplan's (1988) comprehensive theory of contrastive rhetoric describes the impact of a person's L1 and culture on his or her L2 writing. According to this theory, different languages have their own exclusive stylistic protocols. While learning a L2, therefore, the conventions of the L1 can interfere with learning the conventions of the L2. In developing his theory, Kaplan combined the following theories: theory of applied linguistics, theory of linguistic relativity, theory of rhetoric, theory of text linguistics, theory of discourse types and genres, theory of literacy, and theory of translation (Connor, 1996). By considering what each of these individual theories has to say about the role of L1 in L2 writing, we can better understand this theory and its applicability to the present study.

The first theory that has contributed to Kaplan's contrastive rhetoric theory is the theory of applied linguistics. This theory plays a crucial part in our understanding of the

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

impact of L1 patterns on writing style and strategy in another language. Connor (1996) describes this theory and its five spheres of influence within the field of applied linguistics. First, the theory of applied linguistics emphasizes the study of contrastive text in languages. That is, it makes a comparative analysis of the various characteristics of discourse in different languages. Second, the theory focuses on the analysis of writing as an activity having cultural dimensions. The theory of applied linguistics emphasizes the need to consider the influence of culture while learning to write in various languages. Third, applied linguistics theory provides a rationale for careful study of the dynamics involved in L2 classrooms and of those dynamics surrounding L2 writing in particular. Fourth, the theory emphasizes the need to consider variations in genres, situations and motives for writing when comparing and contrasting writing in different languages. For instance, writing done for journal articles, school essays, and business reports would be expected to differ a great deal in tone and content. Finally, the theory of applied linguistics posits that when comparing texts written in different languages, cultural factors such as traditions and ideologies must be taken into account.

Another theory that focuses on the role of L1 in L2 (writing) is the theory of linguistic relativity, otherwise known as Sapir-Whorf hypothesis (Kay & Kempton, 1984). Similar to the theory of applied linguistics, this theory suggests that the models of language writing are interlinked with culture. As Connor (1996) reports, instead of focusing on the universals of language and thought, many psychologists and linguists

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

have begun to identify cultural differences in these processes. Similarly, in the field of composition studies, cultural and linguistic backgrounds have been shown to affect writing activities and written products, and a trend toward acknowledging and examining such cultural differences has emerged via the theory of linguistic relativity.

Rather than focusing explicitly on culture of language, the theory of rhetoric implies that writing as a mode of communication and persuasion impacts the audience (Connor, 1996, p. 10). Thus, and as Marcellino (2007) states, this theory focuses on evaluating the direct or indirect influence of communication on the recipient, be it a reader or a listener, which therefore deals with the situational relativity of communicative effectiveness (Connor, 1996). According to Connor, then, the theory of rhetoric is fundamental to the theory of contrastive rhetoric.

The theory of text linguistics (see de Beaugrande and Dressler, 1981) provides a descriptive apparatus for describing textual cohesion, structures of texts, theme dynamics, and meta-textual features. This has provided researchers with a reliable and valid tool for the analysis of L2 texts. Connor (1996) describes the ways in which text linguistic studies of contrastive rhetoric have advanced since Kaplan's well-known 1966 research and diagrams relating to paragraph organization. Text concepts, text analysis, and types of writing studied are the areas of greatest advance. Current contrastive rhetoric studies tend to go beyond examining paragraph-level organization of texts, to compare discourse-level features of texts, such as superstructures. In addition, the study of interacting levels of

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

texts (such as sentences, words, and text structures) has been made possible by advances in text linguistics theory (Connor, 1996).

Connor (1996) describes the theory of discourse types and genres as pointing out that writing is task- and-situation based. Writing, therefore, results in different discourse types, depending upon the aim of the discourse. For example, argumentation might comprise one specific type of discourse, while narration and prose would be different types. Similarly, a genre is defined as a type of text determined by the task, situation, and communicative purpose (Swales, 1990). Since different languages have different text genres and text organizations, L2 writers' writing productions are influenced by the genres and discourse types that exist in their L1.

The theory of literacy goes even further in dealing with the development of literacy as a whole, rather than merely written products. According to Connor (1996), a comprehensive theory of contrastive rhetoric deals with the development of literacy as writing embedded in culture. Many theories of literacy document that different styles of writing are valued in different cultures and also discuss how the teaching and learning of literacy varies cross-culturally based on these differences (Connor, 1996).

Finally, the theory of translation states that while texts can be translated from one language to another, there might be distinctions based upon cultural factors. According to Connor (1996), the field of translation studies has much in common with contrastive rhetoric and that translation theories have a lot to offer to contrastive rhetoric theories.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Both areas stem from linguistics and, in the past few decades, have expanded their scope beyond structural analyses and literal translations to include the role of factors such as purpose, culture, audience, and genre. Connor argues that Kaplan's theory of contrastive rhetoric provides a model of writing that lends itself best to L2 texts that are influenced by writers' L1, and that the archetype is not necessarily pertinent to the theory of translation.

Each of the theories presented above is either directly or indirectly relevant to L2 learning and writing, the focal point in this study. These linguistic theories, especially contrastive rhetoric theory, underline the role of both culture and context in all writing. In the special case of L2 writing, these influences are complicated by the fact that L1 linguistic and cultural conventions may be different from those present in the L2. This raises the question as to whether and in what ways students transfer their L1 writing skills and experience into learning to write in their L2. The subjects recruited in this study were all L2 learners, most of whom had L1s— e.g. Mandarin, Arabic, Japanese, Turkish and even Portuguese, to some extent—that possess very different cultural and linguistic conventions from those of English, their L2.

2.2.2.2 Transfer of first language (L1) skills to second language (L2) writing.

A number of studies focus on the transfer of skills between L1 and L2 writing. These studies focus on the writing skills and strategies that are similar between L1 and L2 writing, such as planning and producing ideas. Such research demonstrates that

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

making use of established writing strategies in the L1 can both help students reduce their cognitive load while writing in the L2 and actually improve the quality of their L2 writing.

Jones and Tetroe (1987), for instance, carry out extensive research on the effect of L1 use in L2 writing among ESL learners. They note that writing in L1 and L2 can be similar in the way writers make use of their writing skills, even though the language proficiency level of L1 writers is considerably higher than that of L2 writers.

Specifically, they report that L2 writers who use their L1 in the writing process produce more details during the planning stage of L2 writing than those who do not and are more effective in their planning. Based on these findings, Jones and Tetroe conclude that making use of the L1 facilitates abstract thought during the writing planning process.

More recent studies (Cohen and Brooks-Carson, 2001; Koutsoubou, Herman and Woll, 2007) examining direct versus translated writing similarly conclude that L2 writers use their L1 as a strategy to avert cognitive load while composing an L2 text.

Krapels (1990) also espouses the positive impact of L1 literacy on L2 writing. By providing examples from studies examining the relationship between L1 and L2 writing, she further explains that the act of writing in a L2 is somewhat different from that of writing in a L1, and that these differences have not been adequately investigated in L2 writing research. However, she also reports that many research studies have considered the positive influence of L1 on L2 writing. Some that have pointed to the benefits L2

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

writers gain from their L1 writing skills include those that focus on the writing process rather than on the written product (Arndt, 1987; Cumming, 1989; Raimes, 1985; Silva, 1997).

Although skill transfer between L1 and L2 writing is not directly related to the question of translation, the evidence that calling upon L1 writing skills can be helpful in L2 writing does provide additional support for understanding why the L1 is so commonly used and relied upon in the process of L2 writing. Second language instructors may want their students to think, plan, and write in the L2 from start to finish, but since writing is such a complex skill, this may simply not be possible or desirable for any but the most advanced L2 writers. It is in part because of such widespread use of L1s in the L2 writing process that the desire for direct translation, and in particular for tools that can translate quickly and easily, is so common among L2 learners.

Nevertheless, even researchers who report on the benefits of using L1 writing skills when writing in the L2 (e.g. Jones and Tetroe, 1987) acknowledge that L2 writers transfer both good and weak writing strategies and skills from their L1 to their L2. In some cases, use of the L1 can even interfere with successful writing in the L2.

2.2.2.3 Interference of the first language (L1) with second language (L2)

writing.

In spite of similarities in the process of composing in different languages, it would be unwise to expect practices developed for writing in an L1 to always produce high-

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

quality writing in an L2. Many linguistic practices either cannot be directly applied from one language to another or will produce unfavorable results in the L2 if not adjusted appropriately.

Many studies have demonstrated that writing in a L1 and in a L2 differ in crucial ways (Leki, 1992). Three main types of issues can be identified that create difficulty for students attempting to write in an L2 (Silva et al., in Kroll, 2003):

1. Attempting to write in the L2 while simultaneously learning the L2 is substantially more difficult than writing in a language (L1) in which one is already fluent.
2. Different languages have widely differing rhetorical conventions, meaning that what constitutes high-quality writing may differ greatly from one language context to another.
3. When writing in their L2, students (and other writers) need to strategically decide whether and to what extent to use writing practices from their L1 in their L2 writing.

Because writers of L2 need to carry the burden of learning the L2 while attempting to write in L2, *linguistic* weaknesses are frequently evident in the writing of L2 learners. Learning an L2, like all learning, is a developmental process requiring an investment of adequate time, energy, and intellectual effort. It is common for students to complain about the inability to formulate what they think in the FL. This inability is due

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

to language difficulties, above all to an inadequate knowledge of vocabulary or grammar.

As Silva (1997) argues, the extra effort therefore required to write in the L2 compared to the L1 is one reason that texts written by L2 learners have a tendency to be less effective than those written by native speakers. In fact, in an examination of 72 case studies directly comparing writing by students in their first and second languages, Silva (1993; 1997) found that texts written by students using English as Second Language (ESL) are less effective in terms of quality, fluency, and accuracy than text written by those same students in their L1. Moreover, the complexity of L2 texts differs from L1 texts at the levels of general textual patterns, argument structures, narrative structures, features of essay-exam responses, textual manifestations of the use of reading background, reader orientation, cohesion, sentences, and words. It should be noted, however, that the effectiveness of the writing in this study was judged from the viewpoint of an English (L2) evaluator. The subjectivity and variability by context of evaluations of writing quality are inherent to the second difficulty often encountered by L2 learners in their writing: the differences in rhetorical conventions between languages.

Indeed, research has demonstrated that even though successful writers in a L1 tend to transfer their sophisticated cognitive abilities and pragmatic strategies into their L2 writing tasks (Leki, 1992), these abilities and strategies do not always prove advantageous in producing L2 text with a comparable quality and clarity. Problems tend to arise particularly when the *rhetorical* or writing conventions differ greatly between the

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

L1 and the L2. A large disparity between language and rhetorical practices of languages can actually interfere in the writing of L2 (Connor, 1996).

Leki (1992) juxtaposes some of these conventions in English with those in the East Asian, Middle Eastern, and European languages. She joins other researchers in considering Japanese and Chinese languages reader-responsible languages that require a certain degree of intellectual endeavor from the readers of their texts. It is in this context that graduate Chinese students writing in English observe that “an American audience has to have conclusions; we usually leave it to the reader to sense the conclusion. To write to Americans we have to tell everything exactly”. In the same vein, Leki states that while in English hierarchy and “subordination of one idea to another” is important, in Arabic rhetoric other literary devices such as “coordination, parallelism, and balancing of ideas” are necessary. However, I would argue that even though English and Arabic have different rhetoric (systems), coordination and parallelisms are, unlike Leki’s claim, not specific to the Arabic rhetoric and that these devices are commonly used in English writing and speaking as well.

In another example of rhetorical differences between languages, Leki (1992) asserts that well-written English texts are heavily dependent on “clarity” and “simplicity”. She contrasts the structure of English paragraphs with that of Arabic ones. English paragraphs contain “a single main idea supported by facts, examples, or descriptions”, whereas Arabic paragraphs may contain more than one central idea and use

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

a sophisticated language that relies on “philosophical statements”. In Arabic, the reader frequently has to discern a meaning that is implied rather than explicitly stated. Writing in English culture is “formula-oriented”, whereas writing in Arabic culture is “content-based”. Therefore, English writers employ a wide range of structural devices to draw their readers’ attention and provide support to develop the focal point of each paragraph. Because of these rhetorical differences between English and other languages, the English writings of ESL students might violate the expectations of native English speakers and hence be evaluated as imprecise, not to the point, or redundant.

The third issue in L2 writing is the need to *strategically* consider which writing processes to use given a particular L1 and L2 pair. Writing, whether in a L1 or in a L2, and no matter the rhetorical conventions of the language, requires processes of recursive composing, which involve brainstorming, planning the structure of an argument, formulating the ideas, and revising the form and content so that ideas are well developed and adequate linguistic and rhetorical means are found to shape them and make them communicable. Students learning to write in an L2 not only must conform to rhetorical conventions potentially different from those they are used to, but typically must actively choose which of their L1 strategies to use when writing in their L2 in order to obtain the best quality writing by the standards of the L2 and its conventions. Therefore, L2 students’ (and instructors’) awareness of the similarities and differences among rhetorical conventions in different languages is the first step in allowing them to consciously

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

distinguish between favorable and unfavorable interferences. The results of such reflections can serve in the development of practical strategies to maximize the positive and minimize the negative interferences (Cook 2010, pp. 104-124).

Strategic awareness of the cultural and rhetorical differences among languages can help L2 writing teachers properly address the needs of their students. By explicitly describing the culture of writing in the language they are teaching, L2 teachers can help students learn to actively select which L1 writing strategies to employ in their L2 writing. I can personally attest to the relevance of Leki's examples of English and Arabic paragraph structures in helping Arabic-speaking students learn to write in English. My Arabic-speaking students usually develop paragraphs that are sophisticated and sometimes difficult follow. When I remind them that their paragraphs or essays don't read like English, their first (legitimate) reaction is frequently that in their culture formulaic writing is considered simplistic and unsophisticated. In addition, they frequently note that English writing is too "cut-and-dried". The *monofocality* of English paragraphs and their formula-oriented direct and indirect supporting statements seems to be difficult for some students to follow because this rhetorical convention does not exist in their L1. Silva et al. (in Kroll, 2003) give a similar example of a Japanese student learning to write in English, who was unaware that she had to use a "logical" and "linear" thinking approach while writing or that she was supposed to express her own view when writing an opinion essay. She also adds that when she thought she was overly explicit in

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

her writings, her teachers thought her sentences lacked adequate explicitness (also cited in Hyland, 2003, p. 35). Greater awareness of the differences between writing conventions in her L1 (Japanese) and her L2 (English) may have been an initial step in helping this student improve her L2 writing.

An awareness of different rhetorical patterns might not necessarily improve L2 writing on its own, but it can show L2 students the less productive aspects of rhetorical interferences. An investigation of this awareness constitutes the research of Hirose (2006), who compares the L1/L2 organizational patterns of Japanese students' writing. After confirming organizational differences in writing patterns in L1 and L2, he observes that "the same writer can choose different organizational patterns regardless of language, and the chosen patterns may differ depending on many variables such as the task and writer/reader relationship, not solely on his/her L1 background" (pp. 145-146). Research into the nature of correlations and mutual influences of L1 and L2 has produced ambiguous results. Part of this ambiguity can be attributed to different theoretical frameworks adopted to understand, describe, and analyze different aspects of writing products.

As a whole, then, although some L1 writing skills have been shown to transfer in beneficial ways to the process of L2 writing, the L1 can also interfere with effective writing in the L2. Interference is particularly likely when students are less fluent in the L2 (linguistic challenges) and when the writing conventions of the L1 differ greatly from

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

those of the L2 (rhetorical challenges). The extent to which students and instructors are aware of the potential for both skill transfer and interference of the L1 with L2 writing and able to actively choose which of their L1 strategies to use when writing in their L2 (strategic challenges) is not well understood. Nevertheless, nearly all L2 learners use their L1 to some degree while writing in the L2. Given this, the question arises as to the appropriate role of direct translation between the L1 and L2 in L2 writing.

2.2.3 The role of translation in second language (L2) writing.

If students are using writing strategies learned in their L1 when writing in their L2, and are primarily thinking and planning in the L1 before writing in the L2, it is likely that at times, they will attempt to directly translate words or longer segments of text from the L1 to the L2. In this study, MT, particularly using FOT tools, is the type of translation that is of primary interest. However, a deeper understanding of the purpose and uses for these tools can be developed by considering the more general role of translation as a linguistic process in the context of L2 teaching, learning, and writing. According to Hatim and Munday (2004), translation is “the process of transferring a written text from SL to TL, conducted by a translator, or translators, in a specific socio-cultural context.” Consistent with this definition, not only do L2 writers use their L1 in creating L2 texts but they also translate in many cases to produce L2 texts in the L2 classrooms. Historically, translation would occur with the assistance of a human translator or a

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

bilingual dictionary. Currently, MT tools, especially FOT tools, are the most popular means of translating from the L1 while writing in the L2.

Translation theories provide different visions of the role of the (human) translator. Typically, the translator's task is not to find the duplicate of a word but to find the meaning of the word within its original context, and then translate this word to fit into the target language and the translated text. Studies of translated text have shown that such text frequently differs in meaningful ways from text written directly in the target language (see Cohen & Brooks-Carson, 2001). As such, there is thus a difference of opinion about the role that direct translation should play in writing in a second language, particularly by L2 learners. In my opinion, two points are critical to consider when discussing this important, and sometimes serious, difference of opinion. First, it is very difficult to assess whether L2 learners are actually using their L1 or translation while writing directly in L2. While it is possible to observe, in studies such as this one, the use of MT tools or bilingual dictionaries, it is not possible to directly observe the mental processes students engage in while writing in the L2. Second, I believe that translation itself can be considered a language skill, similar to other language skills. Malmkjær (1998), for instance, states that translation is not fundamentally different from other language skills because not only is it dependent of them but it also is inclusive of the other four language skills (listening, speaking, reading, and writing).

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

A number of research studies over the past three decades have examined the role of translation in L2 writing. It is worthwhile to review some of these studies to shed light on the role of translation in L2 writing. In the context of this study, the following three points are important to keep in mind while reviewing the literature on the role of translation in L2 writing:

- In the context of this research, L2 students (writers) sometimes unthinkingly become translators.
- L2 students utilize online translation tools to facilitate the process of translating/writing in L2.
- The socio-cultural context is an L2 (ESL) writing classroom in a country other than their home countries.

According to Zhai (2008), a few research studies demonstrate that translating, especially for low-intermediate-level L2 students, may be helpful with regard to organization and intricacy of L2. He briefly reviews a few studies that compare translated versus direct writing (Kobayashi & Rinnert, 1992; Ali, 1996; Uzawa, 1996 & Cohen & Brooks-Carson, 2001). He reports on findings from Kobayashi & Rinnert illustrating that translation helps *lower-level* L2 writers to produce a more coherent and organized L2 text, but that *higher-level* L2 writers perform better when they write directly in their L2. As Zhai further explains, Ali's (1996) work conducted with Arabic-speaking ESL students shows that writing in English directly, rather than translating from the L1,

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

produces better essays. Cohen and Brook-Carson (2001, as cited in Zhai 2008) similarly find that seventy-five percent of participants (from mixed L1 backgrounds) produced better quality L2 essays by writing directly than by translating.

These studies and the ones described in section 2.2.2 indicate the possibility of using L1 and/or translation in L2 writing. If students are using writing strategies learned in their L1 when writing in their L2, and are primarily thinking and planning in the L1 before writing in the L2, it is likely that at times, they will attempt to directly translate words or longer segments of text from the L1 to the L2. As noted above, historically, this would occur with the assistance of a human translator or a bilingual dictionary but currently, FOT tools are the most popular means of translating from the L1 while writing in the L2.

2.2.3.1 How translated texts differ from non-translated texts.

When considering the extent to which translation is appropriate in L2 writing and in L2 learning and teaching, one important piece of information to consider is how translated texts as a whole differ from non-translated texts. That is, outside the context of L2 learning, are there identifiable differences between texts that have been translated from another language and those written directly, and if so, what are those differences?

Research in translation studies indicates that there are, in fact, differences between translated and non-translated texts (Gellerstam, 1986; Blum-Kulka, 1986; Puurtinen, 1995; Mauranen, 2000; Olohan & Baker, 2000; Schöffner & Adab, 2001; Hansen, 2003; Eskola, 2004; Tirkkonen-Condit, 2004). Bystrova-McIntyre (2012)

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

provides a very detailed summary of the studies that have examined how translated texts differ from non-translated ones. According to this summary, translated texts differ from non-translated (or directly written) texts in terms of vocabulary use, grammatical features, and other textual characteristics. Research on this topic frequently finds a lingering influence of the source language on the translated text. Some translated texts share such similarities that the term “translationese” is sometimes used to describe the nearly-universal features of poorly translated texts, such as the tendency to spell things out more explicitly than usual and to conform closely to the target language’s patterns and standards, resulting in weird structures in the target language. Some of these tendencies may reflect processes of the human brain. Nevertheless, understanding how translated text tends to differ from non-translated text is helpful in framing the argument over the appropriate use of translation in L2 instruction. Machine-translated texts, and FOT translated texts in particular, can then be thought of as a special case of translated texts that share the features mentioned above.

2.2.3.2 Translation in second language (L2) teaching.

Given the evidence cited above that translated texts tend to differ from non-translated texts in specific ways, it is worth considering how translation is used and taught in L2 classrooms. The use of translation has been subject to a variety of historical and cultural trends over the past several decades. An exploration of these trends provides

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

context for understanding current approaches to using translation in the classroom, which in turns provides context for understanding the role of MT and FOT tools in particular.

2.2.3.2.1 Historical Trends.

As discussed above (in section 2.2.2), the extent of L1's presence in L2 acquisition and instruction has been the topic of a considerable number of studies in the field of L2 education. The results of these works have influenced historical trends in the teaching of FLs, and the L1 has taken on a more or less prominent role over the years. For instance, the Grammar Translation Method was the prevalent model for teaching L2s in a classroom setting until the late 19th and early 20th century (Richards & Schmidt, 2013). This model heavily relied on the student's L1 for teaching grammatical concepts of L2, and L2 is only occasionally used in classes. Also, grammar was taught explicitly and was considered a main framework for language learning. Translating sentences from L2 to L1 was a common language task in GTM. Reading difficult (classical) texts was also very common in this method (see Larsen-Freeman, 2011).

After the demise of the Grammar Translation Method in the mid-20th century, however, students' L1 was categorically rejected as unproductive in the L2 learning processes. The idea of absolute monolingualism dominated the high-profile theories of language learning in the twentieth century, which rejected the use of translation in L2 classrooms. The basis of these theories, however, underwent changes as the century approached its end. Certain theories of language teaching (LT) made a space for students'

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

mother tongues in their reflections. Known as bilingual theories of LT, they did not, however, favor an immediate use of translation in teaching or learning. This was perhaps due to the seemingly strong association of translation with GTM—an overemphasis on accurate writing to the neglect of the communicative use of language.

Raimes (1998), for example, highlights four distinct and yet interrelated approaches to L2 writing instruction used from the mid-1960s to the early 1990s, which have produced their own body of research. The first approach was emphasis on grammatical and rhetorical forms of the L2. The second approach gave priority to the process of writing, i.e. “how writers generate ideas, record them, and refine them in order to form a text” (Zamel, 1983, p. 165). The third approach, English taught for academic purposes (EAP), focused on the application of L2 writing to other fields of study (Horowitz, 1990). One commonality among these otherwise disparate approaches to teaching L2, particularly ESL, is that they all left little space for the use of L1 in the production of L2 writing. The question, as Cook (2010) notes, however, is whether or not it is possible to exclude all translation from bilingual theories of LT, especially if FL learners use translation routinely.

In the late 1980s, reappraisal of the use of translation in L2 teaching revisited the beneficial interaction among different languages (See Cook, 2010). The premises of studies based on this movement were informed by what Beiser (2003) calls “the romantic imperative”, which underscores the strong link between language, culture, and identity.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

This shift of attention toward reintegrating the use of L1 into L2 teaching and learning methods has become increasingly evident in recent years in that FL instructors have been encouraged to consider the possibility of L1 use in language learning environments.

The political and economic climate in the past few decades has further contributed to the expansion of bilingual language education, and thus the greater development of bilingual language teaching theories (see Ovando, 2003). The rapid expansion of telecommunications has made it possible to communicate internationally, and to engage in trans-lingual linguistic and economic transactions in shorter periods of time than ever before, giving rise to the phenomenon of globalization. Globalization is gradually weakening the once rigid territories of nation states. People move more easily and frequently all over the globe for purposes such as education, business and immigration. Migration and immigration coupled with linguistic diversity have become an integral aspect of the globalized world. Monolingual states are now turning into more of a political myth than a linguistic fact. Globalization is inseparable from translation. In the multilingual context of the world society we live in today, the knowledge of different languages is turning from an advantage to a requirement. Bilingualism, multilingualism and the respect for other languages equally call for the inclusion of L1 in theories of LT.

A number of other cultural and educational ideals and trends have also contributed to the bilingual approaches in LT. The main push may have come from within academia. With the tendency toward interdisciplinary research in the humanities

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

since the 1960s, many disciplines have approached language from within their own frameworks. For instance, in reflecting on how cultures are represented in texts, ethnography put its finger on the relationship between power and language (Asad 1986; Wolf, 1995). Historical writings in historiography were scrutinized less as objective descriptions of historical facts than as literary productions—entailing ontological and epistemological subjects that have definite leaning towards ideology and politics.

Linguistics has reflected these insights in more contemporary theories of language. While the dominant dichotomies in LT theories such as meaning/form, classroom/reality, native/foreign speaker, etc. are undermined by such theories, more and more emphasis is given to fuzziness and continuity in languages. The new theories in LT tend to make more space for complexity, diversity, difference and indeterminacy, and therefore they tend to welcome, covertly if not openly, the use of other languages in language classes.

2.2.3.2.2 Current approaches.

Cook (2010) goes so far as to claim that the use of the L1 in the radical form of translation needs to be reconsidered, revised, and reintroduced in the processes of FL acquisition and instruction. Exclusively monolingual language teaching approaches become the target of his bitter criticism. These approaches are informed more by “commercial and political than scientific” reasons, Cook (2010, p. 155) asserts. This critical stance paves the way for the reintroduction of translation as the culmination of bilingual approach to L2 instruction. He argues that translation has an integral part to

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

perform in the study of languages. Translation, according to this view, promotes both an awareness and use of language which is far reaching to inculcate and vital for learning. It also considers the needs of the students learning a FL in today's era of globalization and multiculturalism (Cook, 2010).

After laying out his arguments in theory and practice, Cook (2010) goes on to ask a number of questions before offering some practical suggestions. His questions include such issues as which teachers and which students (age and FL level) will benefit from translation in class. He also asks what kind of translation activities can be used in what kinds of classes. With these questions in mind, he proposes a number of activities where translation is actively used. One such activity concerns the close translation of sentences with particular semantic, syntactic or pragmatic features aimed at revealing a potential gap in the linguistic knowledge of the students. Close translations help not only in disclosing problems but also in more proactively drawing students' attention deliberately to difficult aspects of a new language. Another activity is word-for-word translation, requiring students to have gone beyond the more elementary levels of FL acquisition. This activity is useful in various aspects, including highlighting structural features of the L2 such as word order, discovering sequential combination systems, and dividing a message into its component parts.

More recently, in her influential book, *Translation and language education: pedagogic approaches explored*, Laviosa (2014) also announces the reintroduction of

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

translation as a pedagogical tool in the L2/FL classrooms in academic settings. She believes that the reappearance of translation in the L2 classrooms is easily explicable in light of the current changes in L2 teaching approaches and Applied Linguistics. According to her, cultural diversity in today's globalized world and multicultural educational systems has changed the relationship between culture— as a unified individual identity— and language learning. The use of L1 in L2 learning environments is becoming more of an orthodox approach than two or three decades ago.

She presents several theoretical reflections, empirical studies and pedagogical suggestions that support the (*probably successful*) comeback of translation. Using Kramsch's (2002 and 2009) notion of "ecological approaches" to L2 teaching and Tymoczko's (2007) holistic approach to translating culture, Laviosa recommends a pedagogical system in which translation can be incorporated into the language learning environment.

It is noteworthy that Cook (2010) and Laviosa (2014) are among the very few scholars who have recently published on the revival of translation in language teaching. The innovative question I add in the present study is as follows: if translation is part and parcel of adult language learning, how best can translation be implemented to serve its educational purpose in LT theories? It is in response to the recent trends toward reintroducing translation into L2 classrooms that this study will look into the application of translation, more precisely translation technology, in the study of L2s and teaching.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Moreover, the study will add to the current debate by explicitly examining students' attitudes toward translation tools. Student attitudes are often overlooked in pedagogical debates, but play a significant role in student learning.

2.2.4 Attitude and language learning and teaching.

In L2 classrooms, as in all educational settings, the curriculum developed and delivered by the instructor is only one component influencing student learning. The motivation, interest, and attitudes of the students toward the material being taught have a crucial influence on what they will ultimately take away from the experience. The role that students' attitudes and motivation play in the L2 classroom has been a subject of scientific inquiry for several decades now. The history of this line of inquiry and its findings are nicely summarized by Al Shammari (2007).

As Al Shammari notes, Smith (1971) was one of the first researchers to propose that student attitudes played an important role in language learning and teaching. Several decades after Smith's (1971) contention that the important role of student attitudes had been overlooked, attitude, along with other affective factors, have come to be viewed as an important determinant of students' effective learning of a L2 (Sparks & Ganschow, 2001). As Gardner & Lambert (1978, p. 134) point out, motivation is often generated by learners' attitudes toward and enthusiasm for the subject. This connection has been reinforced over the years by a variety of other researchers as well (e.g., Ellis, 1985; Bromely, 1995; Oxford, 2000; Merisuo-Storm, 2006).

In exploring the role that affective factors as a whole play in language learning, Al Shammari (2007) quotes Gardner & Lambert (1978), who pose the question:

How is it possible for some people to learn a second language perfectly and proficiently while other learners, though the same opportunities and setting to study language are available for them, fail their studies, since all other answers attributed to teaching methods, knack, or pedagogical matters have failed?

(Gardner & Lambert, 1978)

At least two different theoretical perspectives propose a link between students' attitudes and outlook toward a given topic and their motivation and effectiveness as learners. Krashen's (1977) Monitor Hypothesis explains how learning and acquisition impact each other and that the major function of language learning is to serve as a monitor for L2 production by their acquired system. In the context of this research, we can extend this theory to the L1 and L2 writing and consider how L2 writing serves as a monitor for outcome produced by L1 system. This monitoring mechanism, especially in lower levels of L2 learning, is an integral part of L2 production.

This theory, however, has been criticized rather heavily. Hadley and Reiken (1993), for example, disagree with the strict distinction that Krashen draws between learning and acquisition. They also note that Monitor Hypothesis (also known as Monitor Theory), while intuitively appealing, does not always stand up to empirical scrutiny. This

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

said, the focus here is not the criticisms of the theory, but on the ways in which this theory, as well as Krashen's other theories, sheds light on the role of attitude in FL/L2 learning (writing).

The second theory that emphasizes the role of affective factors in language acquisition was also proposed by Krashen, a decade after Monitor Theory. Al Shammari (2007) notes that the Affective Filter hypothesis (Krashen, 1987) incorporates additional affective variables, such as self-confidence and anxiety, and posits that these influence students' attitudes toward learning, which in turn affect the successful acquisition of language. In this theory, the affective filter is conceptualized as a potential barrier to learning a second language. Students' filters can be strong or weak depending upon their attitudes toward learning, and toward L2 learning in particular. Thus, L2 learners who hold negative feelings toward the L2, the learning process, or the learning environment may be said to have a strong affective filter. Such a filter, according to this theory, will prevent the students both from taking in and understanding classroom instruction and also from feeling inclined to ask for help. Learners who hold more positive feelings toward the L2, on the other hand, are said to have weak affective filters. Therefore, these students are more open to learning the L2, which results in faster and deeper learning as more input from the course is received. Thus, Affective Filter theory establishes a connection among affective variables, attitudes, and language acquisition.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

The role of attitude and motivation has also been examined empirically by a number of scholars (Ellis, 1994; Gardner & Lambert, 1978; Merisuo-Storm, 2006; Savignon, 1997) and summarized by Al Shammari (2007). As postulated by many of the theories detailed above, researchers do find that students' attitudes and motivation are related to their L2 learning. In fact, Al Shammari (2007) reports that attitude is an important, if not the single most critical, factor in a student's success in learning a second language. Masgoret and Gardner (2003) conducted a meta-analysis of 75 independent samples comprising of 10,489 individuals that explored this topic. They found a significant association between students' attitudes and their L2 achievements. The five attitudinal or motivational variables they examined, which were adapted from Gardner's social-education (see Gardner, Lalonde, & Pierson, 1983 & Gardner, 1985), were attitudes towards the learning situations, motivation, integrative orientation, and instrumental orientation, and integrative status. These factors were positively related to achievement in L2 learning, with motivation bearing the strongest association with achievement.

As Al Shammari notes, the positive association proposed theoretically and demonstrated empirically between affective factors, including attitude and motivation, and language learning may be an answer to the paradox identified by Gardner & Lambert (1978) and quoted above. Mantle-Bromley (1995) states that if "attitudes influence the efforts that students expend to learn another language, then language teachers need a

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

clear understanding of attitudes and attitude-change theory in order to address these issues in the classroom” (p. 373).

Given the findings detailed above, it is clear that students’ attitudes and motivation play a role in their learning of a L2. Understanding what students attitudes toward various aspects of L2 learning are, in that case, should help L2 educators understand learners’ behaviors and improve their teaching methods. According to classic research on motivation (Dörnyei, 2007), intrinsic motivation arises from students having a positive attitude to the teaching methods and materials used in their course. As applied to the present study, this means that if students hold positive attitudes toward translation technology, these attitudes may constitute one important argument for incorporating such technology into the L2 classroom. First, however, students’ attitudes towards translation and translation technology need to be documented and understood.

2.3 Translation Technology in L2 Classrooms

With the rapid development of technology over the past several decades, technology has come to play a role in many educational settings, including L2 classrooms. Computer-assisted language learning (CALL) tools allow students to use computers in their second language learning and writing. Of special importance in L2 classrooms is technology that translates automatically between languages, known as machine translation (MT). Recently, versions of these MT tools known as Free Online Translation (FOT) tools have become available on the Internet. The use of this

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

technology in L2 learning settings has been the subject of much pedagogical and philosophical debate, as well as a variety of scientific research. The review presented here of the history such tools, the debate surrounding their use in L2 teaching, and the importance of students perceptions of educational technology as a whole will provide context for the necessity of understanding the way students use and think about FOT tools.

2.3.1 Computer-assisted language learning (CALL) and teaching second language (L2) writing.

As a context for considering the role of FOT tools in the L2 classroom, an understanding of the overall role of computers in L2 learning is important. Although the use of computers in language learning environments was initially proposed in the 1960s, computers only entered L2 writing centers in the mid-1980s. Moreover, it was not until a decade or so later when information technology became commonplace in L2 teaching and subsequently L2 writing. An increasing number of software programs and computer tools have been developed and used in L2 classrooms since that time. As the availability of these tools in L2 classrooms has increased, a new area of research, known as CALL research, has developed.

Overall, CALL research (Meskill, 1996; Pennington, 1996) has shown that computer tools and software facilitate the teaching and learning of L2 writing. CALL tools offer L2 writers various advantages: they can easily save documents, benefit from

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

helpful features like grammar and spell check, and use software to enhance the quality of their L2 writing product.

Pennington (1996) categorizes the advantages of using CALL tools in L2 writing into five different areas: (1) quality of written work, (2) quantity of writing, (3) writing process, (4) revision behavior, and (5) effective social outcomes. She concludes that by writing with computers, L2 writers achieve higher holistic and analytic ratings of compositions, produce longer compositions, are more adaptable in language experimentation, make more amendments and more meaning-based alterations, and have a better and less apprehensive attitude toward L2 writing.

Studies conducted by Lam & Pennington (1995), Stepp-Greany (2002), and Goldberg, Russell, & Cook (2003) indicate that CALL tools create a stimulating environment for L2 learners to enhance their writing skills. Fidaou, Bahous and Bacha (2010) find that both young ESL students and teachers consider CALL use in the writing classroom motivating and positive. Moreover, teachers assert that CALL tools help students' research skills and facilitate their writing process (Fidaou et al., 2010).

Motivating students, however, is not the only advantage CALL tools offer L2 writers. Research also suggests that CALL tools and activities, together with ESL instructors' supervision, help L2 students write better (e.g., Hart & Hicks, 2002; Warschauer, 2000). Findings indicate that these tools help students revise their writings more thoroughly than they would without the tools (Lam & Pennington, 1995; Goldberg,

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Russell & Cook, 2003). In her pivotal book on artificial intelligence and L2 learning, Dodigovic (2005, p. 96) states that the computer offers corrective instruction that spots writing errors. This helps the students to correct those errors and thereby enrich their writing.

2.3.2 Machine translation (MT).

One type of CALL that is available is machine translation (MT). MT has been in development for many years, and its functionality has changed greatly over that time. Perceptions of MT have also evolved significantly since it was first developed. Currently, there are several different types of MT tools available, serving a variety of purposes. Because MT tools have not yet reached a point where they are able to translate text autonomously with perfect results, humans must typically edit the MT output, providing a learning opportunity for L2 writers. Free online translation (FOT) tools, the subject of the current investigation, constitute one widely-used type of MT. An understanding of the history of MT and the various forms it can take can help to place the use of FOT tools in L2 writing and the current debate over the tools' pedagogical value in context.

2.3.2.1 The history of machine translation (MT).

In the span of just over half a century, the process of MT has progressed from an innovative idea to the basis for a plethora of technical tools, many available free of charge to anyone with an Internet connection. Due to the rapid development and sudden

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

proliferation of these MT and FOT tools, their impact on the process of L2 teaching and learning has been the subject of much debate but little empirical study. A brief review of the history of MT is presented here in order to help contextualize the current use of these tools and the ongoing debate over their pedagogical value.

MT in its initial stages began as early as the 1950s. Encouraged by the potential of the newly developed computer and by code-deciphering techniques dating from World War II, a multitude of linguists and programmers soon began to believe that MT could be possible. Many also felt that the computer would eventually be able to recognize fundamental aspects of all known languages and make significant contributions to the field of linguistics (Schairer, 1996). Georgetown University was one of the first universities in the United States to establish the feasibility of MT. Using a computer, researchers successfully translated a number of sentences from Russian to English as a part of the Joint IBM-Georgetown Experiment of 1954 (Dostert, 1955; Garvin, 1967). MT did not arouse widespread interest, however, until 1956, when the Russians announced the results of their first MT experiment (Panov, Lyapunov and Muxin, 1956). Following that announcement, research funds suddenly became more readily available, and a great number of MT projects began to take shape both nationally and internationally.

A decade after the Russians' experiment propelled MT research to the fore, however, the National Science Foundation's Automatic Language Processing Advisory

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Committee (ALPAC) released a report in 1966 that evaluated the usefulness of MT research (See Pierce, 1966). The report concluded that high quality MT was impossible and that MT had no immediate or even predictable prospects. It also stated that MT was slower, less accurate, and twice as expensive as human translation despite programmers' best efforts (Arthern, 1978). The ALPAC report had a major impact on MT research and development in the United States. It did not halt the research but it definitely slowed it down (Heinsz-Thompson, 1979). After the release of the report, the number of laboratories working in the field sharply decreased (Kay, 1997).

Of the researchers who continued working on MT technology beyond the mid-1960s, those who adopted a more product-oriented approach seemed to be having a higher degree of success than those who focused on more theoretical goals. Product-oriented researchers aimed to produce a translation system of practical value to people working in various technical fields. These researchers gradually tried to improve translations by working with and by learning from their experiences with actual translations. They were eager to disprove or bypass the insights of those who felt it was imperative to utilize the computer to achieve a global understanding of languages before the evolution of a working MT system could be attempted (Heinsz-Thompson, 1979).

When even these product-oriented researchers failed to produce a working system, however, many began abandoning translation research altogether. The main obstacle preventing researchers from developing a working system was the complex

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

nature of the syntactic and semantic analyses that these computers were expected to perform. The efficiency of an MT system depends on the objective laws of language thinking and functioning. The issue here is that similar words can be used in different contexts and they are understood differently in different contexts, limiting the objectivity with which the translation process can be carried out. For an effective translation, it is essential to understand where a particular word or phrase will fit in context. To aptly contextualize language fragments in that way, language thinking is required, a quality that is difficult to replicate in a machine.

A few laboratories were able to obtain funding to address more fundamental questions of the workings of language, giving birth to the field of computational linguistics. The language of computers is a part of the study of languages in which the procedure and ideas of computer science are utilized for exploring issues related to languages and phonetics. The investigation into underlying mechanisms of language as a whole includes the fields of speech synthesis, the production of concordances, automatic translation and the examination of grammar (Crystal, 1994). They also involve the recognition of human speech and the analysis of language data to establish the order in which learners acquire various grammatical rules or the frequency of occurrence of some particular item (Richards, Platt, & Platt, 1992). The development and availability of faster, more powerful, and less expensive hardware with which to investigate these issues created a renewed interest in MT during the 1970s (Russell, 1985).

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

By this point, few serious researchers believed that Fully Automatic High Quality Translation (FAHQT) was still feasible, and many began to resign themselves to the fact that human intervention would always be required at some point during the translation process. According to Annamaria Gentile (1991), two schools of thought emerged at this time. One group took an engineer's view of the problem. These researchers dedicated themselves to the evolution of an interactive program that combined both human and mechanical effort in the translation process. The resulting translation was basically literal and the final output was checked and corrected by a human translator (Hutchins, 1986). The other group concentrated their efforts on FAHQT, still believing it was possible to fully automate the process of syntactical and lexical analysis. By the early 1980s, the Japanese, who were probably conducting more MT research than any other country in the world at the time (Nagao, 1982), began making headway in the development of working MT systems. As stated by the Linguistic Society of America, this success had more to do with developing a better understanding of the limited scope of MT success at that point than with improvements in computers and/or linguistics (also see Kay, 1997).

Linguists began to realize that MT could work fairly well in limited domains where the language was highly controlled. One well-known example of this type of system is the METEO system developed by the University of Montreal. This system was designed to provide translations of weather reports to airlines, shipping companies, and other interested subscribers. Since weather reports tend to use a limited set of standard

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

expressions and phrases, producing an MT program for the specific purpose of describing weather conditions was a relatively easy task. Using controlled language in a limited domain such as the weather allowed MT program designers to overcome the problems of syntactic and lexical disambiguation by avoiding them altogether.

Over the course of the late 20th and early 21st centuries, the rapid growth in technical information fueled by continuous advances in science and technology has created a rapidly growing demand for language translation worldwide. Encouraged by recent progress in MT and by its potential profitability, many private companies became involved in MT research. Of course, these commercial developers are less interested in the theoretical questions of parsing and semantic analysis than in the bottom-line considerations of speed, accuracy, and cost efficiency. Some companies, such as SYSTRAN and LOGOS, began marketing translation software, products, and services to government agencies and private businesses. Other companies, such as Berlitz, Transparent Language, and Language Force, developed and marketed affordable, commercially available MT software to meet the personal and commercial translation needs of individual consumers. These MT software programs can be found today in most computer software stores or can be ordered directly over the Internet. Many of these programs promise easy, automatic translation between languages even for monolinguals. For others, the assistance of human translators is recommended for best results (Schairer, 1996). Of course, only the former are considered fully automatic translation programs.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Just how accurate is the output of these fully automatic MT systems? Opinions vary and even seem to contradict each other.

In 1994, the United States Advanced Research Projects Agency (ARPA)⁴ showed that when compared to expert human translators, MT systems performed only about 65% as well on average (Anderson, 1995). The biggest problem remained that of disambiguation, since many words and sentence structures have more than one possible meaning and computer programs are still not very good at selecting meanings appropriate to specific contexts. Despite the problems and shortcomings associated with current state-of-the-art MT, a number of companies were marketing MT programs to help businesses and private citizens gain better access to FL information via rough translation. As Pierre et al. (1993) suggest, private companies are sometimes willing to sacrifice accuracy for speed and cost effectiveness. Human translators certified by the American Association of Translators have to be able to translate 200 to 300 words per hour. An MT program, such as the RETRANS system mentioned by Belonogov et al. (1995), can translate 20 to 30 words per second. If a company can get by with low quality translation for in-house information purposes, MT systems offer an attractive alternative to more expensive and

⁴ ARPA (Advanced Research Projects Agency), renamed to DARPA (Defense Advanced Research Projects Agency) in 1996, is an institute within the U.S. Department of Defense that develops new technologies for use by the military (Wikipedia).

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

slower human translation services. This is particularly true when large volumes of information must be accessed in a relatively short period of time.

Over the last two decades, while MT researchers have focused on improving the quality of MT-generated translations, Internet and software corporations have tried to make MT systems freely and easily accessible to the public via the World Wide Web. In doing so, Internet companies have substantially increased the number of languages on their MT systems. Whether the quality of MT-generated translations is acceptable is debatable; critics of MT systems maintain that current MT systems cannot produce high quality MT translations (as cited in Hutchins, 2003). Hutchins, however, is not as trenchant as the 1960s critics of MT, who strongly believed this whole project to be a waste of time and money.

The current status of MT systems reminds me of Kay's (1980) arguments concerning the necessity of a human translator intervention in the process of translation. In his seminal article "The Proper Place of Men and Machines in Language Translation," Kay proposed that machines gradually take over some functions in the overall process of translation. This slow but sure takeover would enable scientists to implement what they know about the field more reliably. His suggestions subsequently developed into a new concept in MT: computer-assisted translation (CAT). In CAT, human translators would use translation tools to perform translations, then would post-edit the raw output of the machines.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Multilingual document generation, by MT tools, and other translation support tools is evolving by the day. In 1997, Hartley and Paris discussed the shortcomings of the status quo in multilingual document creations and of the modus operandi presently utilized in the process of translation. They also studied existing developments in the document production industry and noted a reorganization of the processes involved. The emphasis within the programs shifted from translating to writing. In addition, the primary activity of people using the program shifted from overseeing and rearranging a more user-friendly text goal to rearranging and reassessing the basic text. Hartley and Paris maintained that these developments sought to plan and produce new mechanisms for obtaining text in different languages. Furthermore, this development generated the appropriate technology, focusing on a period prior to authoring and related to the exposition of the text. The good thing about MT tools is that they are under the user's supervision. They can be changed in accordance with the preferences of the user. The authors, therefore, proposed that in the years to come a methodology for recording multilingual documents be developed and that it merge conversion target processes and production-based processes and be user friendly, meeting the requirements of those involved in translating and writing.

Despite the major advances that have been made in MT over the past several decades, the original goal of creating a fully automated MT process has not yet been met, which has been disappointing to some. According to Kay (1997), "machine translation

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

does not fulfill the requisite essentials of translation, which is accelerating [the process of translation] at a quick pace”. In the last six decades during which MT has been available, considerable progress has been made in computer science. But progress in the study of languages has failed to reach the roots of this issue. Kay argues that the optimal MT tool would produce results that are indistinguishable from human translations. Kay proposes a “Translator's Amanuensis”, which would resemble a word processor designed specifically for translation, and suggests that this would be one step toward achieving the ultimate goal of fully automated MT. As they work to continue improving MT tools, researchers and software developers most often focus their efforts on the relationship between the translator and the software, the speed of acquisition of information in various languages, the ability to handle multilingual documents and the usability of editing procedures. Thus, MT tools currently available all continue to require human input to some degree. Yet the rapid and ongoing improvements in the quality and accessibility of MT tools have had a drastic impact on the availability of fast, easy translations to students in L2 classrooms. Moreover, students’ access to such tools is likely to increase over time. Meanwhile, research on the impact of these tools for L2 instruction has not kept up with these rapid changes in the technological landscape. The present study aims to fill this gap by investigating students’ use and perceptions of currently available translation technology.

2.3.2.2. Types of machine translation

A variety of different types of MT tools are currently available. They differ in the ways in which the machine, or computer, produces a translation in the target language, and also in the primary purposes for which they are used. For instance, some early MT programs worked by creating large databases of sentences in one language and their equivalent in a different language. Langé, Gaussier, and Daille (1997) proposed improving upon this design by breaking the sentences into large bricks of text, thereby using sentence skeletons and phrase (rather than sentence) databases in order to translate sentences between two languages. By using phrases rather than full sentences, this type of tool was able speed up the process of translation. This translation mechanism has become known as Glossary-based MT (GBMT). GBMT identifies non-English phrases and translates them using a dual language phrase-by-phrase translation that depends on phrase pattern matching. A GBMT process for dual languages is easy, reasonable, and quick to obtain. With the help of GBMT one can translate documents in any FL to English on an almost real-time basis.

Another type of MT tool is the multi-linguistic analytical workstation developed by Zajac and Vanni (1997). The tool was part of the Tipster documentation management tool kit. The analyst workstation provided the English-speaking analyst with a multitude of options by which he can go through documents in Arabic and other languages. These options included a Unicode-based multilingual editor and basic MT functionality. This

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

workstation built by Zajac and Vanni aids in catering to as many different kinds of translations as possible. They identified a particular problem and tried to address it. A related MT tool addressed the need to translate documents that contained multiple languages or languages that were not widely spoken. For example, in Zajac's and Vanni's Temple Project, a multilingual analyst workstation was integrated in the Tipster document management tool kit. It included software for multilingual architecture, was able to translate quickly, and focused on less commonly spoken languages. The goal of the project was to achieve maximum MT functionality and speed with minimal use of human resources. The project produced a working multilingual translator's workstation prototype with complete MT functions for Spanish, Arabic and Japanese to English as well as some Russian morphological analysis (Vanni and Zajac, 1996).

A third category of currently available MT tool is rule-based MT (RBMT). RBMT systems utilize a set of linguistic and grammatical rules in the source and target languages in their process of translation. Costa-Jussa et al. (2012) state that in RBMT systems a group of human experts have to establish rules to describe the translation process. The RBMT approach follows a three-phase procedure to generate a target text from a source text. These three phases are analysis, transfer and generation. According to Cancedda et al. (2009), most FOT tools such as *Babel Fish*, *Google Language Tools*, or *Windows Live Translator—now called Bing Translator*—used to be powered by the rule-based system developed by SYSTRAN. However, some of these FOT tools (e.g.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Google Translate, Bing Translator and Babelfish) now mainly utilize a statistical approach, which comprises the fourth category of MT.

Statistical MT (SMT) is currently the dominant model in MT research, according to Koehn (2010). As the name indicates, SMT relies on statistical techniques to find the “best” translation of a linguistic segment in a target language with minimum error rate (see Delmonte, 2013). In SMTs, statistical methods are used to extract a translation from an enormous corpus of source-target sentence equivalents. Cancedda et al. (2009) believe this approach follows a machine learning framework where an *input* (the source sentence) and an *output* (the target sentence) exist, and a statistical pattern identifies an appropriate output for each given input (p. 2).

Finally, a hybrid model, as Delmonte (2013) argues, is the next generation of MT. Hybrid models are a combination of RBMT and SMT and several subsystems used together to improve the quality of MT. As Delmone (2013) explains:

The hybrid architecture tries to get the best of both worlds: the RBMT system should perform parsing and rule-based transfer and reordering to produce a good structure for the output, while SMT helps the lexical selection by providing multiple translation suggestions for the pieces of the source language corresponding to the tree constituents. The final decoding accounts also for fluency by using language models, and can be monotonic (and so, fast) because the structure has been already decided by the RBMT component. (p.6)

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

The types of MT described above have drastically simplified the process of translation and allowed large quantities of text to be translated quickly. Nevertheless, despite the original goal of MT to automate the entire translation process, current MT tools have not been able to completely eliminate the role of human translators. Hence, all of the MT tools currently available require some degree of human interaction to produce quality text in the target language.

2.3.2.3 Human interaction with machine translation (MT).

Human-Aided MT (HAMT) refers to the interaction between humans and MT tools. Although MT developers may not have reached their original goal of eliminating human interaction from the process of translation, it is precisely this interaction that has the potential to make MT a useful pedagogical tool in L2 classrooms. Considering the different ways in which humans interact with MT tools can help shed light on how such tools can be used effectively in L2 classrooms.

Human-Aided MT (HAMT) relies on a process of pre-editing, human-machine interaction and post-editing. The term (HAMT) refers to a procedure that constitutes human-driven improvement on the mistakes committed by the system, or machine. Typically, this involves editing the text that is output by the machine translator. Somers (1997), however, suggests a different mode by which the source text (rather than the output) is edited in light of errors made by the software in order to improve the performance of the system. In other words, each time a segment is translated by MT, a

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

human evaluates the output and then edits the source text in order to improve the quality of the translated text. He believes that by post-editing the source text in this way, MT issues can be resolved.

Although MT tools have come a long way from their initial development, they continue to encounter the difficulty that the machines are unable to decipher the context in which the language being used. Tools that combine human and machine input help to address this problem. Recently, a variety of such tools have become available on the Internet free of charge. These FOT tools are understandably quite popular among those wishing to translate short and moderate segments of text.

2.3.2.4 Free online translation (FOT) tools

Free online translation (FOT) tools are currently the most frequently used MT tools because they are available for use by anyone with a network connection, and no software purchase is required. In the sections above, we reviewed MT from a historical perspective, but the focus of this study is whether and how L2 learners use FOT tools in their L2 writing classroom.

Babel Fish by SYSTRAN, which was launched on December 9, 1997 on the AltaVista search website, was the first FOT system (Yang and Lange 1998, as cited in O'Neil, 2012). This system had actually begun in 1988 as a limited service used on

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Minitel⁵ in France at post offices, transportation companies, and even homes. According to O'Neill (2012), the project was relocated to the Internet because of high cost and limited coverage of Minitel after about a decade after its invention. Free Translation, Reverso, Wordlingo, Bing, Babylon, LogoVista, BabelFish and Google Translate are some of the FOT services, among many others, that are currently available online.

Google Translate is probably the most popular FOT tool and has been continually evolving. Google Inc. has rapidly increased the number of languages on its MT system, starting with only three languages in September 2007 and currently supporting 90 languages at various levels and serving over 200 million people every day (Google Translate Website, September 2015).

2.3.3 Machine translation (MT) and second language (L2) teaching and learning.

Machine translation (MT) can be and has been used by a wide variety of users in a wide variety of contexts. Of interest for the present study is the use of MT by L2 students. In considering the role of MT tools in teaching and learning, one must consider the effects of MT tool use on the quality of the resultant text – that is, whether text produced with MT tools differs meaningfully from text translated by a human being.

⁵ Minitel was a forerunner of the Internet. It was an online service accessible through telephone lines and was very popular in France from the late 1970s to the early 1990s.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

With mixed evidence on this question, the pedagogical value of these tools in L2 classrooms has been debated, with some L2 educators encouraging students to use MT tools in their L2 writing, but many prohibiting students from doing so.

2.3.3.1 Comparison of machine-translated (MT) and human-translated text.

In order to assess whether MT tools might be beneficial or detrimental to L2 learners, the first step is to examine the effectiveness of MT tools. Given that the purpose of MT tools is to translate text from one language to another, their effectiveness can be conceptualized by assessing the quality of the translated text, how readable it is, and how it compares to text translated in a more traditional fashion by a human translator. Several studies have addressed these topics over the years, with results indicating that although MT tools are less accurate than human translators, the output of machine-translated text is typically still comprehensible to proficient readers and its quality improves with post-editing.

In 1994, the US government's Advanced Research Projects Agency (ARPA) concludes that when compared to human translators, MT systems perform only about 65% as well on average (Anderson, 1995). Similarly, Karen Schairer's 1996 study on the acceptability of MT involved the use of MT output in her experiment. She translated a 23-question social science telephone survey from English to Spanish using three different commercially available translation software programs designed for Windows: *Spanish Scholar*, *Spanish Assistant*, and *Spanish Amigo*. She then had a team of 20 native or near-

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

native speakers of Spanish rate the translations of the survey questions in terms of comprehensibility and accuracy. By word count the best of the three programs successfully translated 46% of the survey, while the worst program translated only about 10% of the original text correctly. Schairer found that the majority of the translations were so flawed that human translation from the original took less time than trying to repair what the machine had produced. On the basis of these results, she concludes that current technology (as of the mid-1990s), as represented by the programs she tested, could not yet replace human translators.

In another mid-1990s study, however, Leffa (1994) examined how well proficient readers were able to understand machine-translated passages. He selected 88 Brazilian eleventh-grade students from two state high schools in Southern Brazil. They were typical lower-middle-class students in their late teens who had a functional reading knowledge of Portuguese, their L1. Their task was to read Portuguese translations of two articles taken from the *Health and Science* section of *Time Magazine*, a popular American magazine. Leffa translated the articles from English into Portuguese using both a professional human translator and a computer software translation program specially designed for the study. He then carefully distributed the articles so that each subject had a human translation of one article and a MT of the other (which article was translated by human vs. machine varied across subjects). After reading the translations, the students were asked to answer five multiple-choice questions about each passage. The questions,

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

designed by two teachers, involved reasoning skills, such that the readers had to join different segments of the text and identify the correct relationship between them. The questions for each article were the same regardless of which translation (human or machine) the subject read. A test comparison of the mean scores between the two translations showed that the readers, in general, can read and understand machine-translated passages with the same level of proficiency as those translated by a professional translator. The grammatical errors found in MTs do not considerably influence the subjects' comprehension scores.

Taking a slightly different approach, Niño (2008) compared translations made by students, translations made by MT, and translations made by MT and post-edited by students. Her (learner) corpus-based research consisted of English-Spanish MT post-editing and translations into FL (Spanish) done by two groups of students. One group was given MT raw output, and the other was assigned translation tasks. Using computer-aided error analysis (CEA) methodology to analyze the frequency and distribution of errors found in the output of the three mechanisms of translations, she concludes that student-edited output is substantially better than either unedited MT output or student-translated output.

The results of these studies suggest that although MT is not perfect, it does result in generally comprehensible text. When this text is post-edited, it becomes even more comprehensible and higher quality. Furthermore, Niño (2008) suggested, based on her

work, that the post-editing activity into the FL is a helpful exercise for advanced FL students to improve their writing skills.

2.3.3.2 The potential pedagogical value of machine translation (MT).

From the history of MT we gather that what began as a largely academic endeavor has evolved into a fairly lucrative commercial enterprise. Despite their flaws, MT programs are finding their way into the L2 and FL classroom with growing frequency. These programs include both hand-held phrase and vocabulary translators as well as more sophisticated MT programs designed for personal computer use. Bueno (1992) specifically emphasizes the need to address this issue, comparing the influx of MT technology into the classroom to the introduction of the hand-held calculator in math classes a few decades ago. Bueno feels that as MT programs become increasingly economical, user-friendly, and available, more and more students are going to use them: “To think that students would invest hours translating with their pencil in one hand and their dictionary in the other, when the computer can do it in a few minutes, is at best wishful thinking” (Bueno, 1992). If such tools are becoming increasingly prevalent in L2 classrooms, questions regarding their appropriate role and how L2 teachers might best use them to support student learning are critical. Currently, L2 instructors frequently focus on preventing their students from using such tools, but as the evidence suggests, their effort might be better spent learning to incorporate the tools into their curriculum and teaching students about their benefits, drawbacks, and effective use.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

MT technology, if perfected, could potentially have a much greater impact on L2 education than most educators realize. After all, if a computer program existed that could produce highly accurate translations effortlessly in a matter of seconds, then there might be no need to offer FL courses. The emphasis for teachers under these circumstances might shift from language teaching to teaching students how to use MT software. Language courses then might exist solely for the purpose of creating linguistic and cultural awareness among those students who might benefit from such exposure. Even without such an extreme shift, MT tools are changing the landscape of L2 courses in important ways and should be acknowledged as such and their impact better understood.

Bueno emphasizes the need to approach this new tool optimistically and to look for ways to take advantage of its pedagogical potential in the classroom. His philosophy is that if students use MT despite its limitations, teachers might as well find a way to employ it to their advantage as well. So far it does not appear that many others have considered the pedagogical applications of MT. Don Anderson (1995), a computational linguist for the U.S. Department of Defense, describes a set of tools and procedures known as the learning algorithm that can be used to convert translation software into a powerful focal point in L2 learning. In his description of Targumatic, a Hebrew-English/English-Hebrew translation program, he gives examples of how MT might be used to facilitate L2 learning in more advanced FL classes.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Over the past two decades, multiple studies have been conducted on the application of MT, including FOT tools, in the teaching and learning of L2s (Richmond, 1994; Anderson, 1995; Lewis, 1997; Shei, 2002; McCarthy, 2004; Somers, Gaspari; Niño 2006; Niño 2008 & Garcia & Pena, 2011). These investigations have been conducted to study various aspects and/or outcomes of using FOT tools and have yielded rather diverse results. Some of these studies demonstrate that MT systems have pedagogical use in the L2 classrooms (Richmond, 1994; Anderson, 1995; Lewis, 1997). Richmond's (1994) work, for instance, focused on the linguistic and grammatical practices with MT tools that could improve L2 students' awareness of grammaticality. He used the term to show the relationship between meaning and the grammatical structures used in a language and argued that particular content-based grammatical structures are used to communicate certain meaning (p. 65). In his experiment, he used *French Assistant*, an English-French translation program, as a pedagogical tool in a six-week French program in order to improve his L2 students' awareness of grammaticality in their L2. He proposed a "reverse translation" method in which his L2 students had to focus on the source text (L1 sentence structures) rather than the target text. He believed that having students revise the source text repeatedly to achieve desired target text sentence structures is a pedagogically sound activity that results in an increased understanding of L2 grammaticality.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Lewis (1997) was another researcher who investigated the use of MT in language courses. He states MT is a useful tool in L2 teaching environments and that language teachers and learners should have access to some affordable MT tools (p. 256). He describes the experiences of teaching an MT system, *Power Translator*, to a group of modern language students. He concludes that although most students participating in the course were dissatisfied with the results of raw output of the MT system, many of them declared that their perceptive knowledge of L2 (German) grammar had increased as a result of using the tools. These students thought they owed this improvement to their interaction with the MT system's dictionaries used in the course. He continues that the weaker students benefited from the MT dictionaries as these tools urged them to explore basic grammatical structures (p. 270).

Other studies reveal that incorporating MT-based activities into L2 classrooms has pedagogical value for L2 learners and pedagogical implications for L2 teachers (Shei, 2002; Kliffer, 2005; Niño 2008). Shei (2002) examined the use of MT in teaching translation and learning L2. His experiment involved giving a group of Chinese students who were learning ESL three pre-editing tasks:

- 1) continuously pre-edit a Chinese text written by a native speaker to achieve an acceptable MT-generated English translation.

- 2) continuously pre-edit an English text written by a native speaker until the MT system produces an accurate Chinese translated text.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

3) continuously pre-edit an English text written by a non-native speaker (L2 learner) until the MT system produces an appropriate Chinese text.

He also describes some major limitations of the two MT systems used in the experiment and provides a list of suggestions on how to make the MT output more accurate. He claims that pre-editing is a very interesting and –at the same time— effective task that can enhance MT use, translation skills and L2 competence.

In his doctoral dissertation, O’Neill (2012) investigated the quantitative and qualitative effects of FOT tool use on L2 composition. The research took place in three third- and fourth- semester French as a second language (FSL) courses in the French Department of the University of Illinois at Urbana-Champaign. Three groups were formed, and three different experimental scenarios were designed. The first was the control group, whose participants who had no FOT tool training and were not allowed to access FOT tools. The second group was allowed to use FOT tools but didn’t have any FOT tool training, and the third group was allowed to use FOT tools and had FOT tool training. The participants completed a reading pre-test, writing pre-test, two writing tasks, and a writing post-test. Raters, FSL teachers, evaluated all the completed written tasks as well as the post-tests, assigned a score to each task and commented whether or not each writer had used an FOT tool. O’Neill then presented and examined samples of student writing taking into account rater comments and participant self-reports. He concludes that the quality of the texts produced by the participants who had used FOT tools was by no

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

means inferior to, and was often better than that of the non-FOT tool users (p. 215).

Two other research studies that concentrate on the use of MT by L2 learners were those conducted by Garcia and Pena (2011) and O'Neill (2012). Garcia and Pena (2011) carried out a research project to find out whether MT can be considered a useful activity for improving L2 writing skills of beginner or early intermediate language learners. The participants were asked to complete two writing tasks, then given a two-question user satisfaction survey. Based on their findings, Garcia and Pena conclude that MT helps beginner FL learners communicate more and write better in the L2 by facilitating the writing of many relevant words.

Some studies, however, have identified detrimental effects of using MT tools in the L2 classroom and translation courses (McCarthy, 2004; Somers, Gaspari & Niño 2006). In fact, Somers et al. (2006) conducted a study to address the problem of using FOMT tools to translate sentences in L2 courses. In their paper, the authors refer to a dichotomy of “honest” translation versus “derived” translation of FOMT outputs and consider the latter a plagiaristic act committed by L2 learners. McCarthy (2004) asserts that we cannot turn a blind eye to the widespread presence of online MT, nor can we expect our students to avoid it as an easy solution to their [out-of-class] assignments. He believes the availability of FOT tools makes assessment a difficult task for language and translation teachers and that these online tools may limit the capabilities of translation and language students.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

At a broader level, the errors made by MT tools could potentially also be used to study the process of language learning itself. Students and MT systems seem to share common goals. Both seek to communicate effectively in a second language. In order to accomplish this task, both must also learn to overcome the same grammatical and lexical obstacles. The studies of student errors led to major new discoveries in the field of L2 acquisition in the 1960s and 70s. What can we learn by studying the errors produced by MT programs? Since expert linguists provide the computer with instructions to deal with a variety of complex linguistic choices during the translation process, one might argue that MT error is also human error, but perhaps at a somewhat more metacognitive level. No one would deny that the decisions that linguists and programmers make during software development phase ultimately affect the efficiency of the completed MT program. Given the similarities between L2 students and MT programs, it seems logical that studying the patterns of MT error may also yield information of value to those involved in L2 education.

The pedagogical impact of MT tools is often minimized by L2 instructors, who frequently ban the use of these products by their students. However, the research that has been conducted to date largely shows beneficial effects of MT and FOT tool use by L2 learners, particularly when students post-edit the MT text.

2.3.4 The role of post-editing.

As noted above, the process known as post-editing has been proposed as one of the most promising ways to use MT in L2 classrooms. Post-editing is a relatively new concept, initially introduced in the early 1980s, that goes hand in hand with MT. Machine translation post-editing (or simply “post-editing”) has been defined as the correction or improvement of MT output by human linguists or editors (Veale & Way 1997; Senez, 1998). In simple terms, post-editing is the process of revising the MT-generated translation by a human translator. O’Brien (2011, p. 197) defines the term as “the correction of raw machine translated output by a human translator according to specific guidelines and quality criteria.” Wagner (1985, p. 1) points out that post-editing involves rectifying the errors of a pre-converted translation rather than translating from the start. Finally, Allen (2003, p. 26) states that “the task of a post-editor is to edit, modify and/or correct a pre-translated text that has been processed by a MT system from a source language into (a) target language(s).”

Fortunately, post-editing is also one of the most widely researched aspects of MT in the present era (Guerberof, 2008 & 2009; Popović & Ney, 2011; Garcia, 2011; Moran, Lewis & Saam, 2014; O’Brien & Moorkens, 2014). In the process of machine-aided translation, human translators are given the texts translated automatically by MT systems and asked to rectify their errors—be it semantic, syntactic, or stylistic. Thus, post-editing is in fact the last segment of the machine-aided translation chain. Current developments

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

in MT technology have led to a growing demand for MT-generated translations and consequently greater demand for post-editing. Organizations that provide language services, known as language service providers (LSPs), often ask their translators—referred to as post-editors in the industry—to post-edit rather than directly translate, in order to increase productivity. O'Brien (2011), Aikawa et al. (2007), Guerberof (2009), Groves and Schmidtke (2009), Tatsumi (2009), Garcia (2009), Plitt and Masselot (2010) and De Almeida & O'Brien (2010) are some of the scholars who have carried out research on MT post-editing.

Although post-editing as a whole has been widely investigated, thus far, not much research has been conducted on the utility of MT post-editing in L2/FL education specifically. In the Garcia and Pena (2011) study discussed in section 2.3.3.2, however, it is notable that one of the writing tasks participants engaged in involved post-editing. Garcia and Pena's conclusion that MT is beneficial to the writing of beginner and early intermediate L2 learners may therefore be based, in part, on the benefits of post-editing.

Furthermore, in her PhD dissertation and an article based on it, Niño (2006; 2008) studied the use of MT post-editing in the FL classroom. As described in section 2.3.3.1, she concludes that MT output that is post-edited by students is of substantially higher quality than either unedited MT output or student-translated text. Upon a close examination of the errors made by students and MT tools, she further notes that the error types found in the MT output were similar to those found in students' translations into the

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

same target language. As a result, Niño suggests that raw MT output could be a useful source of errors to be corrected by advanced FL students to improve their writing skills and proposes the process of post-editing machine translated text as a helpful exercise for advanced FL learners.

2.3.5 Students' attitudes towards translation technology in the second language (L2) classroom.

As discussed in section 2.2.4, students' attitudes and motivation have been found to play an important role in L2 learning and teaching. In considering the role that MT can and should play in an L2 classroom, therefore, it is important to consider students' attitudes toward MT. This encompasses both students' overall beliefs about the use of technology in the classroom as well as their opinions of MT, including FOT tools, specifically.

Several studies have been conducted to measure students' opinions regarding the utilization of computers in L2 instruction. In his empirical study, Ayres (2002), examined students' general attitudes toward CALL, and their perceived view of its relevance to their course of study. In 2000, the author analyzed students' perceptions of CALL as a competitor with the classroom teacher and the links between the perceived usefulness of CALL and the students' aptitude for computer use, level of language, and age at the UNITEC school of English and Applied Linguistics in Auckland, New Zealand. A total of 157 non-native speaker undergraduates representing 27 different nationalities (mostly

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Chinese and Korean) were asked to respond to a questionnaire about how useful they believed the CALL software application used in their L2 course was and how useful they thought time spent in laboratory was. A variety of software programs were installed within the CALL facilities and used by the learners. Ayres notes that language learners hold favorable attitudes towards CALL and that the majority find computer tools helpful. He also concludes that the use of CALL helps students in grammar, spelling and writing. According to him, CALL has “face validity” among students, but students do not believe that CALL could entirely replace a regular classroom environment. Therefore, technology among/along with other things could be used to improve the learning process.

Similarly, Chen (2003) carried out a study among EFL learners to investigate their opinions and approaches towards the utilization of computers in EFL classrooms. Students reported on their attitudes based on their experience in EFL instruction at National Cheng Kung University in Taiwan. The findings of the study show that EFL university students in Taiwan hold a generally positive attitude towards the integration of computer systems into their EFL study program.

In an American context, at the University of Maryland, Rashed (2008) carried out a case study of six international students in order to assess their perceptions of CALL technology implementation. Rashed (2008) employed a qualitative approach providing insight into self-reported perceptions, interaction with technology tools, and the limitations with which technology could be integrated into the learning goals of an ESL

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

curriculum. The study used a combination of small-sample survey, in-depth interviews, observations and a reflective journal. The class in question was part of an Intensive English Program and met five times a week. Course activities consisted of textbook exercises done in class, supplemented by CD/DVD, laboratory, and Internet-based learning experiences. Lab time was comprised of online learning and practice of grammar rules, online listening practice, group work on Web Quest, and visits to ESL sites for the exercises they offered. In general, Rashed concludes that L2 learners hold highly positive perceptions of the technologies deployed to enhance language learning. Students' main concerns tend to be whether the CALL technologies are sufficiently collaborative, interactive and communicative. In addition, the international students greatly value the physical presence of the instructor as an enabler for relating CALL technology to learning goals.

Overall, few studies demonstrate negative attitudes of students and teachers towards CALL in any context. Combined with the findings discussed above showing that student attitudes have a direct impact on motivation and performance, this lends support to the practice of using CALL technology in L2 classrooms. Students' attitudes toward MT, including FOT, tools in particular have been less widely investigated than earlier versions of CALL technology, a gap the present study aims to address.

2.4 Summary

Writing is an essential language skill for L2 learners, and effective teaching of L2 writing is of paramount importance for L2 instructors. Writing in a second language is a complex skill that is impacted in both positive and negative ways by one's writing and cultural experience in the L1, as underscored by the theory of contrastive rhetoric.

Although use of L1 writing skills may benefit L2 learners both in the use of planning strategies and by helping to minimize cognitive load, the L1 can also interfere with L2 writing when writing conventions, grammar, and word usage differ between the two languages. This observation calls into question the role of direct translation when writing in an L2. Translated texts often differ significantly from their non-translated counterparts in terms of vocabulary use, grammatical features, and other textual characteristics. The role of direct translation in learning to write in an L2 has therefore been criticized for many decades but more recently has begun to be reexamined for its potential pedagogical value. In addition, the recent recognition that many students use translation whether encouraged to do so or not, coupled with research showing that students' attitudes and motivation level play a strong role in their L2 learning, has led to an increase in calls for reconsidering the role of translation in L2 writing.

Another important change to the L2 learning environment over the years has come in the form of rapidly developing technology, known as machine translation (MT),

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

which encompasses a variety of computer programs designed to automate language translation to the greatest extent possible. Despite 50 years of intensive research at universities and laboratories around the globe, no one has yet been able to create a fully-automated MT program. Nevertheless, many MT programs are currently available and widely used, including an increasing number available free of charge on the internet (FOT tools). Despite the fact that these programs tend to be less accurate than human translators, they do tend to produce text that is understandable to proficient speakers of the target language. Moreover, the use of MT tools in L2 learning and teaching fits into a broader pattern of expanding computer-assisted language learning (CALL) tool use in L2 education. Not surprisingly, then, MT programs have increasingly found their way into L2 classrooms, where they have gained the attention of L2 educators. Some, including Julian Bueno (1992) and Don Anderson (1995), feel that MT may have a great positive impact on L2 teaching and recommend working to better identify pedagogical applications for MT. The fact that MT results in less-than-perfect translations may even be a benefit when using them as a pedagogical tool, because the process of post-editing, or editing text translated by MT tools has gained attention as a pedagogical tool for advanced L2 learners. Given that students are generally in favor of using CALL in their L2 learning, and that anecdotal evidence suggests that they use FOT tools whether explicitly allowed to do so or not, advancing our understanding of the most effective ways to use MT in L2 curricula is likely to benefit L2 students and teachers. The present

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

study aims to contribute to the state of knowledge in this area by documenting L2 learners FOT use and their opinions about FOT tools.

Chapter 3: Methodology

3.1 Introduction

Chapter 2 provided a selective review of literature on both MT, including FOT tools, and Second Language (L2) teaching and learning research. In this chapter, I describe the overall research methodology used for the present study. This includes the objectives, research questions, design and participants of the study as well as the methods used to collect and analyze data.

3.2 Research Objective and Questions

The objective of this study is to document, i.e. systematically observe and analyze, the use of FOT tools by Second Language (L2) learners in ESL writing courses. The study examines whether or not ESL students use FOT tools while producing English written texts, and, if so, how effectively and efficiently they employ such tools. The following research questions are posed in order to meet this objective.

1. If L2 learners resort to FOT tools while completing writing tasks, how do they use such tools?
2. How effectively and efficiently do learners in the L2 writing classroom use FOT tools?
3. How satisfied are learners with using FOT tools for L2 writing?

3.3 Research Design

According to Yin (2011, p. 75), research designs are *logical blueprints* or plans based on which investigators conduct their research. The logic Yin refers to is *an*, if not, *the* essential element in establishing a tenuous link among the research questions, the data to be collected, and the strategies to be used for data analysis (p. 76). Research design is, therefore, a scheme that a researcher adopts in order to collect and analyze data that will make it possible to answer whatever research questions he or she has posed. As Ragin (1994, p. 191) states, “The design of an investigation touches almost all aspects of the research, from the minute details of data collection to the selection of the techniques of data analysis”.

Creswell (2009) believes that different research questions necessitate different designs and approaches, and he identifies the three major research designs as quantitative, qualitative and mixed methods approaches. The research questions, data collected, tools used for data collection, and interpretation of the data are the main factors that decide whether a quantitative, qualitative or mixed methods design is suitable for a particular study.

Aliaga and Gunderson (2000) state that quantitative research methods explain phenomena by collecting numerical data. Collecting numerical data and using statistical methods for analyzing data are probably the most notable characteristics of quantitative research designs (see Dörnyei, 2007). Creswell (2003 & 2008) notes that in quantitative

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

research, variables and the relationships among them are also key to answering research questions through surveys and experiments. Quantitative research designs are carefully controlled and firmly focused and tend to produce reliable data. The statistical analytical apparatus employed in these designs also functions as a quality control checkpoint that further increases the validity of research findings (Dörnyei, 2007, p. 34). This quality of quantitative research has probably made it a very popular method among researchers in social sciences and education over the last four decades.

On the other hand, qualitative research tends to inquire about phenomena, explore processes, or describe experiences. Variables and the relationships among them are not the concern of qualitative research questions, which serve to address “what” and “how” questions rather than to relate variables. Qualitative research questions are “open-ended, evolving, and non-directional” (Creswell, 1998, p. 99). Connolly (1998) notes that qualitative research questions are designed to generate an understanding of particular educational and social procedures and experiences that already exist in a specific context. This means that qualitative researchers investigate things in their natural settings, striving to understand and/or construe phenomena in terms of the meanings people bring to them (Denzin & Lincoln, 2005, p. 3).

The current study, however, uses a mixed methods design (Creswell, 2003; Creswell, 2009; Tashakkori & Teddlie, 2003 & Tashakkori & Teddlie, 2009). A mixed methods research design uses both quantitative and qualitative data to address a research

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

problem more fully (Creswell, 2003). This research design is defined as “the collection or analysis of both quantitative and qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research” (Creswell et al., 2003, p. 212). Thus, mixed methods designs are used to fulfill two different purposes: to gain a better understanding of an issue and to validate research results obtained through different methods (Sandelowski, 2003, as cited in Dörnyei, 2007, p. 164).

The justification for combining qualitative and quantitative methods is that in certain studies the use of either of these methods alone is inadequate to address the details of the situation. However, when used in combination, quantitative and qualitative methods supplement each other and lend themselves to more comprehensive analyses, and thus more valid research findings (Greene, Caracelli, & Graham, 1997, Tashakkori & Teddlie, 1998).

3.3.1 Advantages and disadvantages of the mixed methods approach.

Morse and Richards (2002) believe that the mixed methods approach can increase both reliability and validity of the research. They assert that by using a mixed methods design, researchers “can build on the strength of each type of data collection and

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

minimize the weaknesses of any single approach” (p. 1-8). Dörnyei (2007) also lists the following merits for the mixed methodology design.

- Using the mixed method design to study the same phenomena can strengthen the validity of the results.
- Combining quantitative and qualitative methods sharpens our understanding of findings.
- Using a mixed method design is likely to increase the acceptance of findings and conclusions by the people who have a stake in the research.

Despite the merits of the mixed methodology design, Leavy and Hesse-Biber (2006) adduce some limitations of this design. They conclude that mixed methods research designs require significant amounts of time and effort. Another disadvantage they point out is that the researcher needs knowledge of and training in both qualitative and quantitative approaches.

3.3.2 More on the design and nature of this study.

As mentioned above, this study uses a mixed methods design and is descriptive in nature. Descriptive research is one of the most commonly used methodologies in examining facts about people, their opinions, and their attitudes (Gay and Airasian, 2011). In descriptive research, “the researcher does not manipulate variables or control the environment in which the study takes place. Its purpose is to systematically describe the facts and characteristics of a given phenomenon, population or area of interest”

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

(Merriam & Simpson, 1995, p. 61). The description may include (1) collection of facts that describe existing phenomena; (2) identification of problems or justification of current conditions and practice; (3) project or product evaluation; or (4) comparison of experience between groups with similar problems to assist in future planning and decision making. Descriptive data are usually collected by observation, questionnaires, or interviews. In this study I pursue descriptive research by using a mixed methods design which involves the observation and recording of the behavior of ESL learners while completing writing tasks. I also use questionnaires and semi-structured interviews in three phases.

3.4 Data Collection

The process of data collection took place over a period of 12 weeks in an English Intensive Program (EIP) course taught by the author at the Official Languages and Bilingualism Institute (OLBI) of the University of Ottawa in the Fall Semester 2013. The author obtained ethics approval from the University's Institutional Review Board before starting the data collection process (see Appendix A). The overall data collection procedure is illustrated in Figure 1.

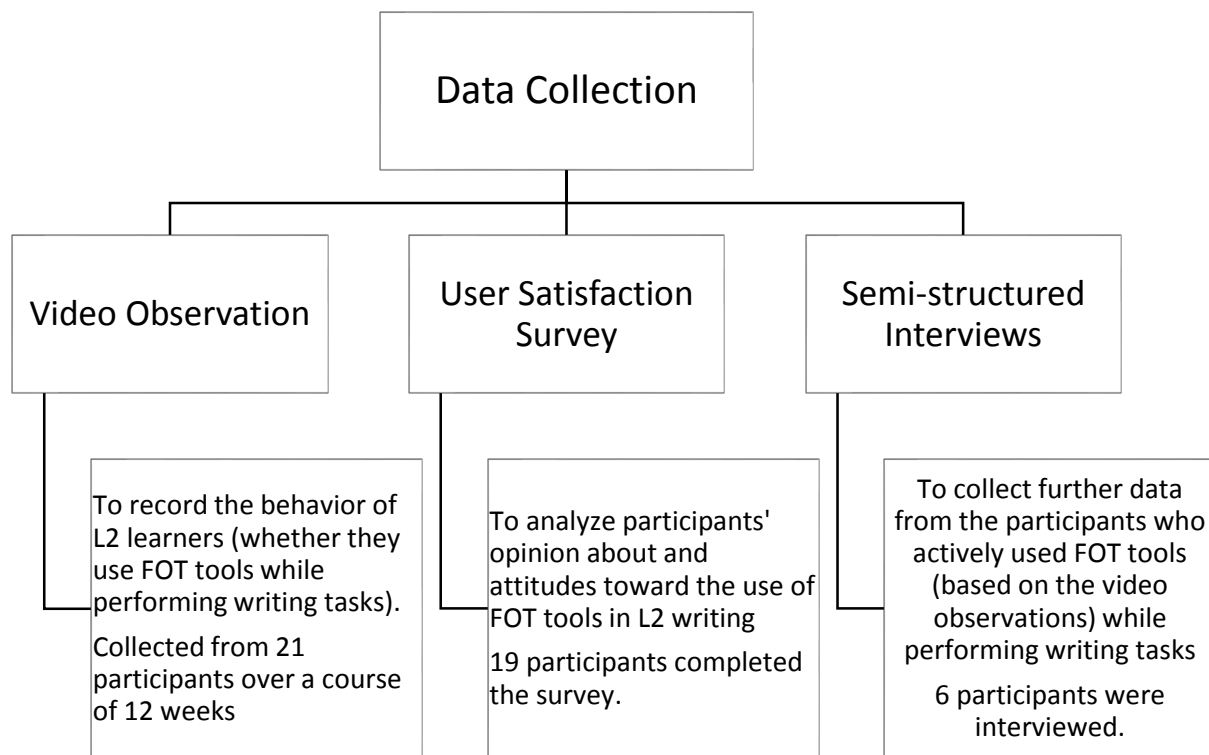


Figure 1. Data collection procedure.

3.4.1. Participants.

The participants of this study were students in ESL 500, a high-intermediate ESL intensive course also known as Bridging Level. 21 adult ESL students, aged between 18 and 28 and computer literate⁶ who were enrolled in the bridging level of the EIP (English Intensive Program) at the Official Languages and Bilingualism Institute (OLBI) of the

⁶ After they had been informed of the research, participants were asked to complete three tasks to check their level of computer literacy. First, they were asked to type a short passage. For the second activity, students were asked to complete a vocabulary task, which required using online dictionaries, thesauri and other online tools. Finally, once they completed the second activity, they were asked to post their answers to the website of the course.

University of Ottawa was selected to participate. However, 2 participants did not complete the user satisfaction questionnaire; therefore, they were excluded from analysis.

3.4.1.1. Demographic breakdown of sample.

Demographic information was available for the 19 participants who consented to participate in both the observation and the survey portions of the study (see appendix B). As shown in Table 1, 8 of the 19 participants (42%) were between 18 and 20 years of age. Ten (53%) were between 21 and 25 years of age, and 1 participant (5%) was between 26 and 30 years of age. As shown in Table 2, participants were approximately equally divided by gender, with 10 out of 19 (53%) identified as female.

Table 1

Participants' Distribution by Age

Age group	Frequency	Percent
18-20	8	42.1
21-25	10	52.6
26-30	1	5.3
Total	19	100.0

Table 2

Participants' Distribution by Gender

Gender	Frequency	Percent
Female	10	52.6
Male	9	47.4
Total	19	100.0

3.4.1.2 Subjects' linguistic background.

The research participants were from 6 different countries: Brazil, China, Japan, Saudi Arabia, Turkey and Vietnam. Of the 19 participants, 4 were Brazilian Portuguese native speakers, 8 were Mandarin native speakers, 2 were Cantonese native speakers who also spoke Mandarin fluently, 1 was a Japanese native speaker, 2 were Arabic native speakers, 1 was a Turkish native speaker, and 1 was a Vietnamese native speaker (see Table 3). One of the Brazilian Portuguese speakers stated that she also spoke French quite fluently.

Table 3

Nationality and First Language of Participants

	Frequency	Percent
Brazilian-Portuguese	4	21.1
Chinese-Cantonese (and Mandarin)	2	10.5
Chinese-Mandarin	8	42.1
Japanese-Japanese	1	5.3
Saudi-Arabic	2	10.5
Turk-Turkish	1	5.3
Vietnamese-Vietnamese	1	5.3
Total	19	100.0

3.4.1.3 Subjects' writing proficiency level.

To ensure the homogeneity of the participants, I gave them a writing diagnostic test— an institutional CanTEST⁷ writing test—at the beginning of the study. Two markers then evaluated each paper separately, and the inter-rater reliability was

⁷ The CanTEST is a standardized English proficiency test developed and validated at the University of Ottawa. It evaluates candidates' language proficiency level in Listening, Reading, Writing and Speaking skills. This test has been developed to ensure that test takers meet the language requirements of Canadian postsecondary institutions (see the CanTEST information booklet available at <http://www.cantest.uottawa.ca/>).

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

calculated by means of Cohen's weighted kappa statistic (Cohen, 1960). The CanTest writing test is rated in half-point increments from (1) to (5), with the option of noting a (+) or (-) after the numerical score, as is commonly done with letter grades. Participants' average CanTEST score was 3.5, with all scores falling between 3.5- /3.5+ on CanTest scale. A score of 3.5- on the CanTEST scale represents an intermediate level but “somewhat limited writer”, whereas a score of 3.5+ represents an intermediate level between a “somewhat limited writer”, while a “competent writer” according to the CanTest interpretation guidelines. A “limited writer” (3.0) is judged to have “fair command of the language only in familiar language contexts” and a “competent writer” (4.0) is judged to have “generally effective command of the language in fairly demanding contexts, with a satisfactory level of comprehension and production” (see appendix C). Table 4 shows the writing proficiency level of the subjects at the start of data collection. On each test, the scores fell within the low-average range of the test scale, indicating that, overall, the participants were moderately proficient at writing.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Table 4

Participants' Writing Proficiency Level at the Beginning of Data Collection

	EIP Entry Level	CanTest Writing Band	TOEFL iBT Writing Band	IELTS Writing Band	Canadian Language Benchmark/ Writing	Common European Framework of Languages/Writing
Participant	500	3.5-	12-19	4.5-6.0	5-6	B1-B1+
Range	(Bridging Level)	/3.5+				

3.4.1.4 Procedure (intervention).

As previously stated, the intervention took place in one of the ESL courses that I taught over a course of 12 weeks in the fall semester 2013. The processes of data collection continued for a complete semester. At the very beginning of the course, the subjects were informed about the research and trained in how to use the video recording tool (Screencastomatic) that was used throughout the data phase collection. Then, in order for me to observe and document the possible use of FOT tools in writing, participants recorded the completion of authentic writing tasks in computer-based language labs over a course of 12 weeks. Next, at the end of week 12, a user satisfaction

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

questionnaire was handed out to the participants to measure their satisfaction with FOT tools. After collecting the data (videos), parameters were calculated to assess effectiveness and efficiency of FOT tools used in ESL writing by analyzing the quality of the participants' writing process and product. Finally, after reviewing the recorded videos, I carried out semi-structured interviews with those subjects who actively used FOT tools in the process of their writing.

3.4.2 Observations of writing tasks.

Krings (2005, p. 8) divides the processes involved in the collection of data on translation processes into two broad categories: online processes and offline processes. Online processes concern the documentation of what subjects do while performing tasks. Online data collection is divided into behavior observation (i.e. observation protocols, video recordings, computer protocols, eye tracking measurements, etc.) and verbal data (i.e. talk-aloud, think-aloud and dialogue protocols). Offline processes, in contrast, refer to the steps that allow the investigator to collect further data after the completion of the task. These are likewise divided into two types: first, the product analysis, which refers to final products and the comparison of different subjects' products of the same task; and second, verbal data, which are gathered through retrospective comments, questionnaires, interview, etc. The logic of this categorization lends itself well to the selection of tools and experiments in this study.

3.4.2.1 Video screen capture technology.

Video screen capture (VSC), also referred to as screencast, is a web- or software-based technology that enables users to record the screen of their computer as well as their voice. Users can capture what they do on the computer screen, a feature that is perfectly suited for collecting data on the behavior of students while completing writing assignments.

Screencast-o-matic (SOM) is the VSC tool used for data collection in the present study. I used SOM because it is a free webware (online tool) that records computer screen output and audio narration without having to download the program. Also, the tool allows users—subjects— to record the process of task completion. In other words, SOM records everything (all the key strokes, cursor movements, use of other web pages, and the so forth) that takes place on the user's screen. Users can record whatever is happening on the screen of their computer as they narrate the process. Figure 2 illustrates the display of the Screencastomatic software.

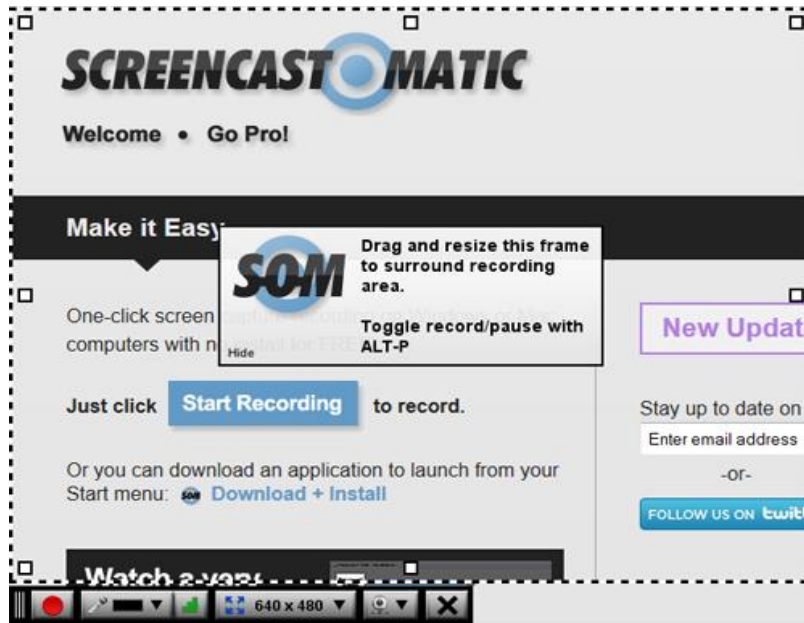


Figure 2. Screencastomatic: the Video Screen Capture Tool.

3.4.2.2 Tasks.

In order to avoid any form of bias related to the research design (Allwright, 2006), data were collected from the regular writing tasks used in the 12-week intensive program curriculum of the bridging level ESL course, which many ESL students at the University complete prior to beginning their program of study. Given the importance of improving writing skills before starting university programs, students at this level are required to complete in-class writing tasks on a regular basis. These assignments formed the basis for data collection in the current study.

The design of the writing tasks used in the experiment is different from those used in usability tests. In the latter case, tasks are designed in a way that fits the intended experiment through, first, designing tasks and, second, optimizing students' access to the

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

tools. However, since the purpose of the present study was to observe “natural” behavior (i.e. the use of FOT tools in writing exercises), conventional, individual in-class writing tasks/assignments were the source of data. Also, toward this end, students were neither instructed to use nor to avoid the use of FOT tools. Instead, the instructor mentioned online translation tools among other online auxiliary resources that students were allowed to use for completing their writing tasks.

Writing tasks that are typically used with advanced ESL students include the composition of different short essay types, such as cause-effect, comparison-contrast, and persuasive essays. An additional type of writing task specific to the EIP bridging level consists of editing English content, which require students to identify and correct grammatical errors and vocabulary inaccuracies. In the present study, students completed these typical course assignments while recording their work using the Video Screen Capture software described above.

3.4.2.2.1 Task 1 (Cause-Effect Essay).

For the first task (see Appendix D), participants were asked to write the first two paragraphs (introductory paragraph and a body paragraph) of a cause-effect essay in a computer lab where they could video-capture the process of task completion.

They were instructed to complete the writing task as they would at home; in other words, they were allowed to use any form of online tool including monolingual dictionaries, bilingual dictionaries and online translation tools. The research subjects were also

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

directed to record all their actions while using online tools and not to use any paper resources.

3.4.2.2.2 Task 2 (Editing).

The second writing task was also assigned in a computer lab. It required the participants to edit an essay by correcting its grammatical errors, vocabulary inaccuracies and overall communication problems (see Appendix E). The task completion conditions were exactly the same as those for the first task.

3.4.2.2.3 Task 3 (Problem-Solution).

The completion of the third task also took place in a computer lab. The task presented a 2-question essay prompt (problem-solution) asking the subjects to write the introduction and then two body paragraphs, one addressing the first question and the other addressing the second question (see Appendix F). The general instructions were the same as for the first two tasks with the exception that subjects were instructed to video capture only the process of writing the body paragraphs.

3.4.2.2.4 Task 4 (Compare-Contrast).

Task four required the subjects to write a compare-contrast essay of approximately 300 words (see Appendix G) and record the process of task completion. Like the other tasks, they were given the task in a computer lab and were allowed to use any online resources they would normally use to complete take-home writing tasks.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

3.4.2.2.5 Task 5 (Advantages and Disadvantages).

Task 5 was the last writing assignment and was completed in a computer-based language lab. This task required the subjects to write an essay of approximately 300 words on the advantages and disadvantages of FOT technology/tools for Second Language (L2) learners (See appendix H). As instructed in the four other tasks, the subjects video-captured their computer screen while completing this task.

One may argue that due to the chosen topic, the fifth task is biased and contradicts the first ethical principle of the study, preventing the data collection process from affecting the quality of the course (for more detail on ethical considerations, see section 3.7). I would like to refute this argument by clarifying two points: 1) “Advantages and disadvantages” is one of the common writing genres covered at the bridging level and fully conforms to the writing learning objectives of the course (see Appendix I). 2) Since this was the last task, I intended to both observe the interaction of the subjects with FOT tools (the main purpose of data collection) and to collect information on their opinions about the benefits and demerits of FOT tools for L2 writers.

3.4.3 User satisfaction survey.

A questionnaire was needed to collect students’ responses about their use of and attitudes towards FOT tools. Closed questionnaires are considered the most popular means of collecting qualitative data. To explain the nature of questionnaires, Brown (2001) provides the following definition: “Questionnaires are any written instruments that

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

present respondents with a series of questions or statements to which they are to react by either writing or selecting from among existing answers” (p. 6). Broadly speaking, questionnaires can be used to gather three types of data about participants: factual, behavioral, and attitudinal. Factual questions are used to find out who the participants are, as they cover demographic characteristics (e.g. age, gender, and race, level of education, occupation) as well as any other background information that may be relevant to interpreting the findings of the survey. Behavioral questions are used to find out the participants’ actions, habits, lifestyles and personal history. Attitudinal questions are used to find out what participants think, and typically cover attitudes, opinions, beliefs, interests and values (Dörnyei, 2010; Rasinger, 2007).

Google Forms was used to build, distribute, collect, and analyze the user satisfaction survey (see Appendix J) that the subjects completed at the end of the data collection period. The survey aimed to gather information on how FOT tools had been used in the process of L2 writing by the participants and on whether they had been satisfied with such tools. Factual (demographic) questions included participants’ age, gender, and linguistic background. Behavioral questions included participants’ self-reported frequency of using FOT tools, direction of translation (English to L1 or L1 to English), purposes of use of FOT tools (e.g., translating words, translating phrases, checking for accuracy of English words used), and extent of post-editing content produced by FOT tools. Attitudinal questions included how useful participants perceived

FOT tools to be. The survey was sent to the participants after they had recorded the last video— during the last week of the course. The participants were given one week to complete the online survey and return it. Of 21 participants, 19 completed the survey. The results of the survey will be discussed in the next chapter.

3.4.4. Semi-structured interviews.

Semi-structured interviews were designed to shed light on other aspects of this study's research questions and its corresponding research goals. These interviews were described as semi-structured for two main reasons. First, not all students were invited for the interview, for only six students actively (noticeably) used FOT tools in completing their writing tasks, and, moreover, they used FOT tools to different degrees and in different ways. Only these six participants were chosen to be the subjects of further observation through semi-structured interviews. Secondly, interview questions constituted a framework to guide the conversation in line with research objectives. This, however, did not determine the interview outcome, as interview questions simply supplied a structure for the conversation flow rather than a rigid framework for the interview outcome. It was therefore foreseen that the conversation could go in unexpected directions or some issues could come up that were not planned when preparing the interview. As a result, interviewees were not only given the freedom but also encouraged to come up with their own reflections during the course of interview.

3.4.5 Learner multimodal corpus (collected data).

The corpus of this study consists of the following: a total of 98 videos (1030 minutes) that record the process of completing ESL writing tasks by 21 subjects; the task outcomes in the form of the written products produced by students during the tasks; 19 completed user satisfaction questionnaires, collected and saved electronically; and six audio interviews together with their transcripts.

During the 12 weeks of data collection, the subjects periodically saved the videos on a memory stick. At the end of week 12, the subjects signed a consent form, allowing me to use the videos for data analysis. The videos that had been saved in .mp3 format by the participants were converted into .avi to be compatible with Morae⁸, the software that had been initially chosen for annotating the videos. The .avi videos were then saved in a different folder with 21 subfolders, one subfolder per subject. Subfolders were named numerically to maintain subjects' anonymity. I also created an Excel sheet to record detailed information about the video corpus. The Excel sheet contains features such as the number of videos recorded by each participant, length of each video, subject of each video and so forth.

⁸ During the data analysis phase a different program (Transana) was used. Most of the .avi videos were compatible with Transana, but a few videos did not open in Transana. Luckily, the tool supported the .mp3 format of those videos.

3.5 Data Analysis

Creswell and Plano Clark (2007, p. 128) state that in mixed methods research, data analysis involves analyzing the quantitative data using quantitative methods and the qualitative data using qualitative methods. The data analysis of this study consists of three sections: observation analysis (quantitative), questionnaire analysis (quantitative) and interview analysis (qualitative). The overall structure of the data analysis process followed is illustrated in Figure 3.

Finally, the results obtained from the user satisfaction questionnaires and the interviews were then triangulated to improve the validity and reliability of the research findings. Since questionnaires and interviews are the tools employed for measuring user satisfaction with the tool, methodological triangulation, which refers to using more than one method for gathering data (Denzin, 1978; Webb et al., 1966) was used in this section of data analysis.

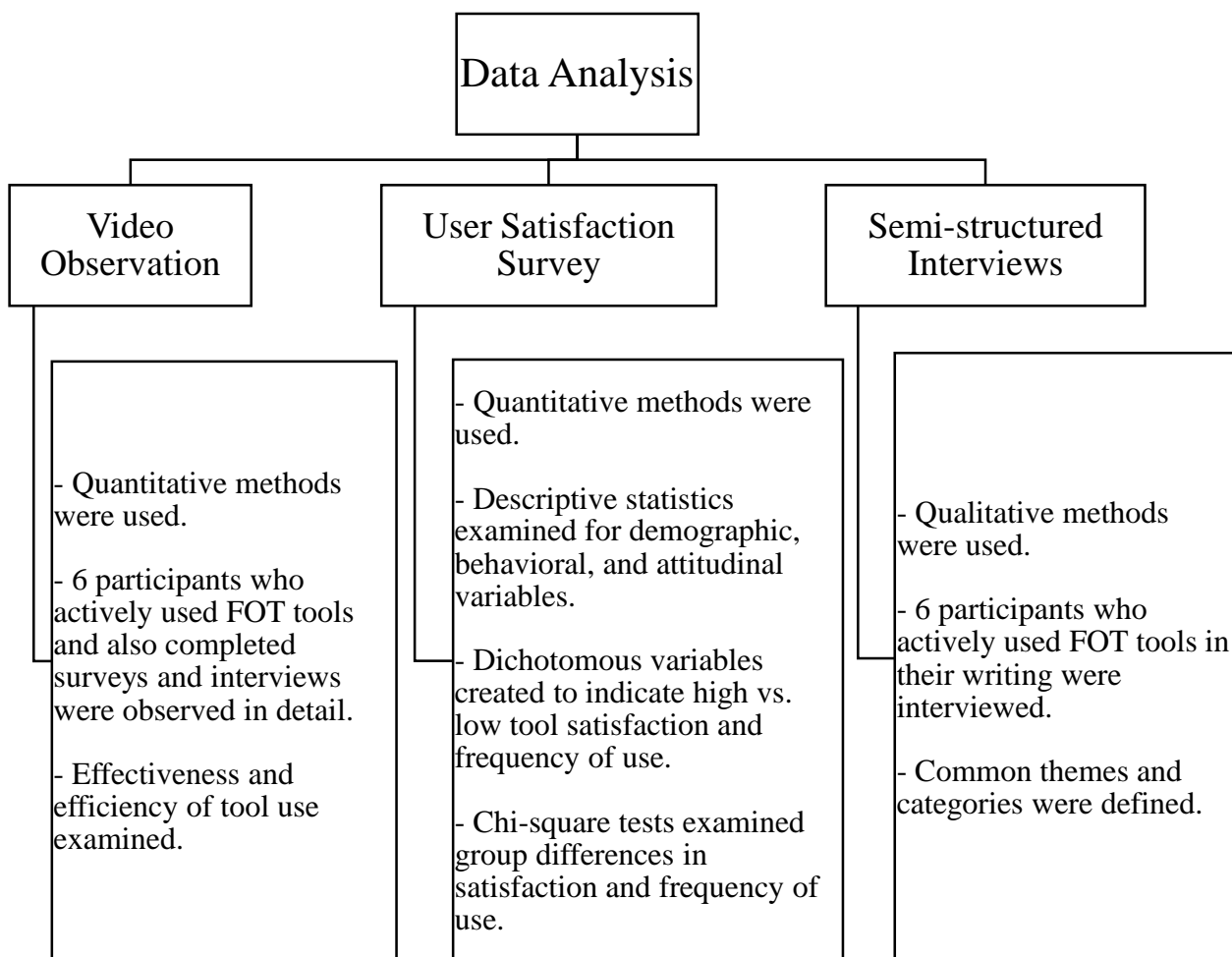


Figure 3. Data analysis procedure.

3.5.1 Observation analysis.

Initially Morae had been the software program selected for annotating the video. However, since the tool became unavailable during the data analysis phase, Transana, another video analysis computer program, was used to code the data from the observations—the videos recorded during the 12-week period of data collection. For each time a participant was observed on video using FOT tools to translate a linguistic

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

segment between his or her L1 and English, the resulting segment was noted in the student's final written product. These translated linguistic segments were then analyzed to assess the effectiveness and efficiency with which students used FOT tools. The set of effectiveness and efficiency parameters selected to analyze the product and the process of FOT tool use in ESL writing tasks were based on Hamel's (2011) usability studies.

These parameters are discussed in detail below.

3.5.1.1 Effectiveness parameters.

The effectiveness of the students' use of translation tools was assumed to be reflected in the quality of the end product of the writing tasks (Nielsen, 2000). For this study, the quality of the completed writing tasks was assessed based on three major criteria: accuracy (grammatical structures and vocabulary use), variety (range of grammar and vocabulary) and overall communication. To assess these criteria, I evaluated each assignment using the standard CanTest writing evaluation rubric (see Appendix C).

3.5.1.1.1 Accuracy.

According to the CanTEST writing evaluation rubric (see Appendix C), accuracy is the proportion of correct grammatical structures and vocabulary used in an ESL essay. The number of errors and the degree to which they interfere with understanding while reading the text determine if the subjects have used the FOT tools properly every time they employed them. Therefore, for each instance in which a participant used a FOT tool

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

to translate between his or her L1 and English, I coded the resulting linguistic segment (word, phrase, or sentence) as a correct or incorrect use of English grammar and vocabulary. To arrive at an overall accuracy score for each participant, the total number of grammatically correct translated segments was divided by the total number of segments translated using FOT tools by that participant.

3.5.1.1.2 Variety (range).

Range, or variety, represents the extent of control that participants exhibit over various grammatical structures and vocabulary words. To evaluate range, the author examined each linguistic segment written by students and noted whether only simple structures and meaning segments were used in a text or whether complex syntactic and semantic elements were also used. This determination was based on the instructions provided in the CanTest Writing Assessment Rubric (see Appendix C). In accordance with the guidelines in the CanTest manual, numerical values were assigned to each interaction with FOT tools based on the variety exhibited (relative to segments for which FOT tools were not used). These scores ranged from 0 (representing no increased variety) to 1 (representing an increase in the variety of grammar and vocabulary structure). In order to arrive at an overall variety score for each participant, I calculated the mean of that participant's machine translated variety scores.

3.5.1.1.3 Overall communication.

The communication criterion refers to the writer's overall effectiveness in

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

conveying a message. Each linguistic segment resulting from the use of FOT tools was rated to indicate whether or not the writer had conveyed the intended meaning clearly. This assessment was based on the amount of extra effort required of the reader to understand the text. To arrive at an overall communication score for each participant, translated segments were given numerical values: (0) if the translated segment did not read like English, and (1) if the translated segment read like English, according to the protocol described in the CanTest writing assessment rubric. To arrive at an overall communication score for each participant, the number of that participant's translated segments that read like English was divided by the total number of segments translated using FOT tools by that participant.

3.5.1.2 Efficiency parameters.

Efficiency parameters are defined in relation to a measure centered on the time and effort spent on the tasks combined with the outcome of that effort (Nielsen, 2000). In the context of this research, the analysis of the process of writing focuses on the efficiency of the interaction between the participant and the FOT tools by measuring the task duration and the efforts expended. In simple words, the participants' behavior and interaction with FOT tools, the frequency of use and nature of FOT tools used during the writing process captured by Screen Capture Technology (SCT) were quantitatively calculated and carefully analyzed. The amount of time (in seconds) that participants spent on each translation was observed via the videos and was combined with the observed

outcome of that interaction to create an efficiency score in which a higher number represented a more efficient interaction. Specifically, for each instance in which a participant was observed interacting with FOT tools, the interaction was coded as (-1) if more than 15 seconds were spent without producing a linguistic segment, (0) if less than 15 seconds were spent without producing a linguistic segment, or (1) if a linguistic segment was produced in 15 seconds. In order to arrive at an overall efficiency score for each participant, the mean of the efficiency scores for each FOT tool interaction was calculated.

3.5.2 Questionnaire analysis.

In this study, questionnaires were distributed to the participants of the study. A total of 19 participants completed the questionnaires. An analysis of the data collected from the questionnaires provided me with the material needed to understand the extent to which FOT tools are used by participants and also the level of satisfaction with these tools. All data was examined for errors and incompleteness. All the items in the questionnaire were examined using the statistical package for the social sciences (SPSS) for Mac version 19.0 for statistical analyses. Descriptive statistics were employed to summarize all major items selected from the data set and are presented in the next chapter. Dichotomous variables were created to represent high and low levels of satisfaction with FOT tools and frequency of using FOT tools (discussed in more detail in

Chapter 4). These variables were then used in chi square analyses to examine group differences in tool satisfaction and frequency of use.

3.5.3 Interview analysis.

6 participants actively used FOT tools in completing their writing tasks. Semi-structured interviews were conducted with these participants. The method employed to analyze these semi-structured interviews was theme and content analysis. This is the most popular approach of analyzing data from semi-structured interviews. For the purpose of analyzing data, I started by listening to the recorded interviews and reading all the notes made during and after the interview. Next, I reviewed every comment made by participants and the text I wrote while transcribing the interviews. After this, I identified common themes present in the interviews and created categories (or codes) for each theme. Themes and categories are commonly used to extract useful information from interviews. The coding step in qualitative research is crucial because it enables readers to interpret the data in a meaningful way. The coding can consist of key words that illustrate complete sentences or notes taken by the researcher.

I also used MS Word 2007 track changes feature to assist in coding and creating themes. Using this feature, I could emphasize text that showed interaction patterns, highlighting it and adding comments. When a comment was added, Word gave it a number and saved it in a separate comment pane. Word also shaded the text that had been commented on and highlighted comments when the cursor was placed over the text. With

the help of this word-processing feature, I was able to analyze each interview and offer interpretations to help answer the research questions.

3.6 Action Research

The current study is designed following the principles of action research. Teachers who carry out this mode of investigation take on the role of researchers to collect, analyze and interpret information in their classrooms, schools or institutions in order to improve their practices. These researcher-teachers tend not to depend solely on theories formulated by those who may not be aware of the intricacies of teaching and learning (Hubbard & Power, 2003), but to use their own experiences to develop research questions, and in turn, use the findings of their research to improve their teaching practices. Action researchers may even swim against the stream of current trends or recommended practices when they notice a problem in their practice. According to Baumfield et al. (2008) the purpose of action research may vary from a reflection on “attitudes or beliefs”, to an investigation of students’ behaviors, to an inquiry into learning objectives in a classroom setting. It engages an educator in collecting data on observable behaviors by participants when a change in normal practice occurs.

Action research is, therefore, one key to improving teaching practices. In many cases it is conducted simply to enhance the learning experience of students, making learning a more rewarding and enjoyable activity. However, teachers sometimes embark on certain studies when they identify potential problems, or believe that certain practices

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

are not working or could improve. For instance, this study began when my colleagues and I noticed that some of our students, for the lack of a better word, overuse FOT tools.

This teacher-oriented method of investigation is a simple but systematic process. It is an asset in the studying teaching practices because it is both informative and practical. It paves the way for greater communication among educators as it entails collaboration in both the enquiry and presentation stages. The researcher not only learns but shares his knowledge with other beneficiaries. Reeves (2008) declares that teachers who conduct action research ultimately achieve three goals: 1) they positively affect their students' achievement; 2) they help their colleagues' practices; and 3) they as well as other teachers benefit from improved educational procedures.

3.6.1 The need for action research.

Research on classroom teaching practices and student learning may broadly be categorized as either academic research or teacher research. Academic research is the more traditional approach. Its features include its objectivity and universality. There is no prejudice involved. It is dependent on facts, building up theories and imparting knowledge after disseminating it. Hence, this research can be considered scientific and sound. Normally, it is academic researchers who are credited with the discovery of new theories. These theories are published in books, articles or reports and presented at seminars and conferences. Through this dissemination process, the research findings and corresponding theories and recommendations reach teachers who are presumed to benefit

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

as they utilize this to improve their learning and teaching. Indeed, academic research has proved beneficial to teachers, course designers and material writers in their respective works, and researchers' findings are eventually implemented by teachers in many cases (Wallace, 1998).

Academicians, however, are rooted in theories while teachers are dependent on practicality (Ashour, 2008). Sometimes the work of academic researchers may not generate the type of data required by teachers and used by students. It is not an easy task to translate the knowledge acquired by research into practice. Thus, an incompatibility may exist between the research of academicians and the needs of teachers (Wallace, 1998). Indeed, teachers are not always happy with academic research. They claim that outside research is of little help because the researcher may not have material required or a clear understanding of classroom needs.

Due in large part to this discrepancy between the academic research available and the needs of teachers, a transition has occurred in which some teachers have become researchers themselves. Experienced teachers are able to consider the practical issues of the classroom in a way that theoretical research does not. In addition, the process of conducting research enables a teacher to grow professionally and undertake a systematic self-study. This is an asset in developing curriculum (Ashour, 2008). The process of investigating and reviewing one's own teaching, making alterations that benefit learners in the long run can be inspirational and challenging for a teacher. This process whereby

teachers themselves become an integral part of research intended to improve teaching practices has become known as action research (Wallace, 1998).

3.6.2 Conducting action research.

Action research is a stepwise process whose initial stage is selecting an area of focus and establishing the topic to be investigated. The second step involves classifying theories where strategies that aid students to adopt more responsible classroom habits are identified. Third, the research questions that guide the inquiry are specified. Once data has been collected, it is analyzed and sorted. The results are then reported in informal settings. The final stage in the process involves taking action by considering the knowledge gained, learning from trial and error and acquiring reliable data (Sagor, 2000).

Action research can be conducted through multiple means. Methods may include observation of behavior and patterns, examination of notes and documents, or analysis of audio or visual records such as photographs or videos. Action research can also include non-observational techniques such as interviews, questionnaires, or surveys as well as through historical observations of careers and lives of individuals. After the relevant data is collected, it is analyzed systematically. Assuring the accuracy, validity and reliability of data collected ensures the effectiveness of the research findings effective (Burns, 1999).

3.6.3 Action research and second language teaching.

In the context of second language teaching, the focus of the present investigation, action research is frequently used to address issues that teacher researchers in the field of the L2 teaching find problematic in their classrooms. In Craig's (2009) words, this "practical and participative" mode of research has contributed significantly to the improvement of practices in the field of EFL/ESL (also see Burns, 2005).

L2 teacher researchers, who adopt an action research framework, introduce reform in the L2 teaching environments. By conducting participative studies, L2 teacher researchers engage learners, examine tasks and procedures used in their teaching to find solutions or more appropriate outcomes to specific problems they face in their classrooms (Cohen et al., 2000). L2 teacher researchers can fill the gap between rather far-fetched research undertaken by applied linguistic theorists and actual problematic areas in the L2 classrooms.

As Burns (2005) presents, some of the main objectives and scope of action research in the field of L2 teaching are as follows.

1. Classroom research conducted by teacher researchers who investigate issues related to specific teaching or learning conditions to find possible solutions
2. Studies that set out to examine changes in curriculum and the processes that take place as a result of such changes (also see Lotherington, 2002)

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

3. Action research studies that aim to bridge the gap between academic research and real classroom practices and needs (also see Dufficy, 2004)
4. Studies that are designed to facilitate the professional development of educators
5. Action research that aims to familiarize L2 teachers with research skills and involve them in classroom research so that they broaden their overall knowledge of research (also see Burns, 1999)
6. Classroom research set out to improve L2 teachers' applied, hands-on theories relevant to their teaching (also see Golombek, 1998)

Action research may serve other purposes, but, as mentioned above, it mostly encourages the concept of “teacher as researcher”. This movement in the L2 teaching field has encouraged many L2 teacher researches to conduct classroom studies, tackling issues they noticed in their classrooms. The following paragraphs present some of these problems and explain how an action research framework has been adopted to deal with L2 teaching problems.

For instance, research shows that many second language learners lack confidence and are thus passive and uncommunicative in language classrooms. It is therefore vital to ensure that the non-native language (e.g., English) is used more actively in the classroom. Speaking a FL skillfully can boost an individual's self-image. It is also important to be

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

able to communicate and express thoughts in a language which both speakers can understand (Burns, 1999). To achieve this level of L2 proficiency, FL researcher teachers follow action research principles. They identify the problem, observe their students' behavior, collect relevant data on their behavior—the way they communicate, why they resort to their L1 and the skills they lack—then analyze and interpret the data they have collected to come up with certain conclusions. Based on these conclusions, researcher teachers will give learners explicit instructional goals, allow them opportunities to make their own contributions, encourage active communication, teach learning strategies and teach grammar showing the form and function, let learners work with original and reliable data and give learners a chance to self-monitor and work cooperatively. However, the range of research tools, techniques and methods available to assess the effectiveness of these strategies and build upon them needs to be maximized. To make learners more proficient in language, encouraging their participation in class and their oral communication in a group as well as applying their skills outside the classroom are necessary. Grammar and vocabulary can be developed when learners are involved in the processing and production of discourse. Teacher researchers working in language education need to expand the range of their research tools, techniques and methods to obtain quality and give a boost to the lack of confidence of learners (Wallace, 1998).

In action research, specific instructions and goals are given to learners who have

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

ample opportunities to contribute towards the learning process. Since communication is a deterrent factor, adequate encouragement is necessary for their skills to be applied even outside the classroom. Learners can self-monitor their progress on work in collaboration with others, but learning procedure and content, the form and function of grammar requires to be taught. It is vital that learners avail genuine and accurate data only (Rahmani Doqaruni, 2014).

Action research is related to studying classroom actions when second language is involved. Practicing language teachers, who themselves are sources of knowledge, find this mode of research reliable because they can investigate issues related to their practices by studying the behavior of their own students. Language teachers need to be focused and systematic, monitor changes, have a follow-up plan, record lessons, and be more practical than theoretical. Therefore, they should be given the tools which they can utilize to bring in changes, expand the base of knowledge and develop skills related to research after a profound understanding of teaching and learning procedure. To reduce errors in grammar, it is essential that emphasis be given to reading, writing, speaking and listening equally. Interaction in the language class, group discussions and working in pairs help motivate learners in language use and improve vocabulary. Learning strategies and techniques, assessing policies and evaluating outcomes should be exclusively taken into account. Information concerning classroom events can be gleaned via interviews, questionnaires, field notes, observations, transcriptions and audio-video recordings

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

(Wallace, 1998).

Another important factor that should not be overlooked in action research is collaboration of teachers in order to collect information from different sources and check if there are discrepancies. Sharing personal reflections, plans and philosophies helps teachers in tackling issues easily and finding the right solutions (Burns, 1999). The problem can then be explicitly addressed by changes in teaching practice and a reflective review of useful classroom skills (Rahmani Doqaruni, 2014).

As Sagor (2000) asserts researchers who conduct action research enjoy an enriching experience because not only is this mode of investigation pertinent to the participants but it also helps educators modify their practices based on the results they gain. Educators, who are also the researchers, are the ones who determine the focus of their research projects and are “the primary consumers of the findings”.

The action research process consists of seven steps: choosing an area, illustrating theories, recognizing the question in research, collecting and observing data, conveying conclusions, taking informed action (see Sagor, 2000).

Second language learners are known to be reticent in the classroom and do not participate in oral classroom activities. This may be due to the fear of speaking in class, previous negative experiences in class, cultural beliefs or a habit of maintaining silence as a sign of respect for the teacher. Introducing interview techniques, questionnaires and speaking activities helps to build confidence in using a FL. Research has proven that

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

when student participation is active, their academic achievement is also high. In second language, confidence, motivation and language ability are interrelated. It is therefore suggested that cooperation and not competition should be the goal of learners. When they realize that flaws, errors are a part of learning procedure and they should be ready to accept the challenge to learn, they are psychologically moving in the right direction. Not everything depends on the learners. Teachers too have a positive contribution to make. Action research requires experienced teachers to explore new ideas, examine their teaching content and have a keen insight into their work. Teachers are not merely holders of knowledge but creators of it too (McNulty Ferri, 2010).

3.6.4 Problems faced in action research.

Despite being very popular, action research entails some drawbacks. Many critics point to potential problems stemming from the direct involvement of the practitioner in the research. For instance, if the students fear giving honest answers to their own teachers, research findings may not be valid. Students may also feel coerced or pressurized into participating in studies conducted by their own instructors, a major violation of the ethical principles of academic research. However to overcome these drawbacks, I tried to minimize these risks by informing my students about the study at the beginning of the semester and letting them know that participation would be

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

completely optional. I also reassured the students that their decision as to whether participate in the study or not would not affect their final scores.

Similarly, in cases where colleagues are asked to evaluate one another by the institution, practitioners may fear damaging their working relationships should they put forward criticism of a colleague's methods. Students may also feel in studies conducted by their own instructors, a major violation of the ethical principles of academic research. Again, this issue does not apply to this particular study.

Concerns have also been raised regarding whether accurate and unbiased reporting of findings can be expected by a researcher whose own methods are the subject of evaluation. For instance, if the findings reveal criticism of the practitioner's methods, he or she may hesitate to include those findings in the research report. In order for action research to be effective, practitioners facing divided loyalties must follow ethical principles by reporting accurate data despite pressures to do otherwise (Bennett, 2004). This study focused on the behavior of learners rather than my methods of teaching, and my intervention was minimal throughout the course of data collection. Therefore, I did not worry about including all the findings of this study, nor was I concerned about my methods of teaching being criticized by others. However, it is fair to mention that I designed the research, conducted it in a course that I taught, and marked the writing sections for which FOT tools were used.

3.6.5 Conclusion.

Action research, when conducted effectively and ethically, can bridge the gap between academic research and teachers' needs. When done correctly, it can bring about improvements in the classroom by motivating teachers to enhance their practice in areas pointed out by their students. Action research can be one way to bring the type of professionalism associated with corporate sectors to teaching practice. It can also provide a means of better understanding a heterogeneous student body. Thus, it can be concluded that action research recognizes the "wisdom of practice" in teaching systems (Sagor, 2000). The present study aims to bring the advantages of action research to the study of L2 writing by building upon the author's own observations to build a scientifically sound exploration of MT use by L2 students. It is hoped that the results of the study will help improve teaching practice in L2 writing courses.

3.7 Ethical Considerations

According to ethics guidelines, when researchers conduct in-class experimentation, they must take the necessary steps to ensure full consent of all participants, maintain their complete anonymity, and guarantee that the pedagogical value of research outcomes accounts for the use of class time for data collection (see ethics guidelines, OREI). The quality of the course in which data was collected, the impartiality of the collected data, and the confidentiality of the participants were therefore the three major ethical concerns in the context of the present study.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

1. To respect the first ethical principle, I had to ensure that the data collection process would exert no adverse effect on the quality of the course. I made determined efforts to keep the intervention as minimal as possible throughout the data collection process. The use of authentic writing tasks, which were part of the course curriculum (see section 4.4.1.3), was a measure I took to ensure minimal intervention.
2. Second, in order to avoid research bias, I implicitly communicated my research intention to the subjects. That is to say, I mentioned online translation tools among other online auxiliary resources that students were allowed to use for completing their writing tasks. The main purpose of the study, i.e. the frequency, quantity and quality of the use of translation tools, was neither explicitly nor implicitly revealed to the participants. Not familiarizing the subjects with the main purpose of this study allowed me to observe and document students' natural behavior and tendencies during the production of a writing task in a more authentic way. In the next chapter, it will be noted that the subjects were not directed to produce desired results; indeed, while some students did not show any interest in using translation tools when carrying out their writing tasks, others used these tools to varying qualitative and quantitative degrees.
3. The issue of maintaining the subjects' complete anonymity was another ethical concern. Since I collected recordings of the subjects' computer screens, subject privacy and confidentiality were serious matters. Some may argue that participants

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

could not be assured of secrecy unless their identity was entirely concealed in the videos (see Derry, 2007). However, masking data in video recordings not only was expensive, it might also have compromised the authenticity of the collected data. To solve this problem, I therefore asked the subjects to choose fake names throughout the process of data collection.

Chapter 4: Results

4.1 Introduction

In this chapter, the data collected for this study are analyzed, and the results are presented and discussed in detail. First, quantitative research methods are used to analyze the video data. Specifically, statistical analyses are employed to measure the effectiveness and efficiency with which ESL students use FOT tools while completing assignments. Next, quantitative methods are also used to assess the data collected from user satisfaction surveys. Specifically, both students' perceptions of FOT tools and the ways in which they reported using these tools are described. Students' perceptions of the strengths and weaknesses of these tools are also presented. Finally, the semi-structured interviews are analyzed qualitatively to shed more light on what active users of FOT tools think of these tools and how they actually use these tools for L2 writing purposes.

4.2 Observation (Videos) Analysis

The videos that had been recorded by participants while completing writing assignments were analyzed by the author to address the first research question, “**If L2 learners resort to FOT tools while completing writing tasks, how do they use such tools?**”.

4.2.1 Extent of FOT tool use by students.

First, the number of times that each participant used FOT tools while completing writing tasks was counted. The initial observation indicated that seven participants did

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

not use FOT tools at all (no-use), that 6 participants used FOT tools only once or twice (low-use), and that 8 participants used FOT tools 7 to 21 times (high-use) during the writing tasks—that is approximately 33.3% of the participants were classified as “no (FOT tools) users”, 28.6% as “low (FOT tools) users”, and 38.1% as “high (FOT tools) users”. Participants’ frequency of FOT use is illustrated in Figure 4.

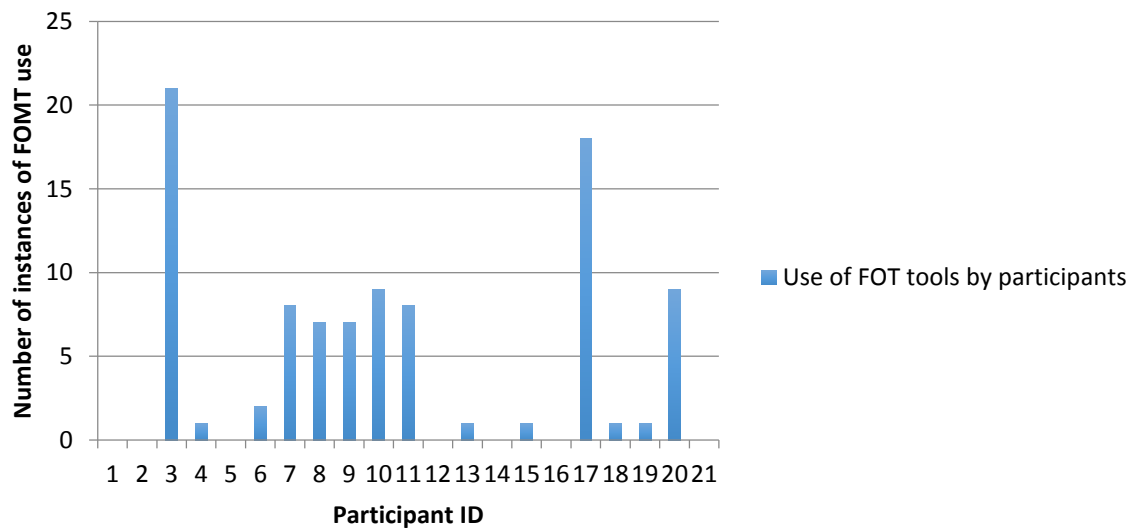


Figure 4. The overall use of FOT tools in completing writing tasks.

4.2.2 Purposes for FOT tool use by students.

The ways in which students used FOT tools was also observed. Of the 8 students who significantly used FOT tools, 7 used them to translate only from their L1 into English, and 1 student translated in both directions. The most commonly observed uses for FOT tools were *translating words from their L1 into English* (61%), *translating phrases or expressions from their L1 into English* (39%), and *double-checking the meaning accuracy of words or expressions by seeing their meaning in their L1* (33%).

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Effectiveness and efficiency analyses were carried out for the 6 participants who were high FOT users and also completed the surveys and interviews. As described in Chapter 3, participants' effectiveness and efficiency in the use of FOT tools was calculated based on video observations and the students' final writing samples. These parameters were then used to analyze the product and the process of FOT tool use in ESL writing tasks.

4.2.3 Effectiveness parameters.

In order to address the second research question, “**How effectively and efficiently do learners in the L2 writing classroom use FOT tools?**” the effectiveness of the students' use of translation tools was assumed to be reflected in the quality of the end product of the writing tasks (Nielsen, 2000). The quality of the completed writing tasks was assessed according to three major criteria: accuracy (grammatical structures and vocabulary use), variety (range of grammar and vocabulary) and overall communication. The videos were carefully watched, annotated and analyzed to assess against the effectiveness criteria defined in Chapter 3. Because the current study has a small sample size (6) and one cannot expect that the distributions of parameters are normal, “median” is used as a measure of central tendency rather than mean (Berenson, Levine & Krehbiel, 2011).

4.2.3.1 Accuracy.

As explained in the Methodology chapter, accuracy, in the context of this study,

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

was defined as the extent to which proper English grammatical structures and vocabulary were used in the writing tasks completed by participants. In other words, the accuracy score reflected correctness of the grammatical and vocabulary segments produced (translated) using FOT tools. For each instance in which a participant used a FOT tool to translate between his or her L1 and English, I coded the resulting linguistic segment (word, phrase, or sentence) as a correct or incorrect use of English grammar and vocabulary. The total number of grammatically correct translated segments was divided by the total number of segments translated using FOT tools by that participant to calculate an overall accuracy score for each participant.

Participants' accuracy scores ranged from 0.67 to 1, with a median of 0.74, indicating that approximately 74% of the linguistic segments translated by students using FOT tools resulted in production of linguistic segments that were grammatically and semantically correct.

4.2.3.2 Variety.

As discussed in the last chapter of this thesis, in the context of this study, variety represents the extent of control that participants exhibit over different grammatical structures and vocabulary words. To evaluate variety, I examined each linguistic segment produced with the assistance of an FOT tool and determined whether only simple grammatical structures and meaning segments were used in the text or whether complex syntactic and semantic elements were also used. This determination was based on the

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

instructions provided in the CanTest Writing Assessment Grid (see Appendix C).

Numerical values were assigned to each interaction with FOT tools based on the variety exhibited relative to segments for which FOT tools were not used. These scores ranged from 0 (representing no increased variety) to 1 (representing an increase in the variety of grammar and vocabulary structure). In order to arrive at an overall variety score for each participant, I calculated the mean of the scores for each of that participant's machine translated linguistic segments.

Participants' variety scores ranged from 0.55 to 1, with a median of 0.67, i.e. approximately 67% of the times that students used FOT tools, these tools increased the variety of vocabulary and grammatical structures that the students were able to include in their written English work.

4.2.2.3 (Overall) communication.

As mentioned in Chapter 3, the final effectiveness parameter was defined as the overall effectiveness in conveying a message. Overall communication, also referred to as communication, signifies whether the use of FOT tools resulted in linguistic segments that were easy to understand and that "read" like English, or whether the use of these tools produced segments requiring extra effort of the reader to understand the intended meaning. To arrive at an overall communication score for each participant, the author attributed numerical values to each translated segment: (0) if the translated segment did not read like English and (1) if the translated segment read like English, according to the

protocol described in the CanTest Writing Assessment Rubric (see Appendix C). The number of translated segments that read like English was divided by the total number of segments translated by that participant to calculate an overall communication score for each participant.

Overall communication scores ranged from 0.285 to 0.875, with a median of 0.62, indicating that approximately 62% of the linguistic segments translated by students using FOT tools were judged to read like English according to the CanTest writing assessment rubric.

4.2.3 Efficiency parameter.

The efficiency parameter concerns the time and effort spent on the tasks (Nielsen, 2000) combined with the outcome of that effort. As described in Chapter 3, each interaction between the participant and the FOT tools was coded between (-1) and (1) based on the time spent and whether a linguistic segment was produced. Participants' scores were then averaged across interactions to arrive at an overall efficiency score, with lower scores indicating less efficiency and higher scores indicating greater efficiency. Participants' average efficiency scores ranged from 0.57 to 1, with a median of 0.81, indicating that, on average, students' interactions with FOT tools produced a linguistic segment in 15 seconds.

Figure 5 shows the median values of *effectiveness parameters* (accuracy, variety and overall communication) as well as the *efficiency parameter*.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

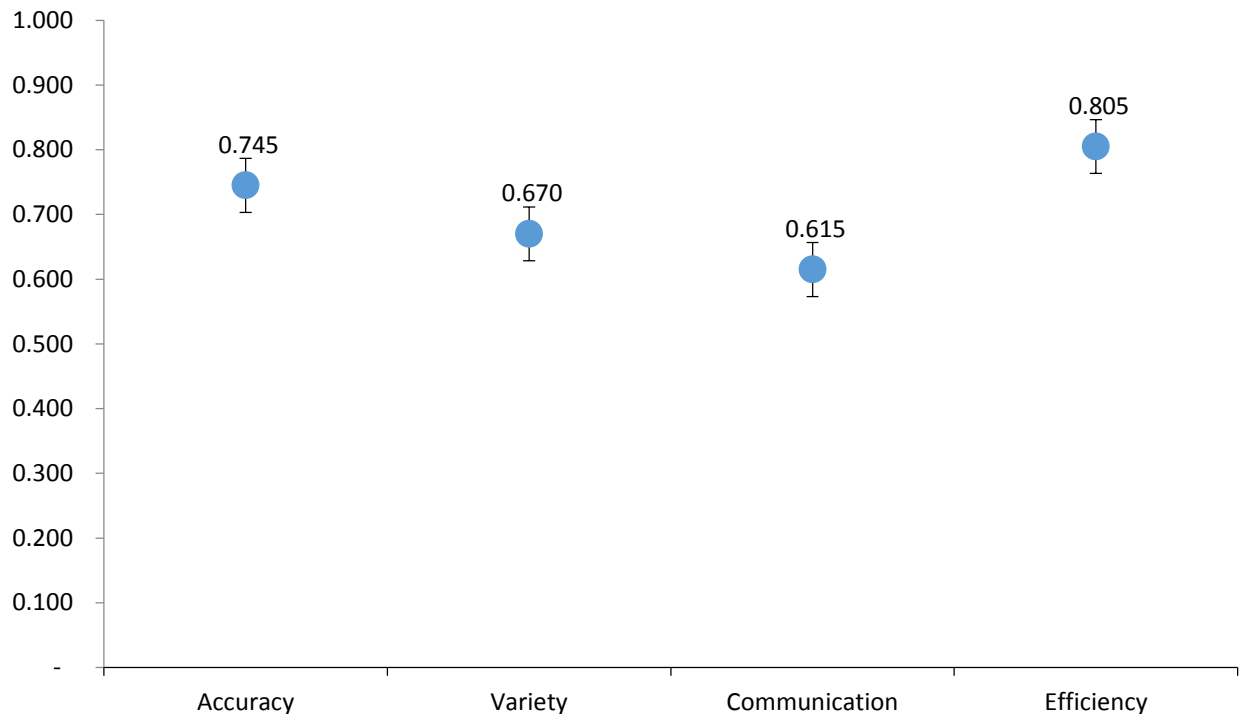


Figure 5. Median values of effectiveness and efficiency parameters.

As can be seen in Figure 5, of the three effectiveness parameters, accuracy has the highest value (0.745 or approximately 75%). Conversely, overall communication has the lowest median value (0.615 or approximately 62%). This means that FOT tools are most effective (for these 6 subjects) at producing accurate translations and least effective at producing linguistic segments that represent good communication. In other words, using FOT tools may result in linguistic segments that are somewhat grammatical but do not necessarily read like acceptable English linguistic segments. However, the results should be interpreted with caution, as the sample size is small.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

The analysis of the relationships among the four FOT tools use parameters is important for determining whether different characteristics of participants' FOT tool use are correlated. The Spearman coefficient of correlation (non-parametric correlation) was taken instead of the Pearson coefficient of correlation because of the small sample size (Nian Shong Chok, 2008). Correlations were calculated among the three effectiveness parameters (Accuracy, Variety, and Communication), between Efficiency and each of the three Effectiveness parameters, and between Overall Effectiveness (average of three Effectiveness parameters) and Efficiency. As shown in Table 5, all three effectiveness indicators are positively correlated, with the correlations between accuracy and variety and between variety and communication reaching statistical significance. Those participants whose FOT tool translations were more accurate also tended to increase their variety of English grammar and vocabulary using FOT tools. Similarly, those who increased their variety of English grammar and vocabulary used via FOT tools also tended to communicate effectively (by creating readable English segments) using FOT tools. In addition, participants' efficiency in using FOT tools was positively correlated with all three effectiveness indicators (significantly with Variety and Communication) and also with the Overall Effectiveness average score. On average, participants who used FOT tools more efficiently were also more effective in their use of these tools, especially with respect to increasing the variety of grammar and vocabulary used and writing readable English segments.

Table 5

Spearman coefficients of correlation between FOT tool use parameters

Parameter	Variety	Communication	Efficiency	Overall Effectiveness
Accuracy	.841*	.706	.794	
Variety		.928**	.928**	
Communication			.956**	
Efficiency				

Note: * Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

4.3 User Satisfaction Analysis

In order to examine the third research question, **“How satisfied are learners with using FOT tools for L2 writing?”** participants were asked to complete surveys assessing their use of and satisfaction with FOT tools. Nineteen of the 21 participants in the observational study (7 “no FOT users”, 6 “low FOT users” and 6 “high FOT users”) completed surveys. The remaining two high FOT users declined to participate despite multiple requests.

4.3.1 Self-reported use of FOT tools by language learners.

The first set of questions in the user satisfaction survey asked about behavioral variables pertaining to participants’ FOT tool use. Specifically, participants reported on

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

the frequency with which they used FOT tools, the direction of translation when using such tools, the purposes for which they used FOT tools, whether they post-edited the resulting translations, and which specific tools they used. Although these aspects of FOT tool use were also observed in the video recordings of in-class writing tasks described above, self-reported FOT tool use was considered an important and separate construct, as the questions referred to FOT tool use in any context, not only in-class writing assignments.

4.3.1.1 Frequency of use.

Participants' self-reported the frequency with which they used FOT tools on all projects during the preceding 12 weeks (the current academic semester) was examined. As can be seen in Table 6, when participants were asked how frequently they used FOT tools for completing writing tasks, 8 of 19 participants (42%) reported that they “*always* (or *almost always*)” used FOT tools, 4 participants (21%) selected “*usually*”, 4 participants (42%) reported using these tools “*often*”, and only 3 participants (16%) reported that they used the tools “*sometimes*” or “*occasionally*”. None of the participants chose “*never*” for this question. Thus, all participants reported using FOT tools at least some of the time, and the vast majority (84%) reported using them “often” or more frequently. However, the responses of the participants to this question did not correspond to their behavior observed in the videos. As mentioned earlier, only 6 of the participants who also responded to the user satisfaction survey frequently used FOT tools

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

while completing their observed in-class writing tasks. The other 13 participants used FOT tools two or fewer times and were categorized as no- or low-FOT users. For a more detailed comparison of students' observed behavior and their self-reported behavior, see section 4.5 below.

In order to allow examination of associations between frequency of self-reported FOT tool use and other constructs of interest, the frequency of use of FOT tools was transformed from a categorical variable to a dichotomous variable. Those who reported that they *always* or *almost always* used FOT tools were classified as “always” users and those who reported that they usually, often, sometimes, or occasionally used such tools were categorized as “sometimes” users. According to these criteria, 8 participants (42%) were classified as “always” users and 11 (58%) as “sometimes” users (see Table 6).

Table 6

Frequency of FOT Tool Use in the Preceding 12 Weeks

Response	Frequency	Percent	New Categories for Frequency Variable
a. Always	3	15.8	Always
b. Almost always	5	26.3	
c. Usually	4	21.1	Sometimes
d. Often	4	21.1	
b. Sometimes	1	5.3	
c. Occasionally	2	10.5	
Total	19	100.0	

4.3.1.2 Direction of translation for participants' use of FOT tools.

Participants were also asked to report whether they use FOT tools to translate from their L1 to English, from English to their L1, or both. Results showed that these tools were used for translation both from participants' L1 to English and vice versa. As shown in Table 7, the vast majority of participants (89.5%) reported using the tools to translate both from their primary language into English and from English to their primary language. The remaining 2 participants (10.5%) reported using the translation tools only for translating from their L1 to English, and no participants reported using the tools only to translate from English to their L1.

Table 7

Language Direction Usually Used FOT Tools

	Frequency	Percent
Both from my L1 into English and from English into my L1	17	89.5
Only from my L1 into English	2	10.5
Total	19	100.0

Again, the responses to this question were inconsistent with what was observed in the video recordings. In observations, all but one of the subjects who used FOT tools used them to translate from their L1 into English only.

4.3.1.3 Purposes for participants' use of FOT tools.

Another question enquired about a variety of different purposes for which the participants might use FOT tools. For each potential purpose (six total), participants were asked to indicate whether or not they used FOT tools for that purpose in the previous 12 weeks. The three most frequently endorsed purposes for using translation tools included: “Double-checking the meaning accuracy of words or expressions by seeing their meaning in your L1” (all participants); “Translating words from your L1 into English” (79% of participants); “Translating phrases or expressions from your L1 into English” (52.6%). The least popular purpose for which participants reported using FOT tools was “Translating bigger units than sentences (paragraphs for example) from your L1 into

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

English” (26%). For more details regarding the purposes for which participants used FOT tools, see Table 8.

Table 8

Purposes for FOT Tool Use

Purpose	Response	Frequency	Percent
Double-checking the meaning accuracy of words or expressions by seeing their meaning in your L1	No	0	0
	Yes	19	100
	Total	19	100
Translating words from your L1 into English	No	4	21.1
	Yes	15	78.9
	Total	19	100
Translating phrases or expressions from your L1 into English	No	9	47.4
	Yes	10	52.6
	Total	19	100
Translating collocations from your L1 into English	No	12	63.2
	Yes	7	36.8
	Total	19	100
Translating sentences from your L1 into English	No	12	63.2
	Yes	7	36.8
	Total	19	100
Translating bigger units than sentences (paragraphs for example) from your L1 into English	No	14	73.7
	Yes	5	26.3
	Total	19	100

The survey also asked whether, when using FOT tools, participants had to post-edit any part of the translation made by the tools. That is, when they used a tool to translate a word, phrase, or sentence from their L1 into English, did they have to edit the resulting translation to make it accurate and appropriate for English writing? All 19

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

participants reported having to post-edit at least some of the translations made by the FOT tools. Nine out of 19 (42%) reported having to post-edit *some* of what the tools translated into English; 9 participants (42%) had to post-edit *most* or *almost all* of their translations, and 1 participant (5%) reported having to post-edit *everything* that he or she translated into English (see Table 9).

Table 9

Statements About Post-Editing with FOT Tool Use

Statement	Frequency	Percent
a. I had to post-edit everything I translated into English	1	5.3
b. I had to post-edit almost everything I translated into English	3	15.8
c. I had to post-edit most of what I translated into English	6	31.6
d. I had to post-edit some of what I translated into English	9	47.4
e. I never had to post-edit what I translated into English	0	0.0
Total	19	100.0

As part of the questionnaire survey, participants were asked to report which translation tools they used to assist them in their English writing. Participants could list multiple tools. Sixteen out of nineteen participants (84%) reported that they frequently used the tool *Google Translate* for L2 writing purposes. This is by far the most popular translation tool, with the next most frequently mentioned tool, *Youdao*, reported by only five participants (26%).

4.3.2 User satisfaction.

The next section of the questionnaire focused on attitudinal variables. Participants were asked how useful they found FOT tools in their L2 writing. Responses to this question were then used to create a dichotomous satisfaction variable, and to examine group differences in user satisfaction with FOT tools.

4.3.2.1 Overall usability and satisfaction.

The core question of the survey concerned overall usability of the FOT tools in L2 writing. According to their survey responses, 10 out of 19 participants (53%) found FOT tools *very or extremely* useful when writing essays in English. Five participants (26%) found the tools *useful* and only 4 participants (21%) found them *fairly or not very* useful (see Table 10). Thus, overall, the vast majority of participants reported finding FOT tools useful to at least some degree when writing in English. This includes both participants who were observed “high FOT users” and “minimal (low- or no-) FOT users”.

User satisfaction with FOT tools was assumed to be reflected by their assessment of the usefulness of these tools. Therefore, the questions regarding “Overall usability of free online FOT tools in L2 writing” was transformed into a dichotomous satisfaction variable by classifying participants who found the tools *very or extremely* useful as “very satisfied” and those who found them *useful, fairly useful, or not very useful* as “not very satisfied” (See Table 10). According to this new variable 53% of participants (n=10) are

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

very satisfied with FOT tools, and remaining 47% (n=9) are not very satisfied (see Figure 6).

Table 10

Overall Usability of Free Online FOT Tools in L2 Writing

Response	Frequency	Percent	Free online FOT satisfaction
<i>a.</i> Extremely useful	3	15.8	Very satisfied
<i>b.</i> Very useful	7	36.8	
<i>c.</i> Useful	5	26.4	Not very satisfied
<i>d.</i> Fairly useful	2	10.5	
<i>e.</i> Not very useful	2	10.5	
Total	19	100.0	

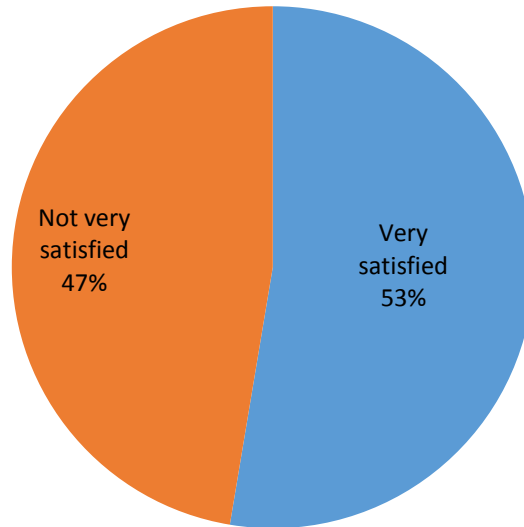


Figure 6. Participants' Satisfaction with FOT Tools.

4.3.2.2 Group differences in satisfaction with FOT tools.

A second goal of the present research study was to examine whether students' satisfaction with translation tools was related to the frequency with which they used these tools and/or to individual characteristics of the students. To address this question, I examined whether there were statistical differences in satisfaction with FOT tools between different groups of ESL students, including frequent vs. infrequent tool users, students using the tools for different purposes, men vs. women, and younger and older students.

First, in order to examine the relationship between satisfaction and frequency of using FOT tools, a contingency table was created and a Chi-square analysis performed (See Table 11). As shown in Table 11, there is a statistically significant relationship (Chi-square = 6.74, $p < .05$; David R. Anderson et al., 2011) between FOT tools use frequency

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

and satisfaction. Seven out of 8 participants who reported *always* using FOT tools during the previous 12 weeks (88%) are *very satisfied* with these tools, whereas only 3 out of 11 (27%) of those who used FOT tools only *sometimes* report that they are *very satisfied* with these tools.

Table 11

Satisfaction and Frequency of Using FOT Tools

FOT Tool	Frequency of FOT Tools Use			Total
	(Self-Reported)			
Satisfaction		Always	Sometimes	
Very satisfied	Count	7	3	10
	%	70.0%	30.0%	100.0%
Not very satisfied	Count	1	8	9
	%	11.1%	88.9%	100.0%
Total	Count	8	11	19
	%	42.1%	57.9%	100.0%
Pearson Chi-Square	Value	Df	Asymp. Sig. (2-sided)	
	6.739	1	.009	

In order to examine whether participants' self-reported satisfaction with FOT tools was associated with their *observed* FOT tool use during writing tasks, a second set of chi-square analyses were performed. According to the results of this analysis (shown

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

in Table 12), only 1 out of the 6 high-FOT users who completed surveys (17%) reported that they were very satisfied with FOT tools. In contrast, 9 out of the 13 minimal FOT users who completed surveys (69%) reported being very satisfied with such tools. This difference is statistically significant at the 0.05 significance level.

Table 12

FOT Tools Satisfaction and Observed FOT Use

Frequency of FOT Tools		FOT Tools Satisfaction		
Use (Observed)		Very satisfied	Not very satisfied	Total
Minimal FOT users	Count	9	4	13
	%	69.2%	30.8%	100.0%
High FOT users	Count	1	5	6
	%	16.7%	83.3%	100.0%
Total	Count	10	9	19
	%	52.6%	47.4%	100.0%
		Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square		4.55	1	.033

It was hypothesized that satisfaction with FOT tools might vary by participants' age or gender. Analyzing the association between the dichotomous FOT tools satisfaction variable and the two largest age brackets, however, showed that age and gender were not significantly associated with satisfaction (Chi-sq = 0.28, ns). Participants between the ages of 18 and 20 are equally likely to feel satisfied with the FOT tools as participants

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

between the ages of 21 and 25 (See Table 13). Similarly, the dichotomous FOT tools satisfaction variable was not significantly associated with gender (Chi-sq = 0.28, ns).

Male and female participants are as likely to feel satisfied with the FOT tools (see Table 14).

Table 13

Satisfaction with FOT Tools by Participant Age

FOT Tools Satisfaction		Participant Age Range		
		18-20	21-25	Total
Very satisfied	Count	5	5	10
	%	50.0%	50.0%	100.0%
Not very satisfied	Count	3	5	8
	%	37.5%	62.5%	100.0%
Total	Count	8	10	18
	%	44.4%	55.6%	100%
		Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square		.281	1	.596

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Table 14

Satisfaction with FOT Tools by Participant Gender

FOT Tools Satisfaction	Participant gender			Total
		Female	Male	
Very satisfied	Count	5	5	10
	%	50.0%	50.0%	100.0%
Not very satisfied	Count	5	3	8
	%	62.5%	37.5%	100.0%
Total	Count	8	10	18
	%	55.6%	44.4%	100%
		Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square		.281	1	.596

It was also hypothesized that participants' satisfaction with the FOT tools might vary with the purposes for which they used such tools. To analyze possible significant difference between participants' dichotomous satisfaction level (very satisfied and not very satisfied) and whether they had preferences to use FOT tools for different purposes or not, Chi-square test was performed and the results are combined and presented in Table 15.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Table 15

FOT Tool Use Purposes and Participants' Satisfaction

FOT Tools satisfaction		Double-checking the meaning accuracy of words or expressions by seeing their meaning in your L1	Translating words from your L1 into English	Translating phrases or expressions from your L1 into English	Translating collocations from your L1 into English	Translating sentences from your L1 into English	Translating bigger units than sentences from your L1 into English
Very satisfied	Count	10	10	8	5	6	4
	%	100.0%	100.0%	80.0%	50.0%	60.0%	40.0%
Not very satisfied	Count	9	5	2	2	1	1
	%	100.0%	55.6%	22.2%	22.2%	11.1%	11.1%
Total	Count	19	15	10	7	7	5
	%	100.0%	78.9%	52.6%	36.8%	36.8%	26.3%
Asymp. Sig. (2-sided)		Hypothesis testing not performed	.018	.012	.210	.027	.153

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

From the hypothesis testing results one can conclude that, compared with not very satisfied participants, a significantly (at 0.05 significance level) higher proportion of very satisfied participants used FOT tools for the following purposes: “Translating words from your L1 into English”; “Translating phrases or expressions from your L1 into English”, and “Translating sentences from your L1 into English”. There is no significant difference between very satisfied and not very satisfied participants, when they used FOT tools for “Translating bigger units than sentences from your L1 into English” or “Translating collocations from your L1 into English”. All participants used FOT tools for double-checking the meaning accuracy of words or expressions by seeing their meaning in L1 regardless of satisfaction level⁹.

In several open-ended questions, participants were asked to describe benefits and disadvantages of free online FOT tools for L2 writing. Benefits and disadvantages mentioned by participants were combined into several groups based on my interpretation of each comment’s main topic.

⁹ While interpreting the relationships between FOT tools satisfaction and use purposes, we should remember that we only estimate possible correlation between them, which is not causality.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Many students reported benefits of FOT tools in terms of tasks the tools could help them complete. As shown in Table 16, the most frequently cited such benefit, reported by 8 out of 19 participants (42%) is that they help participants to understand the basic meaning of a word, paragraph, or text. The next most frequently cited benefit is that the tools are believed to help enrich participants' English, reported by 5 participants (26%). Participants also listed several other functions that the tools helped them to perform. In addition to these uses for the tools, participants reported that the tools were fast (21%), free (21%), and convenient (11%).

Table 16

Benefits of Free Online FOT Tools for L2 Writing

Benefit	Frequency
The tools help me to...	
Understand basic meaning of a word, paragraph, text	8
Enrich English vocabulary	5
Write an unknown sentence	4
Check spellings	1
Most frequent translation of word in the Internet	1
Use translated words in a speech	1
Find collocations that I couldn't find on the dictionary	1
The tools are...	
Fast	4
Free	4
Convenient	2

Students also reported disadvantages to using FOT tools: most frequently that FOT tools are not always accurate (noted by 37% of participants (n=7)), and translations may be wrong in context (noted by 16% of participants). Participants also reported that using FOT tools can make students reliant on the tools (26%) and feel hesitant when speaking English (21%). Finally, participants noted that accessing the tools requires an

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Internet connection (11%). For more details on the disadvantages of FOT tools noted by participants, see Table 17.

Table 17

Disadvantages of Free Online FOT Tools for L2 Writing

Disadvantage	Frequency
Problems with Translations:	
Sometimes FOT tools are not accurate	7
Wrong meaning in a context	3
It is not good for writing test	2
Problems with Effects on Users:	
Make students rely on FOT tools	5
Feel hesitant while speaking in English	4
Problems with Access:	
Require Internet connection	2

4.4 Semi-Structured Interviews Analysis

The 8 participants classified as “high FOT users” were invited to participate in semi-structured interviews to learn more about their perceptions and use of FOT tools. Six agreed to participate in the interviews. Participants discussed their English writing and FOT tool use during interviews with the author and their comments were analyzed

according to qualitative research principles in order to derive a more comprehensive understanding of students' perceptions of FOT tools.

4.4.1 Analysis strategy for interview data.

There is no universal methodology for the analysis of data obtained from semi-structured interviews. The approach used in the current study is based on the work of Kathleen W. Piercy (2004), who devised a method for identifying “themes” and “categories” within interviews. The analysis starts with careful reading of interviews, during which the researcher develops a list of themes emerging from the interviews that are relevant to the research questions. After this, categories or codes are developed for each theme that identify key words describing some aspect of the particular theme. For example, if a theme identified in interviews was “animals”, categories might be “dog”, “cat” and “fish”. At the last stage within the framework of each theme, the corresponding categories are analyzed and summarized based on their importance. The analysis of the corresponding categories provides us with useful information to address the research questions.

4.4.2 Themes evident in semi-structured interviews.

Based on the semi-structured interviews conducted with the 6 high-FOT users participating in this study, I identified 15 themes that frequently emerged relating to 4 broad topics discussed: participants' personal and writing background (3 themes), participants' use of FOT tools (4 themes), participants' general assessments of FOT tools

(5 themes), and participants' opinions of FOT tools as support for second language learning (3 themes). Themes were identified by examining each sentiment expressed by a participant and grouping like sentiments together. Themes and categories related to each topic are discussed below and summarized in Tables 18-21.

4.4.2.1 Participants' personal and writing backgrounds.

The first group of themes identified related to participants' personal and writing backgrounds. In the interviews, these themes provided context for understanding participants' use and assessments of FOT tools. The three themes identified within this group included participant profiles, English writing frequency, and English writing text types. Regarding their personal profiles, participants discussed their nationality, mother language, other languages they speak, and their perceptions of their own English skills. Nationalities and L1s of the full sample (n=19) were previously reported. Of the 6 high-FOT users interviewed, all are students from 3 different non-English speaking countries (Brazil, China, and Japan). English is the second language after their L1. Most of the participants interviewed reported that their English skills were of an intermediate level, consistent with their placement in the bridging-level ESL class. The second and third common themes identified relating to participants' writing background were the frequency with which they write in English and the types of texts they typically write in English. Interviewees generally reported writing in English every day in both informal (messages, letters) and formal settings (academic texts and assignments).

Table 18

Interview Themes: Participant and Writing Background

Theme	Categories	Quotes from interviews
Participant profile	Nationality Mother tongue Language to speak (mostly L1 and English) English skills (mostly intermediate)	
English writing frequency	Every day	I am required to use written English for every task in my academic live such as assignments and projects. I am now an undergraduate student, so I read and write in English a lot.
English writing texts types	Informal Formal	Besides academic tasks as assignments and projects, I also use English in simple and current day-to-day tasks, such as communicating in formal and informal messages, such as e-mail, Facebook and other social media of the kind.

4.4.2.2 Use of FOT tools.

Regarding participants' use of FOT tools, four themes were identified: the specific FOT tools used, the purposes for which the tools were used, the direction of translation, and the frequency with which participants post-edited the output of the FOT tools (see Table 19). Participants listed three major tools that they utilized. These included Google Translate, Google (search), and an Oxford dictionary. Some participants also reported using unspecified other dictionaries and tools. Participants frequently

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

reported using different tools for different purposes, such as Google Translate to translate specific words or phrases from their L1 into English, google search to ensure that words or phrases they have written are used correctly, and dictionary sites to understand the meaning of English words. With respect to the purposes for which they used FOT tools, participants reported using these tools primarily for translating words and phrases.

Participants sometimes used FOT tools for translating sentences, but they reported that the tools were less useful for longer segments of text, except for gaining a very basic understanding of a long English passage in their L1. Participants most frequently used FOT tools to translate from their L1 into English, but they also reported translating from English into their own language. Most participants reported frequently needing to edit the results of translated text.

Table 19

Interview Themes: FOT Tool Use

<p>FOT tools used</p> <ol style="list-style-type: none"> 1. Google Translate 2. Google 3. Oxford dictionary 4. Other dictionaries and tools 	<p>The tools that I most often use is Google (a simple search just to make sure I am writing the word correctly), Google translator (if I am not sure how to translate something that I am thinking in Portuguese to English) and the website: http://dictionary.reference.com/ (when I am not sure the meaning of a word in English, or if I need to use a synonym for a specific word in proper writing.</p> <p>Oh yes, I use Google search a lot... when I want to make sure something I write is normal, I search it in Google. If I find it in Google, then I use it. Another thing I use is online dictionaries such as “dictionary.com “or “Oxford dictionary”... Sometimes when I don’t know a word in English, I use Google Translate too.</p> <p>Eh ... not very often. Well, sometimes when I cannot say something in English like I would say in Chinese, then I give the sentence to Google translate to translate into English. The result is not always good, but to be honest, sometimes it is really good. It surprises me. I edit the text of course; I do not leave it like that. I also use Google translate when translating a combination of words, or even sometimes individual words. For word translations, I also use Youdao.</p>
<p>FOT tools: purposes for use</p> <ol style="list-style-type: none"> 1. Word 2. Phrases 3. Sentences 	<p>Eh... Sometimes I need to translate a word or a phrase and sometimes sentences that I am thinking in Portuguese to a proper word in English so I use Google translate to see what words or phrases I can use for that specific word that I am thinking.</p> <p>For articles or websites that have complex content or texts that are very long, I use such tools to fasten my reading speed or to get a brief meaning of a long text.</p> <p>Usually words and expressions... sometimes for sentences too, but sentences in Mandarin when I translate them into English by Google Translate, they are not very good. I need to correct them... but for words and phrases, online translation is very good.</p>

FOT tools: direction of translation	1. From L1 to L2 2. From L2 to L1	Usually from Mandarin to English, but sometimes from English to Mandarin too....When I don't understand [the] meaning of a sentence in English, I use Google translate to translate it to Chinese. Eh ... when I have difficulty writing a sentence in English. Or when I have Japanese sentence and I want to translate this sentence. For example, when I am quoting a Japanese author. I need to translate the sentence and for that I can use online translator.
FOT tools: post-editing frequency	1. Usually 2. Not usually	Sometimes when the translation seems very bad, yes... but I usually use word to post-edit what I write. I post-edit the translations by changing the word forms that are wrong usually... for example sometimes change a noun to an adjective and things like that.

4.4.2.3 General assessments of FOT tools.

The third group of themes that emerged from the semi-structured interviews was participants' assessments of FOT tools. Five themes pertaining to this topic were noted: how useful participants found FOT tools for writing in the L2 (English), whether they used FOT tools for language combinations other than English and their L1, whether they found FOT tools to be an easy and reliable way of writing in a FL, perceived advantages of FOT tools, and perceived disadvantages of FOT tools (see Table 20). Most participants reported finding FOT tools useful, though some indicated that they did not find the tools especially useful. Participants clarified that FOT tools were most useful under certain circumstances, such as when users were more advanced in their second language learning and when they were translating shorter segments of text. Many participants also have

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

experience using FOT tools for language pairs other than their L1 and English and think that there is a difference in the accuracy of these tools in different language pairs.

In general, participants reported feeling that FOT tools were an easy and reliable way to write in a second language, though they did express some hesitation. They reported expecting both the tools and their ability to use them to improve over time.

When asked about the advantages and disadvantages of FOT tools, participants listed five primary advantages and only one common disadvantage. Participants reported finding the tools helpful, and appreciating that they were free, fast, user-friendly, and readily available. On the other hand, they acknowledged that FOT tools are not always accurate in their translations and cannot necessarily be trusted without further scrutiny on the part of the writer.

Table 20

Interview Themes: General Assessment of FOT Tools

<p>FOT: usefulness for writing in L2</p> <p>1. Useful 2. Not useful</p>	<p>I do. They are more useful for higher levels because people can understand if it is accurate or not. I think it is very helpful to use FOT tools to try to translate words and short phrases and sentences from one language to another. But I think you need to be careful to really understand what is the meaning of the word you're trying to translate, otherwise you can have a word with a completely different meaning. I don't believe they are very useful to translate very long sentences, because they too often don't do it correctly.</p>
<p>FOT tools: use from not L1 and English</p> <p>Yes No</p>	<p>Yes, from English to Portuguese and vice versa and French to Portuguese too. But I've noticed it's a little different in English.... The quality is better than when I use it for French. I don't know why. I use it a lot, more than with English. I use it especially with French that I am trying to learn. When I am face with a sentence in French that I want to know the meaning, my first reaction is to go to Google translator and see the meaning of the sentence. I do not use it for writing a sentence because I have no idea if my sentence "makes sense", and have the meaning I intended.</p>
<p>FOT tools as easy and reliable way for writing in L2/FL</p> <p>1. Yes 2. Don't know</p>	<p>Maybe yes, maybe no. I think I will use these tools less in the future when my English becomes perfect. Now I have a short time to prepare for my exams and these tools help me write better. In future, I do not know. But I think they will be better and better. My friends who speak French say Google Translate is very good for translating English to French or vice versa. Maybe it's just too optimistic, but I do. I believe it's going to get better and better. I have been using it for a while and I've been feeling that it has been improving. And I think people have helped... even normal people. The have given feedback(s), and people have made good use of it.</p>

<p>FOT: advantages in L2 writing</p>	<ol style="list-style-type: none"> 1. Helpful 2. Free 3. Fast 4. User friendly 5. Available 	<p>It can help you to translate a word or a small sentence that you are thinking in your mother language to a matching word in your L2. Because Internet is everywhere, we can use them everywhere. We don't have to pay for them or create an account to use them. Words and expressions that we don't remember... we can find [translate] them in English easily. They are now part of my writing ... I am so used to them. And... they are very useful. You can use them all the time. You just need the Internet connection. I can use them in my class and on my computer. They are not heavy and I do not have to carry them everywhere. Also, they are easy to use... I mean no need to download anything on your computer... if a sentence is difficult for me to write, I use them to help me translate my sentence, especially academic writing is difficult for me... Google translate has all the words and can translate sentences too.</p>
<p>FOT: disadvantages in L2 writing</p>	<p>Not very accurate</p>	<p>The translations are not exact... grammar errors in translations are the disadvantage. A bad disadvantage is that you cannot always trust them. Sometimes the translations are funny, and you understand they are wrong. So I think you should be good in English to decide how good the translations are, the translation of a word or the translation of a phrase, it does not make a difference. It should be possible that translation tools give more than one translation for a phrase or sentence. It would be great.</p>

4.4.2.4 FOT tools as support for language learning.

Participants also discussed with the author their opinions on the utility of FOT tools as support for second language learning and their potential use in formal language learning curricula. Three themes emerged pertaining to this topic: whether FOT tools are beneficial as a language learning method, whether Google Translate specifically could function as a language learning application, and whether FOT tools should be explicitly used by L2 teachers in their curricula (see Table 21). As a whole, participants stated that FOT tools were beneficial to those learning a second language. Participants saw their

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

accessibility and ubiquity as an advantage to fostering language learning among many people. Similarly, when asked about Google Translate specifically, participants expressed hope that the tool could be used to support people's language learning. They expressed more hesitation, however, regarding the use of FOT tools within formal second language learning curricula. Participants reported that language instructors had better tools at their disposal than FOT tools, but did expect that FOT tools could be a useful supplement to other ones when presented properly by instructors. For instance, instructors could point out the drawbacks of such tools.

Table 21

Interview Themes: FOT Tools for Language Learning

FOT tools: benefit as language learning methods	1. Yes 2. Don't know	I do. I think they teach people a lot, and since they have been used more often, they can teach many things to people. Oh, yes they should have a whole department to do that. Maybe they already do... but they must invest more money and time. That would be great since Google is so known around the world. I guess that would increase a lot people's learning.
GT as a language learning application	1. Don't know 2. Yes	Oh, yes they should have a whole department to do that. Maybe they already do... but they must invest more money and time. That would be great since Google is so known around the world. I guess that would increase a lot people's learning. Something that corrects grammar errors is very useful. It would be great.
FOT tools: should be in L2 teacher curricula	Not very useful	I think they have more formal ways of doing that. And they have more accurate dictionaries such as Longman and Oxford, but I think they are pretty reliable and they should be used. However, I think teachers must advise their students that sometimes it is not pretty accurate. I don't know if teachers can help students correct the errors of Google Translate, it will be very helpful.

Note: Numbering, used for several themes shows orders of categories' importance.

4.5 Comparison of Observed and Self-Reported FOT Tool Use

One advantage of the present study was the use of multiple data collection methods (observation, questionnaire, and interview). This allowed the comparison of students' self-reported FOT tool use (via questionnaires) with their observed use (via videos and screenshots). Overall, there was only moderate concordance between observed and reported FOT tool use by these university-level ESL students.

Specifically, of the 12 students who stated they *usually*, *almost always* or *always* used FOT tools for completing writing tasks, only 6 (50%) showed behavior that matched their responses. Four subjects used FOT tools only once, 1 subject used FOT tools twice and 1 never used FOT tools at all. It should be noted that the questionnaires asked about any FOT tool use, and students may have been reporting on their use of FOT tools in contexts other than the observed writing assignments.

In addition, when students were asked about the directionality of their FOT tools use, 17 (89%) stated, "I use FOT tools (to translate) both from my L1 into English and from English into my L1"; 2 (11%) responded, "I use FOT tools only (to translate) from my L1 to English" and no respondent chose the option "I use FOT tools only (to translate) from English to my L1". Again, the responses to this question were inconsistent with what was observed in the video recordings. All but one of the subjects who used FOT tools used them to translate only from their L1 into English and not from English to their L1.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

The purposes for which participants reported using FOT tools and those for which they were observed using such tools were more consistent. When the students self-reported the purposes for which they used FOT tools (via the questionnaire), *double-checking the meaning accuracy of words or expressions by seeing their meaning in your L1* was the most popular purpose (100% of participants endorsed this option). The second most popular purpose was *translating words from your L1 into English* (79% of participants endorsed this choice), and 53% of participants indicated they used FOT tools for *translating phrases or expressions from your L1 into English*. According to the responses to this question, the least popular use of FOT tools as *translating bigger units than sentences (paragraphs for example) from your L1 into English* (only 26% of respondents selected this choice). While many participants who reported using tools for these purposes were not observed to use such tools at all, as noted above, those who did use the tools frequently used them primarily for the purposes they self-reported. Interestingly, however, the only response that was inconsistent with the behavior observed from the 6 participants happened to be the most popular choice. Only one participant actually used FOT tools for double-checking the meaning accuracy of words or expressions by seeing their meaning in his L1.

These apparent contradictions and hypothesized reasons for them will be discussed further in the next chapter.

4.6 Combining Questionnaire and Interview Responses

The advantage of mixed-methods research is the ability to combine and compare the results of the quantitative (i.e., survey questionnaire) and qualitative (i.e., interview) methodologies. In this case, it should be noted that the participants invited to participate in the semi-structured interviews were those observed to use FOT tools frequently in their English writing. Therefore, it might be expected that their opinions of FOT tools may differ from those students who less frequently used FOT tools. With that caveat in mind, a comparison of the results from *user satisfaction surveys* and *semi-structured interviews* were largely consistent with one another. Specifically, the purposes for use, benefits and disadvantages of FOT tools listed were quite similar between the survey responses and the interview responses. As might be expected, interview participants generally reported somewhat more satisfaction with FOT tools than survey respondents. Interview participants expanded upon the reports of survey participants regarding the purposes for which FOT tools were used by explaining the reasons behind their choices to use such tools more frequently for shorter segments of text. They also provided useful information regarding the different contexts in which different types of FOT tools (e.g. Google Translate vs. dictionary websites) were most useful.

Chapter 5: Discussion, Recommendations, and Conclusions

5.1 Introduction

This study was designed to address a series of research questions related to the possible use of FOT tools in the ESL advanced writing classroom. This chapter discusses the findings of the study by assessing each of the research questions in light of the findings presented in the previous chapter; it presents some conclusions and puts forward recommendations for further research.

As a whole, the results of this study showed that ESL students have a positive attitude toward FOT tools and are relatively satisfied with using these tools in L2 writing. However, many students stated FOT tool output needs post-editing and that not all translations are accurate. In addition, careful analysis of the video data revealed that only about one third of participants significantly used FOT tools in completing their ESL writing tasks. Intriguingly, however, triangulation of the video data with the user satisfaction survey results revealed that the participants' behavior in the observed writing task did not always match their self-reported tool use. This suggests that in studies that aim to examine the behavior of L2 learners, relying on one set of data may produce invalid results. While the observation portion of the study was centered on a relatively small sample (6 participants), it produced interesting results that seem to show that the subjects used these tools more efficiently than effectively: the median value of overall efficiency was 0.805, and the median value of overall effectiveness was 0.676. ESL

instructors thus need to seriously consider introducing and using FOT tools in L2 writing courses and developing tasks and exercises that allow L2 learners to employ these tools to improve their writing skills.

5.2 Research Question 1: Documentation of FOT Tool Use

The first goal of the present study was to document the use of FOT tools by ESL students. Although anecdotally, many L2 instructors report that their students use such tools, the extent of student use had not previously been documented in a scientific fashion. Furthermore, many L2 instructors were unhappy that students were perceived to be using FOT tools on their out-of-class assignments. Yet whether such complaints were justified by the ways in which students used the tools was not clear. In order to contribute to the conversation regarding whether and how L2 students and teachers *should* be using FOT tools in the classroom, it was first necessary to document whether and how such tools were already being used. I therefore documented not only the extent to which advanced ESL students use FOT tools but also the purposes for which they use those tools, the types of tools they independently selected and the role that post-editing of the translated content plays in their writing process. Furthermore, the results of this study incorporated both observations of students' FOT use while completing in-class writing assignments and their own self-reports of FOT use for any purpose.

5.2.1. Extent of FOT tool use by students.

Based on the results presented in Chapter 4, it is clear that the majority of students in the high-intermediate-level ESL class who participated in this study use FOT tools for their English writing, even when not required to do so. This is consistent with the hypothesis outlined in Chapter 1 that many L2 learners would use FOT tools while completing writing tasks. By their own self-reports, all students participating in the study used FOT tools at least some of the time, and more than 80% reported using them frequently. On the one hand, there is a gap between theory and research related to L2 language learning— which tends to either ignore or reject the role of translation, especially MT (as discussed at length in Chapter 2)— and, on the other, what is actually happening in L2 classes, where FOT tools clearly play a prominent role.

When completing a specific in-class writing task, more than two-thirds of students were observed using FOT tools at least once. Interestingly, of those who were observed using FOT tools, about half used them only minimally (once or twice) and half used them extensively (between seven and twenty-one times). Thus, at least some students clearly rely on the tools as an integral part of their L2 writing process. This suggests that FOT tools may be considered a useful resource by second language learners in general and that such learners may benefit (or at least perceive that they benefit) from the use of these tools in their L2 writing. Therefore, rather than rejecting or prohibiting the use of FOT

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

tools outright, it may be time for the field of L2 teaching and learning, as well as CALL developers and users, to consider actually incorporating FOT tools into the L2 classroom.

Interestingly, more students report frequently using FOT tools than were actually observed doing so during in-class writing activities. One potential explanation for this discrepancy is simple recall bias. As Hassan (2005) says, “Recall bias represents a major threat to the internal validity of studies using self-reported data”. The user satisfaction questionnaires were completed at the end of week 12 of data collection. The fact that some of the subjects could not accurately recall their actual tool use several weeks earlier may partly explain the noticeable discrepancy between their observed behavior and their self-reported responses. Self-reported data are based on (imperfect) human memory, which may produce less reliable or even invalid responses. This is one important reason why the present study has used three sources of data to obtain valid results.

5.2.2. Purposes for FOT tool use by students.

Participants primarily used tools to translate short segments of text from their L1s into English. While some participants reported that they use tools to translate both from their L1 into English and vice versa, in observations, students nearly always translated from their L1 to English. Follow-up interviews confirmed that tools were used to translate in both directions, but primarily to translate into English. Students in L2 classes, even relatively advanced L2 classes, such as those used in this study, are still more fluent in their L1 than in their L2. Therefore, when attempting to express their thoughts in

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

writing, they typically first think in their L1, then use FOT tools to help them translate their ideas into the L2. Less frequently, students translating from L2 to L1 were likely attempting to confirm that what they had written in the L2 made sense in their L1 and accurately expressed what they had intended. Thus, the level of consistency with which students reported translating primarily from their L1 into English (their L2) was not surprising, and it confirms that when writing in a L2, L2 learners know what they want to say, but their fluency level in writing is not always high enough to express it appropriately in the L2. They therefore resort to FOT tools to assist with this process. In this sense, the use of FOT tools can be conceptualized as a new skill developed by the L2 learners. With the abundance of technological innovations at their disposal, current L2 learners, like current learners in all fields of study, are very different from learners of previous generations. They are more autonomous in applying available technologies such as FOT tools. For this reason, I encourage L2 instructors and curriculum developers to consider FOT tools as an addition to their classrooms rather than a hindrance to their teaching.

In both questionnaires and interviews, students reported using FOT tools most frequently for translating short segments of text, such as words and phrases, and less frequently for translating longer segments such as sentences or whole paragraphs. They also frequently used the tools to double-check the meaning of English words in their L1. This is consistent with Niño's (2008) research and with the idea that when using any type

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

of translation, students post-edit translated text for vocabulary and grammatical accuracy. Although the tools have been criticized as being inappropriate for use in L2 learning, it appears from these data that the students surveyed are using them similarly to the ways in which students in the past might have used bilingual dictionaries. As high-intermediate L2 learners, participants in this study used FOT tools as "smart dictionaries". They are fluent enough to come up with the overall structure of sentences and then they use FOT tools to fill in the gaps in word or phrase-level segments. Students who are at more elementary levels of their L2 learning are likely to use the tools differently, and this should be explored in future studies. Regardless, the data reported here clearly show that students are using FOT tools, some of them extensively. L2 instructors must acknowledge that the tools' ease of use, the rapid pace at which they produce a translation, and the fact that what can be translated is not limited to word segments makes the tools extremely popular among L2 learners. Therefore, whether L2 instructors are in favor of the tools or not, I would argue that disallowing their use is like swimming against the current. Some L2 learners will inevitably use the tools anyway. Exploring ways to improve the quality of students interactions with the tools is probably a more productive pedagogical strategy than disregarding or disallowing a tool that may actually have pedagogical value for L2 students.

5.2.3. FOT tools used.

In terms of the specific tools used, participants reported in interviews that they selected the tools based on the purposes for which they needed assistance. For instance, one site might be best for directly translating words while another site was preferred for understanding the meaning of an English word. Overall, in both questionnaires and interviews, Google Translate was the most popular FOT tool. By documenting which sites are most popular among users, we can begin to understand which features of FOT tools are most in demand and considered useful by students. Google Translate, by far the most popular tool, has a very simple, user-friendly interface and is easily accessible wherever Internet connection is available, making it easy to use in university classrooms. In addition, it supports 90 languages. Youdao was another popular site among Chinese students. However, its user interface is in Mandarin, limiting its usefulness for speakers of other languages.

5.2.4. The role of post-editing.

According to Allen (as cited in Niño 2008) post-editing requires modifying and correcting a text that is machine-translated. Once they had used FOT tools to translate segments of text from their L1 into English, most participants reported in questionnaires and interviews that they frequently needed to edit the resulting translations to ensure their accuracy and appropriateness in context. It was expected that students would report completing this type of post-editing of their FOT tool translated text. In addition to improving the quality of the text translated by FOT tools, the process of post-editing

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

itself may be pedagogically valuable for L2 learners and teachers. In L2 writing courses teachers always ask their students to edit their written pieces according to the feedback they provide. Formal instruction of post-editing can improve students' grammar (see French, 1991; Fotos 1993; Niño 2008) and vocabulary knowledge and eventually enhance their editing skills.

In order to capitalize on the educational value of the post-editing process, teachers can design tasks in which students are required to use FOT tools to translate sentences or a longer passage from their L1 into English/L2 and post-edit the translated text. Depending on the language combination, students can work in groups of 2 or 3 and come up with grammar errors in the translated text, or fix the vocabulary inaccuracies. However, this requires formal training on how to detect errors and modify them. By incorporating FOT tools into the curriculum rather than ignoring or rejecting them, L2 instructors can provide this type of instruction.

The post-editing process may also enhance students' educational experience by increasing "learner autonomy". Learner autonomy is important because when learners feel autonomous, they are more actively engaged in the process of learning, and they are also more motivated (Little, 2003). Based in part on the results presented here, I agree with Niño's (2008) assessment that post-editing can improve what she termed "language autonomy". Through the post-editing process, students need to examine and use different online and off-line language resources and tools such as dictionaries and thesauri, which increases their autonomy and confidence in L2 writing.

5.3 Research Question 2: Effectiveness and Efficiency of FOT Tools Use

The second aim of the present study was to examine the effectiveness of FOT tools and the efficiency with which they are used by ESL students. Overall, the tools were moderately effective when used by high intermediate-level ESL students to complete an in-class assignment, and the students used them with reasonable efficiency.

5.3.1 Effectiveness of the FOT tools.

Effectiveness of the FOT tools was examined in students' observed written assignments and conceptualized as the accuracy of the translated segments, the extent to which it increased the variety present in students' English writing, and the extent to which the translations communicated like natural English. FOT tools were most effective at producing technically accurate linguistic segments and least effective at producing segments that communicated like natural English. The majority of the segments were effectively translated (about three-quarters for accuracy, two-thirds for variety and just under two-thirds for communication). This implies that FOT tools are generally beneficial to students' English writing. It should also be noted, however, that although these numbers represent the majority of segments translated accurately, one quarter to one third or more of the attempts students make to translate into English still result in ineffective translations.

In addition to the observed effectiveness and efficiency of the FOT tools in students' written work, the students' questionnaire and interview responses also shed

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

some light on the effectiveness of the FOT tools. One of the drawbacks frequently cited by students is the tools' lack of consistent accuracy, resulting in the need for students to post-edit much of the translated content. Thus, overall, what students and instructors need to understand about FOT tools is that they are useful but not always reliable. Therefore, users must be aware that they cannot solely machine-translate a text and expect to come up with a flawless L2 product. Again, however, as discussed above, the process of using FOT and then post-editing the text brings about learning and improves learners' writing skills. Therefore, the less than perfect accuracy of FOT tools may in fact be a benefit for L2 teachers.

The findings of this research indicate that FOT tools, if used for short linguistic segments, produce accurate grammatical segments in the L2 (at least when the L2 is English). Therefore, "reverse translation" as proposed by Richmond (1994) and detailed in Chapter 1 may no longer be necessary. The finding that accuracy was the highest effectiveness indicator in students' use of FOT tools was surprising given prior research showing that MT tools are not especially accurate (e.g., Anderson, 1995; Schairer, 1996). One possible explanation for the discrepancy is that FOT tools have improved considerably in the years since previous work questioning the accuracy of such tools was conducted. Google Translate in particular (the most popular tool used by participants) is a free online tool that has evolved rapidly over a relatively short period of time and is constantly improving. If FOT tools become widely incorporated into the L2 writing

curriculum, instructors will need to train students in how to use these tools effectively. As Niño (2008) states, post-editing exercises should be included in L2 courses so that students can produce more natural sounding linguistic segments in L2.

5.3.2 Efficiency of FOT tool use.

The efficiency of students' FOT tool use was also examined in their observed writing assignments and was conceptualized as a combination of whether the translation produced a usable linguistic segment and the time it took the student to obtain that segment. The average efficiency score for participants in this sample fell slightly below the scale point representing successful production of a linguistic segment up to 15 seconds. Thus, it appears that when students attempt to use FOT tools, their interactions with the tools usually do produce a usable translation, but that it takes them 15 seconds to do so. Overall, this can be considered efficient. Efficiency, therefore, deals with the amount of time spent with the tool and whether or not this time results in production of a linguistic segment.

Thus, although the effectiveness and efficiency parameters are on different metrics and cannot be directly compared, the results are at least somewhat consistent with the hypothesis stated in Chapter 1 that students would be more efficient than effective in their use of FOT tools.

5.3.3 Associations between effectiveness and efficiency.

Overall, the four effectiveness and efficiency parameters were moderately to highly correlated with one another, indicating that overall, students who use FOT tools effectively do so by multiple metrics, and also use them efficiently. This was inconsistent with the hypothesis outlined in Chapter 1 that there would not be a significant correlation between efficiency parameters. Interestingly, accuracy was the effectiveness indicator least likely to be statistically significant in its association with other effectiveness and efficiency indicators. This may be a further indicator that while FOT tools are frequently capable of producing technically accurate translations, this does not always equate to improving students' writing with increased variety or natural-sounding English, or to increasing the efficiency with which students write.

Overall, this examination of the effectiveness and efficiency of FOT tools shows that it may be necessary to make a distinction between the ability to use FOT tools to obtain a technically accurate translation and the ability to obtain a translation that actually improves one's L2 writing by variety and communicativeness. Similarly, the use of such tools to obtain an accurate translation may not necessarily equate to using them efficiently. These results also suggest that students who use FOT tools for L2 writing can use these tools more effectively if they are specifically taught how to post-edit the translated segments.

5.3.4 An illustrative case study.

As an illustration of the potential for effective and efficient use of FOT tools by students, one particularly proficient FOT tool user was selected for a brief case study. The student selected was a male whose L1 was Brazilian Portuguese. The student, “Gabriel” (not his real name), extensively used FOT tools during the observed writing tasks. His primary tool was Google Translate, which he used 16 times. He also used Reverso twice. While the aggregate data showed that students used FOT tools to translate from their L1 into English about three times as frequently as they translated from English into their L1, Gabriel translated in both directions approximately equally, even translating slightly more frequently from English into Portuguese (ten times) than Portuguese to English (eight times). In addition, he used the tools for a wide variety of purposes, and in fact he was the only student observed translating single words, two-word segments, phrases, complete sentences, and entire paragraphs. The variety and frequency of his FOT tool use made Gabriel stand out as an exceptionally proficient tool user. In fact, even though students were not given any training in post-editing, he frequently post-edited the English translated segments. In addition, Gabriel sometimes wrote two or three sentences in English and then put them in Google Translate (GT) and back-translated the whole section into his L1. Following this, he moved the cursor over different parts of the L1 (back-) translation to make sure that the sentences he had written in English expressed the ideas he intended. He was also observed checking additional online sources to make

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

sure that he had used the correct word or word form. His accuracy score was 0.78, variety was 0.72, communication was 0.67 and efficiency was 0.83.

In one specific instance, he translated a passage he had written in English into Portuguese using Google Translate; then he used additional websites to help him improve the original English passage. Specifically, he wrote in English:

The fact, summed to the high necessity of labour force, stimulates the migration process. Indeed, countries with more resources encourage qualified professionals, offering high salaries, promises of better security, thus a better way to live their lives.

Gabriel used Google Translate to translate the passage into Portuguese, resulting in the passage:

Este fato , somado à alta necessidade de força de trabalho , estimula o processo de migração. De fato, os países com mais recursos incentivar os profissionais qualificados [more resources encourage qualified professionals] com altos salários, promessas de uma melhor segurança [promises of better security], assim, uma melhor maneira de viver suas vidas.

Then he moved the cursor over the underlined sections of the Portuguese translation below and checked their accuracy both in English and Portuguese. Next, he specifically checked the English translation of the Portuguese word “*incentivam*” to “encourage”, which is the word he had originally used in the sentence. After checking other words

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

suggested by Google Translate, he tried a different site (Reverso), which conjugates English verbs. Gabriel pasted the verb in the “conjugate” box and checked different forms of its conjugation. After spending about 15 seconds on the web page, he reopened the word document, and changed the word “encourage” to “are encouraging”. Regardless of the accuracy of verb tense he ultimately chose, his interaction with FOT tools and other online resources is both sophisticated and intriguing.

In another instance, Gabriel was trying to write the thesis statement of a compare/contrast essay in which he needed to state the elements of comparison. He used Google Translate to translate “the differences come from arborisation to safety” back into “*as diferenças vêm de arborização de segurança*”, then returned to the word document, where he wrote “the differences come from simple things like arborisation to safety”. After spending almost 40 seconds considering this phrasing, he changed the verb “come from” to the following segment “can be huge comparing”. He also changed the word “arborisation” to “the number of parks”, and finally added another element of comparison: weather. The final sentence read “The differences can be huge comparing simple things like the number of parks, weather and safety”. Although the sentence still needs revision, it reads much better than its initial version. Changing the word “arborisation” using Google Translate resulted in the literal English equivalent “afforestation”. Recognizing that this segment is not accurate in English, he post-edited the translation to a more accurate as well as natural-sounding linguistic segment.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

In another assignment, he was asked to edit an essay for grammatical, lexical, stylistic and overall communication errors (See appendix E). The following was the topic of the original essay (the essay to be edited).

“We are becoming increasingly dependent on computers. They are used in business, hospitals, crime detection and even to fly planes. What things will they be used in future?”

After reading one of the body paragraphs, he seemed to be dissatisfied with the ideas developed in that paragraph, and he opened up another blank document and started developing his own body paragraph. First, he wrote the text below.

Diseases detection

Probably, one of the most advance in molecular biology was the use of computers to determine the sequence of DNA. Right now this technology is capable to map the entire genome of a person or animal in question of hours, and, with some statistical treatment, determinate possible diseases. In the future technology will be able to....

He paused for 5 seconds, then translated the entire passage from English to Portuguese, resulting in the passage:

detecção de doenças

Provavelmente, a mais de um avanço na biologia molecular foid a utilização de computadores para determinar a sequência de ADN. Neste momento, esta

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

tecnologia é susceptível de mapear o o genoma complete de uma pessoa ou animal em questão de horas, e, com algum tipo de tratamento estatístico, determinadas doenças possíveis. No futuro, esta tecnologia poderá

Gabriel used Google Translate effectively to double-check the accuracy and overall communication of his English writing in this assignment, too. As before, he moved the cursor along the underlined segments of the Portuguese translation, presumably reading the text to determine if it read well. After 3 or 4 seconds of reading the Portuguese version, he added a plural maker “s” to the word *advance* [*advances*], then added the word “important” between most and advances [*the most important advances*]. Through this iterative process of translating, back-translating, and post-editing, Gabriel improved the accuracy and readability of his English writing.

In another instance, interestingly, Gabriel’s choice of translation actually produces a segment that is less appropriate than the one initially suggested by Google Translate. He first translated the Portuguese phrase “*podem ser varias*” into English using GT, resulting in the English phrase “*may be various*”. Next, he right-clicked on the word “various” and a drop-down window within GT offered the word “several” as a synonym for the word “various”. Gabriel reopened the Word document and updated his sentence to read “The reasons [to] someone migrate from his home country to other more developed **may be several** but in every case people are looking for better life conditions”. In this case, then, the translation he chose (“may be several”) was less grammatically and

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

semantically accurate in context than that suggested by GT (“may be various”).

Furthermore, Gabriel did not elect to post-edit his translation this time, or to double-check the accuracy of his translation by back-translating or by using any other FOT tools.

In summary, Gabriel used multiple FOT tools to translate segments of varying lengths from Portuguese to English and English to Portuguese. He was efficient (his efficiency score was 0.83) in his tool use. The point that attracted my attention while observing his interaction with the FOT tool(s) as well as other tools was that he used advanced strategies, including post-editing and back-translation, while taking advantage of these tools. He also made iterative changes to both his Portuguese and English text in order to successfully improve his writing. However, the FOT tools he used resulted in relatively successful L2 segments. As explained earlier, his accuracy score was 0.78, variety was 0.72, and his overall communication score was 0.67.

5.4 Research Question 3: Satisfaction of Participants with FOT Tools

The third and final aim of the present study was to examine ESL students’ satisfaction with FOT tools. Overall, students were reportedly quite satisfied with the tools, with some groups of participants more satisfied than others. Participants reported both benefits and drawbacks to FOT tools.

5.4.1 Overall satisfaction.

When asked about how useful FOT tools were, the vast majority of participants reported in questionnaires and interviews that they found them at least somewhat useful.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

This was consistent with the hypothesis of the study that L2 learners would be generally satisfied with using FOT tools. Interestingly, the high proportion of students who found the tools useful included both those who used the tools in the observed writing task and those who did not. This was consistent between questionnaires and interviews. Interviews helped to clarify that participants found the tools useful primarily under certain circumstances, such as when users were more advanced in their second language learning and when students translated shorter segments of text.

Consistent with expectations, certain groups of participants were more satisfied with FOT tools than others. Not surprisingly, participants who reported that they used FOT tools more frequently also reported being more satisfied with the tools. In contrast, participants who were *observed* using FOT tools more frequently reported lower satisfaction with the tools than those observed using the tools only minimally, if at all. In addition, participants who used the tools for translating words, phrases, and sentences to English were more satisfied with FOT tools than those who did not use the tools for these purposes.

As discussed in chapter 2, students' attitudes and motivation have a powerful effect on their language learning (e.g., Smith 1971; Sparks & Ganschow, 2001). In addition, students' satisfaction with technological tools used in learning environments has been repeatedly shown to be associated with their motivation, engagement and learning. For instance, in one recent study, students' satisfaction with particular e-learning

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

environments was associated with their self-regulation in completing learning tasks in those environments (Liaw & Huang, 2013). Thus, the fact that students, as a whole, are highly satisfied with FOT tools is further support for the conclusion that students are likely to continue using such tools whether or not their L2 instructors approve of such use. Even if students follow prohibitions against using FOT tools for coursework, they are likely to use them for other purposes in their everyday English communication. Learning appropriate use of these tools is thus again supported as a worthwhile goal to incorporate into L2 classes.

5.4.2 Benefits and drawbacks of tools.

Participants also discussed the benefits and drawbacks of FOT tools in questionnaire and interview responses. Overall, participants reported that the main benefits of FOT tools are to help them understand the meaning of English words or larger linguistic segments and enrich their English vocabulary. Many participants also appreciated the tools' convenience. Participants also reported problems with the FOT tools, however. Most notably, participants reported that FOT tools do not always give accurate translations and do not account for context in their translations. Students also worried that the tools could make English learners overly reliant on them and in turn increase hesitation when speaking on English. These benefits and drawbacks reported were consistent with expectations.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

These findings clearly show that many ESL students hold a positive attitude toward FOT tools and are relatively satisfied with using these tools in L2 writing. This suggests that FOT tools may be a useful resource for L2 learners in general, and that such learners may benefit from the use of these tools in their L2 writing. FOT tools are most useful when they are used for translating words, word combinations and short phrases. On the whole, the smaller the translation unit is, the more effective the translated text will be. In addition, these tools may work better with certain language combinations than others (e.g. Portuguese into English versus Mandarin into English) due to differences in the corpus of word- or phrase-pairs available. This makes sense given the ways that FOT tools, and MT in general, function, as discussed in chapter 2.

The finding that those students who used FOT tools more frequently were less satisfied with them than those who used the tools less frequently was unexpected and is counterintuitive, particularly given the positive association found between satisfaction and self-reported tool use frequency. As discussed above with respect to discrepancies between self-reported and observed tool use, one potential explanation for this counterintuitive finding is that students were given the survey at the end of week 12, whereas the videos were recorded during weeks 2-12. Self-reported data rely on imperfect human memory. Thus, students may have simply misremembered how frequently they actually used FOT tools and how satisfying they found them. A lack of association between observed and reported behavior would be more consistent with this

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

explanation than a significant negative association, however. Another possible explanation would be that more frequent users of FOT tools were less satisfied with the tools because they expected the segments produced via FOT tools be more grammatically accurate and communicate better in English than they actually were. In other words, it is possible that students who used FOT tools more frequently were more mindful of the shortcomings of such tools than those who used them only occasionally. Less frequent users may be less aware of the tools' shortcomings and may have overstated both their use of the tools and their satisfaction with them when questioned weeks later. Reports from the students who were observed using the tools more frequently could thus be considered more valid and reliable. Students may also have been reacting to differences in effectiveness of FOT tools depending upon the language combinations used.

5.5 Contributions of the Study

The results of this study build on and expand earlier research documenting the use and pedagogical effectiveness of MT tools in the classroom in several ways. First, I expand the consideration of MT tools to examine FOT tools specifically and demonstrate that such accessible and affordable tools are used and deemed useful by students. Second, I confirm that the tools are effective and efficient for high-intermediate-level language learners. Third, I replicate some previously reported characteristics of MT tool use.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

As mentioned in the introduction, many have reported that MT translation tools can be useful pedagogical tools in L2 classrooms (e.g., Anderson, 1995; Kliffer, 2005; Lewis, 1997; Niño 2008; Richmond, 1994; Shei, 2002). The current study expands those findings to show specifically that MT tools currently available on the Internet free of charge (i.e., FOT Tools) can be used in similar ways. This is an important finding, given Lewis's (1997) call for an increase in language teachers' and learners' access to affordable MT tools. In the years since Lewis's analysis, many new tools have become available that are not only free but also easily accessible, and the current study shows that ESL students find these FOT tools useful in their L2 writing.

In addition, the current study shows the effectiveness of these tools in a group of students at a high-intermediate language learning level. Similar to Garcia and Pena's (2011) work showing that the use of MT tools helps beginning second language learners to improve their communication in the L2, the current study showed similar benefits for high-intermediate ESL learners. Nearly all of these more advanced ESL students reported that they found such tools helpful and that the tools improved their L2 writing. These perceptions were confirmed by the effectiveness and efficiency analysis of the observed writing tasks. This is consistent with O'Neill's (2012) work, discussed in Chapter 1, which reported that the use of FOT tools did not decrease but frequently improved the quality of students' L2 writing.

Finally, the study replicates previous work documenting the ways in which MT tools can be used and expands this knowledge to include FOT tools specifically. As discussed in Chapter 1, Niño (2008) explores the use of MT post-editing in the FL classroom for the purposes of providing guidelines on how to use raw MT output as input for FL written production. My findings confirm that post-editing is necessary when FOT tools are used for L2 writing.

5.6 Limitations of the Study

Despite the contributions of the present study set out above, some limitations should be noted. First, the small sample size of the present study may limit generalizability of the findings. As has been noted by many (Hackshaw, 2008; Machin et al., 2011), interpretations of findings based on small samples run the risk of extrapolating to a larger population (i.e., all ESL students) phenomena that may occur only within a more limited subset (i.e., students in ESL 500 at the University of Ottawa). Throughout the discussion, I have been careful to use language that avoids overgeneralizing the results. However, there is no reason to suspect that the study participants differ in meaningful ways from ESL students enrolled in similar classes at other Universities. On the other hand, results could have been different if students in more- or less-advanced ESL classes were included. In particular, low intermediate or elementary-level L2 students may have used tools more, less, or in different ways, than the high intermediate students who participated in this study. Similarly, generalizability may be limited by

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

incomplete data. As is frequently the case, not all invited participants consented to complete all the measures. Specifically, because two invited participants who were part of the already-small group of high-FOT users did not complete questionnaires, this may skew the results somewhat. To address these issues, the study should be replicated in the future with a larger group of participants from a wider variety of backgrounds and educational settings before larger generalizations can be drawn.

An additional limitation of the study was the nature of participants' responses to the semi-structured interview questions. Most participants gave only brief responses to the majority of the questions. This may have been due, in part, to their lack of fluency in English (Chris et al., 2010, p. 98). Had the participants given longer responses, more information may have been gleaned from the interview portion of the study. To address this issue in future studies, researchers may consider modifying the interview questions in ways that are likely to elicit more detailed responses or conducting the interviews in participants' L1s so that they can more easily express their views.

The limitations inherent in this study are similar to those faced by all researchers conducting classroom-based studies (Rossiter, 2001). As with all scientific research, replication of the findings with different populations will increase our confidence in the results (Vercruyssen & Hendrick, 2011).

5.7 Implications for Future Studies

The results presented here suggest several avenues for future research. Building

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

upon the findings of the present study, future work in this area could further elucidate the ways in which FOT tools might serve as pedagogical tools in ESL and other FL classrooms. Longitudinal studies with a larger sample, wider variety of ESL levels represented, and more background information on participants would be especially helpful to understand the factors leading some students to use FOT tools extensively and others to use them minimally, if at all. Student gender and age were not related to students' propensity to use FOT tools, but other individual factors may be. Both experience and academic investigations demonstrate that no two students will acquire foreign language knowledge in the same way. This is because their different personalities, attitudes, learning backgrounds as well as their adopted learning strategies clearly shape how quickly, how well, and how proficiently they learn to write in L2. Students bring with them a wide range of cultural, cognitive, psychological, emotional, socio-economic, and educational backgrounds, to name just a few parameters. The intricate interplay of these backgrounds results in their writing products, be it in their L1 or in their FL. Ellis (1994, p. 472) states that many factors including age, gender, motivation and attitude, personality, previous language experience, proficiency in the L1, language aptitude, general intelligence (IQ), learning styles, cognitive and affective factors (extroversion, willingness to take risks, anxiety, sensitivity to rejection, empathy, inhibition), and cognitive styles (analytic versus experiential, reflexivity vs. impulsivity, aural vs. visual, etc.) can significantly affect writing production in the FL. Due to the

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

small sample size, the present study was not able to investigate the impact of these factors fully. Therefore, further investigation with a larger and more diverse sample is recommended.

In particular, students' proficiency level in the L2 may strongly influence their FOT tool use. Students who are more proficient in the L2 (in this case, English) may need to use these tools less often than those who are less proficient. In future studies, L2 proficiency could be assessed prior to observing and asking about FOT tool use in order to assess this possibility. Similarly, it would be of interest to replicate the current study with a group of high-beginner-level ESL students. Their patterns of FOT tool use could then be compared to that of the high-intermediate ESL students in the current study to examine whether the less advanced students use FOT tools differently than the more advanced students. In particular, it would be of interest to compare the variety scores of the two groups to determine whether FOT tools help the beginners add variety to their writing.

In addition, a larger sample could delve further into the question about whether FOT tools work better for certain language combinations than others and examine whether students' L1 is a determining factor in the frequency with which they use FOT tools. Groups of students with the same level of English proficiency but different L1s could be compared in terms of their FOT tool use and effectiveness. It would be

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

particularly interesting to compare vastly different L1-L2 pairs, such as French-English and Arabic-English.

The relationship between accuracy and the other effectiveness and efficiency parameters could be examined in future research as well. For instance, the ability to use FOT tools with accuracy may be a precursor to using them efficiently and to improving the variety and communication of one's writing using the tools. This possibility could be addressed with a longitudinal study following students' tool use, effectiveness and efficiency over time.

Another useful expansion of the present study would add an experimental component to truly assess the impact of FOT tools as a component of L2 curriculum. For instance, a treatment group could receive explicit training in the effective and efficient use of FOT tools. Their observed FOT tool use, effectiveness and efficiency, as well as the overall quality of their L2 writing, could then be compared with that of a control group that had received no such training.

Finally, in order to assess the overall net impact of FOT tools, it would be important to conduct a study comparing students' writing when using such tools to their writing without the assistance of the tools. Such a study could require each student to complete two writing tasks: one without the help of FOT tools and one with the help of FOT tools. Trained raters blind to tool use status could evaluate the overall quality of each piece of writing. Students' writing when using FOT tools could then be compared to

their own writing without the use of such tools to gain a much clearer picture of the actual effect of FOT tools on students' L2 writing quality.

5.8 Conclusion

Unlike many earlier research projects that have concluded that using MT or online translation tools is either disadvantageous or pedagogically helpful, this study adopted a neutral position in regard to the use of FOT tools by ESL learners and aimed instead to document the actual use of such tools by high-intermediate-level ESL students in their ongoing coursework. The results of this study suggest that L2 students have been increasingly using FOT tools for various purposes, including translating single words, word combinations, phrases, clauses and sentences, and, sometimes, segments larger than sentences. This is the first study to document the actual use of FOT tools in a natural classroom setting using tasks students would be normally given in an ESL writing course, not tasks specifically designed to require FOT tools. Moreover, this study is one the first to provide the perspective of L2 learners on these tools. The findings of this study suggest that ESL students have a positive attitude toward these tools, especially toward Google Translate. However, a gap was identified between students' perception of these tools and their actual use of these tools.

Moving forward within the ESL and broader L2 learning community, now that we know students are using FOT tools regularly and are generally satisfied with them, it seems to be time to incorporate FOT tools in the L2 classrooms. It is important for those

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

of us in the fields of teaching English as a second language (TESL), second language acquisition (SLA), education and translation to make informed decisions about the use of these tools in our classrooms. Although the evidence is not such that FOT tool use should currently be required in L2 classrooms, it is clear that instructors of L2 courses should carefully consider incorporating such tools in their teaching, in the knowledge that most students are already using these tools on their own. Therefore, L2 teachers could be encouraged to develop language exercises and tasks around these tools in order to ensure that students are using these tools both efficiently and effectively. In particular, explicitly teaching students how to post-edit machine translated text would likely be a useful pedagogical activity. With guidance from language instructors, students can be taught to correct grammatical, lexical and communication errors that already exist in texts translated by FOT tools. Such tasks are useful for L2 writing and expand students' productive knowledge of grammar, vocabulary and overall writing fluency.

The quality and accessibility of FOT tools has been improving and will continue to improve. As shown by this study, students are already using these tools whether explicitly taught to do so or not. Therefore, L2 educators need to make sure that there are policies in place that promote fair and effective use of these tools in the L2 classrooms.

References

- Aikawa, T., Schwartz, L., King, R., Corston-Oliver, M., & Lozano, C. (2007). Impact of controlled language on translation quality and post-editing in a statistical machine translation environment. *Proceedings of the MT Summit XI*, 1-7.
- Ali, N. H. (1996). Translation versus direct composition: Effects of first language on second language Arab writers. Unpublished M.A. thesis. University of Illinois, Urbana-Champaign.
- Aliaga, M., & Gunderson, B. (2000). *Interactive statistics*. Upper Saddle River, NJ USA: Pearson Prentice-Hall.
- Allen, J. (2003). Post-editing. *Benjamins Translation Library*, 35, 297-318.
- Allwright, D. (2003). Exploratory practice: Rethinking practitioner research in language teaching. *Language Teaching Research*, 7(2), 113-141.
- Al Shammari, M. H. (2007). *Saudi English as a foreign language learners' attitudes toward computer-assisted language learning*. West Virginia University, Morgantown. ProQuest Information and Learning Company.
- Anderson, D. D. (1995). Machine translation as a tool in second language learning. *CALICO Journal*, 13(1), 68-97.
- Arenas, A. G. (2008). Productivity and quality in the post-editing of outputs from translation memories and machine translation. *Localisation Focus*, 7(1).
- Arndt, V. (1987). Six writers in search of texts: A protocol-based study of L1 and L2 writing. *ELT journal*, 41(4), 257-267.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Arthern, P.J. (1978). Machine translation and computerized terminology systems: a translator's viewpoint In: Snell, B. (Ed.) *Translating and the computer*. Proceedings of a seminar, London, 14th November 1978 (Amsterdam: North-Holland, (1979), 77-108.
- Asad, T. (1986). The concept of cultural translation in British social anthropology. *Writing culture: The poetics and politics of ethnography, 1*, 141-164.
- Ashour, S. (2008). *Exploratory practice: An alternative tool for understanding life in the language classroom* (Unpublished master's thesis). The University of Exeter.
Retrieved from
http://www.academia.edu/2897958/Exploratory_Practice_An_Alternative_Tool_f_or_Understanding_Life_in_the_Language_Classroom
- Ayres, R. (2002). Learner attitudes towards the use of CALL. *Computer assisted language learning, 15*(3), 241-249.
- Baecker, R. M., Grudin, J., Buxton, W., & Greenberg, S. (1995). *Readings in Human-Computer Interaction: Toward the Year 2000*. Los Altos, CA: Morgan-Kaufmann Publishers.
- Baumfield, V., Hall, E., & Wall, K. (2008). *Action research in the classroom*. Sage.
DOI: <http://dx.doi.org.proxy.bib.uottawa.ca/10.4135/9780857024305>

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Barker, C., Pistrang, N., & Elliot, R. (2002). *Research methods in clinical psychology: An introduction for students and practitioners*. (2nd edition). John Wiley and Sons Ltd.

Beiser, F. C. (2003). *The romantic imperative: The concept of early German romanticism*. Harvard University Press.

Belonogov, G. G., Khoroshilov, A. A., Kuznetsov, B. A., Novoselov, A. P., & Zelenkov, Y. G. (1995). Systems of phraseological machine translation of polythematic texts from Russian into English and from English into Russian (RETRANS and ETRANS systems). In *International forum on information and documentation* (Vol. 20, No. 2, pp. 29-35). International Federation for Information and Documentation.

Bennett, M. (2004). A review of the literature on the benefits and drawbacks of participatory action research. *First Peoples Child & Family Review*, 1(1), 19-32.
Retrieved from <http://journals.sfu.ca/fpcf/index.php/FPCFR/article/viewFile/6/3>

Blum-Kulka, S. (1986). Shifts of cohesion and coherence in translation. In J. House & S. Blum-Kulka (Eds.) *Interlingual and Intercultural Communication: Discourse and Cognition in Translation and Second Language Acquisition Studies* (17–35).
Tubingen: Gunter Narr.

Brown, H. D., & Principles, T. B. (2001). *An interactive approach to language pedagogy*.
NY: Longman.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Bueno, J. L. (1992). Traducción automatica mediante el ordenador (Automatic Translation Using a Computer). Retrieved from <http://eric.ed.gov/?id=ED354715>
- Burns, A. (1999). Analysing action research data. In A. Burns, *Collaborative research for English language teachers*. Cambridge: Cambridge University Press, 152-180.
- Burns, A. (2005). Action research: An evolving paradigm?. *Language teaching*, 38(02), 57-74.
- Bystrova-McIntyre, T. (2012). *Cohesion in Translation: A Corpus Study of Human-translated, Machine-translated, and Non-translated Texts (Russian into English)*. Doctoral dissertation. Kent University, Ohio.
- Cancedda, N., Dymetman, M., Foster, G., & Goutte, C. (2009). A statistical machine translation primer. In *Learning Machine Translation*. 1-37.
DOI:10.7551/mitpress/9780262072977.003.0001
- Chapelle, C., & Jamieson, J. (2008). *Tips for teaching with CALL: Practical approaches to computer-assisted language learning*. Pearson Education.
- Chen, H. J. (2003). Developing a technology-enhanced self-access reading environment. In *The proceedings of the 2003 international conference on English teaching and learning in the Republic of China*. 103–116. Taipei: Crane Publishing Company.
- Chok, N. S. (2010). *Pearson's versus Spearman's and Kendall's correlation coefficients for continuous data* (Unpublished Doctoral dissertation). University of Pittsburgh.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Christensen, T. P. (2011). Studies on the mental processes in translation memory-assisted

translation—The state of the art. *trans-kom. Zeitschrift für*

Translationswissenschaft und Fachkommunikation, 4(2), 137-160. Retrieved

from: <http://www.trans-kom.eu/bd04nr02/trans->

[kom_04_02_02_Christensen_Translation_Memory.20111205.pdf](http://www.trans-kom.eu/bd04nr02/trans-kom_04_02_02_Christensen_Translation_Memory.20111205.pdf)

Cohen, A. D., & Brooks-Carson, A. (2001). Research on direct versus translated writing:

Students' strategies and their results. *The Modern Language Journal*, 85(2), 169-

188.

Cohen, L., Manion, L., & Morrison, K. R. B. (2000). *Research methods in education:*

RoutledgeFalmer.

Elliot, J. (1991). *Action research for educational change*: Open University Press.

Connor, U. (1996). *Contrastive rhetoric: Cross-cultural aspects of second language*

writing. Cambridge University Press.

Cook, G. (2010). *Translation in language teaching: An argument for reassessment*.

Oxford University Press. Creswell, J. W. (1998). *Qualitative inquiry and research*

design: Choosing among five designs. Thousand Oaks, CA: Sage Publication Ltd.

Costa-Jussa, M. R., Farrús, M., Marino, J. B., & Fonollosa, J. A. (2012). Study and

comparison of rule-based and statistical Catalan-Spanish machine translation

systems. *Computing and Informatics*, 31(2), 245-270.

Craig, D. V. (2009). *Action research essentials*. San Francisco, CA: John Wiley & Sons.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Creswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed methods approaches*, Thousand Oaks, CA: Sage Publications.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE Publications Incorporated.
- Creswell, J. W., & Clark, V. L. P. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage Publication Ltd.
- Creswell, J. W., Plano Clark, V. L., Gutmann, M. L., & Hanson, W. E. (2003). Advanced mixed methods research designs. *Handbook of mixed methods in social and behavioral research*, 209-240.
- Crystal, D. (1994). *An encyclopedic dictionary of language and languages*. Penguin.
- Cumming, A. (1989). Writing expertise and second-language proficiency. *Language learning*, 39(1), 81-135.
- De Almeida, G., & O'Brien, S. (2010). Analysing post-editing performance: Correlations with years of translation experience. EAMT 2010: Proceedings of *The 14th Annual Conference of the European Association for Machine Translation*, 8-20.
- De Beaugrande, R. & Dressler, W. U. (1981). *Introduction to text linguistics*. London/New York: Longman.
- Delmonte, R. (2013). Getting Past the Language Gap: Innovations in Machine Translation. In *Mobile Speech and Advanced Natural Language Solutions* (pp. 103-181). Springer New York.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Denzin, N. (1988). *The research act* (Rev. ed.). New York: McGraw-Hill.

Denzin, N. K., & Lincoln, Y. S. (2005). *Qualitative research*. Thousand Oaks, CA: Sage Publication Ltd.

Derry, S. J., Pea, R. D., Barron, B., Engle, R. A., Erickson, F., Goldman, R., & Sherin, B. L. (2010). Conducting video research in the learning sciences: Guidance on selection, analysis, technology, and ethics. *The Journal of the Learning Sciences*, 19 (1), 3-53.

Dix, A. Finlay, Janet. Abowd, Gregory D. Beale, Russel (2004). *Human—Computer Interaction*. Prentice Hall International, UK.

Dodigovic, M. (2005). *Artificial intelligence in second language learning: Raising error awareness* (Vol. 13). Multilingual Matters. DOI: 10.1191/1362168803lr118oa

Dörnyei, Z. (2007). *Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies*. Oxford: Oxford University Press.

Dörnyei, Z. (2010). The relationship between language aptitude and language learning motivation: Individual differences from a dynamic systems perspective. *Continuum companion to second language acquisition*, 247-267. Retrieved from <http://www.zoltandornyei.co.uk/uploads/2010-dornyei-cont.pdf>

Dörnyei, Z., & Taguchi, T. (2010). *Questionnaires in second language research: Construction, administration, and processing*. Routledge.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Dostert, L. E. (1955). The Georgetown-IBM experiment of 1954. In W.N. Locke and A. D. Booth (Eds.), *Machine translation of languages*, 124-135. New York: John Wiley & Sons.
- Dufficy, P. (2004). Predisposition to choose: the language of an information gap task in a multilingual primary classroom. *Language teaching research*, 8(3), 241-261.
- Ellis, R. (1994). *The study of second language acquisition*. Oxford University Press.
- Eskola, S. (2004). Untypical frequencies in translated language A corpus-based study on. *Translation Universals: Do they exist?*. Benjamins Translation Library, Amsterdam/Philadelphia, John Benjamins, 48, 83-99.
- Fidaoui, D., Bahous, R., & Bacha, N. N. (2010). CALL in Lebanese elementary ESL writing classrooms. *Computer Assisted Language Learning*, 23(2), 151-168.
- Flick, U. (2009). *Introducing research methodology*. Fourth edition. Thousand Oaks, CA: Sage Publication Ltd.
- Fotos, S. S. (1993). Consciousness raising and noticing through focus on form: Grammar task performance versus formal instruction. *Applied linguistics*, 14(4), 385-407.
DOI: 10.1093/applin/14.4.385
- Frawley, W. (1984). Prolegomenon to a theory of translation. *Translation: Literary, linguistic and philosophical perspectives*, 159, 175.
- French, R.J. (1991). Machine translation. In W. Brierley & I.R. Kemble (Eds.), *Computers as a tool in language learning*. Chichester: Ellis Horwood Limited.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Garcia, I. (2009). Beyond translation memory: Computers and the professional translator.

The Journal of Specialised Translation, 12(12), 199-214.

Garcia, I., & Pena, M. I. (2011). Machine translation-assisted language learning: Writing

for beginners. *Computer Assisted Language Learning*, 24(5), 471-487.

Gardner, R. C. (1985). *Social psychology and second language learning: The role of*

attitudes and motivation. London: Edward Arnold Publishers.

Gardner, R. C., Lalonde, R. N., & Pierson, R. (1983). The socio-educational model of

second language acquisition: An investigation using lisrel causal modeling.

Journal of Language and Social Psychology, 2(1), 1-15.

DOI: 10.1177/0261927x8300200101

Gardner, R. C., & Lambert, W. E. (1978). *Attitudes and Motivation in Second-Language*

Learning. Newbury House Publications.

Garvin, P. (1967): 'The Georgetown-IBM experiment of 1954: an evaluation in

retrospect.' In: Austin, W. M. (Ed.) *Papers in linguistics* in honor of Dostert (The

Hague: Mouton, 1967), 46-56; reprinted in his *On machine translation* (The

Hague: Mouton, 1972), 51-64.

Gay, L. R., Mills, G. E., & Airasian, P. W. (2011). *Educational research: Competencies*

for analysis and applications. (10th edition). Pearson Higher Ed.

Gellerstam, M. (1986). Translationese in Swedish novels translated from English.

Translation studies in Scandinavia, 88-95.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Gellerstam, M. (1996). Translations as a source for cross-linguistic studies. *LUND Studies in English*, 88, 53-62.
- Gentile, A. (1991). Studies in Human and Artificial Information Processing. How to Handle Data within a Successful Translation Theory. *Rassegna Italiana di Linguistica Applicata*, 23(3), 95-101.
- Gideon, T. (1995). *Descriptive translation studies and beyond*. Amsterdam & Philadelphia: John Benjamins.
- Goldberg, A., Russell, M., & Cook, A. (2003). The effect of computers on student writing: A meta-analysis of studies from 1992 to 2002. *The Journal of Technology, Learning and Assessment*, 2(1).
- Golombek, P. (1994). Putting teachers back into teachers' knowledge. *TESOL Quarterly*, 28, 2, 404-07
- Greene, J. C., & Caracelli, V. J. (1997). Defining and describing the paradigm issue in mixed-method evaluation. *New directions for evaluation*, 1997(74), 5-17.
- Groves, D., & Schmidtke, D. (2009). Identification and analysis of post-editing patterns for MT. In *Proceedings of MT Summit* (12) 429-436.
- Guerberof, A. (2008). Post-editing MT and TM. A Spanish case. *Multilingual Computing*, 19(6), 45-50.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Guerberof, A. (2009). Productivity and quality in MT post-editing. In *MT Summit XII-Workshop: Beyond Translation Memories: New Tools for Translators MT*.
Retrieved from <http://www.mt-archive.info/MTS-2009-Guerberof.pdf>
- Hackshaw, A. (2008). Small studies: Strengths and limitations. *European Respiratory Journal*, 32(5), 1141-1143. DOI: 10.1183/09031936.00136408
- Hadley, A. O., & Reiken, E. (1993). *Teaching language in context, and Teaching language in context--Workbook*. International Thomson Publishing Book Distribution Center, KY: Heinle & Heinle Publishers.
- Hamel, M. J. (2011). Testing the usability of an online learner dictionary prototype: a process and product oriented analysis. *Computer Assisted Language Learning Journal*, 25(4), 339-365. DOI: 10.1080/09588221.2011.591805
- Hansen, S. (2003). *Nature of translated text: An interdisciplinary methodology for the investigation of the specific properties of translations*. German Research Center for Artificial Intelligence, Saarland University.
- Hart, A., & Hicks, A. (2002). *Teaching media in the English curriculum*. Stylus Publishing, LLC.
- Hartley, A., & Paris, C. (1997). Multilingual document production from support for translating to support for authoring. *Machine Translation*, 12(1-2), 109-129.
- Hassan, E. (2006). Recall bias can be a threat to retrospective and prospective research designs. *The Internet Journal of Epidemiology*, 3(2), 339-412. Retrieved from <http://print.ispub.com/api/0/ispub-article/13060>

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Henisz-Thompson, B. (1979). *A Review of the State of Machine Translation*. USA.
- Hesse-Biber, S. N., & Leavy, P. (2006). *Emergent methods in social research*. Thousand Oaks, CA: Sage Publications Inc.
- Hirose, K. (2006). Pursuing the complexity of the relationship between L1 and L2 writing. *Journal of Second Language Writing*, 15(2), 142-146.
- Horowitz, D. (1990). Fiction and nonfiction in the ESL/EFL classroom: Does the difference make a difference?. *English for Specific Purposes*, 9(2), 161-168.
- Howatt, A. P. R., & Widdowson, H. G. (2004). *A History of ELT*. Oxford University Press, UK.
- Hubbard, R., & Power, B. (2003). *The art of classroom inquiry: A handbook for teacher-researchers* (2nd ed.). Portsmouth, NH: Heinemann.
- Hutchins, W. J. (1986). *Machine Translation: Past, Present, and Future*. Chichester, UK: Ellis Horwood, Ltd.
- Hutchins, W. J. (2003). Machine translation: half a century of research and use. *Proc. UNED summer school*, 1-24.
- Hyland, K. (2003). *Second language writing*. Cambridge, UK. Cambridge University Press.
- Johansson, S., & Hofland, K. (2000). The English-Norwegian parallel corpus: Current work and new directions. *Multilingual corpora in teaching and research*. Amsterdam: Rodopi.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Jones, S., & Tetroe, J. (1987). Composing in a second language. *Writing in real time:*

Modelling production processes, Norwood, NJ: Ablex, 34-57.

Kaplan, R. B. (1988). Contrastive rhetoric and second language learning: Notes toward a

theory of contrastive rhetoric. *Writing across languages and cultures: Issues in contrastive rhetoric, 2.*

Kaplan, R. B. (1966). Cultural thought patterns in inter-cultural education. *Language*

learning, 16(1-2), 1-20.

Kay, M. (1997, December). Machine translation: The disappointing past and present. In

Survey of the state of the art in human language technology (pp. 248-250).

Cambridge University Press.

Kay, M. (1997). The proper place of men and machines in language translation. *Machine*

Translation, 12(1-2), 3-23.

Kay, P., & Kempton, W. (1984). What is the Sapir-Whorf hypothesis?. *American*

Anthropologist, 65-79.

Kenny, D. (2001). Lexis and creativity in translation. A corpus-based study. Manchester:

St. Jerome Publishing, 200, 1.

Kliffer, M. D. (2005) An experiment in MT post-editing by a class of

intermediate/advanced French majors. In *Proceedings of the 10th EAMT Annual Conference*. Budapest, Hungary, pp. 160-165.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Kobayashi, H., & Rinnert, C. (1992). Effects of First Language on Second Language Writing: Translation versus Direct Composition. *Language Learning*, 42(2), 183-209.
- Koehn, P. (2010). Statistical machine translation. Cambridge University Press, Cambridge.
- Kramsch, C. (Ed.). (2002). *Language Acquisition and Language Socialization: Ecological Perspectives*. A&C Black.
- Kramsch, C. (2009.) *The Multilingual Subject*. Oxford: Oxford University Press.
- Krapels, A. R. (1990). An overview of second language writing process research. In B. Kroll (Ed.), *Second Language Writing: Research Insights for the Classroom* (pp. 37-56). Cambridge: Cambridge University.
- Krashen, S. (1977). The monitor model for adult second language performance. *Viewpoints on English as a second language*, 152-161.
- Krashen, S. D. (1987). Applications of psycholinguistic research to the classroom. *Ed. Long, Michael H., and Jack C. Richards. Methodology in TESOL: Book of Reading*. New York: Newbury House, 33-44.
- Krings, Hans P. (2005): "Wege ins Labyrinth – Fragestellungen und Methoden der Übersetzungsprozessforschung im Überblick." "Ways into the labyrinth - problems and methods of the translation process research at a glance" *Meta* 50 (2), 342-358.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Kroll, B. (1990). *Second language writing: Research insights for the classroom*.

Cambridge University Press.

Lam, F. S., & Pennington, M. C. (1995). The computer vs. the pen: A comparative study of word processing in a Hong Kong secondary classroom. *Computer Assisted Language Learning*, 8(1), 75-92.

Langé, J. M., Gaussier, É., & Daille, B. (1997). Bricks and skeletons: some ideas for the near future of MAHT. *Machine Translation*, 12 (1-2), 39-51.

Larsen-Freeman, D., & Anderson, M. (2011). *Techniques and principles in language teaching (3rd edition): Practical, step-by-step guidance for ESL teachers and thought-provoking questions to stimulate further exploration*. New York, NY: Oxford University.

Laviosa, S. (2014). *Translation and Language Education: Pedagogic Approaches Explored*. Routledge.

Leavy, P. H. N. S., & Hesse-Biber, S. N. (2006). *The practice of qualitative research*. California: Sage Publications.

Leffa, V. J. (1994). Machine-translated text: Is it comprehensible to proficient readers?. *System*, 22(3), 391-399.

Leki, I. (1992). *Understanding ESL writers: A guide for teachers*. London and Portsmouth, NH: Heinemann.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Leki, I., Cumming, A., & Silva, T. (2008). *A Synthesis of Research on Second Language Writing*. London: Routledge.
- Levine, D. M., Stephan, D. F., Krehbiel, T. C., & Berenson, M. L. (2011). *Statistics for managers using microscopic excel*. (6th edition). Pearson Education.
- Lewis, D. (1997) Machine translation in a modern languages curriculum. *Computer Assisted Language Learning* 10 (3), pp. 255-271.
- Liaw, S. S., & Huang, H. M. (2013). Perceived satisfaction, perceived usefulness and interactive learning environments as predictors to self-regulation in e-learning environments. *Computers & Education*, 60(1), 14-24.
- Little, D. (2003). Learner autonomy and second/foreign language learning. *Subject Center for Languages, Linguistics and Area Studies, Guide to good practice*. Retrieved from <https://www.llas.ac.uk/resources/gpg/1409>
- Llach, M. P. A. (2011). *Lexical errors and accuracy in foreign language writing* (Vol. 58). Multilingual Matters.
- Lotherington, H. (2002). Coordinated action research as a model for PD in bilingual education. *Australian Language Matters*, 10(2), 5.
- Machin, D., Campbell, M. J., Tan, S. B., & Tan, S. H. (2011). *Sample size tables for clinical studies*. John Wiley & Sons.
- Malmkjær, K. (1998). *Translation & language teaching: Language teaching & translation*. Manchester, UK: St Jerome.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Marcellino, M. (2006). Probing Rhetorical Structures Of Advanced Learners' Expository

Prose: A Data-Based Approach. *IJELT*, 2(2), 216.

Masgoret, A. M., & Gardner, R. C. (2003). Attitudes, motivation, and second language

learning: A meta-analysis of studies conducted by Gardner and associates.

Language learning, 53(S1), 167-210.

Matsuda, P. K. (2012). On the nature of second language writing: Replication in a

postmodern field. *Journal of Second Language Writing*, 21(3), 300-302.

Matsuda, P. K., Canagarajah, A. S., Harklau, L., Hyland, K., & Warschauer, M. (2003).

Changing currents in second language writing research: A colloquium. *Journal of*

Second Language Writing, 12, 151-179.

Mauranen, A. (2000). Strange strings in translated language: A study on corpora.

Intercultural Faultlines. Research Models in Translation Studies, 1, 119-141.

May, R. (1997). Sensible elocution: How translation works in & upon punctuation. *The*

Translator, 3(1), 1-20.

McNulty Ferri, M. (2010). Action Research Topics and Questions in a Foreign

Languages Teaching Practicum in Colombia. *Íkala, revista de lenguaje y cultura*,

15(24), 207-230. Retrieved from <http://www.scielo.org.co/scielo.php?pid=S0123->

[34322010000100008&script=sci_arttext&tlng=pt](http://www.scielo.org.co/scielo.php?pid=S0123-34322010000100008&script=sci_arttext&tlng=pt)

Merisuo-Storm, T. (2006). Girls and boys like to read and write different texts.

Scandinavian journal of educational research, 50(2), 111-125.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Merriam, S. B., & Simpson, E. L. (1995). *A guide to research for educators and trainers of adults*. Krieger Publishing Co., Melbourne, FL.
- Meskill, C. (1996). Computers, creativity and communicative competence: an association machine. *Computer Assisted Language Learning*, 9(2-3), 115-123.
- Moran, J., Lewis, D., & Saam, C. (2014). Analysis of Post-editing Data: A Productivity Field Test using an Instrumented CAT Tool. In S. O'Brien, M. Carl, L. Specia, & L. Balling (Eds.), *Post-editing of Machine Translation* (pp. 126–146). Newcastle upon Tyne.
- Morse, J. M., and L. Richards. 2002. *Readme First for a User's Guide to Qualitative Methods*. Thousand Oaks, CA: Sage Publications.
- Nagao, M. (1982). *Kikai honyaku shisutemu no choosa kenkyuu*. (A survey of natural language processing and machine translation in Japan.) Tokyo: Japan Electronic Industry Development Association.
- Nielsen, J. (2000). *Designing web usability: The practice of simplicity*. Indianapolis: New Riders.
- Niño, A. (2006). *Evaluating the suitability of using raw machine translation output as input for foreign language written production* (Unpublished doctoral dissertation). The University of Manchester.
- Niño, A. (2008). Evaluating the use of machine translation post-editing in the foreign language class. *Computer Assisted Language Learning*, 21(1), 29-49.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- O'Brien, S., & Moorkens, J. (2014). Towards intelligent post-editing interfaces. In *FIT XXth World Congress* (pp. 4-6). Dublin City University.
- O'Brien, S. (2011). Towards predicting post-editing productivity. *Machine translation*, 25(3), 197-215.
- Olohan, M. (2004). *Introducing corpora in translation studies*. Routledge.
- Olohan, M., & Baker, M. (2000). Reporting that in translated English. Evidence for subconscious processes of explicitation?. *Across languages and cultures*, 1(2), 141-158.
- O'Neill, E. (2012). *The effect of online translators on L2 writing in French* (Unpublished doctoral dissertation). University of Illinois at Urbana-Champaign.
- Ovando, C. J. (2003). Bilingual education in the United States: Historical development and current issues. *Bilingual Research Journal*, 27(1), 1-24.
- Øverås, L. (1998). In search of the third code: An investigation of norms in literary translation. *Meta: Journal des traducteurs/Translators' Journal*, 43(4), 557-570.
- Panov, D. J., Ljapunov, A. A., & Muxin, I. S. (1956). Avtomatizacija perevoda s odnogo jazyka na drugoj (Automatic Translation). *Moskva: Progress*.
- Pennington, M. C. (1996). *The computer and the non-native writer: A natural partnership*. Hampton Pr.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Pierce, J. (1966). *Language and Machines: Computers in Translation and Linguistics.*

Report by the Automatic Language Processing Advisory Committee (ALPAC).

Publication 1416. National Academy of Sciences National Research Council.

Piercy, K. W. (2004). *Analysis of semi-structured interview data.* Retrieved from

http://konference.fdvinfo.net/rc33/2004/Data/PDF/stream_03-15.pdf

Pierre, I., Dymetman, M., Foster, G., Jutras, J. M., Macklovitch, E., Perrault, F., &

Simard, M. (1993, October). Translation analysis and translation automation. In

Proceedings of the 1993 conference of the Centre for Advanced Studies on

Collaborative research: distributed computing-Volume (2) 1133-1147. IBM

Press.

Pittaoulis, M. (2004). *Nursing Home Activities: An Exploration of the Limitations of*

Activity Theory. Paper presented at the annual meeting of the American

Sociological Association.

Plitt, M., & Masselot, F. (2010). A productivity test of statistical machine translation

post-editing in a typical localisation context. *The Prague Bulletin of Mathematical*

Linguistics, 93, 7-16.

Popović, M., & Ney, H. (2011). Towards automatic error analysis of machine translation

output. *Computational Linguistics*, 37(4), 657-688.

Puurinen, T. (1995). *Linguistic acceptability in translated children's literature.*

University of Joensuu.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Rahmani Doqaruni, V. (2014). A Quantitative Action Research on Promoting Confidence in a Foreign Language Classroom: Implications for Second Language Teachers.

IE: Inquiry in Education, 5(1), 3. Retrieved from

<http://digitalcommons.nl.edu/cgi/viewcontent.cgi?article=1086&context=ie>

Raimes, A. (1985). What unskilled ESL students do as they write: A classroom study of composing. *Tesol Quarterly*, 19(2), 229-258.

Raimes, A. (1996). *Identities: Readings from contemporary culture*. Houghton Mifflin College Division.

Raimes, A. (1998). Teaching Writing. *Annual Review of Applied Linguistics*, 18, 142-167. DOI:10.1017/S0267190500003524.

Rashed, D. H. (2008). *A case study of international ESL learners' perceptions of technology use in English language learning*. ProQuest.

Rasinger, S. M. (2013). *Quantitative research in linguistics: An introduction*. NY: Bloomsbury Academic. Retrieved from:

http://doras.dcu.ie/20136/1/Towards_Intelligent_PE_OBrienMoorkens.pdf

Reeves, D. B. (2008). *Reframing teacher leadership to improve your school*. Alexandria, VA: Association for Supervision and Curriculum Development.

Richards, J. C., Platt, J., & Platt, H. (Eds.). (1992). *Longman dictionary of language teaching and applied linguistics* (2nd Ed.). London: Longman.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Richards, J. C., & Rodgers, T. S. (1986). *Approaches and methods in language teaching: A description and analysis*. Cambridge: Cambridge University Press.

Richards, J. C., & Schmidt, R. W. (2013). *Longman dictionary of language teaching and applied linguistics*. Routledge.

Richmond, I. M. (1994) Doing it backwards: Using translation software to teach target language grammaticality. In *Computer Assisted Language Learning* 7 (1), pp. 65-78. DOI: 10.1080/0958822940070106

Rossiter, M. J. (2001). The challenges of classroom-based SLA research. *Applied Language Learning*, 12(1), 31-44. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.196.9174&rep=rep1&type=pdf#page=7>

Russell, R. A. (1985). Machine Translation: Developments and Prospects. *Science, Technology and Society*, 48, 16-23.

Sagor, R. D. (2010). *The action research guidebook: A four-stage process for educators and school teams*. Corwin Press.

Sandelowski, M. (2003). Tables or tableaux? The challenges of writing and reading mixed methods studies. *Handbook of mixed methods in social and behavioral research*, 321-350.

Savignon, S. J. (1997). *Communicative competence: Theory and classroom practice: Texts and contexts in second language learning*. McGraw-Hill Humanities Social.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Schäffner, C., & Adab, B. (2001). The idea of the hybrid text in translation: Contact as conflict. *Across Languages and Cultures*, 2(2), 167-180.
- Schairer, K. (1996). Can machine translation replace human translation? *Hisoania*. 79 (1). 96-107. DOI: 10.2307/345618
- Senez, D. (1998). The machine translation help desk and the post-editing service. *Terminologie et Traduction*, 1, 289-295.
- Shei, C. C. (2002) Teaching MT through pre-editing: Three case studies. *Proceedings of the 6th EAMT Workshop on Teaching Machine Translation*. Manchester, pp. 89-98.
- Silva, T. (1993). Toward and understanding of the distinct nature of L2 writing. *TESOL Quarterly*, 27(4), 657.
- Silva, T. (1997). On the ethical treatment of ESL writers. *TESOL quarterly*, 31(2), 359-363.
- Silva, T., Reichelt, M., Chikuma, Y., Duval-Couetil, N., Mo, R. P. J., Vélez-Rendón, G., & Wood, S. (2003). Second language writing up close and personal: Some success stories. *Exploring the dynamics of second language writing*, 93-114.
- Smith, A. N. (1971). The importance of attitude in foreign language learning. *The Modern Language Journal*, 55(2), 82-88.
- Somers, H. (1997). A practical approach to using machine translation software: 'Post-editing' the source text. *The Translator*, 3(2), 193-212.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Somers, H., Gaspari, F., & Niño, A. (2006, June). Detecting inappropriate use of free online machine-translation by language students-A special case of plagiarism detection. In *11th Annual Conference of the European Association for Machine Translation-Proceedings* (pp. 41-48).
- Sparks, R., & Ganschow, L. (2001). Aptitude for learning a foreign language. *Annual Review of Applied Linguistics*, *21*, 90-111.
- Stepp-Greany, J. (2002). Student perceptions on language learning in a technological environment: Implications for the new millennium. *Language Learning & Technology*, *6*(1), 165-180.
- Swales, J. (1990). *Genre analysis: English in academic and research settings*. Cambridge University Press.
- Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Vol. 46). Sage Publications Inc.
- Tatsumi, M. (2009). Correlation between automatic evaluation metric scores, post-editing speed, and some other factors. *The Twelfth Machine Translation Summit (MT-Summit XII)*, 332-339. Retrieved from <http://www.l2f.inesc-id.pt/~fmmb/wiki/uploads/Work/dict.ref21.pdf>
- Teddlie, C., & Tashakkori, A. (2003). Major issues and controversies in the use of mixed methods in the social and behavioral sciences. *Handbook of mixed methods in social & behavioral research*, 3-50.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Teddlie, C., & Tashakkori, A. (Eds.). (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Sage Publications Inc.
- Tirkkonen-Condit, S. (2004). Unique items-over-or under-represented in translated language?. *Benjamins Translation Library*, 48, 177-186.
- Tymoczko, M. (2007). *Enlarging Translation, Empowering Translators*. Manchester: St. Jerome.
- Uzawa, K. (1996). Second language learners' processes of L1 writing, L2 writing, and translation from L1 into L2. *Journal of second language writing*, 5(3), 271-294.
- Van Weijen, D., van den Bergh, H., Rijlaarsdam, G., & Sanders, T. (2009). L1 use during L2 writing: An empirical study of a complex phenomenon. *Journal of Second Language Writing*, 18(4), 235-250.
- Vanderauwera, R. (1985). *Dutch Novels Translated into English: The transformation of a "minority" literature*. Rodopi.
- Vanni, M., & Zajac, R. (1996). Glossary-based MT engines in a multilingual analyst's workstation for information processing. *Machine Translation, Special Issue on New Tools for Human Translators*.
- Veale, T. & Way, A. (1997). Gaijin: A template-driven bootstrapping approach to example-based machine translation. *New Methods in Natural Language Processing Bulgaria*, 229-235.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Vercruyssen, M., & Hendrick, H. W. (2011). *Behavioral research and analysis: an introduction to statistics within the context of experimental design*. CRC Press.
- Voida, S., & Mynatt, E. D. (2009). It feels better than filing: everyday work experiences in an activity-based computing system. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 259-268. ACM.
DOI: 10.1145/1518701.1518744
- Volansky, V., Ordan, N., & Wintner, S. (2011). More human or more translated? Original texts vs. human and machine translations. In *Proceedings of the 11th Bar-Ilan Symposium on the Foundations of AI with Israeli Seminar on Computational Linguistics (ISCOL), Ramat Gan, Israel*.
- Wagner, E. (1985). Post-editing SYSTRAN, a challenge for commission translators. *Terminologie et traduction*, (3), 1-7.
- Wallace, M. J. (1998). *Action research for language teachers*. Cambridge University Press.
- Wang, S., & Vásquez, C. (2012). Web 2.0 and second language learning: What does the research tell us?. *Calico Journal*, 29(3), 412-430. DOI: 10.1558/cj.v29i3.412-430
- Wang, W., & Wen, Q. (2002). L1 use in the L2 composing process: An exploratory study of 16 Chinese EFL writers. *Journal of second language writing*, 11(3), 225-246.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

- Warschauer, M. (2000). On-line learning in second language classrooms: An ethnographic study. *Network-based language teaching: Concepts and practice*, 41-58.
- Webb, E. J., Campbell, D. T., Schwartz, R. D., & Sechrest, L. (1966). *Unobtrusive measures: Nonreactive research in the social sciences* (Vol. 111). Chicago: Rand McNally.
- Wen, Q. (2008). On the output-driven hypothesis and reform of English-skill courses for English majors [J]. *Foreign Language World*, 2, 002.
- Wolf, M. (1997). Translation as a process of power: Aspects of cultural anthropology in translation. *Benjamins Translation Library*, 20, 123-134.
- Woodall, B. R. (2002). Language-switching: Using the first language while writing in a second language. *Journal of Second Language Writing*, 11(1), 7-28.
- Yang, J., and Lange, E. D. (1998). SYSTRAN on Alta Vista: A user study on real-time machine translation on the Internet. In *Proceedings of the Association for Machine Translation in the Americas*, p. 275-285. Berlin: Springer Verlag.
- Yang, S. C., & Chen, Y. J. (2007). Technology-enhanced language learning: A case study. *Computers in Human Behavior*, 23(1), 860-879
DOI:10.1016/j.chb.2006.02.015
- Yin, R. K. (2011). *Qualitative research from start to finish*. Guilford Press Publications Ltd., NY: USA.

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

Zajac, R., & Vanni, M. (1997). Glossary-based MT engines in a multilingual analyst's workstation architecture. *Machine Translation*, 12(1-2), 131-151.

DOI: 10.1023/A:1007943226671

Zamel, V. (1983). Composing processes of advanced ESL students: Six case studies.

TESOL Quarterly, 17, 165–177. DOI: 10.2307/3586647

Zhai, L. F. (2008). Comparison of two writing processes: direct versus translated composition. *Cross-cultural communication*, 4(1), 8-17.

Appendices

Appendix A: Ethics Approval Notice

Appendix B: Consent Form

Appendix C: CanTest Writing Evaluation Rubric/Grid

Appendix D: In-lab Task/Assignment#1– Cause/Effect Essay

Appendix E: In-lab Assignment/Task #2 – Editing Assignment

Appendix F: In-lab Assignment/Task #3 – Problem Solution Essay

Appendix G: In-lab Assignment/Task #4 – Comparison/Contrast Essay

Appendix H: In-lab Assignment/Task #5 – Advantages/Disadvantages Essay

Appendix I: Writing Curriculum Document for Level 500

Appendix J: User Satisfaction Survey: MT Tool Use in L2 Writing

Appendix A

File Number: 06-13-35

Date (mm/dd/yyyy): 08/21/2013



Université d'Ottawa **University of Ottawa**
Service de subventions de recherche et déontologie Research Grants and Ethics Services

Ethics Approval Notice Social Science and Humanities REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Luise	von Flotow	Arts / Translation	Supervisor
Marie-Josée	Hamel	Arts / Second Language Institute	Co-Supervisor
Reza	Farzi	Arts / Translation	Student Researcher

File Number: 06-13-35

Type of Project: PhD Thesis

Title: Rethinking Translation in Second Language Teaching: Documenting and Optimizing the Use of Machine Translation

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
08/21/2013	08/20/2014	Ia

(Ia: Approval, Ib: Approval for initial stage only)

Special Conditions / Comments:

N/A

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

File Number: 06-13-35

Date (mm/dd/yyyy): 08/21/2013



Université d'Ottawa **University of Ottawa**
Service de subventions de recherche et déontologie Research Grants and Ethics Services

This is to confirm that the University of Ottawa Research Ethics Board identified above, which operates in accordance with the Tri-Council Policy Statement and other applicable laws and regulations in Ontario, has examined and approved the application for ethical approval for the above named research project as of the Ethics Approval Date indicated for the period above and subject to the conditions listed the section above entitled "Special Conditions / Comments".

During the course of the study the protocol may not be modified without prior written approval from the REB except when necessary to remove subjects from immediate endangerment or when the modification(s) pertain to only administrative or logistical components of the study (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, information/consent documentation, and/or recruitment documentation, should be submitted to this office for approval using the "Modification to research project" form available at:
<http://www.research.uottawa.ca/ethics/forms.html>.

Please submit an annual status report to the Protocol Officer four weeks before the above-referenced expiry date to either close the file or request a renewal of ethics approval. This document can be found at:
<http://www.research.uottawa.ca/ethics/forms.html>.

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.

Signature:

Protocol Officer for Ethics in Research
For Barbara Graves, Chair of the Social Sciences and Humanities REB

2

550, rue Cumberland, pièce 154 550 Cumberland Street, room 154
Ottawa (Ontario) K1N 6N5 Canada Ottawa, Ontario K1N 6N5 Canada
(613) 562-5387 • Téléc./Fax (613) 562-5338
www.recherche.uottawa.ca/deontologie/ www.research.uottawa.ca/ethics/

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

File Number: 06-13-35

Date (mm/dd/yyyy): 08/21/2013



Université d'Ottawa **University of Ottawa**
Service de subventions de recherche et déontologie Research Grants and Ethics Services

This is to confirm that the University of Ottawa Research Ethics Board identified above, which operates in accordance with the Tri-Council Policy Statement and other applicable laws and regulations in Ontario, has examined and approved the application for ethical approval for the above named research project as of the Ethics Approval Date indicated for the period above and subject to the conditions listed the section above entitled "Special Conditions / Comments".

During the course of the study the protocol may not be modified without prior written approval from the REB except when necessary to remove subjects from immediate endangerment or when the modification(s) pertain to only administrative or logistical components of the study (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, information/consent documentation, and/or recruitment documentation, should be submitted to this office for approval using the "Modification to research project" form available at:
<http://www.research.uottawa.ca/ethics/forms.html>.

Please submit an annual status report to the Protocol Officer four weeks before the above-referenced expiry date to either close the file or request a renewal of ethics approval. This document can be found at:
<http://www.research.uottawa.ca/ethics/forms.html>.

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.

Signature:

Protocol Officer for Ethics in Research
For Barbara Graves, Chair of the Social Sciences and Humanities REB

2

550, rue Cumberland, pièce 154 550 Cumberland Street, room 154
Ottawa (Ontario) K1N 6N5 Canada Ottawa, Ontario K1N 6N5 Canada
(613) 562-5387 • Téléc./Fax (613) 562-5338
www.recherche.uottawa.ca/deontologie/ www.research.uottawa.ca/ethics/

Appendix B



Université d'Ottawa
Faculté des arts
Institut des langues officielles et
du bilinguisme (ILOB)

University of Ottawa
Faculty of Arts
Official Languages and
Bilingualism Institute (OLBI)

☎ 613-562-5743
📠 613-562-5126

70 Laurier E.
Ottawa ON K1N 6N5 Canada
www.uOttawa.ca

Consent form

Title of the course and course code: ESL 500

Title of research project:

Rethinking Translation in Second Language Teaching: Documenting and Optimizing the Use of Machine Translation by L2 Learners in ESL Writing Courses

Name of Professor and researcher: Mr. Reza Farzi

Invitation to Participate: Now that the course is completed and the final marks are submitted, I am invited to participate in the research study entitled Rethinking Translation in Second Language Teaching: Documenting and Optimizing the Use of Machine Translation by L2 Learners in ESL Writing Courses. This research project is being conducted independently of ESL 500 and is part of the researcher's/professor's doctoral thesis.

Purpose of the Study: I understand that the purpose of the study is to document the use of Free Online Machine Translation (FOMT) tools (e.g. Google Translate or BableFish) by L2 Learners in ESL Writing Courses.

Participation: If I choose to participate in this research project, I will grant access to the professor/researcher to use my coursework (i.e. my screen captures—both video and audio— that have been collected as part of the course) for his research project. Also, should I choose to participate, I will fill out a user-satisfaction questionnaire.

Risks: There are no known risks associated with this research.

Confidentiality and Anonymity: I have received assurance from the researcher that the information I will share will remain strictly confidential. I understand that the contents will be used only for this research only and that my confidentiality will be protected completely. **Anonymity** will be protected in the following manner: participant's (my) name will not be revealed under any circumstances and that all the data related to will be analyzed and described anonymously.



Université d'Ottawa
Faculté des arts
Institut des langues officielles et
du bilinguisme (ILOB)
University of Ottawa
Faculty of Arts
Official Languages and
Bilingualism Institute (OLBI)

☎ 613-562-5743
📠 613-562-5126

70 Laurier E.
Ottawa ON K1N 6N5 Canada
www.uOttawa.ca

Conservation of data: The data collected in the password-protected accounts and downloaded on a hard drive will be securely safeguarded— in a locked filing cabinet in a locked office— until five years after the doctoral thesis defence (until approximately August 2019).

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all the data gathered will be fully deleted.

Acceptance: I, _____, agree to participate in the above research study conducted by Reza Farzi as part of his doctoral thesis. This research is under the supervision of Dr. Luise von Flotow and Dr. Marie-Josée Hamel.

If I have any questions about the study, I may contact the researcher or either of his supervisors.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5

Tel.: (613) 562-5387

Email: ethics@uottawa.ca

There are two copies of the consent form, one of which is mine to keep.

Participant's signature: (Signature) Date: (Date)

Researcher's signature: (Signature) Date: (Date)

Appendix C

CanTest Writing Evaluation Rubric/Grid (Descriptors)

	(CanTEST 4.5 – 4.5+)	(CanTEST 4+)	(CanTEST 4..0)	(CanTEST 4 -)
Organization: Structure and Development	<ul style="list-style-type: none"> ▪ Well-structured, clear presentation and development of the topic ▪ Point of view developed in a fairly detailed fashion; excellent support of main ideas ▪ Very good to excellent use of linking devices 	<ul style="list-style-type: none"> ▪ Well-structured presentation and development of topic ▪ Clearly expressed main ideas; very good support ▪ Linking between ideas always clear 	<ul style="list-style-type: none"> ▪ Generally well-structured development and presentation of topic; occasionally somewhat choppy and not completely cohesive ▪ Clearly expressed main ideas; good support ▪ Linking between ideas usually clear 	<ul style="list-style-type: none"> ▪ Structure and development is logical but may be choppy and not completely cohesive ▪ Usually clearly expressed main ideas; adequate support ▪ Linking between ideas often clear
Accuracy	<ul style="list-style-type: none"> ▪ Accurate use of structures and vocabulary with infrequent minor errors ▪ Meaning never obscured 	<ul style="list-style-type: none"> ▪ Occasional minor errors in structures (e.g. articles, embedded clauses) and vocabulary use occur ▪ Meaning rarely obscured 	<ul style="list-style-type: none"> ▪ Generally accurate use of structures and vocabulary, but errors are present. ▪ Meaning seldom obscured 	<ul style="list-style-type: none"> ▪ Generally accurate use of structures and vocabulary but errors are present ▪ Meaning occasionally obscured
Range of structures and vocabulary	<ul style="list-style-type: none"> ▪ Very good to excellent range of vocabulary and structures ▪ Very good control over a fairly wide range of complex structures ▪ Generally correct use of idioms 	<ul style="list-style-type: none"> ▪ Good to very good range of vocabulary and structures ▪ Generally very good control over simple constructions; mostly satisfactory control over complex structures ▪ Generally correct use of idioms 	<ul style="list-style-type: none"> ▪ Adequate range of vocabulary and structures. ▪ Good control over simple constructions; mostly satisfactory control over complex structures ▪ May demonstrate lack of or occasional misuse of idioms 	<ul style="list-style-type: none"> ▪ Sometimes adequate range of vocabulary and structures. ▪ Generally good control over simple constructions; some control over complex structures ▪ Sometimes demonstrates lack of or some misuse of idioms
Overall effectiveness in conveying message	<ul style="list-style-type: none"> ▪ Always conveys intended meaning – clearly and effectively ▪ Almost always reads like English with respect to word choice and style ▪ No or almost no extra effort required of the reader 	<ul style="list-style-type: none"> ▪ Almost always conveys intended meaning—clearly and effectively ▪ Often reads like English with respect to word choice and style ▪ Very little extra effort required of the reader 	<ul style="list-style-type: none"> ▪ Almost always conveys intended meaning—clearly and coherently ▪ Usually reads like English, although some expressions may be awkward ▪ Little extra effort required of the reader 	<ul style="list-style-type: none"> ▪ Often conveys intended meaning ▪ Text quite often reads like English but a number of expressions are awkward ▪ A little extra effort required of the reader

CanTest Writing Evaluation Rubric/Grid (Descriptors)

	(CanTEST 3.5+)	(CanTEST 3.5/3.5-)	(CanTEST 3.5-/3+)	(CanTEST 3.0/3-)
Structure and Development	<ul style="list-style-type: none"> ▪ Structure and development is fairly logical but may be choppy and not completely cohesive ▪ Often clearly expressed main ideas; usually adequate support ▪ Linking between ideas quite often clear 	<ul style="list-style-type: none"> ▪ Structure may be loose, disjointed, or repetitive ▪ Some evidence of logical development and main ideas; some support ▪ Linking between ideas insufficiently clear (sometimes clear) 	<ul style="list-style-type: none"> ▪ Structure may be loose, disjointed, and/or repetitive ▪ Occasional evidence of logical development and main ideas ▪ Linking between ideas occasionally clear 	<ul style="list-style-type: none"> ▪ Structure is loose, disjointed, and/or repetitive ▪ Little evidence of logical development and main ideas ▪ Linking between ideas rarely clear
Accuracy	<ul style="list-style-type: none"> ▪ Some errors in structure and vocabulary ▪ Meaning sometimes obscured 	<ul style="list-style-type: none"> ▪ A fair number of errors in structure and vocabulary ▪ Meaning sometimes obscured 	<ul style="list-style-type: none"> ▪ Numerous errors in structure and vocabulary; few sentences are error-free ▪ Meaning quite often obscured 	<ul style="list-style-type: none"> ▪ Many errors in structure and vocabulary; very few sentences are error-free ▪ Meaning very often obscured
Range of structures and vocabulary	<ul style="list-style-type: none"> ▪ Somewhat limited / just adequate range of vocabulary and structures ▪ Uses mostly simple structures (reasonably well) and/or has problems with complex structures ▪ Vocabulary and structures sometimes insufficient to fully express ideas 	<ul style="list-style-type: none"> ▪ Rather limited range of vocabulary and structures ▪ Uses mostly simple structures with limited success, and/or has problems with a limited range of complex structures ▪ Vocabulary and structures insufficient to fully express ideas or inappropriate for formal writing 	<ul style="list-style-type: none"> ▪ Limited range of vocabulary and structures ▪ Uses a limited number of mostly simple structures; very few complex structures ▪ Vocabulary and structures often insufficient to express ideas or inappropriate for formal writing 	<ul style="list-style-type: none"> ▪ Very limited range of vocabulary and structures ▪ Limited success with a small range of simple structures; almost no complex structures. ▪ Vocabulary and structures too limited to express ideas or inappropriate for formal writing
Overall effectiveness in conveying message	<ul style="list-style-type: none"> ▪ Often conveys intended meaning ▪ Text sometimes reads like English; non-native-speaker expressions are fairly common ▪ Some extra effort required of the reader 	<ul style="list-style-type: none"> ▪ Sometimes conveys intended meaning ▪ Text sometimes reads like English; non-native-speaker expressions are common ▪ Some extra effort required of the reader 	<ul style="list-style-type: none"> ▪ Occasionally conveys intended meaning ▪ Text sometimes reads like English; non-native-speaker expressions are common ▪ Extra effort quite often required of the reader 	<ul style="list-style-type: none"> ▪ Rarely conveys intended meaning ▪ Text sometimes reads like English; non-native-speaker expressions are common ▪ Extra effort often or very often required of the reader

Appendix D

In-lab Task/assignment#1: Cause/Effect Essay

Write an introductory paragraph as well as the first body paragraph of a cause/effect essay on ONE of the following topics.

In some countries it can be very difficult for people over 50 to find good jobs despite their experience. Is this fair? Why or why not?

OR

More and more qualified people are moving from poor to rich countries to fill vacancies in specialist areas like engineering, computing and medicine. Why is this happening?

Important instructions:

1. You may use any form of online resources (online dictionaries; online thesauri; online translation tools; etc.) for completing this writing task.
2. Also, make sure that you log into your Screencastomatic account before you start typing your answer.
3. As soon as you are ready to type, start recording the task completion process.

Remember that in a cause/effect essay:

- The thesis statement should clearly indicate whether you are tackling cause or effect, and it should present the main points (blueprints) in order.
- Avoid common logical fallacies
- Fully support your first main point (blueprint) in a well-developed body paragraph.

YOUR ESSAY WILL BE EVALUATED ACCORDING TO THESE CRITERIA:

A. Organization and development (4 points)

- The introduction has a clear thesis or purpose
- The body paragraph develops a cause logically
- The cause should be supported with specific details
- There are clear, logical linking devices within and between sentences.

B. Language Accuracy (8 points)

- Grammar and sentence structure:
 - Verb tenses; s –v agreement; articles; singular and plural nouns; non-count nouns; pronoun use; word order; punctuation
- Vocabulary
 - Correct word choice and word form

C. Range (variety) of grammar structures and vocabulary (6 points)

- Complex sentences and grammar structures as well as simple ones
- A range of vocabulary: academic; idiomatic; causal transition expressions

D. Overall Communication (2 points)

- Your piece (intro + body paragraph 1) is fluent and effective (it “reads like English”)
- Your message is clearly communicated. The reader does not need to stop often to re-read in order to understand.

Appendix E

Editing Assignment

This assignment is worth 2.5% of your course-work mark.

The essay on page 2 of this assignment contains numerous grammar mistakes, vocabulary inaccuracies/errors, and overall communication errors. As we practiced in class during the past two weeks, edit the essay for grammatical, lexical and stylistic errors.

Important instructions:

You may use any form of online resources (online dictionaries; online thesauri; online translation tools; etc.) for completing this writing task.

Also, make sure that you log into your Screencastomatic account before you start editing the answer.

As soon as you are ready to edit the essay, start recording.

Review the following criteria carefully before editing the essay.

A. Organization and development

The introduction has a clear thesis or purpose

Each body paragraph develops a cause/effect logically

Each cause/effect is supported with specific details

There are clear, logical linking devices within and between sentences, as well as between paragraphs.

B. Language Accuracy

Grammar and sentence structure:

Verb tenses; s –v agreement; articles; singular and plural nouns; non-count nouns; pronoun use; word order; punctuation, etc.

Vocabulary

Correct word choice and word form

C. Range (variety) of grammar structures and vocabulary

Complex sentences and grammar structures as well as simple ones

A range of vocabulary: academic; idiomatic; causal transition expressions

D. Overall Communication

the essay is fluent and effective (it “reads like English”)

The message is clearly communicated. The reader does not need to stop often to re-read in order to understand.

Topic: We are becoming increasingly dependent on computers. They are used in business, hospitals, crime detection and even to fly planes. What things will they be used in future?

In this dependence on computers a good thing or should we be more suspicious of their benefits?

Technology has invaded our modern life style. using computers becomes essential for us. They used in several fields like hospital, crime investigation and in Airports. This using will be increased by the time and affect our future positively.

One of the most important advantages of using computers is long distance education. This kind of education provides great chance for developing countries students. They can enroll in big universities all over the world from their own place. In this way, they can save more money they could spend on traveling. Also, they cannot waste time for attending literatures. The materials of most of these courses are available online on the same sites.

Another benefit of computer revolution is giving the working mothers a good opportunity to work at home, and take care of their children as well. There are a lot of sites offer these kinds of jobs which can do at home on computers. Such as typing some documents or translate some texts to another language.

For people who love private business, they can find a golden chance on the Internet to build their business from home. They can just pay for build their own business website and begin to show their products online. The claiming and paying are both online by credit cards or visa cards or so.

Actually, change doesn't always mean going to bad, in this case, technology services our modern life style and make it more convenience.

To sum up, computers can serve our life in the future in education field and in work. And we shouldn't worry about that change. Change is the natural of life.

Appendix F

In-lab Assignment/Task # 3- Problem-Solution Essay

Read the following topic carefully. Write an introductory paragraph as well as two body paragraphs (in the first body paragraph you should address the causes— the first question— and in the second body paragraph you should propose one or two solutions)

In some countries young people have little leisure time and are under a lot of pressure to work hard in their studies.

What do you think are the causes of this?

What solutions can you suggest?

Important instructions:

1. You may use any form of online resources (online dictionaries; online thesauri; online translation tools; etc.) for completing this writing task.
2. Also, make sure that you log into your Screencastomatic account before you start editing the answer.
3. Only record the process of writing body paragraph 1 and body 2.

YOUR RESPONSE WILL BE EVALUATED ACCORDING TO THESE CRITERIA:

A. Organization and development (20 points)

- The introduction has a clear thesis (states the problem and that some solutions may be put forth)
- Body paragraph ONE develops two or three causes of the problem logically
- Body paragraph TWO suggests one or two solutions to the problem
- There are clear, logical linking devices within and between sentences, as well as between paragraphs.

B. Language Accuracy (30 points)

- Grammar and sentence structure:
 - Verb tenses; s –v agreement; articles; singular and plural nouns; non-count nouns; pronoun use; word order; punctuation, etc.
- Vocabulary
 - Correct word choice and word form

C. Range (variety) of grammar structures and vocabulary (20 points)

- Complex sentences and grammar structures as well as simple ones
- A range of vocabulary: academic; idiomatic; causal transition expressions

D. Overall Communication (30 points)

- Your essay is fluent and effective (it “reads like English”)
- Your message is clearly communicated. The reader does not need to stop often to re-read in order to understand.

Appendix G

In-lab Assignment/Task # 4- Comparison/Contrast Essay

Write an essay of approximately 300 words on the following topic.

*Compare/contrast your hometown and Ottawa.
You may want to consider the weather, transportation, population, etc.*

In terms of organization and development, the essay must be well-structured and contain the following:

a) An introduction (at least one paragraph) which contains a ‘hook’/ ‘attention-getter’ or introductory comments and a thesis statement that clearly indicates the subjects being compared as well as the general organization of the essay (the 2 or 3 criteria of comparison) .

b) The body of the essay: At least 2 supporting paragraphs, each of which develops a point of comparison or contrast well.

c) A concluding paragraph which sums up what has been said (re-statement or summing up) and closes effectively (the ‘clincher’).

There should also be good use of linking devices / transition expressions (clear linking) both within and between sentences and within and between paragraphs.

Important instructions:

1. You may use any form of online resources (online dictionaries; online thesauri; online translation tools; etc.) for completing this writing task.
2. Also, make sure that you log into your Screencastomatic account before you start typing your answer.
3. As soon as you are ready to type the essay, start recording the task completion process.

YOUR ESSAY WILL BE EVALUATED ACCORDING TO THESE CRITERIA:

A. Organization and development (20 points)

- The introduction has a clear thesis or purpose
- Each body paragraph develops a point of comparison/contrast clearly.
- There are clear, logical linking devices within and between sentences, as well as between paragraphs.

B. Language Accuracy (30 points)

- **Grammar and sentence structure:**
 - Verb tenses; s –v agreement; articles; singular and plural nouns; non-count nouns; pronoun use; word order; punctuation, etc.
- **Vocabulary**
 - Correct word choice and word form

C. Range (variety) of grammar structures and vocabulary (20 points)

- Complex sentences and grammar structures as well as simple ones
- A range of vocabulary: academic; idiomatic; causal transition expressions

D. Overall Communication (30 points)

- Your essay is fluent and effective (it “reads like English”)
- Your message is clearly communicated. The reader does not need to stop often to re-read in order to understand.

Appendix H

In-lab Assignment# 5- Advantages/Disadvantages Essay

Write at least 300 words on the following topic.

Many translation experts believe that machine translation (MT) is less accurate than human translation and that there is no immediate likelihood of machines taking over human translators. However, MT technology is increasingly used by language learners and other people for various purposes. Explain some possible uses of MT technology. Use explanations and examples—you can use your personal experience as well—to support your opinion.

Important instructions:

You may use any form of online resources (online dictionaries; online thesauri; online translation tools; etc.) for completing this writing task.

Also, make sure that you log into your Screencastomatic account before you start typing your answer.

As soon as you are ready to type the essay, start recording the task completion process.

In terms of organization and development, the essay must be well-structured and contain the following:

a) An introduction that contains background information on the topic and a thesis stating the two sides (advantages and disadvantages of the tools).

b) The body of the essay: At least 2 supporting paragraphs, one developing the advantages of MT tools and one developing their disadvantages.

c) A concluding paragraph that wraps up your essay effectively.

There should also be good use of linking devices / transition expressions (clear linking) both within and between sentences and within and between paragraphs.

YOUR ESSAY WILL BE EVALUATED ACCORDING TO THESE CRITERIA:

A. Organization and development (20 points)

The introduction has a clear thesis or purpose

Body paragraph ONE develops two or three advantages (OR you may have more than one body paragraph developing advantages. i.e., each body paragraph develops ONE advantage thoroughly.)

Body paragraph TWO develops two or three disadvantages (OR you may have more than one body paragraph developing disadvantages. i.e., each body paragraph develops ONE disadvantage thoroughly.)

A very short transition paragraph if need be.

An effective conclusion

B. Language Accuracy (30 points)

Grammar and sentence structure:

Verb tenses; s –v agreement; articles; singular and plural nouns; non-count nouns; pronoun use; word order; punctuation, etc.

Vocabulary

Correct word choice and word form

C. Range (variety) of grammar structures and vocabulary (20 points)

Complex sentences and grammar structures as well as simple ones

A range of vocabulary: academic; idiomatic; causal transition expressions

D. Overall Communication (30 points)

Your essay is fluent and effective (it “reads like English”)

Your message is clearly communicated. The reader does not need to stop often to re-read in order to understand.

Appendix I

Writing Curriculum Document for Level 500

Entry Level Descriptors	Objectives	Grammar Objectives	Exit Level Descriptors
<p>Usually communicates intended meaning. Occasionally makes errors, even in basic grammar; errors occasionally interfere with understanding.</p> <p>Produces text that often reads like English, although some expressions may be awkward.</p> <p>Uses an adequate range of vocabulary and structures.</p> <p>Can produce effective simple constructions with good control over common sentence patterns (coordination and subordination), and mostly satisfactory control over more complex structures and idioms.</p> <p>Has some variety in sentence structure.</p> <p>Organizes material logically, with main ideas and relevant supporting details, but work may be choppy and not completely cohesive at times.</p> <p>Linking between ideas is often clear.</p>	<p>Produce well-organized reports, summaries, and essays (cause/effect, compare and contrast, problem-solution, advantages/disadvantages and argumentative).</p> <p>Use cohesive devices appropriately: pronoun referencing, transition words, key words, synonyms, clause markers</p> <p>Display good control over a variety of sentence structures (simple, compound, complex, and compound-complex)</p> <p>Increase writing speed.</p> <p>Incorporate facts, quotations, and statistics to support ideas and opinions.</p> <p>Paraphrase to avoid plagiarism.</p>	<p>Refinement and review of</p> <ul style="list-style-type: none"> ● the verb system ● passive voice ● articles/determiners ● gerunds/ infinitives ● modals ● conditionals ● adjective, adverbial, and noun clauses ● punctuation ● coordination and subordination ● linking devices <p>with a focus on editing essay, self and peer correction.</p>	<p>Usually communicates intended meaning.</p> <p>Is generally accurate.</p> <p>Although errors are present, they are not at a basic level, and they rarely interfere with comprehension.</p> <p>Can produce texts that read like English, although errors in word usage (phrases, collocations, and idioms) occur.</p> <p>Uses a good range of vocabulary and structures.</p> <p>Shows good control over more complex structures (e.g. subordination) with more variety in sentence structure and use of linking devices.</p> <p>Can generally present well-structured ideas, with clearly expressed main ideas and good support. Linking between ideas is usually clear.</p> <p>Produces frequent error-free sentences.</p> <p>has good control of grammar and punctuation but may make a few errors</p>

Appendix J

User Satisfaction Survey: MT Tool Use in L2 Writing

14-08-02 1:17 PM

User Satisfaction Survey: MT Tool Use in L2 Writing

This survey aims to gather information on how free online Machine Translation (MT) tools have been used in the process of L2 writing by the participants of this research (you) and whether or not you have been satisfied with such tools. Thanks for your time

*** Required**

1. Age: *

Mark only one oval.

- 18-20
 21-25
 26-30
 31-35

2. Sex: *

Mark only one oval.

- Female
 Male

3. Nationality and First Language: *

.....

4. Participant Identification Number (Student Number): *

.....

5. How would you rate the overall usability of free online MT tools in L2 writing: *

Mark only one oval.

- a. Extremely useful
 b. Very useful
 c. Useful
 d. Fairly useful
 e. Not very useful
 f. Not useful at all
 g. Not sure

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

User Satisfaction Survey: MT Tool Use in L2 Writing

14-08-02 1:17 PM

6. In the past 12 weeks, how frequently have you used free online MT tools for completing writing tasks: *

Mark only one oval.

- a. Always
- b. Almost always
- c. Usually
- d. Often
- e. Sometimes
- f. Occasionally
- g. Almost never
- h. Never

7. Which language pair have you used free online MT tools? *

Example: Mandarin and English

.....

8. Which language direction have you usually used such MT tools? *

Mark only one oval.

- Only from my L1 into English
- Only from English into my L1
- Both from my L1 into English and from English into my L1

9. For which of the following did you use free online MT tools? (you can choose more than ONE option) *

Check all that apply.

- a. Double checking the meaning accuracy of words or expressions by seeing their meaning in your L1
- b. Translating words from your L1 into English
- c. Translating phrases or expressions from your L1 into English
- d. Translating collocations from your L1 into English
- e. Translating sentences from your L1 into English
- f. Translating bigger units than sentences (paragraphs for example) from your L1 into English
- Other:

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

User Satisfaction Survey: MT Tool Use in L2 Writing

14-08-02 1:17 PM

10. Rank the following in order from most frequently used to least frequently used (most frequently used= 1, least frequently used= 6). *

Double checking the meaning accuracy of words or expressions by seeing their meaning in your L1
Mark only one oval.

	1	2	3	4	5	6	
Most frequently used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Least Frequently used

11. *
Translating words from your L1 into English
Mark only one oval.

	1	2	3	4	5	6	
Most frequently used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Least frequently used

12. *
Translating phrases or expressions from your L1 into English
Mark only one oval.

	1	2	3	4	5	6	
Most frequently used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Least frequently used

13. *
Translating collocations from your L1 into English
Mark only one oval.

	1	2	3	4	5	6	
Most frequently used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Least frequently used

14. Please briefly describe the benefits (if any) of free online MT tools for L2 writing. *

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

15. Please briefly describe the disadvantages (if any) of free online MT tools for L2 writing. *

.....
.....
.....
.....
.....

16. Which of the following is true about your free online MT tools use in L2 writing? *

Mark only one oval.

- a. I had to post-edit everything I translated into English
- b. I had to post-edit almost everything I translated into English
- c. I had to post-edit most of what I translated into English
- d. I had to post-edit some of what I translated into English
- e. I never post-edited anything I translated into English
- Other:

17. Which of the following free online MT tools you often use for L2 writing purposes? (you can choose more than ONE option)

Check all that apply.

- a. Google Translate
- b. BabelFish
- c. Reverso
- d. Worldlingo
- e. Imtranslator
- f. Lingo24
- Other:

18. Any further comments:

.....
.....
.....
.....

Thank you for taking the time to participate in this survey!

TAMING TRANSLATION TECHNOLOGY FOR L2 WRITING

User Satisfaction Survey: MT Tool Use in L2 Writing

14-08-02 1:17 PM

