AN EXPLORATION OF THE EFFECTIVENESS OF THE USE OF MULTIMEDIA COMPUTER-ASSISTED ENGLISH WRITING

Sirin Sawangwan

A Dissertation Submitted in Partial
Fulfillment of the Requirements for the Degree of
Doctor of Philosophy (Language and Communication)
School of Language and Communication
National Institute of Development Administration
2017

AN EXPLORATION OF THE EFFECTIVENESS OF THE USE OF MULTIMEDIA COMPUTER-ASSISTED ENGLISH WRITING

Sirin Sawangwan

School of Language and Communication

Assistant Professor.....Kasma Suwanarak.....Major Advisor

(Kasma Suwanarak, Ph.D.)

The Examining Committee Approved This Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy (Language and Communication).

Associate Professor.....Committee Chairperson

(Kanyarat Getkham, Ph.D.)

Assistant Professor.....Kasma Suwanarak.....Committee

(Kasma Suwanarak, Ph.D.)

Associate Professor.....Committee

(Sureepong Phothongsunan, Ph.D.)

Assistant Professor.....Dean

(Jaray Singhakowinta, Ph.D.)

October 2017

ABSTRACT

Title of Dissertation	An Exploration of the Effectiveness of the Use of Multimedia Computer-Assisted English Writing
Author	Miss Sirin Sawangwan
Degree	Doctor of Philosophy (Language and Communication)
Year	2017

This study aims to investigate the effects of multimedia computer-assisted English writing (MCAEW) on English writing performance and to explore motivational factors together with perceptions towards the use of MCAEW. Both quantitative and qualitative research techniques were employed. The quantitative method was used to investigate the difference in overall English writing performance of students before and after the integration of MCAEW by comparing pretest and posttest mean scores. The quantitative technique was also applied to discover motivational factors towards the use of MCAEW. Qualitative method was conducted to explore the students' perceptions towards the use of MCAEW.

Data were collected from 200 EFL non-English major students from a public university. The pretest and posttest of the students' English writing mean scores were examined through a paired-sample t-test. An exploratory factor analysis was conducted to find the motivational factors through a five-point Likert scale items questionnaire. A semi-structured interview was conducted in order to explore perceptions towards the use of MCAEW.

The results show that a highly significant difference exists in overall English writing performance after the integration of MCAEW. The difference between the means of the pretest and posttest scores was reported ($p < .001$). Four influencing motivational factors have been found. The students revealed that MCAEW influent their communicative competence, task completion, autonomous learning, and

communication. Some course and technical resolutions regarding constraints of MCAEW functions were reported.

Overall, the students' performance and views on the use of MCAEW can raise awareness of educators involved in EFL writing. The findings would be valuable resources for considering appropriate ways in which the MCAEW might be useful for teaching EFL writing. Finally, implications are drawn regarding the implementation of MCAEW, adjusting EFL writing curriculum, as well as recommendations for future research.

ACKNOWLEDGEMENTS

This dissertation represents not only my work at the keyboard, but also a milestone of more than 4 years of work, specifically within the GSLC. This dissertation is also the result of work by dozens of people, whom I wish to thank. First and foremost I wish to thank my advisor, Assistant Prof. Dr. Kasma Suwanarak. She has been supportive since the days I began enrolling in the GSLC as a Ph.D. student. Ever since, she has supported me not only by supervising my research assistantship for 4 years, but also academically and emotionally through the rough road to finish this dissertation.

I am also very grateful to Associate Prof. Dr. Kanyarat Getkham, my dissertation committee for educating and guiding me through all these years. She was an extremely reliable source of practical knowledge. I was fortunate to have the chance to consult with Associate Prof. Dr. Sureepong Phothongsunan, who read and guided me through his method for dissertation writing. I honestly express my gratitude to Assistant Prof. Dr. Jaray Singhakowinta, the Dean of GSLC. My graduate experience benefitted greatly from his support, and inspiration. As well, I am indebted to my Ph.D. friends, who deserve the credit for initiating the pilot project, and the Ph.D. life sharing experiences throughout these years.

I am grateful for the funding sources and all support that allowed me to pursue my Ph.D. study: The Graduate School of Language and Communication, National Institute of Development Administration.

Last but not the least, I would like to thank my family: mom, dad, and my sister for loving me throughout my life. They have cherished with me every great moment and supported me whenever I needed it.

Sirin Sawangwan

Ocotober 2017

TABLE OF CONTENTS

LIST OF TABLES

Tables **Pages**

LIST OF FIGURES

Figures **Pages**

ABBREVIATIONS

Abbreviations	Equivalence
CALL	Computer-Assisted Language Learning
CASLA	Computer Applications in Second Language Acquisition
CAVL	Computer-Assisted Vocabulary Learning
CMC	Computer-Mediated Communication
EFL	English as a Foreign Language
ELT	English Language Teaching
E-mail	Electronic Mail
E-learning	Electronic Technology in Teaching and Learning
GPA	Grade Point Average
IOC	Item-Objective Congruency Index
K-12	Kindergarten through Twelfth Grade
L2	Second Language
MCAEW	Multimedia Computer-Assisted English Writing
MSWord	Microsoft Word
OHEC	Office of the Higher Education Commission
PASW	Predictive Analytics Software
SAR	Self-Assessment Report
SLA	Second Language Acquisition
TQF:HEd	Thai Qualifications Framework of Higher Education
T-Test	Student’s t-distribution Test
ZPD	Zone of Proximal Development
P-Value	Differential Statistical Significant Value for Hypothesis Testing

CHAPTER 1

INTRODUCTION

1.1 Introduction

The 21st century is a century of technological competition. Technology accelerates its integration to promote the efficiency of education. In English language teaching, language and technology is a fascinating trend that can be integrated and developed for a better outcome in language education. Warschauer and Kern (2000) posited that one of the most significant areas of innovation in language education-computer-assisted language learning (CALL) has come of age, while Lamy and Hampel (2007) suggested that the multimedia computer environment is necessary for improving language learning skills.

According to section 7(C) of the Thai Qualifications Framework for Higher Education (TQF:HEd) created in 2006, the measurement of teaching quality regulated by the Commission on Higher Education has put one of the quality measurements in the outcomes of intellectual skill, in which the Commission aims to use information technology in developing learning outcomes. Because learning outcomes reflect teaching quality, integrating technology into education, thus, has become a key in developing teaching quality to advance, particularly in a developing country like Thailand. English is used as a central language for global communication. Since the integration of technology is considered as an important tool for learning, English teachers are attempting to seek possible effective practices of teaching learning with technology assistance; as a result, computer- assisted language learning has come into play.

To what extent can educators, be concerned with developing computer-assisted language learning (CALL) practices to serve the demands of educational technology that help students achieve the most effective learning goals? It is

evidenced that the multimedia CALL instructional method promotes better results compared with the traditional instructional method (Buckley & Rauch 1979, Freed, 1971, Oates, 1981, Reid, 1986, Saracho, 1982, Van Campden, 1981, as cited in Kucuk, 2009, p. 11) but CALL effects alone tend to ignore characteristics of individual learners. Psychological factors of the process of learning too that should be considered as a crucial effect of language learning (Garrett, 2009). Gardner and Lambert (1959) found that second language achievement was related not only to language aptitude, but also to motivation. Ellis (1986) claims that motivation is among five individual learners' factors (age, aptitude, cognitive style, and personality) that influence achieving the target language.

In 2013, the result of the previous study on the use of computer-assisted language learning and multimedia toward developing motivation for undergraduate students in Thailand, has shown that teachers and students agreed that multimedia CALL can help enhance the four English skills (speaking, listening, reading and writing). However, some voices reflected that the use of multimedia CALL has been integrated in their English class only to help students pass their learning outcome (grades), and it is used only as a significant tool for passing the standards set by the Office of the Higher Education Commission (OHEC) in the section of the Self-Assessment Report (SAR) in order to assist universities in Thailand to continue maintaining their educational information technology support. It can be concluded that CALL supports global level of success in language education, but there is a lack of consideration regarding individual success. Therefore, to help students succeed in the aforesaid global and individual learning goals, it is the researcher's primary concern that it would be more beneficial to both universities in Thailand and Thai students if the researcher could investigate the two major multimedia CALL concerns: 1) multimedia CALL effects on students' English language performance, and 2) motivational factors that enhance learners' success.

In response to the first concern (students' English language performance), English writing is highly recommended for CALL drill practice (Sawangwan, 2013). According to Swain (1995), to produce language output, learners need to do something, to create meaningful production of language, and to stretch learners' interlanguage to meet communicative goals that speaking and writing can provide. In

addition, Cook (2004) states that writing consists of written symbols, is permanent, can be consulted, regardless of time, and can be stored off-line. More strongly, from the result of the researcher's previous study in 2013, writing has been found as one of the most recommended skills that need to be developed (apart from listening), and it should be taught via multimedia computer-assisted language learning (CALL) exercises. Hence, the focus of this research is to determine the multimedia CALL effects on English writing performance.

The second concern (motivational factors), enhances learners' success; motivation and perceptions should be investigated. Krashen (1998) claimed that learners with high motivation, self-confidence, a good self-image, and a low level of anxiety are better equipped for success in second language acquisition. More strongly, perceptions serve to maintain the desire and effort in the long and tedious process of acquiring the language (Gardner, 1979). It can be interpreted that expected English learning outcome (according to Thailand's TQF:HEd framework) would be less likely to be the most effective way of achieving success in learning English regardless of considering the importance of students' motivation and perceptions toward their language learning. Therefore, the researcher tends to ensure that multimedia CALL is an effective tool for developing students' English writing, and to determine how multimedia CALL helps promote their motivation to achieve in English writing.

These two concerns can be analyzed by intertwining multimedia CALL into the second language acquisition process. Swain (1995) summarized that a primary concern of SLA is to develop effective output, and we must consider the 'process' NOT only the 'product'. Therefore, if the researcher integrated multimedia CALL into students' learning process, and if the product of language learning were students' English writing performance, then writing performance alone would less likely be adequate as an effective output. Rather, the students' psychological process i.e., motivational factors involved in multimedia CALL perceptions may shed light on the suggestion that multimedia CALL can be an effective solution that enhances English writing development.

Hence, the main focus of this dissertation is on investigating the effects of multimedia computer assisted on students' English writing, in other words, multimedia computer-assisted English writing (MCAEW). In addition, the researcher

attempts to determine what motivational factors are involved in using multimedia computer-assisted English writing and how these factors enable learners to achieve the most effective learning outcome. Finally, the researcher investigates students' perceptions on the use of multimedia computer-assisted English writing.

1.2 Research Rationale

In an EFL context, Thailand is a member of the ASEAN Economic Community (AEC). The use of English in Thailand has been considered very important. In addition, the Thai Qualifications Framework for Higher Education (TQF:HEd) has been encouraging universities throughout Thailand to seek ways to find methods for better English learning outcomes. This can be problematic because in Thailand, English is used in an expanding circle and considered as a foreign language (EFL) (Kachru, 1985, 1992). The Thai language is used as the first language and the mother tongue, whereas English is used as a foreign language. Because of this, the exposure to usage of English in Thailand is limited (Khamkhien, 2010). Moreover, Kongkerd (2013) asserted that current pedagogical approaches to English teaching in Thailand are not able to help learners become competent English users. More recently, the international language training companies using data from online English tests revealed that Thais' English proficiency was among the lowest compared to English learners in other Asian countries (Bruner, Shimray, & Sinwongsuwat, 2014, as cited in Teng & Sinwongsuwat, 2015).

In reality, however, just because English is taught in Thai undergraduate levels for an average of 3 hours per week (4 to 5 English subjects throughout the length of 4 years, depending on students' majors) students are directed to learn English as a subject to complete at the university level. This limited English courses are insufficient to bring all English knowledge from classroom into practice. In other words, the course following the TQF:HEd framework does not ensure that the students will be able to actually use the language effectively. According to Suwanarak & Phothongsunan (2008), all participants in the study perceived their English learning outcomes as failures because of their inability to put their knowledge into practice. In order to bring English knowledge into practice, there should be a helpful tool to

ensure that English language is efficiently exposed to learners and might be an effective tool to help learners practice their English learning.

Hence, exposing students to English through multimedia computer-assisted language learning comes into play. It is an interesting topic among educators. The emergence of technology in English language teaching and learning has been improved gradually since the twenty-first century. It has continuously grown since the era of the Internet (Ahmad, 2012). Language classroom applications, such as multimedia computer-assisted language learning and Internet learning have been integrated into language learning and has facilitating students in becoming accustomed with an English language environment. Dramatic change has occurred in the English writing environment as the paper- pencil based classroom or traditional writing method has been outdated and replaced by typing in the age of "digital writing" (Grabill & Hicks, 2005). This is partly because people today communicate more on the Internet. It is undeniable that teachers and students are frequently online. Writing through the use of the Internet such as email, text, chat rooms, web blogs, social media, and surfing online platforms are available and have become our daily routines. Multimedia computer-assisted language learning is not only a part of teachers' and students' lives, but also a part of an English language environment which it has created. A number of studies on the effects of multimedia computer-assisted language learning in education have proved that it can be powerful as a literacy tool to enhance, train, and develop English writing. For example, Ahmad (2012) found a significant difference between the pretest writing and posttest score after the use of multimedia computer- assisted writing (the best score increased dramatically from 10% to 30% for all students participating in his study). More strongly, Kennedy A.W. (2007) found that the use of a Computer-Assisted Vocabulary Learning program (CAVL) improves both receptive and productive skills of EFL students. She found a statistically significant increase of vocabulary retention, usage, and lexical development in English writing. Therefore, in order to know whether multimedia CALL supports better learning outcomes, the researcher explores how multimedia CALL is used best to improve English writing, compared to the traditional English classroom.

Swain (1995) suggested that the product of language learning; for example, utterances or receiving good grades, is not enough for an effective learning output regardless of the process of language learning. Other possible processes of learning also dictate learning success. Motivation reflects the psychological process of the students' attitude toward their successful learning. Focusing on learners' expectations on their successful language learning, Krashen (1998) suggested that motivation helps learners better equipped for success in second language acquisition. In addition, Dörnyei (2009) stated that the motivational task processing system affects language learning achievement. A possible motivational factor, utilitarian reason, predicts success in language learning can be seen through a desire to achieve proficiency in a new language such as getting a job (Dulay, Burt, & Krashen, 1982, p.47). These aspects of learning success suggest that motivation is a significant process of successful language learning.

Therefore, writing performance alone is not effective unless the researcher discovers what lies beneath the students' desire to achieve their learning goal; that is, motivational factors and perceptions toward the use of multimedia CALL in students' English writing. In accordance with the motivation theory, Gardner and Tremblay (1994a, 1994b) suggested that the theoretical framework on second language motivation regarding 'integrative' and 'instrumental' motivational orientations be discussed. It should be determined whether they are factors that facilitate learners in practicing their English writing.

To discover the aforesaid effective learning output, Swain (1995) stated that the process of language learning is inseparable from the product of language learning. In this study, the researcher aims to explore whether the classical motivational aspects of language learning (instrumental and integrative motivations) proposed by Gardner and Tremblay (1994a, 1994b) can suitably be applied into English language learning integrated with multimedia computer- assisted writing in a Thai context, and whether there should be any other possible factors that dictate students' motivation in learning and practicing. The provision of resources to support an English-language environment requires a lot of infrastructure such as English language teaching and learning instruments, language lab, English settings and lessons. Thus, learners' perceptions on the use and also related issues will be discussed. As suggested by

Garrett (1991, 2009), CALL is the answer to respond to the national language learning demand, but it will have to be massively expanded and significantly reconceptualized in its theory, its pedagogical integration, its technologies, and its infrastructure. Hence, this research is opened to students' perceptions, including strengths and constraints towards using multimedia computer- assisted English writing.

In sum, the researcher intends to discover, on the one hand, students' writing performance, as a product of language learning, and on the other hand, motivational factors, as a process of language learning through multimedia computer-assisted English writing. Additionally, the researcher attempted to triangulate an explanation of students' perceptions toward their use of multimedia computer-assisted English writing in order to explore further possible issues.

1.3 Significance of the Study

In the context of EFL, most of the scholars treat the language learning motivation and perceptions of using multimedia computer-assisted language learning and English writing competency separately.

Most of the objectives of CALL studies focused on the effects of CALL in EFL contexts and proved that there was a better outcome of writing performance with less consideration on psychological factors in students' learning process or vice versa. For example, Levy (2009) found that CALL has been used for developing studetns' writing skills. Ackerman and Simmons (2016) indicated a 49% increase in scores for students who were taught the digital writing environment within a classroom. Chao and Huang (2007) also found a highly significant difference in Taiwanese students' writing performance after an integration of blog/wiki. Moreover, media integration in ELT in writing results in better writing scores for EFL Saudi Arabian students (Ahmad, 2012). Heift et al. (2012) summarized that using a CALL environment is considered the best supporting factor for L2 learners. Liou and Hsein-Chin (2016) proved that the roles of 'Second Life', a virtual reality game integrated with English class helped college students write better. More strongly, Young & Bush (2004) found that writing fluency was found a major problem, but students' fluency improved over

time with the online feedback they were receiving from their peers. Still, most of the English teaching fields focused on an English teaching and testing model by treating the motivation and perceptions of using multimedia computer-assisted language learning and English writing competency separately.

Little is known about studying the effects of integrating multimedia computer-assisted programs on the teaching and learning of English writing for undergraduate students in Thailand together with studying students' motivation and perceptions. In particular, this research focuses on two concerns of multimedia CALL: 1) the students' English writing performance; and 2) the students' motivational factors and perceptions towards the use of multimedia computer- assisted English writing.

In other words, there is a lack of studies which combine multimedia CALL as a tool to prove on the first hand, the effects of the product of language learning (English writing performance) by comparing the outcomes before and after an integration of MCAEW class, and on the other hand, the lack of findings regarding the effects of MCAEW on the process of language learning (motivational factors and perceptions). This disparity warrants further investigation in this field. Thus, the researcher intend to fulfil the aforementioned disparity by studying the effects of using multimedia computer-assisted English writing, motivational factors, and perceptions, on EFL undergraduate students in Thailand whether the use of MCAEW can be considered as an effective tool to motivate learners and to facilitate them better equip their English writing skill. Moreover, the study aims to discover perceptions derived from the use of it.

The results of this study may enable teachers and educators to know how to help students develop their English writing performance via the use of multimedia computer-assisted English writing. The results can help to find aspects or types of motivation that occur among students while using multimedia computer-assisted English writing. The results may also aide the consideration of whether multimedia computer-assisted English writing should be added into the English writing curriculum if the results suggest it. Furthermore, perceptions from students' regarding multimedia computer-assisted English writing use can help educators to see further issues in students' English learning and assist students in their writing practice.

1.4 Objectives of the Study

This research aims firstly to explore the effects of using multimedia computer-assisted English writing by comparing students' writing performance before and after the use of it in terms of whether it can improve students' English writing performance after the integration of multimedia computer-assisted English writing.

Secondly, the research aims to investigate motivational factors influencing students' use of multimedia computer-assisted English writing.

Finally, the research investigates the students' perceptions towards using multimedia computer-assisted English writing i.e., preference, benefits, strength, constraints, and any further possible issues in relation to their use.

1.5 Research Questions and Hypothesis

Based on the objectives of the study, three research questions and one hypothesis are posited.

Research Question 1: Are there any significant differences in overall English writing performance of students before and after using multimedia computer- assisted English writing?

Hypothesis: Students' overall English writing performance will be better after an integration of multimedia computer-assisted English writing.

Research Question 2: What are the motivational factors influencing students' use of multimedia computer-assisted English writing?

Research Question 3: What are the students' perceptions towards using multimedia computer-assisted English writing?

1.6 Scope of the Study

This study focuses on the difference in English writing performance of EFL students before and after using multimedia computer-assisted English writing. Additionally, the study also focuses on motivational factors and perceptions toward the use of multimedia computer-assisted English writing. Students participating in this study are Thai EFL and are currently studying in an urban university, where multimedia computer-assisted English writing activities were utilized. These student samples were studying in the second year of undergraduate programs in various faculties. They were those who passed the compulsory English subject called Fundamental English in the first year of enrolment. It is presumably that these students have the same level of English language proficiency in English. In addition, the experimental instructions were examined and finished in one semester. Details and instrumentations are discussed further in chapter 3, the data collection procedures.

1.7 Definitions of Key Terms

Writing performance refers to task scores in overall writing. Holistic Rubric scoring will be used to measure students' writing performance adapted from the Montana University System Writing Assessment (2011).

Motivation refers to the extent to which the students' works or strives to learn English because of a desire to do so and the satisfaction experienced in this activity (Gardner, 1985).

Motivational factors refer to aspects of students toward the use of multimedia computer- assisted language English writing based on Gardner and Tremblay (1994a, 1994b). The two main aspects of motivation are: (1) Integrative motivation: the desire to achieve proficiency in a new language in order to participate in the life of the community that speaks the language (Gardner & Lambert, 1972) which are categorized into items 15 of the questionnaire ; (2) Instrumental motivation: the desire to achieve proficiency in a new language for utilitarian reasons, such as getting better grades or better jobs (Gardner & Lambert, 1972) which are categorized into item 2, and 24. The other aspects of motivation [based on Warschauer, (1996), Nunan,

(2004), Dörnyei (1994), Richards (2006), Truscott and Morley, (2001)] consist of (3) communication, included into items 7, 12, 14 and 26; (4) empowerment, specified into item 8 and 30; (5) Learning, included into items 11 and 27; (6) Task Completion, indicated into items 1, 3, 4, 5, 21, 28, and 29; (7) Communicative Competence included into items 9, 10, 16,17, 19, 23; (8) Autonomous Learning is indicated into items 13, 18, 20, 22, and 25 (see Appendix L).

Multimedia computer-assisted English writing, based on Warschauer and Kern (2000); Meskill and Ranglova (1996), refers to hardware, software, and multimedia teaching materials that enhance students' writing performance as follows:

Hardware: Students' individual computers available in the "Sanako" lab room setting installed at Rmutto-CPC

Software: 1) an in-class-text chat room program embedded in the lab room

2) Online chat applications prepared for outside classroom communication

(1) Facebook or Line

(2) E-mail accounts

Teaching materials 1) Writing courses

(1) Youtube: http://www.youtube.com/watch?v=qr6QQ_mEJUA

(2) E-learning: http://e-learning.rmutto.ac.th

(3) Teachers' PowerPoint presentations

2) Writing tools

(1) Microsoft Word

(2) Online dictionary

EFL refers to English as a foreign language

Learning achievement refers to the English writing performance based on Thailand's TQF:HEd and the students' attitude, motivation, and achievement based on social psychological aspects of second-language acquisition (Gardner, 1979).

Communicative competence refers to real communication in language teaching and learning that aims to urge learners to interact in learning situations (Richards, 2006).

Language learning product refers to the students' writing performance.

Language learning process refers to (1) integrating multimedia CALL into the development of writing skills based on the model of multimedia learning and SLA (Plass & Jones, 2005), and (2) motivation and perceptions toward multimedia CALL based on Computer applications in second language acquisition (Chapelle, 2001).

Students' perceptions refers to pedagogical demand and reasons behind the use of computer-assisted English writing. Based on Garrett (2009), students' perceptions consist of preference, benefits, strength, and constraints towards using MCAEW.

Student Samples refers to two hundred EFL student samples participated in this study. The two hundred samples was set in compliance with the suggestion of a fair sample for an exploratory factor analysis (Comrey & Lee, 1992).

Interviewees refers to five students participated in an individual semi-structured interview of this study. The five interviewees were obtained from reported initial perceptions.

1.8 Expected Outcomes

The findings of the study enable the researcher, readers and educators to see whether there will be a significant difference in overall English writing performance of the students after using multimedia computer-assisted English writing. Moreover, the results can shed light on exploring motivational factors occur among the students while using multimedia computer-assisted English writing. Finally, the result will elaborate their perceptions: preference, benefits, strengths, constraints, and other possible issues toward using multimedia computer-assisted English writing.

1.9 Limitations of the Study

Due to the fact that the research was conducted in one public university with the second year students. The result of the research cannot be generalized in all students in Thailand. Secondly, limitations also lie in the time scale of the research. The research was conducted in one summer semester (10 weeks) meanwhile the MCAEW activities was set aside in English courses (90 minutes) which might be too short for a full investigation on teaching and learning the English language.

CHAPTER 2

LITERATURE REVIEW

This section of the study aims to explore the related theories and reviews of related studies in various disciplines. It is divided into three overarching concepts.

The first section of the literature review involves the technological development on writing performance. First it introduces the development from traditional paper-based instruction to CALL-based instruction and the roles of multimedia CALL in English language learning. Next, communicative competence is applied as a new approach for English writing performance. Finally, a review of writing assessments used as tools for English writing performance is identified.

The second section discusses the use of multimedia computer-assisted language learning and its effects on second language acquisition and learning motivations, described interrelated disciplines in the integration of multimedia CALL into SLA, that is, the role of computer applications in second language acquisition (CASLA). In addition, motivation, types of motivation, and perceptions towards multimedia CALL that enhance learning achievement in English writing as a product of language learning derived from students are discussed

The third concept is the effect of multimedia CALL in English writing and multimedia CALL instruments. The exploration reveals that multimedia CALL integrated into English writing might cause possible effects on students' English skills, especially in their writing. Finally, multimedia instruments recently used to promote today's communicative language learning are discussed.

Finally, related studies are presented at the end of each section and the conclusion is presented at the end of this chapter.

2.1 Technological Development on Writing Performance

This section explained the technological development on writing performance from paper-based to CALL-based instructions. Then, the review shows how communicative competence and its application plays a key role in English writing performance. Related studies are also discussed.

2.1.1 From Paper-Based to CALL-Based Instructions

Technology has been created to serve the demand of globalized communication. It has also been developed for today's language education. English writing with the use of multimedia technology is a result of such a revolution. The development of writing has continuously developed from paper-based writing into digital writing since the introduction of the Internet. Grabill and Hicks (2005) suggest that teaching writing in technological environments is quite different from teaching in environments mediated by more traditional technologies (e.g., paper, pens, books, desks, and chalkboards). Using technology has developed the writing process (the typewriter for example), but only a few writing technologies have had truly dramatic social impact. Therefore, the term "digital writing," a changed writing environment; i.e., writing which students produce on the computer and distribute via networks, for example, e-mail, chat rooms, and internet surfing, means that technological development provides multimedia choices in that society. The result is that the audience of this digital writing network (teacher and students) who participate in a social context of education can encourage themselves to get involved in an English learning society. Hence, the "revolution" is not precisely a machine revolution; it is a social and cultural revolution (Grabill & Hicks, (2005).

In the realm of socio-cultural theory, Vygotsky (1987) stated that zone of proximal development is the difference between what a student can do with help and what he/she can do without help. Vygotsky (1987) originally developed this concept by arguing against the use of academic, knowledge-based tests as a means to measure students' intelligence. Further to Vygotsky (ibid.), a student cannot complete tasks unaided, but can complete them with guidance. Consistent with the theory, language education nowadays puts a lot more effort into technology that serves to develop the

results of this intelligent zone, language performance. Despite the technological materials or task design that must be implemented to serve not only the product, but also the process of students' learning. The most important and relevant observation for technology in language learning today is that the technology is there to *serve* language learning, not vice versa (Levy, 2009). Since the beginning of the Internet era, Garrett (2009) described the trends and issues of technology in the service of language learning:

1) Should the technology be thought of as primarily assisting teaching (for example, handling homework, thus saving classroom time for communicative activities) or as directly supporting learning (for example, allowing students to explore cultural material as they like)?

2) What is the relationship between a theoretically and empirically based understanding of the language learning process and the design and implementation of technology-based materials?

3) Should students work with pedagogically shaped materials or directly with authentic data?

4) Should students' access to the material be directed or entirely under their own control? What cognitive strategies or problems are implied either way?

5) What kinds of research do the use of technology for language learning demand or enable (p.74)?

In sum, researchers in the CALL field should answer those questions of how CALL should be treated as a beneficial tool for language learning.

Furthermore, it is recommended for CALL researchers that in its implication, CALL should be put into the process of language learning (Lamy & Hampel, 2007). It should not only to empirically support language skills of students but CALL should also be included to maintain communicative activities between students and the teacher which is the goal for language learning. Let students explore and construct their knowledge by having them search for the needed information (for example, surfing the Internet to look up vocabulary or utilising word processing to check basic spelling) is a key role in CALL practice.

Letting students construct their knowledge are found in multimedia CALL instruction. Multimedia CALL can also create learners' autonomy, also called

student-centered learning (Taylor, 2000). According to the principles teaching/ learning practices responding to autonomous learning, Lea et al. (2003) asserts that student–centred learning includes the followings tenets:

1) the reliance on active rather than passive learning,
2) an emphasis on deep learning and understanding,
3) increased responsibility and accountability on the part of the student,
4) an increased sense of autonomy in the learner
5) an interdependence between teacher and learner,
6) mutual respect within the learner teacher relationship,
7) a reflexive approach to the teaching and learning process on the part of both teacher and learner.'

Moreover, Brandes and Ginnis (1986) recommend a guide to autonomous learning that teachers and reasearchers should encourage learners having full responsibility for their learning, involving and participating in the course, having more equal in relationship between learners, promoting growth, development, and experiencing confluence in their education. Finally, the learners see themselves differently as a result of the learning experience. These attempts create leaners to be more autonomous have been found in CALL practices. Due to the fact that autonomous learning has encouraged learners construct their knowledge by engaging themselves to learn and understand a target language with computers assistance. They can be less passive and more autonomous when they are freed from inhibitory effect of teacher presence (Truscott & Morley, 2001).

In the 21st century, multimedia CALL development cannot only serve language skills and practice. Multimedia CALL should also be designed to serve communicative aspects of second language acquisition. Garrett (2009) also suggests that SLA theory has attempted and decades have been spent focusing on sociolinguistics, pragmatics, and discourse analysis; i.e., the "communicative" aspects, and during this period we have seen less research, in comparison, on the acquisition of grammar forms and grammar concepts except as these have been examined in the context of communicative theory and pedagogy. Therefore, we cannot assume that CALL development should ideally be driven either by current

pedagogy, by already-developed SLA theory, or by technology. Each of these evolves and changes in its relationships with the others.

Most importantly, teachers and researchers in this field should be certain that in its implication, CALL should be designed to be worth time, cost, effort and individual reflections in its use. By doing so, the researcher has explored those above questions by finding the empirical products of language learning together with the learning process, which is individually and psychologically derived from students.

2.1.2 Communicative Approach and its Application for English Writing Performance

In the 21st century, communicative competence is a goal for effective EFL learning. It refers to an interactive process in which meaning is produced dynamically between information technology and the world people live (Rasool, 1999). Language learners are entering the world in which their communicative competence will include electronic literacies, i.e., communication in registers associated with electronic communication (Warschauer, 2000; Murray, 2000). To emphasize the interactive process by using multimedia CALL as a tool for writing, teachers should encourage multimedia CALL to best serve English writing that respond to communicative competence. From this, teachers and students should be apprentices to each other. 'Digital writing' is socially situated in a collaborative, recursive and responsive space in which teachers *must* participate with their students; therefore, if we want to help students learn how to write more effectively, then we have to see writing in the same ways that they do and be with them where they write (Grabill & Hicks, 2005).

One factor that has made it possible to enhance today's English writing development is communicative competence. Richards (2006) introduced a communicative approach which aims to focus on real communication in language learning. He concluded that communicative language teaching sets as its goal the teaching of communicative competence. There are 10 core assumptions of current communicative language teaching:

1) Second language learning is facilitated when learners are engaged in interaction and meaningful communication.

2) Effective classroom learning tasks and exercises provide opportunities for students to negotiate meaning, expand their language resources, notice how language is used, and take part in meaningful interpersonal exchange.

3) Meaningful communication results from students processing content that is relevant, purposeful, interesting, and engaging.

4) Communication is a holistic process that often calls upon the use of several language skills or modalities.

5) Language learning is facilitated both by activities that involve inductive or discovery learning of underlying rules of language use and organization, as well as by those involving language analysis and reflection.

6) Language learning is a gradual process that involves creative use of language, and trial and error. Although errors are a normal product of learning, the ultimate goal of learning is to be able to use the new language both accurately and fluently.

7) Learners develop their own routes to language learning, progress at different rates, and have different needs and motivations for language learning.

8) Successful language learning involves the use of effective learning with real communication strategies.

9) The role of the teacher in the language classroom is that of a facilitator, who creates a classroom climate conducive to language learning and provides opportunities for students to use and practice the language and to reflect on language use and language learning.

10) The classroom is a community where learners learn through collaboration and sharing. (P.9-10)

In sum, communicative language teaching puts the main focus on learners by creating more chances to engage learners into the target language community. Moreover, it conduces in us a development of the process of second language learning. Finally, it is believed it can be a current trend of effective language learning because it is not primarily concerned with language proficiency for students' to pass examinations, rather, it emphasizes the process of language learning. This is a view of learning as a lifelong process rather than something done to prepare students for an examination (Jacobs & Farrell, 2003) quoted in Richards (2006).

Warschauer (1996) stated that CALL enhanced collaborative writing both between teacher and students and among students. When more communicative CALL practices are utilised, there is a higher level of communicative competence produced.

Effective EFL learning requires a lifelong process. Writing English with fluency and accuracy is the goal toward communicative language teaching and learning. According to the above 10 assumptions for CLT, task, exercises, and instructions are pivotal to successful English writing. Therefore, researchers in English writing are attempting to seek ways in doing research which primarily emphasizes the development of writing skills (Ahmad, 2012; Swain, 1995; Cook, 2004 Naves, 2006; Warschauer & Kern, 2000, 1996, Godshalk et.al, 1966). This is because writing is one of the products of language skills. According to Swain (1995), to produce, learners need to do something, to create meaningful production of language, and to stretch learners' interlanguage to meet communicative goals, in that, speaking and writing can provide. Cook (2004), stated that writing is written symbols, permanent, can be consulted, regardless of time, and can be stored off-line. In order to analyze EFL students writing performance, we need to consider their writing as an output of language learning. Moreover, the length of writing tasks should be considered. Navés (2006)'s 'analytical measures of learners' regarding interlanguage concluded that preliminary factors should measure length of writing tasks instead of just four components (accuracy, fluency, lexical and syntactic complexity). Clause and sentence length, in particular, may constitute a different factor that effects students' writing proficiency.

To enhance communicative competence for language learning, by creating the right kinds of interactional processes, the best way to create these processes is to use specially designed instructional task (Richards, 2006). Thus, in order to design instructional tasks, in which communicative competence is indispensable, teachers must create instructional activities that urge students to interact in their learning situation, for example, sharing information, supporting collaborative teaching and learning, and having discussions both inside and outside the classroom. Nunan (2004) indicates that task-based language teaching should follow these principles and practices:

1) A needs-based approach to content selection: An emphasis on learning to communicate through interaction in the target language.

2) The introduction of authentic texts into the learning situation.

3) The provision of opportunities for learners to focus not only on language, but also on the learning process itself.

5) An enhancement of learners' own personal experiences as important contributing elements to classroom learning.

6) The linking of classroom language learning with language useoutside the classroom (P.1).

In practice, further to Nunan (2004), it can be applied to English writing class in the way that multimedia computer-assisted language is to be integrated as a writing task. It provides a lab room with a software program for computers for learning inside the classroom and also for learning via online platforms in order to serve students outside classroom learning to create interaction both between teachers and students and among students. Most importantly, multimedia computer-assisted language learning encourages students to share their experiences via chat, engage in more exercises via e-learning, and look up online sources (See Appendix C: Multimedia Computer-Assisted Lists).

It can be concluded that the new paradigm shifted from the effects of the use of multimedia CALL to students' proficiency is now turning to the achievement of communicative competence. This research puts focus on communication through e-mail and chat rooms between both teachers and students and among students. Further, to the investigation the feedback of using CALL amongst themselves and the results of the effects of implementing multimedia CALL in English writing will be discussed in 2.3.

2.1.3 Related Studies on English Writing Performance: From Accuracy Focus to Communicative Approach

Further to Nunan (2004), the principles and practices depict that product and process are the essential parts for successful language learning. Tasks and exercises are necessary for creating students' interaction toward the target language. When tasks and exercises are necessary factors for English writing development, they

confirm that interaction and related variables (such as individual differentiation, reading skills, and learning situations) are useful and also need to be considered as other factors of students' writing development. There are some studies influenced by the language writing performance models proposed by Skehan and Foster (1999, 2000); Robinson (2001a, 2001b, 2003, 2005, 2007); Wolfe-Quintero, Inagaki and Kim (1998) in which the main focus is on the information processing during task-based completion. For example Baba's (2009) "Aspect of lexical proficiency in writing EFL" found that two factors; structure of semantic network of words, and the ability to metalinguistically manipulate words may constitute the construction of summary writing in L2 while reading comprehension, and the length of the summaries are the best predictors of successful writing. Moreover, Kuiken & Vedder's (2007) "Task complexity and measures of linguistic performance in L2 writing" based their discussion on comparing cognitive task complexity on linguistic output which is held by a limited attentional capacity model of three dimensions of task complexity (Skehan, 1998, 2001, 2003; Skehan & Foster, 1999, 2001) with Robinson (2001a, 2001b, 2003, 2005, 2007). Their triadic componential framework reveals that the two models differ but have shared features mainly concerning the resource-directing variables with respect to the resource-dispersing variables. More strongly, Johnson et al. (2012) asserted that the predictions of the limited attentional capacity model and cognition hypothesis may not be applicable to writing; that the effects of pre-task planning in earlier L1 and L2 research may have been moderated by the participants' education and genre knowledge, and that a threshold level of general L2 proficiency may be necessary for pre-task planning to impact L2 writers' texts.

In the Thai EFL writing context, it was suggested that the communicative approach by intensive use of English as the instructional medium in the writing classroom can be an alternative to decrease L1 interference (Bennui, 2008). Grammar exercises might still be valuable help to beginning ESL/EFL writers in reviewing problematic grammatical features before they start to write. In addition to the exercises, the teachers may make use of class activities that can help eliminate errors and improve students' accuracy in writing (Pongsiriwet, 2001).

Although the above studies maintained their focuses on aspects of linguistic accuracy in English writing, their main focus not only aims to improve writing accuracy, but also aims to involve students' cognitive process, reading ability, and learners' individual differences. Most importantly, most of the researchers agree upon fluency of writing and applying a communicative approach to English writing in the classroom. Both aspects (accuracy and fluency) create a great impact in which the results of students' writing depend on various factors, especially from students' motivation, which will be discussed later in section 2.2. Additionally, it is emphasized clearly in Thai EFL writing that the communicative approach is essential in English writing practice.

2.1.4 Identifying Students' English Writing Performance

In order to explore students' writing performance, assessment is a necessary tool to identify students' language performance in terms of marking and scoring. According to Godshalk et al. (1966), holistic rubric scoring was introduced as a major tool for the measurement of writing ability. Later schools such as New Jersey's Criterion-Based Holistic Scoring: A Writing Handbook (2010), and The Montana University System Writing Assessment (2011) in the United States of America have been using and publishing a holistic rubric scoring; the latter rubric adapted from Montana University will be used as a basis of writing measurement in this research. The rank of score marking is from 0 to 6 respectively. (See list of scoring in Appendix B). Further to Richards (2006) accuracy and fluency are the main assumptions of successful communicative language learning. English writing requires measurement to determine the development of students' writing performance.

2.1.5 Related Studies on English Writing Performance

There have been some previous studies examining essay evaluation. Most of these studies focus on the appropriate type and length of English essays to determine students' writing performance. Bacha (2001) asserted that there are two important issues in essay evaluation, analytic and holistic scoring instruments. The results show that reliable and valid information gained from both analytic and holistic scoring instruments can inform teachers considerably about their students' proficiency levels.

However, it is claimed that the purpose of the essay task, whether for diagnosis, development or promotion, is significant in deciding which scale is chosen.

Haine (2004) clarified Bloom's taxonomy; a classification of the different objectives that educators set for students can be divided into 3 domains: cognitive (knowing), affective (feeling), and psychomotor (doing). The type of writing essay questions located in the stage of '*describe and explain*' gives an opportunity for students to account for the rationale behind something. Bloom's taxonomy can be useful for examining questions where marks are clearly indicated. Expressing feelings toward writing seems to be an appropriate topic for Thai EFL students to describe and explain the rationale behind their thoughts and feelings (see task for pretest and posttest in Appendix A). This type of describing and explaining can fit into the '*comprehension stage'* of Bloom's essay taxonomy, as shown in Figure 2.1.

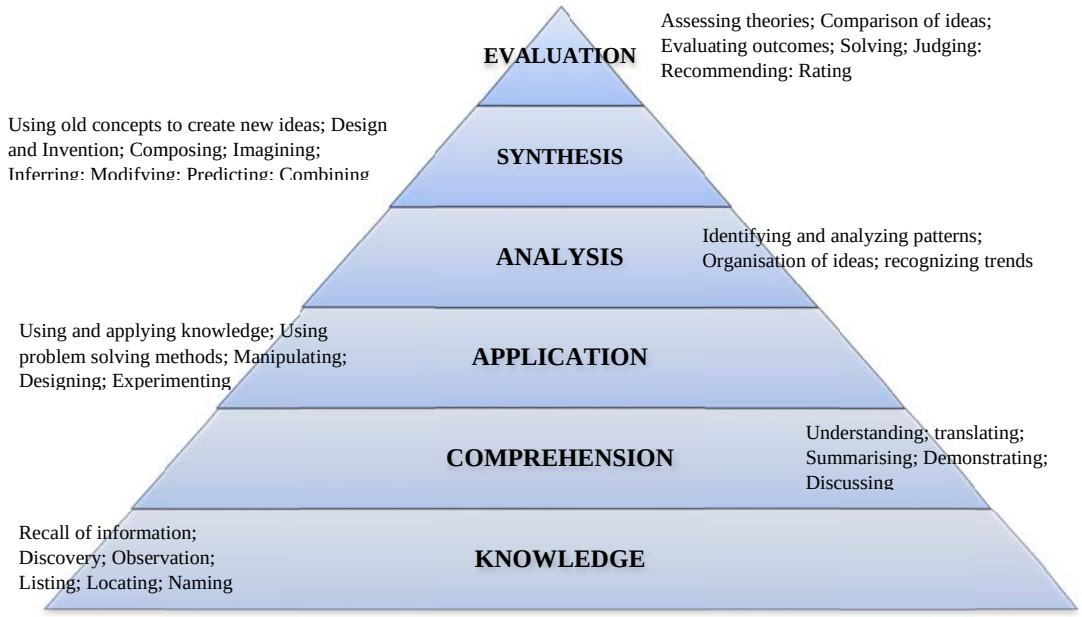


Figure 2.1 Bloom's Taxonomy

Godshalk et al. (1966) suggested the measurement of writing ability in scoring essays in their study called the College Board English Composition Test. They recommended using holistic or global judgment that is, reading rapidly for a total

impression. Holistic ratings may be assigned on the basis of a general impression scoring or may be based on a scoring guide, which consists of specific linguistic and rhetoric features that need to be taken into account while rating a piece of writing (Charney, 1984).

In this research, the researcher uses holistic scoring procedures when scoring writing performance, because holistic scoring aims to rate overall English writing proficiency as suggested by the above scholars.

2.2 The Use of Multimedia Computer-Assisted Language Learning affecting SLA, Learning Motivation, and Perceptions

2.2.1 Integration of SLA and Multimedia CALL

Second language acquisition (SLA) refers to the study of the processes through which learners acquire a new language. However, various hypotheses about how such acquisition occurs have been subject to intense debate. Some researchers have been critical due to a lack of empirical evidence (Beatty, 2003). In 2009, Garrett also pointed out that

> Technology plays a major role in foreign language learning and in research. However, the development of the significance of technology-based materials is still in its early stages. There is a gap to fulfill the knowledge of classroom language acquisition for learners' benefit. … by theoretical considerations in second language acquisition, (SLA), actual pedagogical situations are needed as they affect our learners in the classroom and the language media center (p.717).

Both of Garrett's studies (in 1991, and her revisited issue of 2009) gained the attention of further researchers (e.g., Chapelle, 2001, 2009; Minghe, 2012; Warschauer, 1996, 2000, Kennedy, 2007; Ahmad, 2012) to address the actual pedagogical situations in classroom language learning. Thus, the students' language learning process can be enhanced by the process of acquiring second language

learning through the use of CALL, and will be discussed in the multimedia integrated in SLA.

In addition, the researcher intends to find evidence to determine whether ‘multimedia CALL should be integrated in classroom settings. In order to merge with empirical evidence, first, the researcher considers the use of multimedia computer-assisted language learning with the major equipment; classroom and lab settings compared to traditional English instruction. In so doing, to find multimedia CALL and its best benefits, the researcher intends to compare the outcome of students’ performance before and after the integration of multimedia CALL. As Garrett (2009) suggested, the full benefits of CALL will not be realized until it is fully integrated with classroom-based activities which are most enhanced by technology.

After comparing the outcome of the effects of multimedia CALL integrated in classroom learning, according to Garrett (2009), students can learn much more from software which gives accurate and individualized feedback than from workbook or textbook exercises corrected collectively in class or later by teachers. Therefore, the acquiring of second language acquisition-- SLA can be included as a pedagogical concern with the use of multimedia CALL. In this regard, multimedia integrated in SLA, and computer applications in second language acquisition (CASLA) among students and with students and teachers will be further discussed in this section.

Finally, students’ motivational aspects and perceptions toward the use of multimedia CALL which have been a key to learning development will be discussed in detail in this section.

1) Multimedia integrated in SLA

In order to know how multimedia CALL best benefits students in acquiring and developing their new language, Chapelle (1998) conducted an integrated model connecting the theories of second language acquisition and the cognitive theory of multimedia learning based on the interactionist perspective.

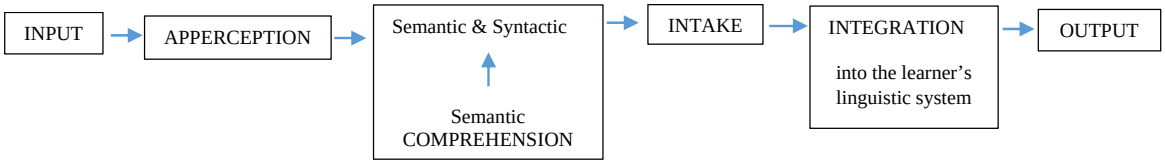


Figure 2.2 Basic Components in the SLA Process in Interactionist Research
Source: Chapelle, 1998.

In this model, the integration of multimedia and CALL compared with the traditional instruction will be added as instruments that the researcher intends to utilise with students who will presumably acquire language from the SLA process. The process begins with comprehensible INPUT. Once students notice certain aspects of the input, sensing both instructional sources, APPERCEPTION (noticing aspect of input) come into play as the students realize the existence of a new instruction. Then, students come to the comprehension stage, and then the linguistic features of the comprehensible input become INTAKE, "comprehended language that holds the potential for developing the learner's linguistic system" (Chapelle, 1998, p. 22). At this stage, first, parts of the information are attended to and taken into short-term memory. These are referred to as INTAKE. Second, some of the intake is stored in long-term memory as L2 knowledge (Gass, 1997; Ellis, 1997, p. 35). INTEGRATION is comprised of the processes for using or holding the intake in short term memory to influence the development of the linguistic system, which, in turn affects the L2 OUTPUT, comprehensible output that the learner eventually produces.

The same explanation was provided in a widely accepted theory, Swain's (1995) comprehensible output hypotheses. The output hypothesis states that learners need opportunities for "pushed output" where they are writing or speaking in a context that requires correct and appropriate use of the target language. Opportunities for negotiation arise when learners have to adjust their output in order to reach a communicative goal. The researcher intends to put multimedia CALL into this process of modification, which will expectedly enable learners to reconstruct their knowledge and assist in the overall acquisition of the target language.

In each stage of the model, paper based and traditional instruction (before the integration), visual, audio or hypermedia text (after the integration) are presented to

enhance the student's learning abilities. Also, linguistics features and language focus are highlighted (by putting grammar uses for English writing, see also Appendix D) during the instruction. Finally, in the output process, the overall writing scores of the students before and after the integration of multimedia CALL will be analysed. The connection between multimedia CALL and SLA influenced language learning brought up the idea of blended theories of SLA focusing on the cognitive theories and learning motivation (to be discussed next section) that might have some effects on learners' language performance. It is the key to this study.

2) Computer Applications in Second Language Acquisition (CASLA)

Learners' characteristics or individual study is a vital factor that the researcher aims to discover. As stated in the Research Questions 2 and 3, the multimedia CALL expectedly influences the students' motivation and perceptions toward using it. Accordingly, Chapelle (2001) stated that in the 21st century, everyday language use is so tied to technology that learning language through technology has become a fact of life with important implications for all applied linguists, especially for those concerned with facets of second language acquisition (SLA).

Multimedia CALL instructional methods promote better results compared to traditional instructional methods. Jonassen (1985) stated that the studies of computer instruction effects alone seem to ignore characteristics of individual learners; influencing contextual factors of the process of learning should also be taken into account as a crucial effect of language learning. Interestingly, Chapelle and Jamieson (1986) investigated whether CALL was a predictor of success in acquiring English as a second language and in what way it affected EFL students in an intensive program. The study examined two student variables, time spent using CALL, and perceptions toward the CALL lessons, as well as four cognitive/affective characteristics: field independence, ambiguity tolerance, motivational intensity, and English-class anxiety. English proficiency was measured by the TOEFL examination and an oral test of communicative competence. Results indicated that the use of CALL lessons alone predicted no variance on the criteria measures beyond what could be predicted by the cognitive/affective variables. On the other hand, time spent using CALL and attitude toward CALL were significantly related to field independence and motivational intensity. From these results it can be interpreted that (a) certain types of learners may

be better suited to some CALL materials than other students, and (b) it is necessary to consider many learner variables when researching the effectiveness of CALL.\

Further to the above study, Chapelle (2009) also pointed out that pragmatic goals of CALL developers and researchers to create and evaluate learning opportunities ignites them to consider a variety of theoretical approaches to Second Language Acquisition (SLA). These approaches: cognitive linguistics, psycholinguistics, human learning, and language in social context can be useful in development and evaluation of CALL materials and English lesson plans.

2.2.2 Related Studies on Integration of CALL and SLA

The concept of development of an integrative CALL toward learning the four skills of the second language which happened at the latest stage of the development was reported by Minghe (2012). Minghe (2012) reported that nowadays, EFL teaching and learning have moved away from a cognitive focus into communicative language learning. Integrative computer-assisted language learning seeks both to "integrate the various skills of language learning (listening, speaking, writing and reading) and to integrate technology more fully into language teaching" (Warschauer & Healey, 1998). Thus, the integration provides a range of informational, communicative, and publishing tools that are potentially available to every student (p.179). Further to Minghe (2012), to compare with the traditional classroom teaching and learning, network based learning including multimedia and the Internet-based language, learning requires students' motivation and self-dependence towards utilizing modern technology to facilitate their learning.

Moreover, Kennedy (2007) suggested in her dissertation "An analysis of a computer-assisted vocabulary learning (so called CAVL) program" that technology is a tool for productive and receptive vocabulary learning in foreign languages. Based on the findings of this study, the use of the CAVL program was successful in increasing K-12 students' receptive and productive knowledge of vocabulary words, especially in the lexical quality of students' writing.

Recently, there was a study of 'English language teaching and integration of media technology' (Ahmad, 2012). It was found that 90% of students highly agreed with the integration of media technology in English language teaching. Secondly there

was a highly significant difference between the pretest writing and posttest score after the use of multimedia computer-assisted learning and technology assistance for writing (the best score increased dramatically from 10% to 30% for all students who participated in his study).

2.2.3 Motivation on Using Multimedia CALL that Enhance Learning Achievement in English Writing

In the first place, the researcher intends to discuss motivation that governs language learning achievement in general. Then, the researcher deeply focuses on English writing performance enhanced by motivation. The related studies that reflect the product of learning achievement will be discussed.

In 1959, Gardner and Lambert found that second language (L2) achievement was related not only to language aptitude, but also to motivation. Gardner (1985) defined motivation to learn an L2 as the extent to which the individual works or strives to learn the language because of a desire to do so, and the satisfaction experienced in this activity (p. 10). This definition includes three components: (a) effort expended to achieve a goal, (b) a desire to learn the language, and (c) satisfaction with the task of learning the language.

Towards the goal of achievement, his explanation included the achievement in terms of knowledge about linguistic features (e.g., grammar and pronunciation) or in terms of proficiency in four skills (i.e., listening, speaking, reading and writing). When assessing students' levels of language performance, communicative competence should be highlighted in relation to language achievement as well. "Motivation is the result of the interplay between intrinsic and extrinsic factors, between exploration and interest on the one hand, and external rewards on the other hand" (Dörnyei, 1994). With regard to CALL, Furstenberg (1997), Warschauer (1997), Tella (1999), Paramskis (1999), O'Dowd (2006b); Lamy & Hampel (2007) found that intrinsic motivation can be increased in computer mediated communication in language learning by allowing learners to 1) write for a real audience (email exchanges or publishing work on the Internet), 2) develop useful technical skills, 3) communicate with distant partners, 4) work collaboratively, 5) create projects that

reflect their own interests, and 6) participate in authentic exchanges with peers teachers, and /or native speakers.

Gardner (1979) proposed a schematic representation presenting the relationship attitudes towards motivation, which is then followed by achievements as shown in Figure 2.3

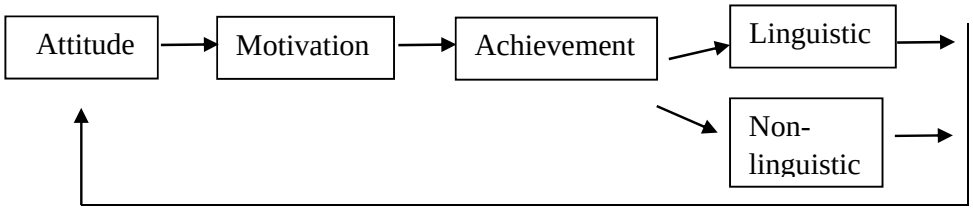


Figure 2.3 Attitudes, Motivation and Achievement
Source: Gardner, 1979, as cited in Giles & St. Clair, 1979.

As seen in Figure 2.3, attitude, motivation dictate achievement. It can be said that "motivation serves to maintain the desire and effort in the long and tedious process of acquiring the language" (Gardner, 1979, p. 206). According to this representation, motivation plays a critical role in motivation. It ignites learners to the process of motivation that leads to learning achievement. Therefore, motivation governs the achievement in language learning. Further to Gardner (1979) individual differences in a range of social perception influences individual differences in motivation, which consequently are responsible for variance in what is achieved. Thus, achievement in this sense is seen as having linguistic and non-linguistic results and both can reflexively impact attitude or perception as seen in Figure 2.3. It can be concluded that this model would not be valid if motivation was not viewed as supporting achievement (Gardner, 1979). Hence, the researcher explores which factors support students' learning motivation (which will be discussed in the Research Question 2 in chapter 3) and in what way that the motivation influences the use of multimedia CALL.

In relation to SLA, Ellis (1986) claims that motivation is one among other individual learners' factors that influences SLA. Those factors can be classified as personal factors: 1) group dynamics, 2) attitudes toward the teacher and course

materials, and 3) individual learning techniques (p.101) and general factors: 1) age; 2) aptitude; 3) cognitive style; 4) motivation; and 5) personality (p.104). Moreover, there are more factors that learners may find more motivating. Heift et al. (2012) added that learning tasks can also affect learners' intrinsic motivation in which it relates to supporting learners' ability to expand their knowledge and creativity. This supports Ellis (2004), who later expanded on this finding, stating that learners feel involved in learning tasks which are intrinsically motivating. It depends on the learners' particular interests to judge how they feel personally involved in learning activities. From this, it can be interpreted that, if students are put into facilitated or enjoyable situations that multimedia computer-assisted integration is used in teaching and learning with appropriate task design, they will be able to gain the knowledge and creativity and retain it longer. Consequently, the language learning skill can be better equipped.

For writing, Kern and Warschauer (2000) posited that electronically archived form gives students opportunities to plan their language use which is found in the messages they compose and read. It means that when students plan to write using multimedia CALL, they are encouraged to control over the context of language use (Warschauer, 1997; Kern & Warschauer, 2000). Therefore, in order to discover how motivation influences students' writing, the researcher intends to emphasize students' individual learning motivation as a process of this study.

2.2.4 Related Studies on Motivation towards Using Multimedia CALL that Enhance Learning Achievement in English Writing

To realize how learners acquire a target language through the motivational process, using multimedia CALL as a key infrastructure seems to be not enough. Language learning achievement can be reflected by considering students' product toward technology integrated with their writing. There are more studies that discuss and provide confirmation on motivation that effect the learner's language achievement.

An example that multimedia CALL help motivates students' achievement in English writing can be seen from the work of Hui et al. (2007). Hui et al. (ibid.) conducted a field study of technology-assisted learning: a longitudinal field study of knowledge category, learning effectiveness and satisfaction in language learning. The

researcher surveyed participants and compare the effectiveness and satisfaction associated with technology-assisted learning with that of face-to-face learning. The evidence suggested that technology-assisted learning effectiveness depends on the target knowledge category which can be seen on the test scores on listening, vocabulary, and grammar exercises. Secondly, technology-assisted learning improves students' acquisition of knowledge that demands abstract conceptualization and reflective observation but adversely affects their ability to obtain knowledge that requires concrete experience. Finally, a web-based course and supportive learning community are needed to help students increase their learning satisfaction. Further to Kennedy (2007), as discussed in 2.2.1, not only did the students overwhelmingly express a positive perception toward using the CAVL program, but the vast majority of students also found it to be an effective language learning tool. Additionally, the program has contributed to the perception of the students, as well as to the effects on their second language learning. Wechsumangkalo and Prasertrattanadecho (2002) found that Thai EFL students with high English achievement are more integratively motivated and have higher overall motivation than those with low English achievement. There were two reasons for learning English; to get a good job, and to have more chances to communicate with people.

However, from the above studies, it might be seen that most of the previous studies regarding students' motivation toward multimedia computer-assisted language learning have focused on the four skills of English learning achievement in general with less focus on a specific writing performance. Additionally, factors analysis was used in different contexts depending on areas of population, levels of English proficiency, and English learning skills in general in order to find either motivation or demotivation factors that influence ESL and EFL students in various parts of the world. Development of influencing motivational factors that may have an effect on English writing performance needs further study. Therefore, factors that influence students in response to their perceptions of being successful in English writing are needed in this field.

2.2.5 Types of Motivation on Using Multimedia CALL that Enhance Learning Achievement in English Writing

The second concern of the process of language learning in this research is to describe different types of motivation that influence the use of multimedia CALL. The researcher has found a variety of researchers who have attempted to categorize motivation into types. Then, the related studies with regard to the use of multimedia CALL enhancing product of English writing are elaborated.

Motivation can be described in various categories as suggested by researchers in psychology and second language acquisition (Wechsumangkalo & Prasertrattanadecho, 2002). Gardner and Lambert (1972) proposed the terms integrative and instrumental as two types of motivation in SLA. These types of motivation are classified according to the learners' goals (reasons) of learning language. Integrative motivation refers to "the desire to achieve proficiency in a new language in order to participate in the life of the community that speaks the language", whereas instrumental motivation refers to "the desire to achieve proficiency in a new language for utilitarian reasons, such as getting a job" (Dulay, Burt, & Krashen, 1982, p.47). Integrative reasons are those which indicate an interest in learning the language in order to "meet and communicate" with members of the target language community (Gardner, Smythe, & Brunet, 1997). Language learners are integratively oriented when they want to learn and understand more about the culture of the target language community as if they were members of that community (Gardner & Lambert, 1972). The learner who is integratively motivated wishes to develop personal relationships with members of the target language community, whereas instrumental reasons are those which emphasize "pragmatic aspects" of learning the language. The instrumentally-oriented language learners aim at such utilitarian purposes as getting better grades or better jobs (Gardner & Lambert 1972).

According to Dörnyei (1994), "motivation can be either intrinsic or extrinsic", intrinsic motivation involves performing a task in order to gain pleasure and satisfaction, whereas extrinsic motivation involves performing a task in order to receive some reward or to avoid punishment. He also pointed out that extrinsic motivation can undermine intrinsic motivation. As suggested in Sakai and Kikuchi (2008) in their 'Analysis of demotivators in the EFL classroom', five demotivation

factors were extracted: 1) learning contents, and materials; 2) teachers' competence, and teaching styles; 3) inadequate school facilities; 4) lack of *intrinsic motivation*; and 5) the test scores. From this study, intrinsic motivation can be deducted by the consequence of extrinsic motivation factors which possibly came from content and materials, teachers, facilities, and the test scores which can be considered critical and salient issues in which finding quick solutions is recommended because the extrinsic factors can undermine intrinsic motivation and the intrinsic motivation also dictates every possible issue and vice versa. This connection between both motivational types was beneficial not only for researchers and educators, but also for teachers to realize what causes learners to become demotivated in their language classrooms.

Dörnyei (1994) claims that L2 motivation is an eclectic, multifaceted construct. It needs to be separated into different levels to integrate the various components. He found it useful to separate L2 motivation into three motivational components (i.e., motives and motivational conditions: 1) language level; 2) learner level; and 3) learning situation level (see Figure 2.4).

LANGUAGE LEVEL	Integrative Motivational Subsystem Instrumental Movtivational Subsystem
LEARNER LEVEL	Need for Achievement Self-Confidence • Language Use Anxiety • Perceived L2 competence • Casual Attributions • Self-Efficacy
LEARNING SITUATION LEVEL	
Course-Specific Motivational Component	Interest • Relevance • Expectancy • Satisfaction
Teacher-Specific Motivational Components	Affiliative Drive Authority Type Direct socialization of Motivation • Modelling • Task Presentation • Feedback
Group-Specific Motivational Components	Goal-Orientedness Norm & Reward System Group Cohesion Classroom Goal Structure

Figure 2.4 Components of Foreign Language Learning Motivation
Source: Dörnyei, 1994.

Ushida (2005) suggested that language level focuses on orientations and motives related to various aspects of the L2 such as the target culture and the potential usefulness of L2. Proficiency learner level concerns affects and cognitions underlying the motivational processes. The learning situation level consists of intrinsic and extrinsic motives, plus motivational conditions expanded from more specific

components concerning three areas: (a) course-specific components; (b) teacher-specific components; and (c) group-specific components. She concluded that this model could be a useful framework not only for researchers and teachers to identify motivational sources, but also to develop students' motivational strategies to perfect their language level of proficiency.

Raby (2007) investigated the critical reflections on the students' practices in CALL labeled 'A triangular approach to motivation in Computer-Assisted Autonomous Language Learning' by carrying out her triangular study and cross-checking different data. The data pertained to what students did; physical behaviors while working with a computer, and how they felt about it in the form of journals, and verbal behaviors. Three strategic models emerged (epistemic, procedural, and mixed). She used journal analyses to check different motivational attitudes which ranged from enthusiastic appraisal to stark rejection. Her salient finding was that the result found the internal factors (learners' characteristics) versus external factors (learners' environment) are the two keys of differences found in individual learners in the process of appropriation of the new language learning system of the individual learners.

Interestingly, the higher the motivation, self-confidence, self-images, and lower level of anxiety learners, the better the success in second language acquisition (Krashen, 1998). As seen in the study of 2012, "The roles of Second Life in a college computer-assisted language learning course in Taiwan" the introduction of *Second Life* (a game) can be infused into a CALL course for college students toward practicing and creating motivation in language learning for Taiwanese undergraduate students. Her study conducted the oral proficiency courses held in the virtual world of *Second Life* and analyzed different outcomes. The results indicated that task design involving authenticity and collaborative elements, has a direct impact on learner participation and engagement. Technical and social initiations in a complex environment such as CALL are the other important factors that have to be worked into the course design.

The above discussions put emphasis on the goal oriented, interest, satisfaction and task presentation which is stated in Dörnyei's learning situation level (1994) (as shown in Figure 2.4). Also, language learning achievements at learners' levels as

agreed by Gardner present a schematic representation (Figure 2.3). This expanding of the two ideal concepts of motivation, which have been mentioned and explained in various ways, depends on different factors and learning environment and most importantly, the categorization of orientations depends on individual students. Hence, individual students' perceptions are the key to finding motivational factors, which are expected to be seen as the cause that influence the product of writing.

2.2.6 Related Studies on Types of Motivation towards Using Multimedia CALL that Enhance Learning Achievement in English Writing

Apart from reviewing that motivation predicts language learning success, the study aims to find influencing motivational factors that enhance achievement in English writing. As discussed earlier in the significance of the study, in order to help students develop their English writing performance via the use of multimedia computer-assisted English writing, the research needs to find aspects or types of motivation that occur among students while using multimedia computer-assisted English writing. There are some studies concluding that various types of motivation also enhance achievement in English writing and raising acquisition whether or not the motivation could help students achieve better English writing performance.

Motivational types of using computers for writing and communication (Warschauer, 1996) confirmed the work of Crookes & Schmidt, 1991; Dörnyei, 1994; and also Oxford & Shearin, 1994. The same conclusion agreed with the traditional framework of Gardner & Lambert (1972) "the two types of language learning motivation: instrumental (for practical benefit) and integrative (a desire to integrate into the target culture) motivational aspects". Instrumental and integrative motivation both need expansion and refinement. In terms of the aspects of motivation towards the use of multimedia CALL in English writing development as argued by Warschauer (1996), there were *three* more aspects of motivation that have been found tremendously influential in students' motivation toward using computers for English writing—communication, empowerment, and learning. Moreover, Ahmad (2012) confirmed that almost all EFL undergraduate students using media in ELT English writing classes think that multimedia enhance motivation to learn English and the preference causes a positive effect in their posttest writing performance.

Wang (2008) also found this in her ‘Motivation and English achievement: An exploratory and confirmatory factor analysis of a new measure for Chinese students of English learning. Her study was based on the theoretical framework of Gardner and Lambert (1972) and looked at “*the two types”* of language learning motivation, and found that there were “*four more components*” in this study; motivation for knowledge; internal fulfillment; motivation to challenge; and other external regulation (teacher, test scores, scholarship, and graduation).

As agreed with Gardner and Lambert (1972), Spolsky (2002) explained that “Motivation refers to the combination of effort, the desire to achieve the goal of learning and favorable attitudes towards learning the language”. Further to Spolsky (2002), the model of language learning attitudes (as described in Figure 2.3) noted by Christian missionaries living in Japan showed that motivation is generally divided into 2 types; instrumental and integrative. Instrumental (utilitarian) motivation appears when you are motivated to learn a language in order to achieve a certain goal or to get a job done. The result found that the instrumental motivation of the missionary is to acquire Japanese language firstly in order to survive in the country and continuously, as a tool with which to communicate their religion to Japanese people.

2.2.7 Students’ Perceptions towards Using Multimedia CALL that Enhance Learning Achievement in English Writing

Effectiveness of the use of multimedia CALL can be seen from both achievement in product and process of language learning. As discussed in the previous sections, types of motivation towards using multimedia CALL help students achieve better product and process of language learning. Apart from motivations, students’ perceptions towards the use of multimedia CALL can be considered a psychological factor that can help enhance language learning achievement.

There are several reasons why students’ perceptions are worth exploring. First, according to Young and Bush (2004), students’ perceptions can reveal the extent to which and how students perceive the effectiveness of multimedia CALL practice in improving their writing. In other words, knowing students’ perceptions can help educators understand students' knowledge gained from writing practice through

multimedia CALL. Also, discovering students' perceptions towards the use of multimedia CALL can help the authorities in charge to make decision whether or not to continue using the particular multimedia CALL for future English writing teaching. Besides, knowing students' perceptions helps English writing teachers know possible challenges that may happen when using multimedia CALL (Chapelle, 2001; Suhr, Hernandez, Grimes, and Warschauer, (2010). As well, discovering students' perceptions help English writing teachers know possible issues that might happen when using multimedia CALL whether there will be remaining issues waiting to be solved.

It is apparent that students is the end user of MCAEW (in the context of this study), the achievement of their English writing can be affected by the way they perceive themselves towards using MCAEW. This is because the more understanding of technological writing practices, the better the outcome of English writing (Garettt, 2009; Grabill & Hicks, 2005; Lamy & Hampel, 2007; Warschauer & Kern 2000). In the context of this study, the students are the MCAEW users, therefore, in order to know what students think about an MCAEW and whether MCAEW brings the best on their writing practices with technology that enhance English writing skill or not, students' perceptions towards the use of MCAEW should be explored. Thus, this section starts reviewing on perceptions towards learning with multimedia CALL. Then, the related studies regarding perceptions towards multimedia CALL that enhance students' English writing are discussed.

Students' perceptions towards technological use in English writing classroom should answer the primary question of how multimedia CALL best be used to improve language learning (Chapelle, 2000). According to Chapelle (ibid), educators must develop a heightened critical view of technology to determine its potential for the English writing. In other words, in response to the question of to what extent students best use of multimedia CALL, there must be an empirical evaluation of multimedia CALL during the experiment.

According to Garrett (2009), the multimedia CALL utilization is an infrastructure and it becomes a facet of language learners' multimedia CALL usage. In that of learners, it involves preference, benefit, and issues with regards to their usage. It means that the abovementioned facet of learner's usage involves the

preference, benefit, and issues towards the use of multimedia computer-assisted English writing. To know that to what extent multimedia CALL becomes an effective tool for learning, the study on individual reflections in its use is necessary. Therefore, preference, benefits, and issues are to be explored through a semi-structured interview of the third research question of this study. Drawn from Garrett (1991), strength and constraints functions of multimedia CALL also affect a number of technological, pedagogical and learner perceptions towards infrastructure of CALL. From these point of view, Donaldson and Haggstrom (2006, as cited in Levy, 2009), added that each CALL technology has specific strengths and limitations for language learning, and, as a result, the decision to use or not use it is rarely a straightforward one. To fulfill this disparity, issues in the use of MCAEW, should include the strengths and constraints of using MCAEW during the experiment. And the result will help the leading authorities make a decision whether or not to integrate MCAEW into English writing in the future.

In sum, to investigate students' perceptions towards the use of MCAEW, the study should concern reasons for preference, benefits, strength, and constraints that occur during the use of MCAEW. The next section discusses the studies in relation to the perceptions that support the English writing towards using multimedia CALL.

2.2.8 Related Studies on Perceptions towards Using Multimedia CALL that Enhance Learning Achievement in English Writing

Empirical evidence with regard to perceptions towards multimedia CALL can be seen through the work of Richards (2000), there were 4 potential results drawn from the perceptions of students indicating that English teacher should make the change to implement technology. Further to Richards (ibid.), the revealed perceptions consist of: the more conversational classroom atmosphere; the validation the work of the classroom, the individual performance, the worth of time and effort.

Also, (Young & Bush, 2004; Young, 2001) suggested that multimedia CALL technology should focus on work to validate individual students and empower their ability to achieve academic and "real world" success. Secondly, Multimedia CALL supplement and enhance instruction and, in effect, performance. Thirdly, Multimedia CALL should provide additional resources and create wider access to them.

Multimedia CALL should enlarge ways of students' expression together with broaden their opportunities to reach meaningful and authentic English writing learner. Multimedia CALL should also deepen students' understanding of complex issues and enhance their ability to make more global communication. Multimedia CALL should expand and enhance the definitions and dimensions of literacy (critical, digital, media and otherwise). Finally, multimedia CALL should facilitate an open forum for discussion that allows for more opportunities for free and democratic participation and dialogue. On the other hand, multimedia CALL technology should not replace complex language and developmental goals with more simplistic "learn technology" goals. Neither replace teachers or pedagogy nor replace or overshadow traditional print/ literature/media materials. It should not limit appropriate resources or access to them, disrupt or complicate normal classroom community efforts and objectives for addressing audience. It should not diminish students' ability to participate or contribute by favoring students with advantaged access to technology. It should not deepen social, racial, gender, and economic inequalities, stifle creativity or opportunities for using the imagination or multiple intelligences. Finally, multi CALL should completely replace teacher-student and/or student-student "face-to-face" communication and interaction.

According to Noytim (2010), students perceived weblog as a tool for the developing writing, reading, vocabulary, and recording their learning experience. The students also viewed weblog as giving an opportunity and freedom for self-expression in English writing. They also perceived weblog helps them to be more creative, analytical and critical thinking skills. It helps creates social interaction, maintains good relationships between writers and readers, and supporting the learning community. In addition, Weblogs also offer an online alternative to learning logs, in which students document their learning experience (Du & Wagner, 2007). Also, Mynard (2007) asserts that Weblogs can be a tool for language educators to use in order to interact with peers to reflect on their learning experience and also add comments to other people's Blogs to encourage further writing reflection.

The related studies help the educators to understand students' view that reflect the effectiveness through qualities of multimedia CALL. This is due to the fact that the effectiveness of multimedia CALL depends on the ultimate users' perceptions,

i.e., students'. In other words, whether or not a particular multimedia CALL can be determined as an effective tool, the researcher should investigate students' perceptions towards the use. This is because empirical research methods for evaluating L2 classroom activities have to give up on a large extent on the product solely through measurement of the learning outcome in favor of investigating learning processes (Allwright, 1988; Allwright & Bailey, 1991; Chaudron, 1988; Cohen & Hosenfeld, 1981; Crookes & Gass, 1993a; 1993b; Day, 1986; Farch & Kasper, 1987; Gass & Madden, 1985; Johnson, 1995; Long 1980; Van Lier, 1988, as cited in Chapelle, 2000). Thus, the way to understand the effectiveness of MCAEW is to consider both product and process of the English writing. Hence, the effects of multimedia CALL in the learning outcomes should be more advanced if the researcher take contextual factors from individual learners, i.e., perceptions into account in this research.

In sum, as discussed earlier in the introduction, not only are the above reviews on the process of acquiring SLA through exploration of motivation and perceptions based on the implementation of multimedia computer-assisted English writing, but the reviews should also be based on students' output performances in English writing in order to prove the product of language learning achievement for students' learning outcome after the integration of MCAEW. The next section will discuss the last concept of the effects of multimedia CALL in English writing.

2.3 The Effects of Multimedia CALL in English Writing and Multimedia CALL Writing Instruments

It is in the context of these multifarious changes that one of the most significant areas of innovation in language education—computer-assisted language learning (CALL) has come of age (Warschauer & Kern, 2000). Thailand has been encouraging the use of multimedia computer-assisted language learning in teaching and learning for better learning outcomes. Research on the effects of multimedia computer-assisted resources in language education has intended to show what extent it can be powerful as a literacy tool to enhance, gain, practice, and develop English language skills. In order to know whether multimedia CALL supports better learning

outcomes and questioning how multimedia CALL can best be used to improve learning, comparing multimedia CALL with traditional English language classrooms is required.

Further to Chapelle (2001), in regards to CASLA, she also emphasised two concerns in computer-assisted language learning; first, “in educational technology, how can computers be best used to promote the development of communicative L2 ability? Second, in computer supported collaborative learning, how can collaborative computer-assisted language learning activities be designed to promote development of communicative L2 ability? There are some studies that can best describe these questions.

In the context of this research, multimedia computer-assisted language learning is used to enhance the acquisition of English written language in and outside the classroom environment. Also, writing skill requires both the interaction between teacher and students and among students. Therefore, a model of integrating multimedia into the development of writing skills based on the Plass and Jones (2005) model of multimedia learning and SLA may help to seek the answer for the first research question.

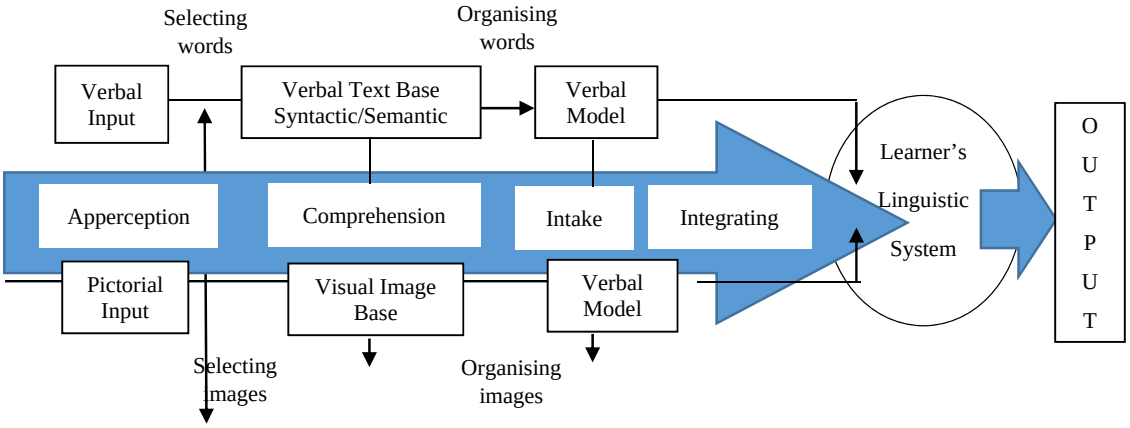


Figure2.5 Model of multimedia learning and SLA

Source: Plass & Jones, 2005.

As shown in Figure 2.5, in this model, students acquire language through interaction with their teacher and classmates. Multimedia computer-assisted English writing can be integrated in writing practice because in real life, texting usually is a part of a conversation as a whole to exchange information. An online writing activity is introduced with a multimedia context (teaching materials). In class, chat room activity is introduced via the Sanako's language lab room. Outside classroom activities are implemented via Facebook or Line, and e-mail. After the profound understanding of the context, students discover and practice the linguistic, discourse and socio-cultural knowledge from the multimedia-assisted comprehensible input and become intake. At this stage, using multimedia practices i.e., Microsoft Word together with an online dictionary can help to provide linguistic system to certain students constructing their English writing. Then, their communicative competence is visualized through their output which is their English writing scores. Moreover, other linguistic measurements as discussed earlier in section 2.1 should be considered in the outcome of students' writing.

2.3.1 Related Studies on the Effects of Multimedia CALL in English Writing and Multimedia CALL Writing Instruments

Computer conferencing techniques have been adapted by second and foreign language teachers, either for the teaching of writing (Sullivan, 1993) or for promoting general language development (e.g., Beauvois, 1992; Chun, 1994; Kelm, 1992; Kern, 1993).

Ahmad (2012) found a significant difference between the pretest writing and posttest scores after the use of multimedia computer-assisted and technology assisted writing (the best score increased dramatically from 10 to 30% of all students who participated in his study). In recent years, there has been a great deal of research and pedagogical experimentation relating to the uses of technology in second and foreign language education. Before the study of Liou '*the second life*' (2012), there was another study conducted by Thorne, Black, and Sykes (2009) which included L2 use, socialization, and learning in Internet interest communities and online game articles. The results revealed that participation in Internet interest communities and online gaming has the potential to propel language learners beyond the confines of the

institutional identity of students by fraying the boundaries separating language study from social life, student from player, and information consumer from knowledge contributor. Some specific language competencies develop in interaction within particular genres (a software 'Fan Fiction') and routine interactional scenarios (gaming contexts) which may help to strengthen the ecological linkages between language use and identity dispositions developed within instructed L2 settings, and communicative pursuits associated with other life contexts.

Ducate and Lomicka (2008) stated that the data from student blogs, reports, and focus group interviews suggested that this project fostered both ownership and creativity; it allowed students to experiment with language, facilitated expression in a relaxed environment, and provided students with a window into the target culture that their textbooks could not provide. Finally, it reported on questionnaires that were designed to assess students' reactions to the project. Moreover, fluency in language learning skills can be monitored via the use of online networks and also from students' peer reviews. Young and Bush, (2004) stated that the focus was now on the writing rather than cutting each other down. Their students began to consistently get writing down on paper and complete drafts. Fluency was found to be a major problem, but their fluency improved over time with the online feedback they were receiving from their peers. Their drafts not only became longer, but they improved in terms of content and quality too (Personal Communication, 2000).

Otto and Pusack (2009) recently introduced a shift in CALL authoring away from traditional tutorial CALL programs. This shift has taken place with the evolution of the Web. "The Web 2.0 designation refers to a paradigm shift in Web usage precipitated by the appearance of many extraordinary popular new communities, services, and applications that facilitate online communication, collaboration, information and resource sharing, and social networking." Further to Otto and Pusack (2009), their study indicates some examples of Web 2.0 technologies; "*blogs, wikis, podcasts, Delicious, Skype, YouTube, Flickr, Facebook, and Twitter*." Lomicka and Lord (2009) observed that Web 2.0 seems ideally suited to foster the ideal language learning environment, one that encourages interaction and collaboration-the major goals, after all, of language itself (p.794).

Both Ducate and Lomicka (2008) as well as Otto and Pusack, (2009) worked on CALL experimental use to develop language achievement, especially comparing CALL with traditional textbooks. Levy (2009) addressed that a blog is a webpage with a regular diary of journal entries consisting of text, audio or video. With regard to writing, particular areas of focus have been self-expression, creativity, ownership, and community building. Ducate and Lomicka (2009) described two French and German blog projects at the intermediate university level.

Levy (2009) also found that CALL has been used for developing students' writing skills. Murray and Hourigan (2006) stated that beyond word processing tools, learner corpora, and email to enable collaborative writing and peer review, numerous other tools have been employed in L2 writing including students' designed webpages, photo-editing, PowerPoint presentations, weblogs, and wikis. In addition, 'text chat, a form of synchronous computer mediated communication (CMC) is concerned with concentration of interaction via typed text.

These studies confirmed that CALL trends and technologies used in language education have been changing through time. Computer-assisted language learning may not be completely responsive to today's online platform learning requirements. Multimedia computer-assisted language learning presumably seems to have responded to the change and has become effective in recent CALL studies.

Multimedia computer-assisted language learning for the four skills of language learning have become widely used, according to Wang and Vasquez (2012) who confirmed that Web 2.0 technologies have greatly broadened the scope of topics explored in computer-assisted language learning (CALL): from earlier research which tended to concentrate on the traditional four broad language skills, to more recent topics, such as learners' identities, online collaboration, and learning communities. Although very few studies surveyed have actually examined students' progress and learning outcomes associated with these tools, the most frequently reported benefit associated with Web 2.0 technologies is the favorable language learning environments they help to foster.

Their studies also included a very clear picture of the example of Web authoring tools, provided purpose, interaction types, strengths, and also weaknesses in Course Management Systems (Blackboard, and Moodle.); Presentation and Web

Tools (PowerPoint; Dreamweaver; and Wimba Voice); Systems/Languages (Revolution, ToolBook , Flash, Director, and Authorware); Virtual Environment (Second Life, and Croquelandia); Language Templates (Hot Potatoes, SMILE, and, Comet). Microsoft Office has been used as a tool for writing for the twenty first century. Word processing and the foreign language classrooms have been common for more than a decade. Many composition and language teachers believe that word processing encourages new pedagogical relationships in the class, by facilitating student revision and collaborative writing (Susser, 1992, as cited in Warschauer, 1996) Computer-mediated communication (CMC), like word processing, also involves the use of the computer as a tool, rather than as a deliverer of instructional material. Many claim that CMC is the most revolutionary development in computer-assisted language learning, since it is the only one which involves direct human-to-human communication rather than human-to-machine communication (e.g., Barson, Frommer, & Schwartz, 1993; Cummins and Sayers, 1990; Warschauer, Turbee, & Roberts, 1994; Warschauer, 1996).

Among the earliest proponents of CMC for educational purposes were L1 composition teachers, who used computer conferencing among the students in a class to enhance collaborative writing and the social production of knowledge (Batson, 1988; DiMatteo, 1990; Faigley, 1990; Hawisher and LeBland, 1992; Susser, 1993; Warschauer, 1996). These studies confirm that word processing has been widely used in response to having multimedia CALL as a tool to create more opportunities to communicate between students and teacher and among students that best describe how multimedia CALL works for todays' communication in the field of language education.

The second instrument implemented in this research is electronic mail (e-mail), a tool for sending and receiving messages between and amongst students and teachers outside the classroom. The use of electronic mail proved even more popular among language teachers, since it allowed for communication not only inside a single class, but also among learners and native speakers from different parts of the world (Barson et al., 1993; Paramskas, 1993; Sayers, 1993; Soh & Soon, 1991).

Meskill and Ranglova (1996) suggest that the best practice of the CALL writing classroom is via word processing and sending the first until the final draft by

communicating with peers and teachers by e-mail. These additional multimedia CALL activities enhanced collaborative writing, which has resulted in better performance in their English writing. In addition, they presented an effective EFL curriculum redesign, compared with the traditional approach below:

Table 2.1 EFL Revised Curriculum (Adapted Version)

English Skill	Traditional Approach	Revised Approach	Technologies	Assessment
Writing	Write on specified topics	Process writing based on individual responses to short stories, class discussion, and peer correspondence	-Word processing, -e-mail	Peer and teacher review of drafts, essay pretest, and posttest

Source: Meskill and Ranglova, 1996.

To follow the above suggestions together with the manageability of the study, the MCAEW activities should involve multimedia CALL that is currently available in a public where the study is conducted. The MCAEW activities include hardware, i.e., individual computers available in the “Sanako” (lab room setting); software, i.e., in-class chat room program embedded in the lab room, “Facebook” or “Line” and e-mail accounts; and teaching materials through web based writing tutorial courses with PowerPoint presentation (as listed in section 1.7), the definitions of key terms, which are illustrated in detail in Appendix C) to ensure that all teaching and learning in the multimedia CALL context indicates better outcomes in English writing performance.

From this point, it can be seen that other contexts, the English writing classroom especially at the undergraduate or university level should consider providing multimedia CALL contexts in comparison with other traditional contexts. More strongly, students at this level especially undergraduate students seem to

consume technology as a part of their life (Grabill & Hicks, 2005). Adapting multimedia computer-assisted English writing into curriculum or tasks might positively affects (according to the above studies) their learning motivation toward language classroom activities. Finally, the results of this research may ignite teachers and concerned educators to look at and rethink whether to add CALL as a necessary tool for English writing in the current curriculum.

Conclusion

According to Swain (1995); and Nunan (2004), what matters most in successful language learning is that products (outcomes) and processes of students' language learning must be taken care of. The three overarching theories and related studies reveal that in order to find how multimedia CALL affects learning development, the researcher needs to look at both its effects, students' writing performance and the process of students' motivation.

To recap, in Thailand, multimedia CALL has been viewed as a tool to support a global level of success in Thailand's EFL education, but due to a lack of consideration of individual success, students and teachers seems to use CALL as a tool to pass students' English examination and to reach the standards set by the Thai Qualification Framework for Higher Education (TQF:HEd). Therefore, it is the researcher's primary concern that it would be more beneficial to both universities in Thailand and Thai students if the Thai educators look at the two major multimedia CALL involvement on product (i.e., students' English writing performance) and process of individual learners' success (i.e., motivation and perceptions).

The theoretical framework of the study is presented in the Table 2.2

Table 2.2 Theoretical Framework of the Study

An exploration of the Effectiveness of the Use of Multimedia Computer-Assisted English Writing

Technological Development on Writing Performance

Paper-based to CALL-based instructions
Vygotsky (1987)
Grabill & Hicks (2005)
Levy (2009)
Garrett (2009)
Lemy & Hampell (2007)
Lea et al (2003)

Communicative approach and its application for English writing performance
Richards (2006)
Warschauer (2000)
Murray (2000)
Rasool (1999)
Warschauer & Kern (2000)
Swain (1995)
Cook (2004)
Navés (2006)
Godshalk et al (1966)
Nunan (2004)
Skehan & Foster (1999, 2000)
Robinson (2001a, 2001b, 2003, 2005, 2007)
Wolf, Inaki & Kim (1998)
Baba (2009)
Kuiken & Vedder (2007)
Johnson et al (2012)
Bennui (2008)
Pongsiriwet (2001)

Identifying English writing performance
Godshalk et al. (1966)
Montana University System Writing Assessment (2011)
Bacha (2001)
Haine (2004)
Charney (1984)

Language Learning Motivation

Integration of SLA and multimedia CALL
Beaty (2003)Garrett (2009)Chapelle (1998, 2001, 2009)Minghe (2012)Warschauer (1996, 2000)Gass & Ellis (1997)Swain (1995)Jonassen (1985)Chapelle & Jamieson (1986)Warschauer & Healey (1998)

Language learning motivation
Gardner & Lambert (1959;1972);Gardner (1985;1979);Dörnyei (1994, 2001a);Krashen (1998);Furstenberg (1997)
Tella (1999);Paramskis (1999);O'Dowd (2006b); Ushida (2005); Spolsky (2002);
Hui et al (2007)

Types of language learning motivation
Warschauer & Kern (2000); Warschauer (1996); Ellis (2004); Wechsumangkalo & Prasertrattanadecho (2002);Dulay, Burt & Krashen (1982);Giles & St. Clair (1979); Sakai & Kikuchi (2008);Raby (2007); Crookes & Schmidt (1991);Oxford & Shearin (1994); Taylor (2000);Truscott & Morley (2001); Wang (2008)

Perceptions on multimedia CALL
Chapelle (2000); Garrett (2009, 1991); Levy (2009); Noytim (2010); Due and Wagner (2007); Mynard (2007);Young (2001, 2002, 2003) Young & Bush (2004) Suhr, Hernandez, Grimes, & Warschauer (2010); Richards (2000); Allwright, 1988; Allwright & Bailey, 1991; Chaudron, 1988; Cohen & Hosenfeld, 1981; Crookes & Gass, 1993 a; 1993b; Day, 1986; Farch & Kasper, 1987; Gass & Madden, 1985; Johnson, 1995; Long 1980; Van Lier, 1988

Multimedia Computer-Assisted Language Learning

The effects of multimedia CALL and writing instruments
Warschauer & Kern (2000)
Chapelle (2001)
Plass & Jones (2005)
Meskill & Ranglova (1996)
Lemy & Hampell (2007)
Garrett (1991, 2009)
Beauvois (1992)
Chun (1994)
Kelm (1992)
Kern (1993)
Thorne et al. (2009)
Ducate & Lomicka (2008)
Young & Bush (2004)
Otto & Pusak (2009)
Levy (2009)
Murray & Hourigan (2006)
Wang & Vesquez (2012)
Kennedy (2007)
Ahmad (2012)

Computer-mediated communication
Warschauer (1996, 2000)
Barson et al. (1993)
Cummins & Sayers (1990)
Warschauer, Turbee & Roberts (1994)

CHAPTER 3

RESEARCH METHODOLOGY

This research has been designed as a quasi-experimental study utilizing mixed methodology in order to quantitatively prove the hypothesis, analyze types, coupled with qualitative explanation described in Chapter 1. The study follows the basic philosophical assumptions of constructivism. Constructivism is a social construction of reality perspectives (Crotty, 1998; Lincoln and Guba, 2000; Neuman, 2000; and Schwandt, 2007, as cited in Creswell, 2014). The study was conducted by following constructivists' ideas with a reason that constructivists hold assumptions that individuals seek understanding of the world in which they live and work. According Creswell (2014), individuals develop subjective meanings of their experiences towards situations. These meanings are varied and multiple, leading the researcher to look for a critical of views rather than narrowing meanings into a few categories or ideas. Therefore, the academic basis of this research is to rely on interpretation of participants' views of the integration of MCAEW.

As for the research questions, according to Crotty (1998); Lincoln and Guba, 2000; Merten (1998, as cited in Creswell, 2014), the questions of research that reflect constructivism should be broad and general so that the participants can construct the meaning of a situation, forged in interactions with other persons or situations. Also, Crotty (1998) asserted that the more variety and open-ended the questioning, the better, the understanding of what students can perceive knowledge towards their life situations as the researcher listens carefully to what people say or do in their life settings. Recently, Yilmaz, (2008) added that students are intellectually generative individuals (with the capacity to pose questions, solve problems, and construct theories and knowledge) rather than empty vessels waiting to be filled.

Therefore, the three questions designed in this research together with the obtained data drawn from the students' views are interpreted through the constructivism perspective.

This chapter presents the research methodology of the study. The chapter begins with the details of the research instruments used for the main study. Next, the validity and the reliability of the research instruments are presented in the pilot study. Then, data collection, data analyses, together with summary of the data analysis are presented consecutively. Thus, this chapter is divided into five sections: 3.1) Research Instruments; 3.2); Pilot Study; 3.3; Data Collection 3.4); Data Analyses; and 3.5) Summary of the Data Analysis.

3.1 Research Instruments

Three instruments were used in this study: pretest and posttest, the questionnaire, and semi-structured interview questions.

3.1.1 **Pretest and Posttest** (See Appendix A)

In order to answer Research Question 1 "Are there any significant differences in overall English writing performance of students before and after using multimedia computer- assisted English writing?," it is recommended that college students write a short essay in two hours (Cooper, 1984; Broad, 2003). Therefore, one - page essay was assigned for both tests under the same topic of '*My feeling about English writing'* to find whether there would be a significant difference in overall English writing performance before and after use of multimedia CALL. All of the samples were asked to write the pretest before the treatment was given. The posttest was assigned after finishing the multimedia computer-assisted English writing courses.

3.1.2 **Questionnaire** (See Appendix D)

There are 2 parts of the questionnaire, Part A, and Part B. In order to answer the Research Question 2 and 3 respectively.

The questionnaire part A consists of 30 items of five point - Likert scale. The possible responses range from 1 (strongly disagree) to 5 (strongly agree). These responses rated motivational factors that influence student samples' use of multimedia computer-assisted English writing (see Appendix D, Part A).

The questionnaire part B includes 10 items. The 10 items are divided into 3 parts. First, part B1 (Questions 1-7) was conducted to obtain demographical data. Secondly, part B2 (close-ended Question 1 and 2) was employed to obtain the initial perceptions towards using MCAEW. Finally, 3 open-ended questions were applied for semi-structured interview (see Appendix D, Part B2, Questions 1-3).

3.1.3 Semi-structured Interview

According to Merriam (2009), a semi-structure interview is best be applied to explore for perceptions. Based on this recommendation, all questions should be used flexibly, without fixed questions, and the largest parts of the interview can be guided by researchers in order to find reasons or requirements that needed to be discovered from the students' perceptions.

Hence, based on this recommendation, the semi-structured interview reflects the reasons behind the use of multimedia computer-assisted English writing were listed openly without predetermined wording or order. Three open-ended questions (see Appendix D Part B2, Questions 1-3) were used. In this regard, reasons for preference, benefits, strength, and constraints functions of MCAEW were used to ask the interviewees for perceptions towards using MCAEW (see also the interviewing method).

3.2 Pilot Study

The pilot project was established to determine the content validity and the internal consistency reliability of the pretest and the posttest scores, and the questionnaire used in this research. The pilot project was conducted in early July 2014 at the researcher's institute and an urban university in Bangkok, Thailand. Five experts in English teaching fields and ten third year undergraduate students participated in the project. The content validity and the internal consistency reliability are reported below.

3.2.1 Reliability and Measurement of the Pretest and Posttest Scores

Three inter-raters were asked to grade the pretest and posttest. According to Clark, 1975; Clark and Swinton, 1980; Mullen, 1978, (as cited in Kalayanee, 2002), a fair number of inter-raters for marking scores in English language testing is recommended between 2 or 3. Therefore, the 3 inter-raters consist of 3 expert committees possess full-time English instructors from two public universities in Thailand was conducted as English writing examiners. The marking criteria of a holistic scoring rubric was applied (See Appendix B).

Considering a measurement of the pretest and posttest scores, a Holistic Rubric Scoring adapted from Montana Writing Assessment (2011), ranging from 6, 5, 4, 3, 2, 1, to 0 was used to measure samples' task scores for both tests.

3.2.2 Reliability of the Questionnaire Part A

Part A of the questionnaire consists of thirty items. According to Rovinelli and Hambleton (1977), the acceptable index for Item-Objective Congruency (IOC) of content validity (where the content experts rate individual items) is .5 or above. The content validity of this part for all thirty items of the questionnaire were rated from .6 to 1, therefore, the use of all items in this part is appropriate (See Appendix E: Table A5.1).

Cronbach Alpha was used to determine the reliability coefficient of Part A of the questionnaire, and it was reported at .858. As stated by Nunally and Bernstein (1994), a reliability of .70 and above is desirable. Therefore, a reliability coefficient of .858 is acceptable and the questionnaire is appropriate to be used in this research (See Appendix E: Table A5.3).

3.2.3 Reliability of the Questionnaire Part B

Part B of the questionnaire consists of ten items. These items contain: 1) seven sub-items of personal data, and 2) three opened-ended questions revealing students' perceptions and issues towards using multimedia computer-assisted English writing. All items were rated from .6 to 1, therefore, the content validity of all items in this part are acceptable (See Appendix E: Table E2).

3.3 Data Collection

3.3.1 Population

The population of this study was the second year undergraduate students enrolling in any English language courses at a public university. The total number of the second year students was 725. Before enrolling in these courses, the students must pass the Fundamental English compulsory course during the first or the second semester of their first year. The compulsory examination used for the midterm and final examinations of Fundamental English are designed in compliance with the course syllabus, which also includes writing. Additionally, all students who pass this course took the same standard examinations for both the midterm and final examinations. With this condition, it is possible to assume that these students who enroll in the second year of English courses possess similar competence in English.

Since this study conducted mixed methodology: Quantitative and qualitative research methods, there were 2 criteria of selecting samples. First, the criteria of selecting samples is discussed in response to the quantitative method. Next, the criteria of selecting interviewees serving for the qualitative method is described.

3.3.2 Criteria of Determining Sample Size

In response to the research questions 1 and 2, the researcher applied 200 samples for the whole population of this study. According to Comrey and Lee (1992), the sample size of 200 is considered as “fair” for exploratory factor analysis. The 200 student sample size was set to ensure that the sample is large enough to represent the population and are qualified for factor analysis. Additionally, the number of 200 students was decided due to the recognition of time constraints and manageability of the study.

As the first step for drawing the sample from the population (see section 3.3.1), the summer semester of the 2015 academic year, the total number of the second year students enrolling in English courses was 725.

Secondly, according to the section system currently available, these students were divided into 18 sections, and each section had approximately 40 students.

Thirdly, 5 sections out of 18 sections were selected through a simple random sampling method.

3.3.3 Criteria of Selecting Interviewees

After collect returned questionnaire, representative answers were selected in order to triangulate the 2 research questions. As mentioned in 1.6, Scope of the study, the research focuses on 3 overarching concepts: writing performance, language learning motivation, perceptions and issues towards the use of multimedia Computer-assisted English writing.

Based on the discussion of Garrett (2009), the CALL usage is like an infrastructure and it becomes a facet of language learners' usage. In that of learners, it involves preference, benefit, and issues. The preference, benefit, and issues are to be explored through a semi-structured interview. However, research question 3 was set in order to triangulate the first 2 quantitative results. Means that the abovementioned facet of learner's usage: the preference, benefit, and issues towards the use of multimedia computer-assisted English writing were discovered through the criteria as follow.

The criteria of selecting interviewees answering research question 3 was based on first, the result of the pretest and posttest scores. This is because the study pays direct attention to the English writing performance. Therefore, the first interviewee was the one who obtained the highest difference in overall English writing performance.

Secondly, the criteria of selecting interviewees was also based on the representative answers of the first item of the questionnaire part B2/Question 1 (Preference). The representative answers of this question were divided into 2 responses: (1) "Yes, I prefer using MCAEW"; and (2) "No, I do not prefer using MCAEW".

Thirdly, the criteria of selecting interviewees was also based on the representative answers of the second item of the questionnaire part B2/Question 2 (Benefits). The representative answers of this question were also divided into 2 responses: (1) "Yes, I think using MCAEW helps improve my English writing skill";

and (2) “No, I do not think using MCAEW can help improve my English writing skill”.

Finally, it is due to the fact that qualitative analysis focuses on the use of multimedia computer-assisted English writing. Hence, 2 respondents who spent the longest hours using multimedia computer-assisted English writing were asked to be participated in the interview. The list of each interviewees is described before the end of the section 3.3 in this chapter.

3.3.4 Multimedia Computer-Assisted English Writing (See Appendix C)

As mentioned in (1.7) the definitions of key terms, the list of multimedia computer-assisted English writing consist of hardware, software, and teaching materials that enhance effective writing according to Warschauer and Kern (2000). Firstly, hardware: individual computer language lab setting namely Sanako. Secondly, software: chat room applications supporting computer-mediated communication consist of Facebook or Line, and e-mail account. Thirdly, teaching materials includes: 3.1) web based writing tutorial courses (Youtube and e-learning), and teachers’ PowerPoint presentation, according to multimedia in second language acquisition (Plass & Jones, 2005); and 3.2) writing tools, suggested from a CALL revised curriculum designed by Meskill and Ranglova (1996), includes Microsoft Word, and online dictionary.

3.3.5 Data Collection Procedures

This study was conducted in the summer semester of the 2015 academic year. The summer semester consisted of 2 sections a week. Therefore, the experiment took 10 weeks (15 sections) in total. These 15 sections were divided into 7 sections before a midterm examination, 1 section for midterm examination, 8 sections before final examination, and 1 section for a final examination. The following table shows the multimedia computer-assisted English writing course activities.

Table 3.1 Multimedia Computer-Assisted English Writing Course Activities

Section	Activities
1-7	- Students completed consent form - Students were taught and trained depending on course description - Paper-based teaching materials were used - Face-to-face communication between teacher and students was allowed
8	- 2 hour- paper based pretest was administered - The 3 inter-raters marked the pretest writing scores
9	Students were taught and trained by Youtube essay writing tutorial courses
10	Students were taught and trained by - E-learning exercises - In class chat room
11-12	Students were taught and trained by PowerPoint presentation on essay writing tutorial courses
13	Students practiced with Microsoft Word, and online dictionary
14-15	- Students practiced and developed essay drafts with MCAEW - Questionnaire was completed - Semi-structured interview was conducted
Final exam week	2 hour- computer based posttest
After posttest	The 3 inter-raters marked the posttest writing scores

Notes: Students and teacher were allowed to communicate with e-mail and chat applications throughout the 18^{th} and 15^{th} sections.

In the first section, the samples were asked to sign a consent form for participating in this study (Appendix F). Then, from the first to seventh sections, the students were taught and trained in various English learning skills depending on their subject in order to familiarize them with any English courses. Before the midterm

examination, exercises and teaching materials were required to be paper-based such as paper dictionary and handwritten writing practice. Peers may communicate with their teachers face-to-face instead of communicating with media. Each class was three hours long.

However, the multimedia computer-assisted English writing was not used in class until after the midterm examination. Then, in the eighth section, the students were administered a pretest in order to measure their writing performance before the treatment was given. They were allowed two hours to write one - page essay using paper - pencil (See Appendix A).

In the ninth to the fifteenth sections, students were taught with multimedia computer-assisted English writing materials and assigned to do assignments, exercises embedded in the lab rooms during 90-minute of each section. This 90 minute-section was set aside for students to do multimedia computer-assisted English writing activities. In the ninth section, the students were taught via a web based Youtube essay writing tutorial courses. The tenth section, they were trained by using a web based e-learning courseware at http://e-learning.rmutto.ac.th and in-class chat room (See Appendix C: Teaching materials).

Between section eleventh and twelfth, they were taught English writing via teachers' PowerPoint presentation (See Appendix C: Teaching materials). Section thirteenth, they began use Microsoft Word, and online dictionary as tools for their essay writing practice (See Appendix C: Writing tools). During section fourteenth and fifteenth, they were continue practicing their writing and finishing their classroom e-learning exercises.

During this multimedia computer-assisted English writing section, the students learned with individual computer (Appendix C: Hardware). They were allowed to use an in-class-text chat room for communicating and collaborating their writing tasks with teachers and peers. Hence, 630 minutes were spent during in-class multimedia computer-assisted English writing practice. As for outside classroom, they were openly allowed to text their teachers and peers with email and online chat applications (see Appendix C: Software).

In ninth week, after fifteen sections were finished. All students of the five classes were asked to complete the questionnaire (see Appendix D). The 200

questionnaire were launched under the control and guidance of the researcher. That means the researcher explained the instructions for completing the questionnaire. The students were allowed approximately 60 minutes to complete it. Then the researcher collected the returned questionnaire after all of them were completely filled.

During this week, after returning the completed questionnaire part A and B1 and the initial (Yes/No) questions of part B2, the 5 selected interviewees were participated in a one-on-one semi-structure interview. The 5 interviewees were asked all of the 3 questions (see questionnaire part B2/Questions 1-3). The interview averagely took half an hour for individual interviewees. The researcher recorded interviewees' answer by a field note.

Then, in the tenth week, the final examination week, students were administered a posttest in order to measure their writing performance after the integration of multimedia computer-assisted English writing. They were allowed two hours to write one - page essay using Microsoft Word (see Appendix A).

3.4 Data Analyses

The data analyses of the study were designed to use mixed: quantitative and qualitative methods. The quantitative method was conducted in order to respond to the Research Questions 1 and 2 whereas a qualitative method was used to explore the result of the Research Question 3. The summary of the data analysis are shown in Table 3.2.

3.4.1 Quantitative Data Analysis

In order to find the answers to the first research question and to prove the hypothesis 1, a paired-sample t-test was conducted to find the difference between the mean score of the pretests and posttests of students before and after the integration of multimedia computer-assisted English writing. After the pretest was administered, the researcher used 3 inter-raters to mark sample's score for pretest by using 0-6 holistic scoring rubric (see Appendix B) as a marking criteria. Then, after the MCAEW treatment was finished, the researcher asked the 3 inter-raters to mark sample's pretest

score. Next, the researcher collected the 200 samples' pretest and posttest scores as input data into a statistic program, PASW Statistic 18 (2009). After processing paired variables, the mean scores of both tests were compared and find whether there were significant differences among students' overall English writing performance before and after the integration of multimedia computer-assisted English writing.

As for the second research question, an exploratory factor analysis was conducted to group the correlated variables together into categories. A principal components analysis was operated to extract factors from the questionnaire Part A (see Appendix D). The number of factors to be extracted were based on a rotation method which stops selecting factors when there is a sharp shift downward on the scree plot. According to Costello and Osbourne, (2005); Comrey, (2000), a Varimax rotation is by far the most common choice for orthogonal rotation method and it is widely selected in psychological research. Therefore, Varimax rotation was complied. After this rotation, calculated items were loaded and interpreted. In order to obtain the aforesaid number of factors to be extracted, a suitable cut-off point and the eigenvalues were set.

According to Field (2000), Rietveld and Van Hout (1993) recommend the eigenvalues of 1 or higher is acceptable in exploratory factor analysis. The criterion for a cut-off point for motivation loadings to be interpreted is arbitrary. According to Tabachnick and Fidell (2007), a cut-off point of .45. or above is recommended in an exploratory factor analysis. In motivational studies, Akbulut (2008); Warschauer (1996); also recommend including factor loadings having a nature of value of.45 or greater. This study is compelled to conduct motivational factors; thus, the researcher decided to comply.45 or above as a cut-off level. After retaining and extracting numbers of factors out of the 30 items of the questionnaire Part A, the researcher named the extracted factors as a result of this research question.

According to Biber, (1995); Field, (2000); Institute for digital research and education (1995); Suhr & Shay, (2008), there are 7 steps of analyzing exploratory factor analysis. (1) the initial extraction; (2), determining the best number of factors by considering the Scree Plot; (3), identifying rotation method; (4), interpret solution, in this step, the inclusion of motivational loadings in the factors was explained. As for step 5, due to the study is conducted to assign name of the motivational factor, the

factor score is not reported. Next, the loading results were presented together with an identification of underlying factors presented in tables. Finally, the name of each motivational factor was assigned.

The mean score of the pretest and the posttest together with the extracted factors were numerically, described and reported quantitatively in Chapter 4 (section 4.2: quantitative results).

In response to the third research question, the descriptive analysis was applied in order to obtain demographical data from the returned questionnaire part B1/Questions 1-7 (Appendix D). As for the initial perceptions towards using multimedia computer-assisted English writing, obtained from the returned questionnaire part B2/Questions 1-2 (Appendix D) was also reported in the form of descriptive statistics of a demographical data and initial perceptions towards MCAEW (see section 4.3.1, Table 4.14 & 4.15.)

3.4.2 Qualitative Data Analysis

According to Merriam (2009), and Patton, (2002), a semi-structure interview is best be applied to explore for perceptions and it is to find out what is in and on someone else's mind. Further to Merriam (2009), all questions in a semi-structured interview should be used flexibly, without fixed questions, and the largest parts of the interview can be guided by researchers. In order to find reasons, requirements that needed to be discovered from the students' perceptions, the researcher is compelled to use an individual semi-structured interview.

In response to the Research Question 3, "What are students' perceptions towards using multimedia computer-assisted English writing", two qualitative analyses were complied. First, the descriptive analysis was used to describe demographical data and samples' initial perceptions. Secondly, the findings of the semi-structured interview are reported.

After returning the above responses, a semi-structured interview was conducted. Based on Garrett (2009), in order to discover reasons behind perceptions towards the use of multimedia computer-assisted English writing, further research was recommended to focus on its, pedagogical demand, and reasons behind the use.

Therefore, the students' perceptions involved in 3 dimensions 'preference', 'benefits', and 'strengths/constraints' towards using the multimedia computer-assisted English writing.

In terms of preference, the first item on the questionnaire part B2/Question 1) "Do you prefer using multimedia computer-assisted English writing?" was discussed in this dimension: 'preference'. The second dimension: 'benefit' was explored from the second item of the questionnaire part B2/Question 2) "Do you think using multimedia computer-assisted English writing help you improve your English writing skills?". Finally, the third dimension was discussed in the questionnaire part B2/Question 3) "What are strengths, constraints and recommendations of using multimedia computer-assisted English writing?" (see Appendix D: Questionnaire Part B2/Question 1 -3).

According to Merriam (2009), there are 4 steps for analyzing qualitative data from the semi-structured interview. After completing the interview, the researcher, first, made a list of an open coding of all responses, a list of potential key word that relevant for answering this research question. Secondly, the sorted data from the coding are listed into categories. Thirdly, the researcher interpreted numbers of the categories. Finally, the researcher named and summarized the categories into emerging themes, considered as findings of this research question. The findings are presented in section 4.3.2 on the findings of the semi-structured interview.

3.4.2.1 Interviewees for the Semi-structured Interview

In compliance with the criteria of selecting interviewees explained in the section 3.3.3, the 5 interviewees were interviewed according to the conditions scoped by the study. First, the highest difference due to the effect of integration of multimedia computer-assisted English writing. Second, the longest hours of its daily use. Finally, the initial perceptions. The name of the interviewees were pseudonymous.

1) Interviewee 1 was selected to participant because he obtained the highest difference in overall English writing performance. He is a 20-year-old male who received B for a fundamental English course. He was enrolling on English for Business Communication course. His major was Informational System. He came from Ubonratchathani, the Northeastern part of Thailand. He was a

representative respondent who obtained the highest difference in his writing performance: from 0 to 4 after the integration of multimedia computer-assisted English writing. He spent time using the multimedia computer-assisted English writing and the Internet for 12 hours a day.

2) Interviewee 2 was a 21-year-old male, spending 18 hours using multimedia computer-assisted English writing including the Internet. He lived in Bangkok. He obtained C for Fundamental English while he was in the second year of the university. His major was Information system enrolling on English in Daily Life. He was one of the interviewees who use the longest hours of multimedia computer-assisted English writing and the Internet. He was scored in his writing performance at 3 and 4 for the pretest and the posttest respectively. He spent 18 hours a day on the Internet and multimedia computer-assisted English writing.

3) Interviewee 3 was a 20-year-old male, received B+ for a fundamental English course, and was enrolling an English in Daily life course. He got 2 points for his writing pretest and 4 for the posttest. His major was Information System. He came from Surin, the Northeastern part of Thailand. He also spent the longest hours using the multimedia computer-assisted English writing and the Internet for 18 hours daily.

4) Interviewee 4 was the one who rated ‘Non-preference’ using multimedia computer assisted English writing. He was a 22-year-old male who received A for a fundamental English course. He was enrolling on an English in Daily life course. He got 4 points for his writing pretest and 5 for the posttest. His major was Information System. He came from Samutprakarn, the central part of Thailand. He uses the multimedia computer-assisted English writing and the Internet 10 hours daily.

5) Interviewee 5 was a representative participant who rated for “Non-benefit”. She was a-20-year-old female who received A for a fundamental English course. She was enrolling an English for Business Communication course. Her major was Accounting. She came from Bangkok, the capital city of Thailand. She obtained 2 scores for the pretest and 3 for the posttest. Everyday, she used the multimedia computer-assisted English writing and was on the Internet for 8-10 hours.

3.4.2.2 Validity and Reliability of Emerging Themes

According Patton (2002), (as cited in Merriam, 2009), the quality of the emerging themes are essential because as in all qualitative data, trustworthiness involves the way the qualitative inquiries were carried out with integrity and ethical stance of the researcher. Further to Merriam (ibid.), two strategies for promoting validity and reliability of the study were applied in the study.

First, the member checks technique was applied. The researcher took sorted data from the coding listed into categories back to all 5 interviewees. In this step the interviewees were asked again after recording the field note if the categorized responses were plausible. The 6 categorized findings (see section 4.3.1.2) were confirmed by the 5 interviewees that the emerging themes were accurate.

Secondly, the peer review technique was used. The researcher discussed with the 5 content experts in teaching fields mentioned in section 3.2. All emerging themes listed in section 4.3.1.2 were consensual approved by the teaching experts.

The list of emerging themes were reported in the qualitative findings (section 4.3).

3.5 Summary of the Data Analyses

This study relies on 3 main theories: (1) English writing performances; (2) Second Language Acquisition (SLA); and (3) Computer-Assisted Language Learning (CALL).

The framework of the research question 1 was conducted by writing assessment of Bloom's essay taxonomy (recommended by Haine, 2004), and Communicative Competence (Richards, 2006; Warschauer & Murray, 2000). The Students' writing pretest and posttest scores were analyzed in accordance with the holistic rubric scoring, adapted from The Montana University system writing assessment: A practical guide to writing proficiency (2011).

Secondly, as for the research question 2, the framework of SLA were used to analyze the motivational factors influencing students' use of multimedia computer-

assisted English writing. It includes; computer applications in second language acquisition (CASLA), multimedia integrated in SLA (Chapelle, 2001), motivational aspects of language learning (Gardner & Tremblay 1994a, 1994b), components of EFL Motivation (Dörnyei, 1994), EFL revised curriculum (Meskill & Ranglova, 1996), autonomous learning (Taylor, 2000), communicative language teaching: the new approach of language teaching and learning goals (Richards, 2006), Task-based language teaching (Nunan, 2004), computer-mediated communication (Warschauer, 1996, 2000), attititude, motivation and achievement (Gardner, 1979), and instrumentations for measuring motivational factors based on Warschauer (1996).

Finally, perceptions towards the use of multimedia computer-assisted English writing and other related issues were analyzed through a descriptive explanation and a semi-structured interview. The analysis was geared under the suggestion of Garrett (1991, 2009) Computer-assisted language learning trends and revisited issues together with the perceptions towards CALL use (Young & Bush, 2004;). These frameworks were conducted to plan out the research question 3.

A summary of data analyses is presented in Table 3.2.

Table 3.2 Summary of Data Analyses

	Research Questions		
	1) Are there any significant differences in overall English writing performance of students before and after using multimedia computer- assisted English writing?	2) What are motivational factors influencing students' use of multimedia computer-assisted English writing?	3) What are the students' perceptions towards using multimedia computer-assisted English writing?
Research Methods	Quantitative	Quantitative	Qualitative
Research Instruments	Pretest & Posttest (Appendix A)	Questionnaire Part A (Appendix D)	Questionnaire Part B (Appendix D)
Data Analysis Methods	Paired sample t-test	Exploratory Factor Analysis	Semi-structured Interview
Variables	Paired variable: Students' overall English writing pretest and posttest mean scores	30 items rated in the questionnaire part A	Perceptions towards using MCAEW

CHAPTER 4

RESEARCH RESULTS

The research results were obtained from a mixed methodology: quantitative methods, and qualitative methods. The results answered the three research questions: 1) Are there any differences in overall English writing after the integration of multimedia computer-assisted English writing?; 2) What are the motivational factors influencing students' use of multimedia computer-assisted English writing?; and 3) What are students' perceptions towards using multimedia computer-assisted English writing? Therefore, this chapter is divided into four sections: 4.1) Introduction; 4.2) Quantitative Results; 4.3) Qualitative Findings; and 4.4) Conclusion of the Findings.

4.1 Introduction

This chapter presents the effects of multimedia computer-assisted English writing on students' English writing performance, together with their motivational factors, triangulated with their perceptions toward using it. Three instruments were employed. First, the pretest and posttest measuring writing comprehension were administered to measure the writing performance of the students before and after the integration of multimedia computer-assisted English writing. Secondly, questionnaires were distributed to explore the motivational factors towards using multimedia computer-assisted English writing. Finally, students' perceptions towards the use of the multimedia computer-assisted English writing were analyzed from a semi-structured interview.

The results of the aforesaid research questions were analyzed both quantitatively and qualitatively. Research question 1, hypothesis 1 and research question 2 are reported in quantitative results (see section 4.2). In addition, the first

part of research question 3 was explained quantitatively in the form of descriptive statistics, whereas the second part was reported qualitatively (see section 4.3).

In response to research question 1, “Are there any significant differences in overall English writing performance of students before and after using multimedia computer-assisted English writing?”, together with hypothesis 1, “Students’ overall English writing performance will be better after an integration of multimedia computer-assisted English writing”, the difference in overall English writing performance was quantitatively reported and compared. Regarding research question 2, “What are the motivational factors influencing students’ use of multimedia computer-assisted English writing?”, the students’ motivational factors were discovered and interpreted through a factor analysis. Finally, as for research question 3, “What are the students’ perceptions towards using multimedia computer-assisted English writing?”, the results were discussed in the form of descriptive statistics and semi-structured interview report.

The salient findings are presented and the conclusion is summarized at the end of this chapter.

4.2 Quantitative Results

This section presents the quantitative effects of the use of multimedia computer-assisted English writing. The results are elaborated in response to research questions 1 and 2. The results of research question 1 describes differences in overall English writing performance that exist after the integration of multimedia computer-assisted English writing, whereas the 4 motivational factors influencing the use of multimedia computer-assisted English writing were discovered in response to research question 2.

4.2.1 Quantitative Results of Research Question 1

Research question 1: Are there any significant differences in the overall English writing performance of students before and after using multimedia computer-assisted English writing? Hypothesis 1: Students’ overall English writing performance will be better after the integration of multimedia computer-assisted English writing.

This first research question and hypothesis were drawn from the objective of the study, which aims firstly to explore the effects of using multimedia computer-assisted English writing. In order to find the effects of the integration of multimedia computer-assisted English writing, whether the writing performance is better after the integration, the researcher observed five classes of two English subjects: English in Daily Life, and English for Business Communication.

The five classes were selected from the simple random sampling method, explained in section 3.2. They were divided from the two hundred students who participated in this study. The two hundred was a minimum requirement for a fair representative (Comrey & Lee, 1992) of samples responding to a factor analysis (to be described in the findings of research question 2 in section 2.2). There were forty students in each class. The samples were those who passed the same fundamental English subject and examination, enrolling in the aforesaid 2 English subjects: English in Daily Life, and English for Business Communication, studying in the second year of undergraduate level of a public university in Bangkok, Thailand. Hence, they presumably have the same level of English background knowledge which is elaborated in section 3.2: Data Collection: Population and Criteria of Selecting Samples Size.

In the pretest, the student samples were asked to do a pretest by writing a one-page essay on the topic “My feelings about English writing” (see Appendix A) in the eighth section after the first half of the semester and before the integration of multimedia computer-assisted English writing. The scores were marked by the 3 inter-raters (see section 3.1.4 Pilot Project: Three inter-raters). A holistic scoring rubric, based on the Montana University System Writing Assessment (2011), was employed as the writing performance measurement (see Appendix B).

After the pretest, the student samples were taught and practiced with multimedia computer-assisted English writing (see section 3.2: Data Collection Procedure). The posttest under the same topic was administered after the integration of the multimedia computer-assisted English writing. Both scores (pretest and posttest) were marked, and filled into the data sheet carried by a standard Predictive Analytics Software (PASW 18). The pretest and posttest scores are shown in Appendix G. The PASW 18 (IBM, 2010) is a program used to analyze mean

difference between pretest and posttest scores. The data was analyzed according to the following steps.

In order to find the mean scores of the pretest and posttest, first, the paired variables were set in the data sheet of PASW (18). The paired variables were the pretest and posttest scores of each student. Therefore 200 pretest and posttest scores were filled into the data sheet of the program. The paired samples' mean scores of students' writing performance is shown in the following table.

Table 4.1 Paired Samples Mean Scores of Students' Writing Performance

Variables	Mean	SD
Pretest	2.54	1.421
Posttest	3.58	1.346

Table 4.1 shows the mean scores of the writing performance (pretest and posttest). The students' mean of the pretest score was 2.54 (M = 2.54, SD = 1.42), and the mean of the posttest score was 3.58 (M = 3.58, SD = 1.35).

The pretest mean was 2.54 while the posttest mean was 3.58. Similarly, the pretest standard deviation was 1.42 while the posttest standard deviation was 1.35. These results show that there was an increase in the mean scores between pretest and posttest. According to the University of Surrey (2015), standard deviation is a measure of dispersion of the sample. Furthermore, the normal distribution is more likely to fall closer to 1 and to the mean. From this, the similar values of the standard deviations indicated that the distribution of scores around the means were similar for both the pretest and posttest. Hence, the SD of the study (1.35 and 1.42) fell in a normal distribution, less dispersed from the mean, and is acceptable. An increase of 1.04 was found in the overall English writing performance of students after the integration of multimedia computer-assisted English writing. This is illustrated in figure 4.1.

A comparison of mean scores as well as a paired samples t-test were analyzed and reported through PASW 18. A comparison of the pretest and posttest mean scores is reported in Figure 4.1.

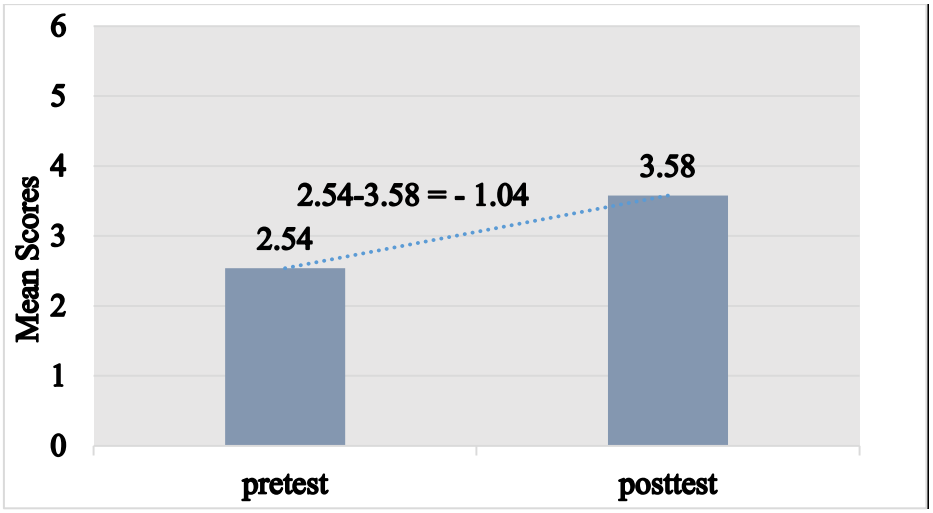


Figure 4.1 A Comparison of Pretest and Posttest Mean Scores of Students' Overall English Writing Performance

Finally, to prove whether or not significant difference occurred, a paired sample t-test was conducted to compare the pretest mean score with the posttest mean score of the students before and after the integration of the multimedia computer-assisted English writing. The t-test result is shown in the table below:

Table 4.2 Paired Samples T-Test of Students' English Writing Performance

Outcome	n	Mean Difference	t	df	Sig.
Pretest - Posttest	200	-1.040	-17.073	199	.000

Note: $p < .001$.

As seen in Table 4.2, the t-test analysis indicates that an increased mean score from pretest (2.54) to posttest (3.58), which is 1.04, is statistically significant at the p-value = .000 level. The difference of the mean of the pretest and posttest scores was reported at -1.04, $t(199) = -17.07$, Sig. = .000, $p < .001$. It can be interpreted that there is a highly significant difference in students' overall English writing

performance before and after the integration of multimedia computer-assisted English writing.

Hence, the data supported hypothesis 1 that the students' overall English writing performance was better after the students had been integrated by using multimedia computer-assisted English writing.

4.2.1.1 Salient Finding of Research Question 1

According to the above report marked by the 3 inter-raters, the mean difference of the pretest (2.54) and posttest (3.58) is 1.04, which indicates that there is an improvement of writing performance by one level. Based on the Montana Holistic Scoring Rubric (Table 4.3), the gain of writing performance occurs after the integration of multimedia computer-assisted English writing.

Interestingly, according to the details of the interpretation of students' writing performance presented in the Holistic Scoring Rubric (see Appendix B), a standardized rubric was used to mark each student's scores of both tests. The full score of the writing performance based on this rubric is 6 (Advanced). That presumably means the neutral score was 3 (Near Proficient) rated down respectively until 0.

Table 4.3 below presents a summary of English writing scores and performance identification based on the aforesaid rubric. Students overall English writing performance improved one level after the integration of multimedia computer-assisted English writing.

Table 4.3 A Summary of English Writing Scores and Performance Based on the Holistic Scoring Rubric

Mean Scores	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Performance	Advanced	Advanced Proficient	Proficient	Near Proficient	Novice	Beginner	-

According to Table 4.3, the higher the score is, the better the students' writing performance is. In accordance with the rubric, it can be interpreted from the results that the students' overall English writing performance has been improved from

2.54 (Novice) to 3.58 (Near Proficient) after the integration of multimedia computer-assisted English writing. Their performance has shifted from being 'Novice': the range of 2, to 'Near Proficient': the range of 3.

In sum, the research question one was hypothesized and it has been proved that the integration of multimedia computer-assisted English writing enhances improvement of students' writing performance in the way that the multimedia computer-assisted English writing effects a statistical difference in students' English writing performance (Sig. = .000, $p < .001$). This higher performance occurred in one summer semester (10 weeks/15 sections).

The effect of multimedia computer-assisted English writing has proved that students obtained not only higher performance, but the students also obtained one higher level of proficiency. As mentioned in Chapter 1 (section 1.4: Scope of the study), the results revealed the first concern of this study, that a primary concern of second language acquisition is to develop effective output. The effective output which is the 'Product' of language learning (Swain, 1995) has been proved and enhanced by the use of multimedia computer-assisted English writing. Further to Swain (1995), there are other factors influencing effective learning output. That is the process of language learning.

Next, the second concern of this study reveals the psychological 'Process' of language learning. Stated by Gardner and Lambert (1959), second language achievement is related not only to language performance, but also to motivation (1969). This is because motivation reflects the psychological process of successful expectations in language learning. Thus, research question 2 analyzes what motivational factors enable learners to achieve the most effective learning outcome via the use of multimedia computer-assisted English writing.

4.2.2 Quantitative Results of Research Question 2

Considering research question 2 "What are the motivational factors influencing students' use of multimedia computer-assisted English writing?," The researcher aims to study the psychological factors influencing the process of second language learning. This second research question was designed from the second

objective of the study aiming to explore the motivational factors driven by the use of multimedia computer-assisted English writing.

In order to find the students' motivational factors derived from students using multimedia computer-assisted English writing, the 200 questionnaires were distributed. The questionnaire consists of 30 Likert-scale items constructed from various motivational factors influencing students' use of multimedia computer-assisted English writing. The questions asked students to check their extent of agreement with the statements. Those motivational factors were set according to various motivational theories supporting the 30 items in the questionnaire, which are Integrative, Instrumental (Gardner & Lambert, 1972) Communication, Empowerment, Learning (Warschauer, 1996), Communicative Competence (Richards, 2006), Task Completion (Nunan, 2004), and Autonomous Learning (Truscott & Morley, 2001). These 30 items are listed in Chapter 1, section 1.7: Definitions of Key Terms and individually elaborated in Appendix L.

After collecting the returned questionnaires, the motivational factors were extracted. The 200 responses from the interviewees were recorded, analyzed and interpreted by conducting an exploratory factor analysis programed on PASW 18. The analysis was conducted to group the correlated items together into categories. These explored categories was interpreted to motivational factors that influence students' use of multimedia computer-assisted English writing (see section 4.2.2.6, Interpretation of the motivational factors). The data was analyzed through the seven steps of exploratory factor analysis.

As mentioned in section 3.4.1, factor analysis scholars (e.g., Biber, 1995; Field, 2000; Institute for Digital Research and Education, 1995; Suhr & Shay, 2008) suggest to follow these steps for interpretation of a factor analysis. The results of this research question are explained below followed by the details of each step which are categorized from 4.2.2.1 through 4.2.2.4.

First, the initial extraction is reported under Eigenvalue above or equal to 1 (see Table 4.4 and 4.5). Secondly, scree plot determines suitable number of factors to retain is illustrated in Figure 4.2. Thirdly, the inclusion of motivational loadings in the 4 factors is explained in Table 4.6. Forthly, the identification of loading results will be presented in Table 4.7. Then, the list of loading items and loading structures will be

shown in Table 4.8 and Table 4.9. Finally, all loading results will be interpreted in the light of motivational theories and presented in Tables 4.10, 4.11, 4.12, and 4.13.

4.2.2.1 Initial Report of Eigenvalue

The first step of the exploratory factor analysis is to find the initial extraction. In doing so, the Principle Component Analysis (PCA) was conducted. The analysis is used to group correlated items into initial components that reach total Eigenvalue above or equal to 1. The Eigenvalue set at 1 was recommended by Field (2000) and Rietveld and Van Hout (1993) (see section 3.3.1, Quantitative analysis). The Eigenvalue was set due to the fact that each of the 30 components accounts for a maximum amount of variance which has not previously accounted for the other components; they are uncorrelated to each other (Field, 2000; Rietveld & Van Hout, 1993). Therefore they must be initially grouped under an Eigenvalue above or equal to 1 to find the initial extraction.

Table 4.4 below reports initial 10 Eigenvalue above or equal to 1. The total initial Eigenvalue was listed from the highest (5.945) to the lowest (1.016). This means the first step of extraction shows the 10 components, reduced from 30 components, that reached the Eigenvalue above or equal to 1. Table 4.5 presents details of unrotated components loading with the 30 items listed in the questionnaire part A.

Table 4.4 First 10 Eigenvalues of Unrotated Factors Analysis

Total Variance Explained									
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.945	19.818	19.818	5.945	19.818	19.818	2.983	9.944	9.944
2	2.514	8.379	28.197	2.514	8.379	28.197	2.653	8.844	18.788
3	2.208	7.361	35.559	2.208	7.361	35.559	2.137	7.122	25.909
4	1.78	5.932	41.491	1.78	5.932	41.491	2.112	7.04	32.949
5	1.691	5.638	47.129	1.691	5.638	47.129	1.939	6.465	39.414
6	1.541	5.137	52.266	1.541	5.137	52.266	1.866	6.22	45.635
7	1.283	4.277	56.543	1.283	4.277	56.543	1.789	5.963	51.597
8	1.209	4.031	60.574	1.209	4.031	60.574	1.747	5.824	57.422
9	1.201	4.002	64.576	1.201	4.002	64.576	1.634	5.477	62.869

Table 4.4 (Continued)

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
10	1.016	3.388	67.964	1.016	3.388	67.964	1.528	5.095	67.964

Table 4.4 shows 10 components, in other words, 10 factors which reach Eigenvalue above or equal to 1. These 10 factors, also called unrotated factors, accounted for 67.96% of shared variance. The details of these unrotated factors is presented together with the 30 items listed in questionnaire part A below.

Table 4.5 Details of Unrotated Component Analysis

Unrotated Component Matrix										
30 Items	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
i9	0.813									
i17	0.748									
i10	0.644									
i23	0.505									
i1	0.477									
i16	0.468									
i19		0.746								
i20		0.727								
i18		0.668								
i13		0.54								
i3			0.846							
i5			0.794							
i30										
i14				0.763						

Table 4.5 (Continued)

Unrotated Component Matrix										
30 Items	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
i15				0.755						
i7					0.793					
i6					0.731					
i24						0.756				
i2						0.525				
i27						0.454				
i8							0.756			
i21							0.609			
i29							0.547			
i4								0.73		
i28								0.454		
i26										
i25									0.763	
i22										
i11										0.775
i12						0.473				0.51

Note: Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 16 iterations

To determine the best number of factors to be included in the factor analysis, Field (2000), Rietveld and Van Hout (1993) suggest keeping factors with Eigenvalues larger than 1. Then, the second step for analyzing factors is to find the Eigenvalue in the scree plot that shows the remaining factor numbers before the sharp breaking point (see Figure 4.2).

4.2.2.2 Scree Plot of Motivational Factors

To determine the best numbers of motivational factors, suggested by Field (2000) and Rietveld and Van Hout (1993), the second step of analyzing the suitable number of factors is to take a scree plot into account. The scree plot is shown in Figure 4.2 below.

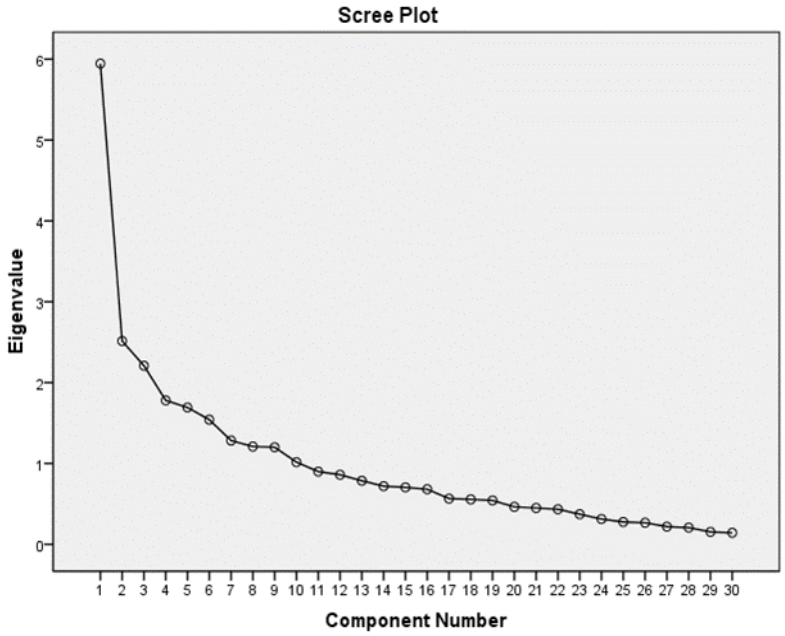


Figure 4.2 Scree Plot of Motivational Factor

As seen in the scree plot, the line begins to flatten from the seventh factor onward. However, there was a more steeply decreasing trend on the forth, the fifth, and the sixth factors. Thus, there were 3 possible choices which suggested a tendency to favor 3 possible factor models: four, five, and six.

Suggested by Biber, 1995; Comrey, 2000, (as cited in Getkham, 2010), comprising at least five important loadings is necessary for allowing a meaningful interpretation of the construct of latent factors. Moreover, Costello and Osborne (2005) asserted that a factor with fewer than three items is generally weak and unstable. Rather, 5 or more strongly loading items are desirable and indicate a solid factor. According to this suggestion, the component trial of 4, 5, and 6 factor models were forced. The results of the trial revealed that a 4-factor model is the best solution

according to this condition. If a 5-factor model was chosen, the fourth rotated component contained only four important loadings as shown in Appendix H. In addition, the number of important loadings for a 6-factor model did not meet the aforementioned requirements; there were only three important loadings rotated into component number five and number six (see Appendix I). Thus, the four-factor model was the best number accounted for this dataset.

4.2.2.3 The 4 Motivational Factors

Before moving on to the explanation of how the aforesaid 4 factor loading items grouped together, some explanation of the 4 factors accounting for 41.5 percentage of variance is elaborated in the following table.

Table 4.6 Initial Eigenvalues of 4 Factors

Components	**Initial Eigenvalues**		
	Total	**% of Variance**	**Cumulative %**
1	5.945	19.818	19.8
2	2.514	8.379	28.2
3	2.208	7.361	35.6
4	1.78	5.932	**41.5**

Table 4.6 shows that the four factors, or the components, account for 41.5% of the cumulative percentage of shared variance. This is in accordance with what other motivation researchers found in various motivation studies; for example, Wright (2007) studied employee work motivation towards public services in New York, USA. It was found that 41% of shared variance was reported among workers towards the public services. Lin (2007) revealed that 49% of shared variance accounted for extrinsic and intrinsic motivation found in knowledge sharing among work employees in Taiwan. Elliot and Thrash (2002) revealed that three dimensions of approach and avoidance motivation toward personality traits of undergraduate students in the USA accounted for 49.4% of the shared variance. Moreover, Erez and Judge's study (2001) discovered the four motivational types in job behavior

performance of undergraduate students in the USA. Those types accounted for 25.8% of the shared variance.

According to these related motivational studies, the cumulative percentiles of shared variance were reported in the range of 25.8% - 49.4%. This similarity of shared variance compared with this study lies in the same motivational genre. Thus, it can be assumed that the amount of shared variance of 41.5%, presented in Table 4.6, is suitable for representing motivational factor analysis.

4.2.2.4 The Inclusion of Motivational Loadings in 4 Motivational Factors

The inclusion of motivational loadings (30 items in the questionnaire part A) in the four factors/components is explained through a rotated component matrix. Table 4.7 presents a whole pattern of loading items into a 4 motivation-factor model. The inclusion of the 4 motivational factors is explained below.

Table 4.7 Rotated Component Matrix for the 4-Motivation-Factor Model

Items	Components			
	1	**2**	**3**	**4**
17) Learning with MCAEW gives me a feeling of accomplishment.	0.794			
9) I enjoy using MCAEW to communicate with my teacher.	0.704			
19) Using MCAEW gives me more opportunities to write authentic English	0.686			
16) Communicating by MCAEW is a good way to improve my English.	0.663			
10) If I have a question about my writing, I would rather contact my teacher in person than by MCAEW.	0.532			
23) I enjoy the challenge of using MCAEW.	0.531			

Table 4.7 (Continued)

Items	Components			
	1	**2**	**3**	**4**
8) I am more comfortable to contact people by MCAEW than in person.				
3) I enjoy writing my papers by MCAEW more than by hand.		0.72		
29) MCAEW is usually easy to work with.		0.613		
5) Writing papers by computer saves time compared to writing by hand.		0.611		
30) MCAEW makes people strong and powerful.		0.536		-0.464
21) Using MCAEW is not worth the time and effort.		0.513		
28) Using MCAEW gives me more chances to practice writing English.		-0.481		
1) I can write better essays when I do them on MCAEW.		-0.456		
2) Revising my papers is a lot easier when I write them on MCAEW.				
25) I can learn English more independently when I use MCAEW.			0.642	
18) Writing by MCAEW makes me more creative.			0.555	
20) I want to continue using MCAEW in my English classes.	0.506		0.544	
13) Writing by MCAEW helps me develop my thoughts and ideas.			0.468	
12) An advantage of using MCAEW is you can contact people any time you want.				
11) MCAEW helps people learn from each other.				
27) I can learn English faster when I use MCAEW.				

Table 4.7 (Continued)

Items	Components			
	1	**2**	**3**	**4**
22) Using MCAEW gives me more control over my learning.				
24) Learning English with MCAEW is important for my career.				
7) I enjoy using MCAEW to communicate with my classmates.				0.659
6) I enjoy using MCAEW to communicate with people around the world.				0.648
14) Using MCAEW makes me feel part of a community.			0.451	0.577
26) MCAEW keeps people related to each other.				-0.521
15) Using MCAEW is a good way to learn more about different people and cultures.				
4) I enjoy seeing the things I write printed out.				

Note: 1. MCAEW = Multimedia Computer-assisted English writing
2. Reversed statement items have been transcribed

Table 4.7 presents the rotated component matrix showing inclusion of motivational loadings of the 4 factors. All 30 items were grouped together in accordance with the cutoff point at .45 or above. As mentioned in section 3.3.1, it is necessary to set a criterion or a cutoff point, settled for extracting the number of loading factors. Suggested by Tabachnick and Fidell (2007), a cut-off point of .45 or above is recommended in an exploratory factor analysis. In motivational studies, Akbulut (2008); McKay, Perry and Harvey (2016); Yubero et al. (2017) also recommended including factor loadings of a value of .45 or greater. This study is compelled to conduct motivational factors; thus, the researcher decided to comply.45 or above as a cut-off level.

Therefore, .45 or greater was set as a cutoff point to retain all 30 factors. Only loading values that reaches this point can be included in each motivational factor. That means there were 21 items which reached this criteria, whereas the other 9 items (listed in Appendix 11) were not used in the computation of factor scores. These 21 items are listed in 4.2.2.5.

Noticeably, 7 statement items 3, 5, 8, 21, 26, 29, and 30 have been transcribed from those sentences with the asterisk signs. The asterisk sign (*) indicated at the end of each sentence of the questionnaire part A (Appendix D) has been removed in this step in order to be suitable for factor interpretation.

4.2.2.5 List of Factor Loading Items

Table 4.7 above elaborates the inclusion of 21 items. The 21 items are listed in accordance with the highest range of loading factor scores to the lowest range. That is, the highest (.79) to the lowest (.46). The list of factor loading items are summarized in Table 4.8.

Table 4.8 List of Factor Loading Items

Factor	Loading	Items
1	.79 to .51	17, 9, 19, 16, 10, 23, **20**
2	.72 to .-46	3, 29, 5, **30**, 21, 28, 1
3	.64 to .45	25, 18, **20**, 13, **14**
4	.65 to -.46	7, 6, **14**, 26, **30**

Table 4.8 presents the largest loading of 7 items categorized into Factor 1. Secondly, Factor 2 also includes 7 items with the smaller loading value than Factor 1. Thirdly, Factor 3 shows 5 items. Finally, Factor 4 consists of 5 items with the loading value of .65 to -.46 respectively.

Noticeably, there were 3 items: 14, 20, and 30, printed in bold, which were loaded in more than 1 factor. Item 14 was loaded into Factors 3 and 4. Item 20 was loaded into Factors 1 and 3 whereas item 30 was loaded into Factors 2 and 4. These items loadings will be elaborated in the next section.

Then, these 21 motivational items were categorized into each group of motivational factors 1, 2, 3, and 4 loading structures are provided in Table 4.9 below.

Table 4.9 Loading Structure of the 4-Factor Model of the 21 Included Items

Items	Loadings
Factor 1: Communicative Competence	
17) Learning with MCAEW gives me a feeling of accomplishment.	.794
9) I enjoy using MCAEW to communicate with my teacher.	.704
19) Using MCAEW gives me more opportunities to write authentic English.	.686
16) Communicating by MCAEW is a good way to improve my English.	.663
11) If I have a question in English writing I would rather contact my teacher in person rather than by MCAEW.	.532
23) I enjoy the challenge of using MCAEW.	.531
20) I want to continue using MCAEW in my English classes.	(.506)*
Factor 2: Task Completion	
Positive Loadings	
3) I enjoy writing my papers by MCAEW more than by hand.	.720
29) MCAEW is usually very easy to work with.	.613
5) Writing papers by MCAEW saves time compared to writing by hand.	. 611
30) MCAEW make people strong and powerful.	.536
21) Using MCAEW is worth the time and effort.	.513
28) Using MCAEW gives me more opportunities to practice writing English.	-.481
1) I can write better essays when I do them with MCAEW.	-.456

Table 4.9 (Continued)

Items	Loadings
Factor 3: Autonomous Learning	
25) I can learn English more independently when I use MCAEW.	.642
18) Writing by MCAEW makes me more creative.	.555
20) I want to continue using MCAEW in my English classes.	. 544
13) Writing by MCAEW helps me develop my thoughts and ideas.	.468
14) Using MCAEW makes me feel part of a community.	(.451)*
Factor 4: Communication	
Positive Loadings	
7) I enjoy using MCAEW to communicate with my classmates.	.659
6) I enjoy using MCAEW to communicate with people around the world.	.648
14) Using MCAEW makes me feel part of a community.	.577
26) MCAEW keep people relate to each other.	.521
Negative Loading	
30) MCAEW makes people strong and powerful.	(-.464)*

Note: loadings with parentheses and asterisks (*) represent repeated loadings

According to Table 4.9, these four factors consisted of two sets of loadings; positive and negative loadings. Factors 2 and 4 were the factors with negative loadings. Nevertheless, one of the most common ways to estimate factor scores involves summing raw scores corresponding to all items loading on a factor. Therefore, neither a positive nor a negative sign does indicate the importance of a loading. Rather positive and negative loadings indicate the distributions that occur frequently in a complementary pattern (Getkham, 2010). Both positive and negative loading items yield the alphas for the more homogeneous. This would suggest that their items belonged to the same scales rather than separate scales (Devellis, 2012). Hence, both positive and negative loading items can be explained in the same level of interpretation.

Noticeably, the items 14, 20, and 30 which were loaded lower in more than one factor will be presented in parentheses and asterisks.

The next step is to interpret the four motivational factors. The interpretation stage is an attempt to find the structure accounting for associations among the items analyzed or labelled. According to DeVellis (2012), the interpretation of factor analysis must be done in the light of rational theory. Thus, to interpret the motivational factors, it is vital to consider reasons that account for theoretical correspondence within each set. Next is the interpretation of each motivational factor.

4.2.2.6 Interpretation of the Motivational Factors

Since the interpretation must be based on motivational theories, Dörnyei (1994) stated that motivation is an eclectic, multifaceted construct. Thus, the interpretation of motivational factors needs to be traced back into the root cause of all loading items. The interpretation of the factors is based on the shared theoretical constructs: Integrative, Instrumental, Empowerment, Task Completion, Communicative Competence, Communication, Learning, and Autonomous Learning. The concepts of each item are given in Appendix L. The interpretation of 4 motivational factors are elaborated in Tables 4.10, 4.11, 4.12, and 4.13 respectively.

Table 4.10 Motivational Factor Loadings of Factor 1

Communicative Competence	
Loadings	**Loadings**
17) Learning with MCAEW gives me a feeling of accomplishment.	.794
9) I enjoy using MCAEW to communicate with my teacher.	.704
19) Using MCAEW gives me more opportunities to write authentic English.	.686
16) Communicating by MCAEW is a good way to improve my English.	.663

Table 4.10 (Continued)

Communicative Competence	
Loadings	**Loadings**
10) If I have a question in English writing I would rather contact my teacher in person than by MCAEW.	.532
23) I enjoy the challenge of using MCAEW.	.531
20) I want to continue using MCAEW in my English classes.	(.506)

As shown in Table 4.10, Factor 1 consists of 7 important motivation loading items. The majority of the important loadings, item 17, 9, 19, 16, 10, and 23 fell into the theoretical construct called “Communicative Competence”. Noticeably, item 20, had the larger loading into Factor 3 ‘Autonomous Learning’, so it was not interpreted as an important one in the Factor 1.

According to Richards (2006), communicative competence focuses on real communication that leads to accomplishment in language learning. There are 10 core assumptions of current communicative competence responding to language learning accomplishment (see Chapter 2, section 2.1.2). These assumptions are relevant to statements that lead to language learning competency stated in this factor. The 10 core assumptions of communicative competence involves: 1) successful language learning with real communication strategies; 2) the needs to be able to use language accurately, fluently, and creatively via trial and error; and 3) a teacher as a facilitator who creates a classroom atmosphere and provides opportunities for practicing and learning the language.

Firstly, item 17 “Learning with MCAEW gives me a feeling of accomplishment,” with the highest loading (.794), reflects the main focus of the communicative competence that the more teaching/learning with real communication strategies the higher competency in learning language (Richards, 2006). MCAEW class activities illustrated in Table 3.1 provides various communication strategies to achieve English writing competency; i.e., learners are open to communicate with peers and a teacher through social media (chat rooms and e-mail) in order to accomplish their writing task. These communication strategies fulfil students’

accomplishment. Ultimately, the more they have a feeling of accomplishment, the higher they gain writing competency. This better competency is proved in students' English writing performance results in research question 1.

Secondly, the needs to be able to use language accurately and fluently are involved in the core of communicative competence. The needs can be seen in item 19, "MCAEW gives me chances to write authentic English". The item statement apparently indicates that learners' desire to write authentic English as it could support their need to write English accurately. Also, the need to "improve my English" by using the assistance of MCAEW, as shown in item 16, reflects that students think that communicating with MCAEW is a good way to help them to practice their English so that they are to be able to use English fluently. This is because the more the students practice, the more fluency they gain. The writing performance of Interviewee 1, can be an example. He obtained a much better score of 4 for his sixth draft, which shows a lot improvement after practicing with MCAEW.

As for the need to be able to use language creatively via trial and error, the item statement which apparently indicates that learners enjoy using MCAEW as it could support their needs to use language creatively is item 23, "I enjoy the challenge of using MCAEW" because MCAEW activities allow students to create their own writing via trial and error. This trial and error of their writing made students find it challenging..

Finally, the teacher's role is important as a facilitator who creates a classroom atmosphere and provides opportunities for practicing and learning language. As seen in item 9, "I enjoy using MCAEW to communicate with my teacher", and item 10, "If I have a question in English writing I would rather contact my teacher in person rather than by MCAEW", the idea that the teacher possesses an important role as a facilitator in helping learners have more opportunities to practice language is validated.

Clearly, these included items can be grouped together to represent "Communicative Competence".

Table 4.11 Motivational Factor Loadings of Factor 2

Task Completion	
Positive Loadings	**Loadings**
3) I enjoy writing my papers by MCAEW more than by hand.	.720
29) MCAEW is usually very easy to work with.	.613
5) Writing papers by MCAEW saves time compared to writing by hand.	. 611
30) MCAEW makes people strong and powerful.	.536
21) Using MCAEW is worth the time and effort.	.513
Negative Loadings	
28) Using MCAEW gives me more chances to practice writing English.	-.481
1) I can write better essays when I do them on MCAEW.	-.456

Table 4.11 exhibits Factor 2, having a majority of loadings under the theoretical explanation of "Task Completion." The loadings are divided into 2 types: positive and negative. The former, the positive items, reflect the desire of satisfaction and completion that MCAEW tasks provide, whereas the latter, the negative loadings, will be later explained.

Considering the positive loadings, Gardner (1972), proposed that Instrumental motivation puts focus on the pragmatic aspect of learning language as it is a useful tool to complete language learning tasks and completing essays more easily. This pragmatic aspect occurs when learners desire to achieve satisfaction with the task of learning the language (Gardner, 1985). As seen on item 3 "I enjoy writing with MCAEW" and item 29 "MCAEWs are very easy to work with," these 2 items are the highest loading items that respond to the learners' satisfaction with the task processed through the use of MCAEW. They reflect joy and ease towards using them.

Nunan (2004) introduces the 6 principles of task-based language teaching/learning (Chapter 2, section 2.1.2) as the practices requiring success; i.e., learners can complete and can be engaged in the task with their own personal experiences. Items applicable to this explanation were item 5 "Writing by MCAEW

saves time compared to by hand", and item 21 "Using MCAEW is worth time and effort." "Time and effort" are the two strongest benefits for the digital writing era (Grabill & Hicks, 2005). Further to Grabill and hicks (ibid.), digital writing requires beneficial tools that save time and work effort among today's society. In order to complete writing tasks that are worth the time and effort, MCAEW can help complete it faster with less energy. The strength of MCAEW shown in table 4.17 also explained that MCAEW is the fastest and easiest writing tool. Hence, time saving, and worthy effort can be appropriately interpreted into task completion.

As for item 30, "MCAEW makes people strong and powerful," it can be related to the Empowerment construct. According to Dörnyei's course-specific motivational component (1994), tasks involving learners' interaction create a powerful impact on learning engagement. It means that learners' power of interaction happens when engaging with the task. This engagement fulfils the opportunity for successful language learning. Hence, learning tasks should enhance learners' feelings of being strong and powerful in interaction. Further to this explanation, Warschauer (2006) proposed that writing with computers helps people overcome weakness and powerlessness. It enhances 'collaborative writing' that creates strong and powerful interaction between a teacher and students. As seen in class activities shown in Table 3.1, students were opened to using MCAEW with their teacher and classmates in order to help each other correct and finish their drafts. These activities were designed to overcome weakness and create powerful interactions in class.

Considering the negative loadings which consist of item 28, "MCAEW gives me more chances to practice writing English" and item 1, "I can write better essays when I do them on MCAEW," it is evident that the learners agreed that more writing practice and writing better essays typically require time and effort. In other words, if learners tend to save time and put less effort in English writing, they will not have adequate practice; as a result, their essay writing will not be better than those who spend longer time.

Clearly, on the one hand, the positive loading reveals that learners find using MCAEW helps them complete their writing tasks. On the other hand, from the negative loadings, the learners agreed that using MCAEW consumes time and effort to practice in order to achieve better writing performance.

Taken together, joy, ease, time saving, worthy effort, strong and powerful feelings of writing tasks with MCAEW respond to the second factor, which can be grouped and defined as “Task completion.”

Table 4.12 Motivational factor loadings of Factor 3

Autonomous Learning	
Included Items	**Loadings**
25) I can learn English more independently when I use MCAEW.	.642
18) Writing by MCAEW makes me more creative.	.555
20) I want to continue using MCAEW in my English classes.	. 544
13) Writing by MCAEW helps me develop my thoughts and ideas.	.468
14) Using MCAEW makes me feel part of a community.	(.451)

Table 4.12 presents Factor 3, showing the majority of loadings under the construct of “Autonomous Learning.” Section 2.2.2 in chapter 2 described that Autonomous Learning relates to the focus changed from a teacher to students or from teaching to learning (Redmond et al., 2012). Lea et al. (2003) asserted that the principle of autonomous learning includes the following concepts: 1) more active, creative, and independent; 2) students can choose what they want to learn; and 3) self-constructed knowledge with deep understanding and full responsibility for learning.

First, the reliance on being active, creative, and independent can be seen in item 25, “I can learn English more independently when I use MCAEW”, which has the strongest loading (.642) in this category, as well as item 18, “Writing by MCAEW makes me more creative.” Obviously, learning with MCAEW makes learners feel more independent and more creative because the class activities shown in Table 3.1 allows them to freely write, search, and consult with the teacher and peers by their own experience (via online dictionary, Internet surfing, e-mail and chat rooms).

Secondly, the students have a choice of what to learn. Item 20, “I want to continue using MCAEW in my English classes” states that the students want to continue learning with MCAEW in class. The statement reflects that selecting what or what’s not to learn belongs to the students.

Finally, the emphasis on self-constructed knowledge with deep understanding is stated in item 13, “Writing by MCAEW helps me develop my thoughts and ideas.” Learners’ deep understanding occurs when they are capable of constructing their thoughts and idea in learning language, then, producing it on their own. It is apparent because MCAEW activities encourage students to be fully responsible for their own search regarding how to write, then developing their piece of writing, and ultimately producing an essay of their own.

However, the loading score of the item 14 in this factor was lower than that of Factor 4 (.577); therefore, it was not interpreted in this factor.

In sum, the shift in focus from teaching to learning, being more active, independent, creative, having more choices, self-constructed knowledge and having responsibility for their own learning are categorized into “Autonomous Learning.”

Table 4.13 Motivational Factor Loadings of Factor 4

Communication	
Positive Loadings	**Loadings**
7) I enjoy using MCAEW to communicate with my classmates.	.659
6) I enjoy using MCAEW to communicate with people around the world.	.648
14) Using MCAEW makes me feel part of a community.	.577
26) MCAEW keeps people relate to each other.	.521
Negative Loading	
30: MCAEW make people strong and powerful.	(-.464)

Table 4.13 reveals that all positive loadings in this factor reflect good motivation to participate in the target language community. It is obviously seen that the four loadings (items 7, 6, 14, and 26) in this factor are concerned with online communication, collaboration, and social networking. These, therefore, can be categorized into “Communication.” According to the findings of the semi-structured interview shown in Table 4.15, it was found that MCAEW class activities create a

great preference for the students. The findings show that 99.5% of students enjoy texting via Line and Facebook group chat because it allowed students and the teacher to communicate to each other any time they wanted.

In the realm of computer-mediated communication (CMC) and communicative competence (see Chapter 2, Section 2.3), today's language learning has been attempting to use multimedia computer-assisted English writing to help language learners to participate and communicate in society. In other words, to exist in a community, the statement is clearly illustrated in item 14 "MCAEW makes me feel part of a community," and Item 7 "I enjoy using MCAEW to communicate with my classmates." This is due to the fact that while studying in MCAEW class, students are allowed to text to their classmates and send/receive e-mail with the teacher. These attempts to communicate with people around the world to keep in touch with each other are clearly seen in Items 6 and 26.

For item 30, it was also loaded higher (.536) in Factor 2 "Task Completion". Hence, no attempt was made for this factor interpretation. Hence, to identify the motivational sources of this loading, the best interpretation of the genre and the situation is "Communication."

4.2.2.7 Salient Finding of Research Question 2

As mentioned in the beginning of this research question, effective language learning is involved not only in the product, but also the process of learning language (Swain, 1995). Motivational factors are considered as part of the learning process that would lead to crucial effects of language learning because they influence learners acquiring the target language. The discovery of the 4 motivational factors indicates that students are motivated to use MCAEW in order to achieve competency in language learning. It is a tool to complete their writing task. A strive for being autonomous is found. Students find communication to be a process to help them participate in society (see Table 4.10-4.13).

The implication of this discovery can lead to effective language learning when it is implemented in an English course. The implication of these 4 motivational factors will be discussed in the next section.

4.2.3 Quantitative Results of Research Question 3

This section shows demographical data and initial perceptions towards using MCAEW. Table 4.14 shows the demographical data of the 200 student samples then the initial perceptions towards using MCAEW are presented in Table 4.15.

From the returned questionnaires part B1, Table 4.14 reports summarized data of the 200 student samples of this study who were Thai non-native speakers of English studying in the second year of university. The average age was 19 to 22 years old. The majority of the students (64%) were 20 years old and 78% of them are female. They all passed a fundamental English course in the first year of their study; 30% of them obtained an A, while 46% received a B and B+, 22% of them received a C and C+. Only 2% received a D+ from this subject. The samples are those who came from 2 faculties in various majors, i.e., the Faculty of Liberal Arts, and the Faculty of Business Administration. All of them were non English majors. Most of the students (60%) were studying in Accounting, 19% were studying Information Systems, 14% were studying Tourism, while only 7% were studying General Management, Logistics, and Economics. In terms of location, 79% of them came from the Central and Eastern parts of Thailand including Bangkok, 17% came from the Northeast, 2% came from the North, and 2% came from the South. 67% of students use multimedia computer-assisted English writing both inside and outside classroom including mobile Internet for 8-12 hours a day.

Table 4.14 Demographical Data of 200 Student Samples

Demographical Data	F	%
Age		
19	28	14
20	128	64
21	38	19
22	6	3

Table 4.14 (Continued)

Demographical Data	F	%
Sex		
Female	156	78
Male	44	22
English Grade		
A	60	30
B+	34	17
B	58	29
C+	36	18
C	8	4
D+	4	2
Major		
Accounting	120	60
Information System	38	19
Tourism	28	14
Others	14	7
Hometown		
Central/East	158	79
Northeast	34	17
North	4	2
South	4	2
Average Use (hours/day)		
4	2	1
5	16	8
6	10	5
7	2	1
8	58	29
9	2	1
10	32	16

Table 4.14 (Continued)

Demographical Data	F	%
Average Use (hours/day)		
12	42	21
13	2	1
14	4	2
15	4	2
16	20	10
18	6	3

Note: 1) **F** = number of frequency; 2) **%** = percentage of frequency; 3) Others = General Management, Logistics, and Economics

Table 4.15 Initial Perceptions Towards Using MCAEW

Initial Perceptions	F	%
Preference		
Yes	199	99.5
No	1	0.5
Helpful for writing		
Yes	180	90
No	20	10

The initial perceptions were obtained from the returned questionnaires part B2 (Questions 1-2) reporting the preference and helpful benefits towards the use of multimedia computer-assisted English writing. Interestingly, almost all (99.5%) of the students preferred using multimedia computer assisted English writing; 90% of the students thought that multimedia computer-assisted English writing helps improve their English writing skills, whereas 10% of the students thought that MCAEW cannot help them improve their writing skills.

4.3 Qualitative Findings

The result of research question 1 has proved that multimedia computer-assisted English writing statistically affects students' English writing performance. Meanwhile the result of the research question 2 reveals 4 motivational factors enhancing the process of their language learning. The purpose of this qualitative finding is to triangulate the whole process of this study as well as to discover student's perceptions and issues toward the use of multimedia computer-assisted English writing.

In response to research question 3, "What are students' perceptions towards using multimedia computer-assisted English writing?," the results from the returned questionnaire part B can be divided into 2 parts.

As mentioned in section 3.4.2, first, the data obtained from the questionnaire part B1 (Questions 1-7) reveal the demographical data of the 200 students together with their initial perceptions towards the use of MCAEW in the questionnaire part B2 (Yes/No Questions 1-2). This is presented in section 4.3.1. The findings are reported in the form of descriptive statistics presenting number and percentage of frequency. Table 4.14 shows demographical data, whereas Table 4.15 shows the students' initial perceptions towards using MCAEW. Secondly, findings obtained from the semi-structured interview are elaborated in section 4.3.2 on the findings of the semi-structured interview.

4.3.1 The Findings of the Semi-structured Interview

Semi-structured interviews with individual students were conducted to give a satisfactory account of reasons behind the findings of initial perceptions reported in Table 4.15. As explained in section 3.4.2 (Qualitative analysis), 5 interviewees selected from the initial perceptions (Table 4.15) and the criteria of selecting interviewees (section 3.3.3) were asked to explain these reasons. They were named anonymously. The 5 interviewees were those giving responses to the initial perceptions, gaining the highest different scores in essay writing and the most hours using MCAEW. They gave reasons why they prefer or do not prefer using MCAEW, why MCAEW benefits them or does not benefit them in improving their writing

skills, and what strengths/constraints of MCAEW were. The interview explored reasons behind these perceptions.

There were 6 main interview questions: 1) “Why do you prefer using MCAEW?”; 2) “Why don’t you prefer using MCAEW?”; 3) “Why do you think using MCAEW helps improve your English writing skills?”; 4) “Why don’t you think using MCAEW helps improve your writing skills?”; 5) “What are the strengths of MCAEW?”; and 6) “What are the constraints of MCAEW?”. The following perceptions were obtained from the above 6 questions of the semi-structured interview. They are reported in accordance with the qualitative analysis elaborated in Chapter 3, section 3.3.2. The list of the 6 codes are 6 potential key words relevant to the interviewees’ perceptions. The lists will be explained in section 4.3.2.1. Then, the data was sorted from the coding list and entered into the categorized findings in section 4.3.2.2. Finally, the requirements and recommendations were elaborated in section 4.3.2.3.

4.3.1.1 Coding List

There were 6 codes elicited from the aforesaid 6 perceptions given to the 6 interview questions. These codes revealed why the interviewees prefer or do not prefer using MCAEW; why MCAEW benefits them or does not benefit them in improving their writing skills; and what the strengths/constraints of MCAEW were. Therefore, the 6 perceptions were: 1) Preference of using MCAEW; 2) Non-preference of using MCAEW; 3) Benefits of using MCAEW; 4) Non-benefit of using MCAEW; 5) Strength Functions of MCAEW; and 6) Constraints Functions of MCAEW.

According to the result shown in Table 4.15, the initial perceptions responding to question 1, “Yes, I prefer to use MCAEW” is categorized into “Preference of using MCAEW”, is the first coding. Secondly, there was only 1 respondent who answered “No, I do not prefer using MCAEW”. This “Non-preference of using MCAEW” answer provides critical reasons behind the preference of using MCAEW. This ‘Non-preference of using MCAEW’ was listed in this coding. Thirdly, those who rated “Yes, MCAEW is a helpful tool to improve my English writing skills” is reported in the “Benefits of using MCAEW” category. In addition, the forth code was selected from those rated “No, I don’t think using MCAEW can help improve my English writing skills”. This is categorized into “Non-

benefit of using MCAEW". The strengths of MCAEW is categorized into the fifth code "Strengths Function of MCAEW", whereas "Constraints Functions of MCAEW" of MCAEW is categorized into the sixth code.

Furthermore, some requirements and recommendations after the use of multimedia computer-assisted English are also elaborated at the end of the findings.

4.3.1.2 Categorized Findings

The findings are categorized into 6 perceptions. First, the preference of using MCAEW describes the reasons why the interviewees prefer using multimedia computer-assisted English writing. Secondly, the report of non-preference of using MCEW were reported. Thirdly, the benefits of using MCAEW discuss why the interviewees think that multimedia computer-assisted English writing was helpful for improving English writing skills, whereas non-benefits were critically elaborated respectfully. The fifth and the sixth: strengths and constraints of multimedia computer-assisted English writing functions were explained in detail. Some statements from the interviewees are also cited.

1) Preference of using MCAEW

The findings of the research question B2/Question1 "Preference" were revealed by four interviewees (Interviewee 2, Interviewee 5, Interviewee 3, and Interviewee 1). The four interviewees were among 199 respondents (99.5 %) rated "Yes, I prefer using multimedia computer-assisted English writing". The reasons are listed in the following table.

Table 4.16 Preference Reasons Towards the Use of MCAEW

Preference Reasons Towards the Use of MCAEW
1) It is convenient and it provides real time communication.
2) It provides clearer understanding of English and helps to maintain good grades.
3) It allows group communication.
4) It saves costs for printing and calling.
5) It provides more challenging, creativity, entertainment, and better learning mood.
6) It reduces tension in learning English.
7) It is easier for completing tasks.
8) It is a new trend of learning English.

Further to Table 4.16, the first reason of preference revealed that MCAEW enhanced learners to communicate conveniently. This is due to the fact that Line and Facebook are text chat applications that allows members to text each other any time they wanted. The four students agreed that this was convenient because it was the easiest way to have 2 way-communication with friends and teachers. That means, they were able to receive simultaneous responses from the interlocutors; i.e., when student A texts, calls, or video calls to student B, the two students could communicate back and forth.

As one of the students revealed,

> "It provides a real time communication." (Interviewee 1)

Another added,

> "I like the way that I can get the answer to my question right now." (Interviewee 3)

One student also elaborated,

> "I always text via Line because I can communicate with my classmates and teacher any time I want." (Interviewee 2)

The students could understand how to write via the use of the Internet, on-line excises from e-learning, Youtube tutorial course, and the teachers' presentation. The students argued that they prefer MCAEW because it helped them understand English clearly. As one student revealed,

> "I had zero understanding of essay writing, but finally I can do it because MCAEW shows me the essay writing pattern." (Interviewee 1)

The students enjoyed practicing grammar because it is believed that the more they understand the grammar, the better the learning outcome. Interviewee 5 preferred using MCAEW because she believed that grammar exercises can help her maintain a good grade in English. She said,

> "I had an A for my Prerequisite English, I enjoy doing quizzes on the e-learning. If I continue doing it, I'm sure it will help me get an A for my future English grades." (Interviewee 5)

Students preferred using MCAEW because it allows group communication that saves costs for telephone calls. This is because Facebook and Line allow members to create a group chat so that they can invite friends and teachers to join the group. Group chatting allowed members to text once and the message can be seen by the others. As one student mentioned,

> "Forget about one-by-one phone calls." (Interviewee 3)

It is also apparent that the students also found it reduced costs for printing. This is because the students Interviewee 1 and practiced their essays on the computers and they were able to hand in their writing assignments through e-mail or Facebook without costs for printing them out.

Learning with MCAEW was challenging. As explained,

> "The e-learning quiz and exercises were very challenging because I could test whether my answers were right or wrong." (Interviewee 5)

Another student added:

> "spelling check function from MSWord allowed me to know whether or not my spelling was correct." (Interviewee 3)

MCAEW was a creative workshop as reported by a student. He explained:

> "I could create my own writing via MSWord, I can also select words creatively via the online dictionary." (Interviewee 3)

MCAEW provided more creative activities compared to a paper-pencil classroom. One of the students illustrated,

> "My MCAEW classroom was like an enjoyable English workshop." (Interviewee 3)

This student also asserted that using MCAEW decreased his tension in learning a foreign language. MCAEW made the classroom more entertaining, and less boring because during the 90 minutes plus the time outside the classroom, students could enjoy engaging in a lot of multimedia activities.

The four students enjoyed hands-on writing practices. They also revealed that their writing tasks are finished faster than writing by hand. One of them stated,

> "I like typing via MS Word because it was very easy to work with, I took 2-3 seconds deleting and rewriting my awful sentences into better ones.
> I forgot how to use my correction pen." (Interviewee 1)

The last reason for preferences was that using MCAEW fulfilled the current trend of learning English with technological assistance. One of them mentioned,

> "Using MCAEW made me feel trendy." (Interviewee 3)

These reasons have elaborated what almost all of the students (99.5%) agreed upon the preference towards using multimedia computer-assisted English writing for their English class.

2) Non-preference of using MCAEW

According to the initial perception shown in Table 4.14, only one student, Interviewee 4, gave a representative answer for the aforesaid 0.5% of non-preference. In other words, he was an unfavorable learner when it came to using multimedia computer–assisted English writing. Table 4.17 shows the reasons of his non-preference of using MCAEW.

Table 4.17 Non-Preference Reasons Towards the Use of MCAEW

	Non-Preference Reasons Towards the Use of MCAEW
1)	It causes distraction.
2)	It makes the learner lack privacy.
3)	It makes the learner neglect his family.
4)	It consumes time.
5)	The learners were stressed when the system fails.
6)	It causes social network addiction.

First, the use of MCAEW distracted this student from his daily activities. This is because MCAEW includes Line and Facebook chat applications that show messages from all senders. These messages appear every time when he turned on the mobile Internet. “The pop-up notifications distracted me and made me lose my concentration.” As he explained,

> “Not only when I live with my family, but also after school, after my part-time work, during my break time, and while I was travelling, keeping my mobile online always distracts me from doing daily routines.”

In consequence to the first reason, distraction, Interviewee 4 also added that MCAEW resulted in a lack of privacy. This is because this student studies full-time at the university, and he also worked every day after class. Privacy might be important for him. He mentioned “I need to rest for a while but chat programs are sometimes annoying.”

The third reason that the student did not prefer using MCAEW is because it made him neglect his family members and friends. He claimed that he had fewer hours spent with his family. Due to the fact that MCAEW includes social media (e.g., Line, Facebook, and e-mail); therefore, spending long hours using the device keeps the student and the family away from each other. He added “We are now living in a Phubbing society—sometimes I sit in the same table with my family but we do not talk to each other, instead, we keep our face down texting to other people.”

The forth reason Interviewee 4 did not like using MCAEW was because it is time consuming. His 10-hour daily use of MCAEW and mobile Internet outside classroom wasted his time. He clarified that one and a half hour practice with MCAEW in class was quite long. It was long enough for him to improve his writing skills. He did not want to spend his time practicing it outside the classroom. He admitted:

> "Writing class assignment using MCAEW outside classroom was a burden for me because I did not have enough time for my writing homework and opening the chat room or email to communicate with classmates and teacher." (Interviewee 4)

The fifth reason Interviewee 4 did not prefer using MCAEW was because he had a lot of anxiety during online course exams. The anxiety and stress occurred when the teacher gave him an online quiz with a time limit or when the due dates of handling writing drafts were set. He was stressful because he faced with system failure while submitting e-learning quizzes and was unable to turn in his homework on time. He complained "System failure happened occasionally when I tried to submit my exercises outside the classroom and also my quizzes inside class. It had me stressed."

The last reason was that due to the fact that he felt he used the social network too much. He felt he was addicted to it. He explained,

> "I always use Facebook, and Line almost every time I was free from studying, and working, especially when I was travelling. I felt I was addicted to it." (Interviewee 4)

In sum, this learner who was unsatisfied with the use of MCAEW because it caused him distraction, lack of privacy, neglect of his family, time consuming, anxiety due to system failure, and social network addiction.

3) Benefits of using MCAEW

The four students (Interviewee 4, Interviewee 2, Interviewee 3, and Interviewee 1) gave similar responses to the 180 respondents "Yes, I think using MCAEW is helpful for improving English writing skills." The benefit reasons of using MCAEW to improve English writing skills towards the use of MCAEW were revealed by the 4 students, and they are listed in Table 4.18.

Table 4.18 Benefit Reasons of Using MCAEW to Improve Writing Skills

	Benefit reasons of using MCAEW to improve writing skills
1)	It enhances collaborative writing.
2)	It helps to learn how to write faster.
3)	It helps get closer to the use of authentic English.
4)	It helps writing accurately.
5)	It helps discover new vocabulary.
6)	It also improves reading and listening as well as typing skills.

According to the result shown in Table 4.18, the four students agreed that using MCAEW was beneficial in the way that it is a helpful tool for collaborating in English writing. MCAEW allows them and their classmates to train each other with the help of the teacher. From the interview, the 4 students agreed that English writing practice is no longer difficult when writing with friends and a teacher because chat rooms helped them discuss their writing with the help of their peers and the teacher. As one of the student elaborated,

> "I can use both Sanako in class chat room or e-mail for corresponding about my writing feedback from my teacher when I was outside classroom." (Interviewee 1)

Another added,

> "I used MCAEW when I needed help for my writing assignments." (Interviewee 3)

MCAEW was helpful for the students to learn how to write English faster because MCAEW supports hands-on writing activities. According to the MCAEW activities shown in Table 3.1, students were taught and trained how to write from the beginning of the class. As one stated,

> "The Youtube tutorial course showed me a good essay sample, so it gave me a quick start for my first draft" He also added that "Google Translate helped me translate words or phrases from Thai to English very easily." (Interviewee 4)

In addition, Interviewee 1 clarified that MCAEW helped him feel closer to the use of authentic English in the way that he realized that there was an easier pattern for essay writing. He also mentioned that MCAEW helped him write accurately. This participant had zero background of English writing before coming to the MCAEW class. He explained:

> "I submitted 6 drafts to my teacher and the result of the sixth draft was totally different from the first one." Microsoft Word was really helpful because it rovided a grammatical check and word auto – correction." (Interviewee 1)

Besides, MCAEW helped students discover new vocabulary via the use of an online dictionary. Interviewee 3 stated "Online Dictionaries, such as Merriam-Webster and Thesaurus.com helped me discover new words, and most importantly, to check and compare synonyms and antonyms. These are for creating various sentences."

Moreover, MCAEW helped improve other English skills, especially reading and listening. Like Interviewee 2, he spent 18 hours using MCAEW and mobile Internet. He asserted, "I used MCAEW and mobile Internet for 18 hours daily, it not only helped me improve my writing skills, but also my reading and listening skills."

Additionally, he mentioned that MCAEW also improved his English typing skill. Most in class activities have MS Word as the writing tool that students used on their computers. Also, outside class, students and the teachers communicate via text message. Automatically, they practiced their English typing skill.

4) Non-benefits of using MCAEW

The forth finding revealed the reason for one of the interview questions “Why don’t you think using MCAEW is helpful for English writing skills? Interviewee 5 was the only student who revealed that she did not see any benefits of using for improving her English writing skills. She claimed, “No, I do not think that using MCAEW is helpful for improving my English writing skills.” The major reason that MCAEW could not help her improve her English writing, was that she had less opportunity to communicate in English. As she explained,

> “Because I have less opportunity to communicate in English especially with my friends, I text my friends in Thai. I rarely have a chance to write English. The only chance for me is only when chatting and corresponding with my English teacher via e-mail. I used English writing only when my teacher asked me to do it e.g., class exam and practices, chat rooms, and e-mail with my teacher.” (Interviewee 5)

Interestingly, for the second reason, Interviewee 5 revealed that she did not think MCAEW was helpful for writing skills. Rather, it might be more useful for listening skills. Regarding MCAEW instruction, students had to engage with the use of English in the forms of visual and audio, such as Youtube video, online exercises, and writing tips from teachers’ presentations. These English listening activities made her realize that she does lack listening skills. She said “There are lots of other skills that I am not good at especially listening skills.”

The third non-benefit reason was elaborated by Interviewee 5, who faced an obstacle of her own background knowledge. She had been struggling with her limited vocabulary knowledge, so she couldn’t make sentences clearly. Consequently, she gave up her practices and turned to use the Internet only for entertainment, such as online-games, and using the Internet on her smart phone. As she explained,

> "Actually, I think MCAEW is really helpful only for my listening skills. I admit that I am not good at vocabulary. There are so many words I do not know and I prefer asking for its meaning directly from my teacher and friends to finding it by myself via an online dictionary. Sometimes, I gave up my writing practice. For example, instead of using the mobile Internet to search for a meaning of a word for my essay, I used it for music, games, and movies." (Interviewee 5)

In sum, Interviewee 5 was not motivated to use MCAEW outside the classroom for improving her English writing skills. Rather, she thinks that it is helpful only for improving her English listening skills. MCAEW for listening practice is easier for her to understand English, such as listening, translating lyrics from English songs, and watching English soundtrack films.

5) Strength Functions of MCAEW

The findings of the research question, "What are strengths of MCAEW?", was revealed by the five students who stated that MCAEW has strengths regarding its functions. The report of strengths of MCAEW is shown in the table below.

Table 4.19 Strengths of MCAEW

	Strengths of MCAEW
1)	It is the fastest way of sending/receiving information.
2)	It facilitates 24 hour/7day English writing practice.
3)	It provides free calls.
4)	It is an effective writing tool.
5)	Texting chatting is better than voice calling in terms of users' consequent health problems.

Table 4.19 reports the strengths of MCAEW's functions. The five students agreed that MCAEW is the fastest way to send and receive in formation, news, and knowledge. Interviewee 4 mentioned "Line group chat is the fastest function for class appointments." Interviewee 5 also added "Once you share anything on Facebook, people know." This is because MCAEW includes Line and Facebook which are well-known chat applications. All of the interviewees and the teacher were asked to join Line and Facebook groups so that they could send and receive information via the sharing function. Once the message was shared by the teacher, for example, the whole class received it.

The second strength was that students can use MCAEW anytime they are free from daily activities. From Interviewee 1's opinion, writing skills are the most difficult English skills. He added,

> "I could practice as many drafts as I wanted and also I could use it any time I was free." In the context of this study, MCAEW provided various choices in practicing English writing because the students could choose when and what to practice anytime outside class. The students could select time to send homework and they were allowed to use MCAEW anytime to correct their essay drafts." (Interviewee 1)

As mentioned in the preferences, "MCAEW saves calling and printing costs." The five students emphasized that the free call function on Line and Facebook saves on calling costs. Instead of using telephone calls, the students and the teacher can make a free call via these applications.

The forth strength of the MCAEW function indicates that MSWord, and e-mail are the best tools for practicing writing. According to the five students, MSWord helped manage and retrieve files easily. This is because MS Word provides the File-and-folder function. The folder contains as many files as users want. When the user needs to retrieve the file, they can use the search function so they can find their wanted file only by typing in the file name. Interviewee 2 said "Just one click, MS Word functions helped me get easy-access so filing was very easy to work

with." He added "E-mail is an important tool to trace and find the history of sending receiving information between peers and teachers." Regarding this function, e-mail also has a sort function that allows users to trace their sent e-mail items by clicking "To" and they can trace their received email items by clicking "From". They also reported that their data was safe and recordable. Automatic drafting and saving modes from Microsoft Word helped them manage a good filing system and avoid handwriting problems. As one of them illustrated,

> "Even when the electrical power was cut, files can be automatically backed-up so my drafts are safe without risk of loss." It can be clearly seen that these effective functions of MSWord and E-mail supported a useful system that encourages students to write effectively via MCAEW. These functions cannot be seen in the traditional paper-pencil based English writing classes." (Interviewee 5)

Besides, the text chatting functions of Line and Facebook were found to be better than voice calling over telephone in terms of consequent health problems. Some interviewees stated that telephone calling caused hearing problems. As Interviewee 2 mentioned "Talking on the mobile phone for too long caused my ears to hurt". It can be assumed that text chatting is a better option to communicate instead of calling via telephone.

In sum, it can be concluded that MCAEW provides functions that can be considered effective tools for writing practices because the MCAEW functions allow ease of filing management, communication, and it enhances writing improvement and the students' motivation. The functions support convenience in writing because it provides texting that can be substituted with calling and the students can practice their writing any time they want. For filing management, users can easily find, search, and sort their required documents. For communication, MCAEW provides quick sending and receiving of information. These explicit functions encouraged higher motivation for the students to practice their English writing via MCAEW.

6) Constraint Functions of MCAEW

The findings of the research question “What are the constraints of MCAEW?” were revealed by the five interviewees, who stated that MCAEW has some constraints on its functions. The report of constraints on MCAEW functions is shown in the below table.

Table 4.20 Constraints of MCAEW

	Constraints of MCAEW
1)	Uncontrollable messages can cause loss of concentration.
2)	Unexpected jammed e-learning network happened when submitting online.
3)	Limited Internet can be found in some areas of the university.
4)	The cost of the Internet use is high.
5)	Chatting sometimes causes miscommunication.
6)	It is not suitable for people who lack typing skill.

First, the five interviewees agreed that MCAEW has its weakness related to uncontrollable messages. This is because waves of messages from Line, Facebook and e-mail were notified during their writing practice. They reported that these messages made them lose their concentration so many times while logging on to the writing exercises. All five interviewees agreed that they opened almost every notification message while they were practicing and doing daily activities either in class or outside the classroom. If the students did not turn off these notifications, or turned off their mobile phones, these notification messages appeared uncontrollably at any time.

Secondly, an unexpected jammed e-learning network was reported. The error on the overflow of the e-learning network happened while sending homework or quizzes online. There was also an obstacle at the university’s domain network which continuously lost connection almost every time when many students submitted their homework at the same time. The five students faced the same problem. Interviewee 2 elaborated, “E-learning submission error occurred so many times when I submit e-learning exercises both inside and outside the lab room.”

There was a limitation of free Wi-Fi Internet access at the university. The five students reported that the free Wi-Fi Internet was not available in some areas of the university. Some students reported that the cost of the unlimited Internet is too expensive for those students who are still unemployed and had limited cost of living expense. They have to pay for the unlimited Internet at least 500 Thai Baht per month to get access in all areas. One of them mentioned,

> "The free wifi was not available in some rooms and buildings at the university and also at my home. I had to pay 500 Baht for the Internet bill per month for my unlimited mobile Internet package." (Interviewee 3)

Another added,

> "I paid 600 Baht for monthly home wifi." (Interviewee 2)

The disruption in Internet service in Line and Facebook group chats caused a miscommunication problem compared to one-on-one communication between two students or a teacher and a student. One-on-one communication provides more simultaneous and real time responses. Unlike telephone calls, the sender gets the required message immediately. One student clarified,

> "I needed to wait until someone read my message ('sent'/ 'seen' signs shown), then I waited for a response to my previous questions from my friends and my teacher in that group, but what happened was sometimes they read the messages, but they did not answer." (Interviewee 1)

Another student supported:

> "They only read my message without answering, then I had to ask them again over and over to get them to answer my previous question. Ultimately, I had to give them a call." From these opinions, it is obvious that group chat functions to some extent can cause a problem of miscommunication. (Interviewee 5)

Finally, Interviewee 5, a student who was not familiar with typing skills stated that it takes time for her to type with Microsoft word in class and outside class chatting programs. As Interviewee 5 said "Typing was difficult for me because I have never taken any typing courses, so I did not know how to use the computer keyboard." From the researcher's observation, there were other students who were not familiar with typing on the computer keyboard. They typed with their index fingers. Sometimes it caused a delay in finishing their sentences. Therefore, the MCAEW typing function causes a delay and obstacle for students who lack typing skills.

4.3.1.3 Requirements and Recommendations

After answering the 6 questions from the semi-structured interview, all five interviewees were asked again whether there were any requirements and recommendations for improving MCAEW. The findings revealed that MCAEW needs to be improved in three areas: the Internet access; software; and hardware.

Firstly, free Internet access is urgently required. Due to the fact that the Internet package in Thailand is still expensive, it is unaffordable for students who do not have much money. They suggested that the university provide an Internet fund for students doing and using multimedia and online homework outside the classroom. Most importantly, students required the university to add more free Wi-Fi hotspots so that they can efficiently practice their online exercises at any area of the university and at home without paying. As Interviewee 3 recommended, "There should be the free Internet provided by the university." Interviewee 2 also suggested, "The free Wi-Fi hotspot organized by the university is not good enough to get access in every

corner of the university, for example, some classrooms, some buildings, the gym, and car park in the basement."

Secondly, a software issue, a help desk - technical assistance for 24 hours was needed because there were network error problems mentioned in the constraints, so students couldn't submit their online exercise in class and online homework at home. In the context of this study, the whole class consisted of at least 40 students sending online exercises, and online homework through the university's e-learning server at the same time. This caused the university's network to overflow. There has been an increase of online assignments from other subjects using the same domain network as well that requires the same technical assistance. Thus, the university should provide a 24 hour technical support team to fix and monitor the e-learning network. Apart from this, a more modern and larger server needs to be installed. At present, the capacity of the university's server cannot receive bunches of homework being sent at the same time; it needs to be urgently expanded. As Interviewee 1 stated, "My major was Information Technology, and I had 4-5 subjects using e-learning. I faced the obstacle of the unexpected jammed network almost every time I submitted my e-learning outside the classroom. Interviewee 4 also emphasized, "I faced the jammed network every time when I submitted exercises in class."

To avoid the network/server error, Interviewee 4 made the recommendation "To fix the assignment submission overflow at hand, the teacher should queue up a smaller group of students sending e-learning exercises and online homework."

Finally, the hardware issue, an ergonomic requirement was reported. The university's computer peripherals in lab rooms are not user-friendly. For example, one student commented:

> "Lab desks and chairs are not comfortable, Blue-light cut lens or film on the PC's monitors are needed to save my eyesight." (Interviewee 2)

Another suggested:

> "I think the lab room needs a higher ceiling, more glass windows, and a larger lab room." (Interviewee 1)

These requirements reflect that there were three main problems that MCAEW are required to improve. First, for the Internet access, more Wi-Fi hotspots to cover every area of the university are needed. For the problems on the Internet cost, the university should provide an Internet fund in order for students to use free Internet at home. Secondly, hardware, MCAEW should improve ergonomic lab settings (PCs, chairs, desks, room atmosphere). For software consistency, the students need 24-hour technical support with a larger and more modern server for e-learning submission. These suggestions are vital factors to support effective language learning with the use of technological assistance.

4.4 Conclusion of the Findings

The sections consists of 2 parts: the conclusion of the quantitative findings and the conclusion of the qualitative findings.

4.4.1 Conclusion of the Quantitative Findings

The result in response to the research question 1 "Are there any significant differences in overall English writing performance of students before and after using multimedia computer-assisted English writing?", and hypothesis 1 "Students' overall English writing performance will be better after an integration of multimedia computer-assisted English writing" reveals that multimedia computer-assisted English writing affects better performance in overall English writing of EFL undergraduate students.

After the integration of Multimedia computer-assisted English writing, the mean score was reported higher at 3.58 (M = 3.58, SD =1.35), which is higher than before the integration 2.54 (M=2.54, SD = 1.42). The difference of pretest and posttest scores was reported at -1.04, $t(199)$ = -17.07, Sig. = .000, p < .001 after the

integration of Multimedia computer-assisted English writing. Based on the standardized Holistic Scoring Rubric, one level of performance indicates that the students improved from being in the range of 'Novice' to 'Near Proficient.'

The hypothesis was also supported by the result of this study that the students' overall English writing performance was better after the integration of MCAEW.

For research question 2, "What are the motivational factors influencing students' use of multimedia computer-assisted English writing?", the results revealed that the most influencing factors was that the students found it was essential that the multimedia computer-assisted English writing facilitates their sense of "Communicative Competence" in the way that students use MCAEW to communicate in order to achieve better performance in English writing. Secondly, "Task Completion" was found as the second significant factor that students are motivated to use MCAEW for completing their writing task. "Autonomous Learning" was also interpreted as the third factor in the sense that students' needed to be active, independent, creative, have more choices, self-constructed knowledge and having responsibility for their own learning when learning and practicing writing with MCAEW. The forth factor, "Communication" revealed that students are influenced by the use of MCAEW because it helps them to be part of a target language society where English is used as a medium of communication.

For the third and the last research question, "What are the students' perceptions towards using multimedia computer-assisted English writing?", almost all (99.5%) of the students preferred using MCAEW. 90% of the samples found MCAEW was beneficial for improving their English writing skills.

4.4.2 Conclusion of the Qualitative Findings

Six perceptions were found from the semi-structured interview. The six perceptions consist of preference, non-preference, benefits, not-benefits of using MCAEW, together with strength, and constraints of MCAEW's functions.

First, the students preferred using MCAEW because it enhances convenience and real time communication, and it provides enjoyable and trendy learning. Secondly, one student did not prefer using MCAEW because it distracted him from other activities. Outside classroom essay writing was a burden. Writing practice

consumed a lot of time. Furthermore, it caused a lot of anxiety during submission of online exams because of unexpected network system failures.

Secondly, the students revealed their benefit reasons for improving writing skills because they did collaborative writing. Students could help each other write, correct, and give and receive feedback from friends and the teacher. Moreover, they thought that MCAEW brought them closer to the use of authentic English.

Forth, one student gave reasons of non-benefits. The student explained that there was a lack of opportunity to write English in daily life. Also there was a lack of English writing background knowledge. MCAEW was not beneficial for improving English writing skills; it was more helpful in improving English listening skills.

The MCAEW functions had its strengths; for example, it was the fastest way to send/receive information. The data was safe and it was the most effective tool for writing practice.

Finally, MCAEW had constraint functions because the incoming messages from chat programs and email were uncontrollable. It had problems regarding the Internet cost, and miscommunication.

In sum, the results of the study suggested that the integration of multimedia computer-assisted English writing affects product and process of English writing. For the product, a high difference in students' English writing performance was found after the integration. For the process, the integration of MCAEW also affects students' process of language learning which are motivational factors and perceptions towards using MCAEW. After the integration, the result suggested that students wish to achieve competency in English writing and social communication. The findings of the semi-structured interview fulfilled the enhancement of both product and process of English writing in the way that it explains the depth of perceptions behind success of the writing performance, in terms of preferences, benefits, and strengths towards MCAEW. On the other hand, the interview also elaborated reasons of dissatisfaction of MCAEW usage (non-preference, non-benefits, and constraints). Regarding motivational factors, the results of the interview helped clarify each factor interpretation in the way that the given reasons point to the conclusion that the students were motivated to use MCAEW because it was a communicative writing tool for better writing competency, and it also helped complete writing tasks. In addition,

it facilitated English language learning, and communication. The implementation of these results are discussed in the next chapter.

CHAPTER 5

DISCUSSION, CONCLUSION AND IMPLICATIONS

The discussion of this study is presented along with each research question. Three overarching concepts: development of computer-assisted English writing, language learning motivation, and perceptions towards the use of multimedia computer-assisted English writing are used as the main issues of the discussion.

This chapter is divided into five sections: 1) Introduction; 2) Discussion on the Results of the Study; 3) Implications and Contributions of the Study; 4) Recommendations for Further Research; and 5) Conclusion of the Discussion.

5.1 Introduction

The discussion mainly focuses on three main issues elicited from the research findings. The first point of discussion reflects the first research question “Are there any significant differences overall in the English writing performance of students before and after using multimedia computer-assisted English writing?, together with the hypothesis “Students’ overall English writing performance will be better after the integration of MCAEW.” The second point of discussion reflects the second research question “What are the motivational factors influencing students’ use of MCAEW?” The third discussion reflects the third research question “What are students’ perceptions after using MCAEW?” The results of the study in response to the first research question reveals that multimedia computer-assisted English writing enhances one level of performance in the overall English writing of undergraduate students in Thailand after the integration of multimedia computer-assisted English writing. The second result of the study in response to the second research question suggests that there are four motivational factors influencing the use of multimedia computer-assisted English writing. The four factors are communicative competence, task

completion, autonomous learning, and communication. The third result of the study in response to the third research question explains that there are six perceptions towards the use of multimedia computer-assisted English writing: preference reasons towards using MCAEW; non-preference reasons; benefit reasons; non-benefit reasons; strengths; and constraints of MCAEW functions.

The first discussion in section 5.2.1, focuses on the effectiveness of MCAEW on students' English writing performance, and the new turn of English writing development in the Thai context. Secondly, the existence of motivational factors influencing Thai EFL students towards using MCAEW is discussed in section 5.2.2. Finally, MCAEW enhances practices of computer-assisted learning in second language acquisition (CASLA). The positive and negative perceptions derived from the students' perceptions towards using MCAEW are discussed in section 5.2.3. Moreover, the discussion also sheds light on how communicative competence, collaborative writing, computer mediated communication, and CALL practical resolutions can be implemented into the EFL writing curriculum. These are discussed in implications and contributions, recommendations, and conclusions of the study in sections 5.3, 5.4, and 5.5 respectively.

5.2 Discussion on the Results of the Study

As mentioned in Chapter 1, the main concept of this study is inspired by the idea that a primary concern of SLA is to develop effective output in which it involves both product and process of language learning (Swain, 1995). The product and process of language learning found in this study are discussed according to this concept.

Regarding the findings in response to the first research question, students' writing performance considered as the product of this study (see section 5.2.1), will be discussed regarding how it was enhanced by the assistance of MCAEW. The section 5.2.1 consists of two subsections: how MCAEW creates a great effect on students' English writing performance (see section 5.2.1.1), and how MCAEW has become a new tool in writing development in the Thai context (see section 5.2.1.2).

Secondly, in terms of the process of language learning, together with the findings in response to the second research question, section 5.2.2 discusses how the 4 motivational factors influence students in using MCAEW. This section focuses on how the existence of the 4 motivational factors enhances the process of English writing as well as how the individual factors play an important role in the process of writing.

Finally, the process of language learning will be further discussed in response to the third research question in section 5.2.3 on how MCAEW enhances the practices of computer applications for second language acquisition (see section 5.2.3.1), how students' positive perceptions yield practices of communicative language teaching, computer mediated communication and collaborative writing (see section 5.2.3.2), and the negative perceptions of the course and technical resolutions (see section 5.2.3.3) in order to achieve the most effective English writing.

5.2.1 The Discussion in Response to the First Research Question

The main purpose of the study is to find the effects of integration of MCAEW. The response of the first research question shows that the students' overall English writing performance was better at one level, from being novice to near proficient, after the integration of MCAEW. This significant effect of the integration of MCAEW not only creates a great result of the product of English language writing, but it also creates a new turn of development of digital writing in the Thai EFL context of this study.

5.2.1.1 The Effectiveness of MCAEW on Students' English Writing Performance

The salient result of the hypothesis of this study and research question 1 suggests a highly significant difference (Sig. =.000, $p < .001$) gained from the pretest mean score (2.54) to the posttest mean score (3.58), which is 1.04 from students' overall English writing performance occurring after the integration of MCAEW. It is clearly seen that the MCAEW shows a significant differenace after the integration into English classes.

Based on the holistic scoring rubric measuring overall English writing performance (see Appendix B), students' English writing performance improved,

from 2.54 to 3.58. It can be seen that MCAEW creates a positive result in English writing performance in the way that it effects "*one level*" after the integration. The students' performance has been developed from "*novice"* (the range of 2) to "*near proficient"* (the range of 3). Compared with the paper-pencil based English classes before the integration of MCAEW, the students received a score of 2.54 from the pretest of the paper based essay writing which is considered as "novice English writer", according to the holistic scoring rubric (see Appendix B). Once they used MCAEW to practice their writing, they received a score of 3.58. It is certain that MCAEW enhanced them to be considered as "near proficient English writer."

Hence, MCAEW can be considered as an effective writing tool in the way that it helps create better students' English writing performance. The better performance is caused by the use of MCAEW. It is apparent that compared with the traditional paper-pencil based English writing, MCAEW develops students' overall English writing performance. Thus, MCAEW can be considered as a new turn in English writing development in the Thai context of this study.

5.2.1.2 MCAEW: The New Turn of English Writing Development in the Thai Context

The era of the Internet has brought traditional life into the digital age. This phenomenon has spread to language education, especially English writing. The integration of writing technology has been considered as an important tool for language learning, along with the Thailand Qualification Framework of Higher Education (TQF:HEd, 2006), which stated that Thai EFL English educators should seek possible effective practices of teaching English with technology assistance. As a result, computer- assisted English writing has come into play.

In this study, the MCAEW course activities (see Table 3.1) was created and designed in particular for this study, it includes hardware, software, and the researchers' e-learning and web-based instruction. The student samples were taught with MCAEW for the first time so the MCAEW course is considered as a first launch.

According to the researchers' previous study in 2013, a few practice of English writing on the Internet was found. Thai EFL students revealed that their writing skills needed a lot of improvement. There has been a requirement in adding English writing online practice in an English curriculum. The result of the study

revealed that some of the student participants have never written English essay or practice writing online before.

Although the Thailand Qualification Framework of Higher Education (TQF:HEd, 2006) put emphasis on technological use in English language learning, the technological use has not been sufficient and has not been applied effectively. Thai undergraduate students still face the insufficiency in the use of technology for learning English writing. To fulfil this disparity, integration of online English writing via the use of MCAEW has been proved that it has helped the students gain more online writing experience, and obtain higher writing performance. Ultimately, the result showed that the students' overall English writing performance is better after the integration of MCAEW. The higher performance of the students was gained in one semester. Therefore, MCAEW has facilitated a shift in writing performance of the students. The shift in writing performance of the student was based on the standard Holistic Scoring Rubric presented in Table 4.3 and Appendix B. According to Bacha (2001), Charney (1984), Godshalk et al. (1966), Haine (2004), Montana System Writing Assessment (2011), the standard Holistic Scoring Rubric stated that a writer with a score in the range of 2 can be interpreted as a novice writer whereas a writer with a score in the range of 3 can be considered as a near proficient writer. Based on this explanation, MCAEW has helped the students move from being novice writers to near proficient writers after the integration of MCAEW. Hence, MCAEW has brought about a new turn in developing EFL writing performance of Thai students.

Compared with section 2.1.1 (from paper-based to CALL-based instruction), the results of this study reflect the practicality of computer-assisted language learning in the twenty-first century which has been welcomed in the era of the Internet. Asserted by Grabill and Hicks (2005), a dramatic turn happened in the English writing environment when the paper- pencil based classroom or traditional writing method has been substituted by computer-based classroom in the age of digital writing. The result of this current study strengthens to the idea that the MCAEW has opened the gate to the transfer from traditional paper-based writing instruction to multimedia writing instruction.

To compare knowledge-based instruction with multimedia computer-based instruction, Vygotsky (1987) stated that zone of proximal development (ZPD)

is the difference between what a student can do with assistance and what he/she can do without it. Vygotsky (ibid.) developed this concept by debating against the use of academic, knowledge-based tests as a means to measure students' intelligence. The theory has supported what is found in this current study; that the students have a better outcome in English language writing with the assistance of MCAEW.

In sum, resulting from the requirements of section 7 of the Thailand Qualification Framework of Higher Education (TQF:HEd, 2006), the researcher has been seeking ways in helping the students achieve a better outcome in English writing. In so doing, the researcher has attempted to integrate writing technology into English courses. Therefore, in order to respond to the TQF:HEd requirement, MCAEW is considered as a new writing technology for English writing class in the context of this study.

5.2.2 Discussion in Response to the Second Research Question

The 4 motivational factors will be discussed with comparison of the classical language learning motivational theories followed by the in-depth discussion of the 4 factors, which will be individually discussed in 4 subsections (Communicative Competence, Task Completion, Autonomous Learning, and Communication). Finally, the conclusion provides ways to create possibility to use the 4 factors as a process of successful language learning into account of planning successful English writing courses.

5.2.2.1 The Existence of Motivational Factors

According to Gardner (1979), learning achievement is based on psychological aspects of language learning motivation. Knowing what aspects of language learning motivation exist in students' minds is the core of studying the process of language learning in this study because it can ensure that MCAEW is an effective tool for developing students' English writing performance by determining how MCAEW helps promote their motivation to achieve success in English writing.

To clarify the aspects and the motivational factors, further to the definitions of key terms of this study (see section 1.7), motivational factors refer to aspects of students towards the use of MCAEW based on Gardner and Tremblay (1994a, 1994b). Compared with the most classical theorists of motivation, Gardner

and Tremblay (ibid.), language learning motivation has generally been classified into 2 aspects, instrumental and integrative; meanwhile, the result of this study reveals 4 motivational factors: communicative competence, task completion, autonomous learning, and communication. The discovery of the 4 motivational factors reflects that MCAEW helps promote the students' motivation in 4 aspects, more than that of the classical motivational aspects towards language learning such as integrative and instrumental.

Although the existence of the 4 motivational factors appear more than that of the classical theory, proposed by Gardner and Tremblay (1994a, 1994b), the integrative and the instrumental motivation, there are some common aspects between the 4 motivational factors and the classical integrative and instrumental motivations. The instrumental motivation puts orientation on language learning achievement, getting better jobs and better grades. Compared with the findings of the study of the first factor (Communicative Competence), the second factor (Task Completion) and the third factor (Autonomous Learning), it can be assumed that the students tend to find MCAEW as a communicative tool to achieve success in learning the English language, to finish writing tasks easily, and to be self-constructed learners respectively. These three motivational factors can be related to instrumental motivation. For integrative motivation, it is similar to the findings of motivational factor 4: communication, because the direct orientation is paid to participate in the target language. Students desire to be part of a society where English is used as a medium of communication.

In sum, the discovery of the 4 individual motivational factors points out that there are more motivational factors influencing students' use of MCAEW than the 2 aspects of language learning motivation. The individual motivational factors are discussed in detail in the next sections.

5.2.2.2 Communicative Competence: The Most Influencing Motivational Factor

The discovery of motivational factor 1 "Communicative Competence" is the strongest evidence affirming that students tend to achieve communicative competence because communicative competence is the most influencing motivational factor. The students are most likely to use MCAEW as a tool for communication

because they think that MCAEW can help them achieve success in learning English writing.

The first motivational factor reveals that students strive for engaging in real communication with accurate and fluent use of English with the teacher as a facilitator when students take part in real communication. The need for communicative competence is matched with the concept of Communicative Competence, proposed by Richards (2006), in which the communicative competence is a goal for effective EFL teaching/learning that requires real communicative interaction between the teacher and students. MCAEW is initiated to encourage communication activities between teacher and students to be apprentices to each other. With the use of MCAEW, the teacher can discuss, give feedback, and communicate with students whenever and wherever they write. Ultimately, students achieve better writing performance. Thus, the students are highly motivated to use MCAEW because it can help them write English accurately and fluently. MCAEW is expected to be an effective tool in helping students communicate to achieve success in learning English writing.

Similar to the results of the study, there is an example of the CALL writing program called Moos (Warschauer, 2000). Moos is a collaborative writing program encouraging a writing interaction between a teacher and students. The result suggests that the more it is used in a language classroom, the better the writing competence of students. It can be assumed that the most influential reason the students believe that MCAEW plays an important role is the integration of communicative competence into English writing.

In sum, the use of MCAEW is the most influential factor that enhances students' writing performance because MCAEW is highly expected to help the students achieve communicative competence in learning language. Communicative competence is necessary to integrate into further language learning courses because it not only enhances the product of language learning outcome, but it also facilitates the process which is the key to success in language learning.

5.2.2.3 Multimedia Computer-Assisted English Writing and Communicative Competence of the Students

Communicative competence occurs when real communication in teaching/learning of language induces learners to interact in learning situations (Richards, 2006). However, the extent to how real communication affects language performance is the main focus of this research. Thus, the ultimate goal of MCAEW application is to help students achieve better writing competency, in the meantime, the students are also motivated to have communicative competence in language learning.

As mentioned earlier in the introduction of this chapter, the main focus of this research involves product and process of English writing

The integration of MCAEW affects a high motivational factor that English writing communicative competence considered as the process of learning English writing. Meanwhile, MCAEW also supports effective writing performance, which is the product of learning English writing. Hence, it is obvious that 'ONE' level of a better performance in English writing is a consequence of the integration of communicative competence in which it occurred during the MCAEW practices. In other words, when the process (developing communicative competence) occurs, the product (the writing performance) will be better. Thus, the achievement in the process of language learning leads to the success of the product. Once the process develops, the product develops too. On the other hand, less communicative competence could be a barrier in writing performance.

In this regard, the product of the integration of MCAEW was achieved from the highly effective process of communicative competence. These effects have been considered as pivotal phenomena that have caused a new turn of a digital writing era in language education. This new turn has proved that better performance, which is the product of the integration of MCAEW, has significantly and statistically occurred because the enhancement of the process, communicative competence, is a needed approach in learning language in the twenty-first century. The approach is in high demand to be integrated in multimedia computer classes, especially in English writing class. The possibility of taking MCAEW and the approach into account of planning a successful product of language course is presented in the implications and contributions of the study.

5.2.2.4 Task Completion: The Second Influencing Motivational Factor

The motivational factor 2 “Task Completion”, the second evidence confirming that the students tend to use MCAEW to complete writing task. The result suggests that students think task completion is a significant process; it is conducive to achievement in English writing by the use of MCAEW. The students strive for completing their writing task in short time as well as practicing their writing with friends and the teacher via MCAEW. They expect that task completion is the important process that brings achievement in English writing.

Similar to this result, many scholars have asserted that successful writing occurs when learners are satisfied by task completion because the learners gain benefits of time saving as well as collaborative writing. As agreed by Gardner (1972), Nunan (2004), Grabill and Hicks (2005), the pragmatic aspect of language learning occurs when the learners desire to achieve the task, getting the task completed through their own personal experiences, while less time and effort are used for learning. It is obvious that students rated this highly (see Table 4.11). They are highly motivated in using MCAEW because it saves time and it is easy to use compared to writing by hand.

Moreover, the need for collaborative writing is also important because it enhances task completion. The results show that students are satisfied and motivated to use MCAEW because it enhances ‘collaborative writing’ due to the fact that collaborative writing creates strong and powerful interaction between a teacher and peers. The feelings of strong and powerful interactions can help students complete tasks easily. As seen in MCAEW activities presented in Table 3.1, students and a teacher are allowed to help each other correcting and finishing their essay drafts both in class and outside the classroom. These activities are designed to overcome weakness and have become a powerful interaction tool in class. Warschauer (2006) asserts that writing with the assistance of peers and teacher using computers helps learners feel more confident and it is easier to finish their writing. Moreover, there are some other examples of computer assisted language learning that enhance powerful interaction between a teacher and peers, such as Multiple-user-domains Object Oriented which is also called Moos (Warschauer, 1995) and Second Life: an online game used in English classroom, (Liou & Hsein-Chin, 2012). The powerful

interaction happened when using Moos, a text based writing programs. The program helps the teacher and learners complete writing tasks together, and it has been accepted as a powerful tool of language classroom interaction. Also, Second Life a virtual world integrated in the language classroom, allows students to overcome fear and anxiety while learning a foreign language. The results of these studies are paralleled to what the research findings of this current study shows regarding how MCAEW enhances the feeling of strength and power because its collaborative task-based activities are completely controlled and finished by both learners and the teacher.

In sum, the second influencing factor that enhances students' use of MCAEW is time because it helps them achieve the task easily in short time compared to traditional writing by hand. It is likely that the more collaborative writing is utilised, the easier the task completion. Task completion is a highly demanded function of technological assistance in learning English writing. Hence, MCAEW should be added into further language learning courses because it not only helps students finish the product of language learning, but it also satisfies and helps collaborative writing which are key processes for success in English writing.

5.2.2.5 Time: The Potential Factor for Task Completion

Task completion is the only motivational factor that contains significant negative loadings. The negative loadings shown in Table 4.11 reflects that students also strive for more time for writing practice in order to achieve better English writing. This is why time is important to discuss in this finding factor.

It is true that, on the one hand, MCAEW is highly motivating because it helps completion of writing tasks. As mentioned earlier in section 5.2.2.4, students are highly motivated to complete writing tasks in short time. Yet, it takes time to achieve better writing performance. As stated in the negative loading items 28 and 1, students need more opportunities to practice writing English so that they can write better essays. Thus, time is a controversial factor that occurs in opposite directions of task completion.

It is no surprise that having more writing practice and writing better essays typically require time and effort. As mentioned in the interpretation of Factor 2: Task Completion, learners who spend longer time revising as many drafts as they

can, tend to write better essays. This motivational factor elaborated that learners find using MCAEW conduces them to complete tasks, but it also consumes time and effort to practice in order to achieve better English writing performance.

Therefore, completing writing through MCAEW is in high demand because the students think it is the second most influencing factor that enhances success in English language learning. In addition, 'time' is also the most variable factor that dictates the achievement of writing. Completion does not imply better performance in writing regardless of time. Therefore, to help the students write better, the teacher should have the most suitable time for students to practice so that the time would not be a barrier in successful English writing.

5.2.2.6 Multimedia Computer-Assisted English Writing and Students' Autonomous Learning

It is undeniable that planning language course activities have been designed in order to respond to what has been written in a particular course description. This can be a threat towards learning achievement and learning motivation because having teacher-centered classes by following what is written in the traditional course plan leaves learners with no choice of what to learn. It is no surprise that today, learners are passive, lost in language understanding and ultimately lack learning motivation.

The third factor, "Autonomous Learning", sheds light on the influence of learners control, flexible learning, student centeredness, and self-constructed approaches (Redmond et al., 2012; Taylor, 2000; Warschauer, 1996; Hicken et al., 1992; Kinzie et al., 1998; Pollock & Sullivan, 1990). These approaches share a common turn in reemphasizing teaching into learning focus. The result of the study, shown in Table 4.12, and the semi-structured interview indicates that the students are highly motivated to use MCAEW because they have more chance to choose what to write and when to submit their writing homework. They enjoyed being asked whether they want to continue using MCAEW for further English courses. Most importantly, they gave the reason that they could understand how to construct and develop their writing ability by themselves. This reflects on the fact that MCAEW, to some extent, helps encourage students' autonomous learning. The core of being active instead of passive, self-constructed knowledge, and flexible learning were found during the

integration of MCAEW. It is obvious that the MCAEW activities shown in Table 3.1 help support the core of students' autonomous learning in the way that students are freed to search and compose their essays on the Internet, to search definitions of words from online dictionaries, and to send or receive feedback from their classmates and teacher via chat applications. These activities reflect that students were engaged with their own experience and used it to construct their own knowledge which responds to the application of the autonomous learning approach. According to Vygotsky (1987), leaners can create a zone of proximal development through assistance. The assistance of MCAEW, thus, helps learners develop their own understanding. From this, their understanding occurs when they are capable of being more creative and expanding knowledge in learning language with the use of MCAEW.

Thus, this factor refines more learning attempts in the way that learners desire to be more autonomous. They strive to be more active, self-constructed and free to choose what to learn. They perceive effort and desire to continue using MCAEW with independence and more creativity in developing their thoughts and ideas. In response to the autonomous approach, instead of having students be passive learners, the teacher should act as a facilitator who lets the students be more active by giving them opportunities to generate their ideas of, for example, what topic to write, and what other online platform to utilize. The students should be asked to participate in course activities. Most importantly, the teacher should integrate MCAEW to English writing courses in order to have the students construct and develop their own knowledge by their own writing experience. The more the students generate autonomous learning, the better the achievement in successful English writing.

5.2.2.7 Multimedia Computer-Assisted English Writing and its Significant Role in Communication Process

The forth influential factor that enhances the process of learning language through multimedia computer-assisted English writing is "Communication". The students found MCAEW to be a communicative tool. It is not only a writing tool for local English classroom instruction, but also a global medium of communication.

Further to the findings of research question 3 (see section 4.3.2.2 on students' perceptions), the student samples agreed that MCAEW has a significant role

in communication. Table 4.16 (Preference) shows that almost all of the students (99.5%) prefer using MCAEW because it is convenient for communication. Table 4.18 (Benefits) shows 90% of students found MCAEW was beneficial for improving their English writing skill because they can write with their friends and teacher. Meanwhile, Table 4.19 (Strengths) illustrates that MCAEW is an effective tool in the way that it provides functions that allows the fastest communication and easiest way of learning. In addition, the item statements in the results of Table 4.13 reveal that the students enjoyed using MCAEW to communicate with classmates and people around the world. Therefore, MCAEW makes them feel as being part of a community because it keeps them related to each other. These results emphasize that students find MCAEW supports social communication purposes.

According to Warschauer and Kern (2000), CALL and online communication is part of socio-cognitive approaches due to the suggestion that the pedagogy of network-based language teaching and learning nowadays must be broad. From this idea, bringing network-based and socio-cognitive approaches into teaching and learning activities, teachers and students should communicate more via online applications. MCAEW is considered a communicative tool because it consists of software applications (In class text chat, Line, Facebook, and e-mail) that encourage teachers and students to create an English learning network. Via the use of MCAEW, teachers and students can interact and communicate online whenever the students need writing assistance or need to participate in English environment.

The goal of computer mediated communication (CMC) asserts that technologies are to serve not only the role of examining in language classrooms, but also the role of language learning in a society. Texting and corresponding via e-mail were the activities that respond to CMC. Garrett (2009) suggests that language students today treat Facebook and other online communication as their routine activities. In addition, Warschauer (2000); Otto and Pusack (2009), as well as Lomicka and Lord (2009) agree upon the conclusion that online communication, and social networking are key concepts used to encourage students in achieving target language communication.

With regard to this communication trend, multimedia computer-assisted training has been integrated into language learning. The interaction with the use of

multimedia computer, as mentioned in section 2.1.2, is computer-mediated communication (CMC). CMC is a current trend that can be integrated in computer assisted language learning (Warschauer, 1996; Warschauer & Kern, 2000). Similar to this study, MCAEW activities have been used in response to this communicative trend for language learning.

From the result of this current study, MCAEW has put focus on writing as one method of using multimedia computers as a medium of communication. After learning and communicating through MCAEW, the result has been proved that the students' writing performance has been better after the integration. The main significant process that causes students to have higher performance in English writing is the interaction between friends and the teacher using multimedia computers as a medium of communication. Thus, the most significant reason for better performance in English writing is not only for practicing with computers such as Microsoft Word. The interaction among people, i.e., peers and the teacher creating collaborative writing, are the key tools towards better writing performance.

In conclusion, the use of MCAEW affects product and process in English writing. In terms of the product, MCAEW helps facilitate achievement in product because it has significantly proved the better level of writing performance. Thus, the English writing course should see MCAEW activities as a facilitating tool for writing development. In terms of the process, The 4 motivational factors reflect that students are motivated to use MCAEW to be competent in communicative writing, to complete tasks, to be more autonomous learners, and to participate in a society where English is a medium of communication. These 4 motivational factors can be a basis for creating new language learning that should emphasize the 4 factors as a principle of language learning courses. A successful language course should be based on the 4 motivational factors which is the process of successful language learning. In other words, the successful language course should emphasize writing activities that are "writing for academic achievement", "manageable time for writing tasks", "self-constructed learning", and "social communication."

5.2.3 The Discussion in Response to the Third Research Question

This section discusses the perceptions towards using multimedia computer-assisted English writing. Students' perceptions are the key role of the study because they are the end users giving helpful feedback and helping the teacher and educators before making decision of implementing MCAEW into English language courses. The discussion is divided into 3 sub-sections. First, MCAEW enhances practices of computer applications in second language acquisition. Secondly, the positive perceptions yield the possibility on implementing CLT, collaborative writing, and CMC into English writing classes. Finally, negative perceptions related to the course and technical resolutions are discussed.

Students' perceptions towards the use of MCAEW is a vital factor influencing second language acquisition. Chapelle (1998) asserts that pragmatic goals of computer assisted language learning should serve for second language acquisition through the entire process of the components in SLA. The process focuses on input throughout the output (see Figure 2.2). Later, Chapelle (2009) ties computer assisted language learning and its use to shed light on the psycholinguistics and social context approaches as the process of SLA. These approaches are also called computer applications in second language acquisition (CASLA) (See section 2.2.1).

5.2.3.1 Computer Applications in Second Language Acquisition

To shed light on the integration of computer applications in second language acquisition, this study found that multimedia computer-assisted English writing best benefits students in acquiring and developing their English writing performance as output. Therefore, in accordance with the pragmatic goal of the process, the present study is influenced by the 3 pedagogies for the study of CALL best practices suggested by Garrett (2009). Interestingly, the 3 pedagogical perceptions: preference, benefit, and issues involved in computer assisted language learning are inseparable.

However, every coin has two sides. Although the qualitative finding of the study (4.3) revealed that MCAEW is preferable to traditional English writing class, and it is also a beneficial tool having its strength to enhance local communication in educational context and in global communication. There are some negative perceptions in terms of qualities and limitations towards CALL use

(Chapelle, 2000; Garette, 2009; Levy, 2009; Richards, 2000). It was found in this study that the students face some difficulties on the background knowledge, less opportunity to communicate in English, distraction, time, Internet accessibility, network problems, and listening skill drill practice is needed. These negative perceptions caused them to give up on practicing English writing.

Perceptions drawn from the student interviews reflect that psychological explanation is important in acquiring language. The better performance of students which is considered as an output of language learning, in this study, is not enough to help students acquire a new language. Understanding students' perceptions helps teachers understand process of language learning. The advantages and disadvantages of MCAEW which are considered as the best practice and solution of teaching and learning with MCAEW can be seen through preference, benefits and issues towards the use of MCAEW.

5.2.3.2 Benefits of MCAEW on Communicative Language Teaching, Computer-Mediated Communication and Collaborative Writing

The pursuit of the positive reasons (preference, benefit, and strengths) shown in section 4.3 towards MCAEW reemphasized that students perceive themselves and strive to use MCAEW to achieve communicative competence coupled with the collaborative writing and to participate in social communication. MCAEW is viewed as a tool for communication in order to achieve better writing competence and to achieve effective writing with peers and teachers. Consistent with the results of preference and benefit, it exhibits that 99.5% prefer MCAEW to paper-based English classes. In addition, 90% of them think that MCAEW can help improve their English writing. MCAEW is viewed as it helps facilitate a better product of language learning, English writing competence, and develops the process of the 3 learning approaches, CLT, CMC, and collaborative writing.

In practice of communicative competence, it is reconcilable that MCAEW is possible to apply with communicative language teaching (CLT). Referring to the findings of preference (Table 4.16), together with the discussion of finding Factor 1 "Communicative competence", students find MCAEW to encourage their communicative understanding, and also accuracy in writing English. This finding is in response directly to the suggestion that effective learning must be

governed by real communication strategies and practices to communicate accurately and fluently (Richard, 2006).

Additionally, MCAEW is an emerging trend in computer-mediated communication. The results of the study on students' benefits (Table 4.18), strengths of MCAEW (4.19), together with the discussion of finding Factor 4 "Communication" accept that computer-mediated communication enhances collaborative writing because the MCAEW activities (see Table 3.1) are utilized as a tool to create more opportunities to communicate between students and the teacher. The findings correspond to CMC in that the more chances peers and the teacher are apprentices to each other, the more CMC is enhanced (Warschauer & Kern 2000). MCAEW activities allows the teacher and students to write and correct their writing assignment. Therefore, the students can have more opportunities to correct their writing as many drafts as possible by using comments from peers and teachers as their guideline. It can be assumed that students can finish task effectively with the use of computer-mediated communication.

Moreover, collaborative writing is found in MCAEW activities as the teacher and students are allowed to help composing sentences and giving feedback. In addition, as shown in Table 4.18 (Benefits), together with the discussion of Factor 2 (Task Completion), students like writing papers by MCAEW compared to writing by hand because it saves time and they can write, give and receive feedback from friends and their teacher. In this way, MCAEW is beneficial for students because it helps them learn how to write faster, and to be certain in perfecting their writing more than the traditional English writing class (paper-pencil based).

It is apparent that the psychological process of language learning is important as agreed by Krashen (1998), Swain (1995), Dörnyei (1994), and Gardner (1972). Good motivation is conducive to language learning achievement. Hence, MCAEW activities are utilized in English classes, especially into a course not limited to writing that responds to communicative purposes. It is apparent that the integration of MCAEW opens gates to the communicative strategies of communicative language teaching and collaborative writing in which the class activities can be considered as a process of writing achievement. Ultimately, the 3 approaches can lead to success in

the product of language learning, which is more useful in evaluating writing competence, in the context of this study.

5.2.3.3 Disadvantages and Resolutions of MCAEW

Before implementing MCAEW into English language class, there are some disadvantages points gathered from negative perceptions that need resolutions. As seen in the negative responses (non-preference, non- benefit, and constraints), students do not prefer using MCAEW outside the classroom because outside classroom writing practice consumes time. Secondly, MCAEW is not motivating for some students to practice writing skills, rather, it should focus more on listening skills. Thirdly, students perceive themselves to lack opportunity and background knowledge to write English in their daily lives. Finally, there are problems regarding the constraint functions of MCAEW.

The negative perceptions generate 2 resolutions which are discussed in the next section. Firstly, the course resolution should be implemented to solve the first problem on the burden of practice, the requirement of listening drill practice, and the problem of the lack of English writing background knowledge. Secondly, the technical resolution is discussed in order to solve the constraint functions of MCAEW.

1) Course Resolution

First, teachers, policy makers, educators, and students should make consensual decisions about continuing multimedia activities into English courses. Regarding a revealing result from the non-preference section, practicing writing English via MCAEW outside of the classroom was burdensome because it consumes time. This time consumption caused the student to spend less time at home with his family. The teacher should make a consensual decision with the student by explaining the fact that good writing requires more time to practice. For example, the teacher may extend in-class practice time from 90 minutes to 120 minutes. The 120 minutes should be set aside from a normal 180-minute class time. This additional in-class practice time could assist the student in finishing his writing in class instead of writing at home.

Secondly, due to the suggestion of adding listening practice into English class, this issue needs to be discussed in the recommendations for further

research (see section 5.5). Yet, the teacher is an important facilitator; therefore, the teacher should provide more multimedia programs, listening dialogues and practice on the Internet during their class in order to create a better learning mood. Ultimately, the student will have positive motivation towards learning English writing with multimedia. When positive motivation occurs, it encourages the students to practice more on writing. Finally, the more writing practice students do, the better their English writing skills will be.

Thirdly, in order to add more opportunities to write in English, the course should provide a place where students can write and give feedback about their everyday experiences. According to the suggestions of Dizon (2016); Mindog (2016); Tran (2016); Wang and Kim (2014); Warschauer and Grimes (2007), an English writing course for EFL students should provide social network groups or web blogs in order to create more opportunities for students to write English in their daily lives. For example, the course should add a Facebook group for the students to write their daily routine in English starting with small sentences, then expanding further into paragraph writing. Meanwhile, their friends can see the daily posts and give comments and writing feedback.

These activities not only create more opportunities to write collaboratively in English, they also motivate the students by making English writing easier than what they practiced during the MCAEW course in which the assignment required one-page essays.

2) Technical Resolution

Students face technical problems via the use of MCAEW. Table 4.17 shows that when the writing assignment is almost due, the students cannot submit their online writing assignment on time because the e-learning help-desk is not available. There should be a support team with a 24-hour online help desk. Secondly, there is a lack of opportunities to communicate and use English in daily life. This problem can be solved by opening a Facebook Group encouraging students to write a routine diary with comments and feedback provided by the peers and the teacher in order to create a good opportunity to write, give feedback and communicate in English. The Facebook group can provide students more experience using English. This increased use of English writing might change the negative opinions of students

who think MCAEW cannot help improve their English writing skills. If the collaborative writing and daily writing activities are maintained outside the classroom, students might have more positive opinions about writing. Finally, from the students' suggestions, free Internet access at home, a more ergonomic lab room and facilities, and a 24-hour help desk to fix the Internet access problems are urgently needed.

Overall, the implementing of MCAEW into English writing courses will not be successful without taking negative perceptions into account. Therefore, before making a decision to integrate MCAEW in English courses, teachers, and educators should urgently take action according to the course and technical resolutions. The resolutions are there to serve best to the students who are the most important part of the study following the suggestions from both Garrett (2009) and Chappell (2000) that the implementation of CALL must take students' perceptions towards the use of computer-assisted language learning as an important infrastructure because the students' perception is one of the psychological processes that enhances achievement in language learning.

5.3 Conclusion of the Discussion

The discussion of the study can be concluded that both product and process are important in learning English writing. The effect of MCAEW directly impacts on both product and process of English writing.

In terms of the product, a one level of writing performance gain in overall English writing of undergraduate students in Thailand occurred after the integration of Multimedia computer-assisted English writing. It helps students develop from *novice* writer to *near proficient* writer. MCAEW, thus, can be considered as an effective writing tool that helps students develop better English writing performance. MCAEW also enhances the new turn of digital writing development in EFL education in the context of this study.

At the same time, the process of language learning, which consists of the 4 motivational factors, exist more than that of the traditional integrative and instrumental motivation. Compared with the traditional motivational factors towards

language learning proposed by Gardner and Lambert (1972), the discovery of 4 motivational factors of this study can be brought to implement curriculum that serve positive motivation in learning English writing for EFL students. In this regard, communicative competence, multimedia collaborative writing, autonomous learning and computer-mediated communication approaches can be integrated into the English writing curriculum which is explained in the next section (Section 5.4). Finally, the course and technical resolutions towards finding perceptions of MCAEW are the greatest benefit and suggests possible solutions before implementing MCAEW into English writing courses.

In conclusion, based on the idea of Swain (1995) on effective output regarding product and process of language learning, it can be implied that English writing performance cannot work properly without knowing what motivates students and how students perceived themselves in the use of MCAEW. To have students' English writing performance developed, motivations and perceptions of students should be developed too.

5.4 Implications and Contributions of the Study

The results of this study can be contributed to the development of EFL teaching and learning in Thailand. MCAEW can help those EFL teachers, educators, and executives who work on enhancing students' English writing outcomes and developing good motivation in language learning in response to this logical question of what can be done to make Thai EFL students use English more frequently. The results of this study suggest 4 possible implications.

First of all, pedagogical implications is discussed based on communicative language teaching (CLT), computer applications in second language acquisition (CASLA), computer-mediated communication (CMC), collaborative writing, and autonomous learning approaches. Secondly, MCAEW course activities can be implemented into the English writing curriculum in order to have students improve their results studying English, especially in writing. Thirdly, with regards to language learning motivation, the English course descriptions should be adjusted in order to

serve the 4 motivational factors and perceptions towards the use of MCAEW. Finally, authorities should agree in implementing MCAEW with efficient supports.

5.4.1 Pedagogical Implications

Based on the findings of this current study, the findings shed light on the contribution of the development of the EFL English writing curriculum. With regards to the pedagogical understanding reviewed in chapter 2 and the aforementioned discussion in this chapter, the implementing of MCAEW can contribute to four pedagogical approaches: communicative language teaching, computer-mediated communication, collaborative writing, and autonomous learning

5.4.1.1 Communicative Language Teaching

Communicative language teaching (CLT) succeeds when real communicative strategies in learning language leads learners to interact in learning situations (Richards, 2006). It is suggested by Baba (2009), Murray, (2000), Warschauer and Kern (2000) that online communication helps promote CLT. However, the extent to how real CLT pedagogical approach affects English writing performance is the main focus of this current study. Thus, the ultimate goal of MCAEW application is to help students achieve better English writing competency, meanwhile, the students are also motivated to have communicative competence in language learning.

In order to implement the communicative language teaching into a new English writing curriculum, online applications available in MCAEW activities should be implemented into the English writing curriculum by considering the following teaching and learning activities.

First, to encourage the teacher and students to communicate in real situations, the teacher should create a Line group. The study reveals that online activities promote CLT. Likewise, Warschauer and Kern (2000) suggest that the more the English is used in online communication, the better the student's English competence. Therefore, a Line group should be created for a writing class in order to help students communicate in English. Line communication activities may help students ask questions and respond whenever the person in the group needs help in the English writing assignments. The group can also help students use English in routine

communication. In addition, Ackerman and Simmons (2016) suggested that teachers should be added into group applications in order to be certain that English is used as the medium of the online communication. Thus, the teacher should act as an important facilitator encouraging students to text in English as frequently as possible.

Secondly, a Facebook group is recommended for communicative multimedia activities (Ackerman & Simmons, 2016). This is due to the result of the current study that shows that students need to be more accurate in writing English, therefore, the way to write English more accurately is to show students additional writing examples. Good examples can be found in teachers' comments or people from public friends on a Facebook group. Therefore, the teacher should work hard by being an initiator who always uses authentic English while giving comments or composing text on Facebook. The use of authentic English can be strong motivation as the students desire to write authentic English as it could support their need to write English accurately.

Thirdly, students should be encouraged to send writing assignments by e-mail. This method allows the teacher and students to communicate in English more privately. It can also help the teacher to give direct feedback from individual tasks to each student.

Finally, the teacher's role is important as a facilitator who creates a classroom atmosphere and provides opportunities for practicing and learning language. Therefore, teachers should be diligent and be there whenever students need assistance in writing. For example, the teacher should keep in touch with students by texting via Line, giving comments on Facebook, and checking email regularly.

5.4.1.2 CASLA and Computer-Mediated Communication

The results of the study reflects that MCAEW contributes computer applications for second language acquisition and computer-mediated communication. This is because quality of a particular Multimedia CALL can be evaluated from its effectiveness by seeing how it is best applied to help students gain better knowledge in second language (Young & Bush, 2004). The more opportunity engaging in second language communication, the better the learning outcomes (Krashen, 1998; Warschauer & Kern, 2000). The results of this study confirms that MCAEW can be used to help create more opportunities to communicate between the students and the

teacher as well as among students. MCAEW can be an effective tool that describes how a multimedia CALL works for todays' communication in the field of language education.

In response to CASLA, Swain, (1995) pointed out that the awareness of the product and process of language learning is inseparable from each other. Also, Chapelle and Garett (2009) added that the process of the computer applications for second language acquisition is to focus on input throughout output of the teaching and learning with computers. This current research puts focus on both product of language learning. The writing performance is considered as a product of language learning whereas the motivational factors and perceptions towards MCAEW are considered as a process of language learning in the context of this study. Thus, the MCAEW can be applied in enhancing both product and process of language learning and English writing skills in particular.

With regard to computer-mediated communication, Crystal (2010) added that computer-mediated communication is important in language learning because it consists of simultaneous responses where a teacher and students can connect to each other any time they want. As well, MCAEW helps the teachers and the students communicate online via a chat program. As seen in in-class text chatting, the results showed that the students have strong motivation in using text applications in the English classroom because they can use computer applications as a medium of communication with their teacher. Ultimately, the students learn how to write and have feedback during English writing practice with their teacher.

In conclusion, drawn from the results of the current study that the students need MCAEW to help them be part of an English society. They also need MCAEW as their writing assistance to achieve better English writing performance. The students tend to use English writing skills in order to participate in a community where English is a medium of communication. Thus, English writing courses should emphasize Internet surfing activities in order to have students participate in an online English society. For example, during English writing class, the students should be allowed to surf the Internet for composing sentences and finding good example for their writing assignment. This is to help students know how to write and make use of the Internet to create English sentences with the use of MCAEW.

5.4.1.3 Collaborative Writing

It is apparent that the psychological process of language learning is important. Good motivation in language learning leads to language learning achievement. Dörnyei (2001) and Nunan (2004) asserted that group tasks can help create good motivation because they create self-confidence, which ultimately leads to self-confidence and language learning success (Krashen, 1998).

The results of this current study shows that MCAEW helps promote joy and satisfaction with English writing tasks because the students can consult about their writing with peers and a teacher. Hence, the pair work technique (Mcdonough & Shaw, 2011) is a good teaching method. Further, English writing courses should implement this method into every English writing subject because collaborative writing allows students to be apprentices to each other. Warschauer (1996, 2000) added that 'Digital writing' learning occurs when the teacher and students are socially situated in a collaborative space in which teachers *must* participate to their students. Therefore, if the teacher wants to help students learn how to write more effectively, the teachers have to see writing in the same ways that the students do and be with them where they write (Grabill & Hicks, 2005).

To conclude, in order to have EFL Thai students overcome fear and difficulties in using English as a foreign language, group writing tasks, and pair work assignments may help them overcome fear from learning English writing and create opportunities to express strong motivation when writing English.

5.4.1.4 Autonomous Learning

Autonomous learning relates to the focus, which has changed from a teacher to students. Redmond et al., (2012), Taylor (2000), Truscott and Murley (2001) and Lea et al. (2003) suggested that the principle of autonomous learning includes three concepts. First, students are more active, creative, and independent. Second, students can choose what they want to learn. Third, students gain self-constructed knowledge with deep understanding and full responsibility for learning.

According to the first principle, the reliance on being active, creative, and independent can be seen in MCAEW course activities. It is apparent that learning with MCAEW makes the students feel more independent and more creative because the MCAEW allows them to freely write, search, and consult with the teacher and

peers according to their own experience (via online dictionary, Internet surfing, e-mail and chat rooms). Hence, further multimedia activities in English writing class might allow students to write daily journals via Facebook because it can help them be more active writers so that they can freely write about their daily routine on Facebook.

Secondly, according to the student-centeredness approach, Lea et al. (2003) suggested that the students should be encouraged to increase their flexibility, responsibility and accountability on their learning. Further to the suggestion, the students should have more choices of what to learn. In addition, they should take more responsibility on their writing tasks. The result indicated that selecting what or what not to learn and the time of handling the assignment should be flexible and should belong to the students. As well, the students should participate in selecting a writing topic. They should also be able to select the most convenient time for handling online writing assignments so that they can have strong motivation and strive for writing achievement.

Finally, further to the above suggestion, the students should be more accountable on what they learn. This idea is related to the emphasis of self-constructed knowledge with deep understanding, which is the core of autonomous learning. Further to Lea et al. (2003), learners' deep understanding occurs when they are capable of constructing their thoughts and ideas in learning language, then, produce it on their own. It is apparent because MCAEW activities encourage students to be fully responsible for their own search regarding how to write, how to develop their piece of writing, and ultimately they know how to produce an essay of their own. The teacher should monitor students' behaviors during the use of MCAEW in class whether or not the students achieve their comprehensive understanding by, for example, giving comments, feedbacks, and assisting in grammatical understanding. So that the students can generate their self-constructed knowledge by their own experiences. Ultimately, the students should be able to compose accurate English sentences via reading comments from the teacher and peers.

In sum, MCAEW should be added into further English writing courses because MCAEW activities encourage student-centeredness, and autonomous learning. In order to use MCAEW to enhance the most effective autonomous learning, the students should be able to participate in selecting their writing topic and

have freedom to surf how to write authentic English. Also, they should have flexible time for managing each writing assignment. As well, the students should comprehend how to utilise their English writing skills through their own writing experience.

5.4.2 Adding MCAEW into English Writing Curriculum

The main purpose of the study is to know how to make use of MCAEW as tools which facilitate the product and the process of English language learning. The results point out that MCAEW facilitates students to perform better in English writing. Therefore, to help the students gain a better product of language learning, the teachers and educators should cooperatively make a decision on integration of MCAEW to English writing subjects aboth inside and outside classroom. One-hundred and twenty minutes of integrating MCAEW course activities as shown in Table 3.1 can be set aside in the English writing subjects so that it could help students practice writing. Ultimately, the more opportunity students receive for writing practice, the more they will improve their English writing skills.

5.4.3 Adjusting Course Description and Classroom Activities

As for utilizing MCAEW as a tool of facilitating the process of language learning, the educators and teachers should adjust the English course description and classroom activities based on the 4 motivational factors found in this study.

First, in response to the finding Factor 1 “communicative competence”, students expect real communication with the teacher via the use of MCAEW. Therefore, teachers should add computer-mediated writing tasks suggested in MCAEW class activities shown in Table 3.1 so that the students can communicate with teacher, and to receive feedback via chat and e-mail. With regard to the finding Factor 2 “task completion”, the students focus on the ease and convenience on the use of MCAEW. Therefore, MCAEW should be used instead of using paper-pencil based tool alone for English writing class. In addition, the time which is an important factor for improving writing skill. Hence, extra time should be extended in class. Adding more time in classroom, 120 minutes as suggested in 5.4.1, can help students finishing their writing tasks in class with the help of the teacher and the computer writing tools.

The third factor, “autonomous learning,” suggests that the students hope to be more autonomous learners. In so doing, the students should be allowed to participate in generating their favorite topic for their own writing practicing. Also, the students should be flexible to choose their most suitable and available time in order to improve their writing. For example, students can choose time for submitting their e-learning quiz, or they should have more time for finishing their essay drafts. Most importantly, they should be free to decide whether to continue using MCAEW in other English classes.

Finally, in response to the forth factor “communication”, a sharing Facebook group is recommended for students to write their daily routine in order to provide more frequent use of writing English and also to have students improve their English writing by giving and receiving comments from peers and the teacher via the Facebook group.

5.4.4 Encouraging more Support and Concern from the Authorities

The implementation of MCAEW activities into future English writing courses and resolutions cannot be done by the English teacher alone. The implementation of MCAEW requires support from the EFL teachers, students, and the university executives. The major issues that need to be supported can be divided into 3 categories; first, the opportunities to use English, second, technical support, and finally, other demanded English skills.

First, in order to solve problems of students’ limited English background knowledge, the EFL teachers and the students should work harder together. Teachers should help the students write English both inside and outside classroom. Apart from having the students practice writing harder in class, adding extra time into 120 minutes, as suggested in 5.4.1, the teachers and the students should also work hard outside the classroom. The teachers should text with the students via Line, Facebook Group, corresponding through e-mail and staying online whenever the students require writing feedback. These communicating and collaborative activities can help students use English with the teachers more frequently. Students should be aware of the responsibility in engaging themselves into an English learning environment by continuing to use MCAEW with their teachers and friends. Secondly, the university

executives should hire a 24 hour help desk support team including a larger and a more modern server for submitting exercises outside of the classroom. Moreover, the university executives should launch free Internet, but limited to, e-learning sources or English exercises so that students can practice writing outside classroom. Finally, due to the lack of listening skills, English listening development should be of more concerned by the EFL teachers. Research on English listening practices should be studied in the future.

These are three urgent issues that should be consulted to the authorities and administrators as soon as possible so that writing with technology can fully help develop students' English writing skills.

5.5 Recommendations for Further Research

This study is based on the quasi-experiment methodology. The experiment has been conducted in Thai EFL writing, utilising a paired sample t-test, exploratory factor analysis, and a semi-structured interview. The researcher would like to recommend 3 aspects for further investigation.

Firstly, the second objective of this study focuses on motivational factors in general. It would be constructive to investigate the best predictor that encourages the most effective writing by analyzing scores with various research methodologies. For example, the future analysis should conduct a Linear Regression to find the best predictor among the 4 motivational factors (communicative competence, task completion, autonomous learning, and communication) that most influence students' writing performance. The results might indicate to the researcher what factor among the four motivational factors will be the best predictor of English writing. The researcher may focus more on creating activities using multimedia for teaching. For example, if the autonomous learning is the best predictor among the 4 motivational factors, the researcher should plan further English writing courses that best serve a student-centeredness approach. For example, the course should have more free writing topics, flexible courses and time. In addition, the course should encourage students to construct their own knowledge, and be more responsible for their own English writing practices.

Secondly, further research should monitor students' writing performance after integration of other multimedia that require daily communication, for example, a web blog or a public Facebook group. The further research may investigate students' English writing performance after integration of a web blog or Facebook group in order to add more of these multimedia activities to improve students' English writing skills.

These suggestions may shed light on the further investigation on how to help EFL students engage in the most effective use of multimedia computer-assisted learning in English writing. As well, further investigation may find the most effective teaching/learning approach with the assistance of multimedia computer-based lessons that affect both product and process in English writing.

BIBLIOGRAPHY

Ackerman, A., & Simmons, K. (2016). Write On: Digital Graphic Organizers Impact on Developing Writing Skills. In *Proceedings of EdMedia: World Conference on Educational Media and Technology 2016* (pp. 7-12). Association for the Advancement of Computing in Education (AACE).

Ahmad, J. (2012). English language teaching (ELT) and integration of media technology. *Procedia Social and Behavioral Sciences, 47*, 924-929. doi:10.1016/j.sbspro.2012.06.758

Akbulat, Y. (2008). Exploration of the Attitudes of Freshman Foreign Language students toward using Computes at a Turkish State University. *The Turkish Online Journal of Educational Technology – TOJET, 7*(1), 1-14. Retrieved from http://files.eric.ed.gov/fulltext/ED499579.pdf

Aponte, A., Butcher, R. K., Dietz, K. A., Fulton, E., Haney, R. P., Hernandez, J. E., & Strickland, D. S. (2010). *New Jersey registered holistic scoring rubric. Criterion-based holistic scoring: A writing handbook*. New Jersey: New Jersey Department of Education.

Baba, K. (2009). Aspects of lexical proficiency in writing summaries in a foreign language. *Journal of Second Language Writing, 18,* 191-208. doi:10.1016/j/jslw.2009.05.003

Bacha, N. (2001). Writing evaluation: what can analytic versus holistic essay scoring tell us?. *System, 29*, 371-383. PII: S0346-251X(01)00025-2

Biber, D. (1995). *Variation across speech and writing*. Cambridge: Cambridge University Press.

Broad, B. (2003). *What we really value: Beyond rubrics in teaching and assessing writing.* Utah: All USU Press Publications.

Brown, J. D. (2009a). Statistics corner. Questions and answers about language testing statistics: Principal components analysis and exploratory factor analysis—Definitions, differences, and choices. *Shiken: JALT Testing & Evaluation SIG Newsletter, 13*(1), 26-30. Retrieved from http://jalt.org/ test/bro29.htm

Brown, J. D. (2009b). Statistics Corner. Questions and answers about language testing statistics: Choosing the right number of components or factors in PCA and EFA. *Shiken: JALT Testing & Evaluation SIG Newsletter, 13*(2), 19-23. Retrieved from http://jalt.org/test/bro30.htm

Bryman, A., & Cramer, D. (2011). Quantitative data analysis with IBM SPSS 17, 18, & 19 for social scientists. New York: Routledge.

Chao, Y. C. J. & Huang, C. K. (2007). The effectiveness of computer-mediated communication on enhancing writing process and writing outcomes: The implementation of blog and wiki in the efl writing class in Taiwan. In C. Montgomerie & J. Seale (Eds.), *Proceedings of EdMedia: World Conference on Educational Media and Technology 2007* (pp. 3463-3468). Association for the Advancement of Computing in Education (AACE).

Chapelle, C. A. (2001). *Computer applications in second language acquisition: Foundations for teaching, testing and research.* Cambridge: Cambridge University Press.

Chapelle, C. A. (2009). The relationship between second language acquisition theory and computer-assisted language learning. *The Modern Language Journal, 93*, 741-753. doi:10.1111/j.1540-4781.2009.00970.x

Chapelle, C. A., & Jamieson J. (1986). Computer-assisted language learning as a predictor of success in acquiring English as a second language. *Tesol Quarterly, 20*(l), 27-46. doi:2307/3586387

Charney, D. (1984). The validity of using holistic scoring to evaluate writing: A critical overview. *Research in the Teaching of English, 18*, 65-81.

Clinard, J. (2011). *The montana university system writing assessment: A practical guide to writing proficiency.* Board of Regents of Higher Education. Policy and Procedures Manual.

Comrey, A. L., & Lee, H. B. (1992). *A first course in factor analysis* (2nd ed.). Hillsdale, NJ: Erlbaum.

Cook, V. (2004). *The English writing system.* New York: Oxford University Press.

Cooper, P. L. (1984). *The assessment of writing ability: A review of research* Princeton, NJ: Educational Testing Service. Retrieved from https://www.ets.org/Media/ Research/pdf/RR-84-12-Cooper.pdf

Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment Research & Evaluation, 10* (7). Retrieved from http://pareonline.net/getvn.asp?v=10&n=7

Creswell, J. W. (2014). *Research design* (4th ed.). California: Sage.

Crotty, M. (1998). *The foundations of social research*: *Meaning and perspective in the research process.* London: Sage.

DeVellis, R. F. (2016). *Scale Development*: *Theory and applications*. (4th ed.). Los Angeles: Sage.

Dizon, G. (2016). A comparative study of Facebook vs. paper-and-pencil writing to improve L2 writing skills. *Computer Assisted Language Learning, 29,* 1-10.doi:10.1080/09588221.2016.1266369

Dörnyei, Z. (1994). Motivation and motivating in the foreign language classroom. *The Modern Language Journal, 78*(3), *273-284.* Retrieved from http://seas3.elte.hu/coursematerial/RyanChristopher/Dornyei(1994)_Foreign_Language_Classroom.pdf

Dörnyei, Z. & Tseng, W. T. (2010). Motivational processing in interactional tasks. In A. Mackey & C. Polio (Eds.), *Multiple perspectives on Interaction: Second Language Research in Honor of Susan M. Gass.* New York: Routledge. Retrieved from http://www.zoltandornyei.co.uk/uploads /2009-dornyei-tseng.pdf

Drost, E. (2011). Validity and reliability in social science research. *Education Research and Perpectives*, *38*(1), 105-123. Retrieved from http://seas3.elte.hu/coursematerial/RyanChristopher/Dornyei(1994)_Foreign_Language_Classroom.pdf

Du, H. & Wagner, C. (2007). Learning with weblogs: Enhancing cognitive and social knowledge construction. *IEEE Transactions on Professional Communication, 50*(1), 1-16.

Ducate, L. C., & Lomicka, L. L. (2008). Adventures in the blogosphere: From blog readers to blog writers. *Computer Assisted Language Learning*, *21*, (1), 9-28. doi:10.1080/ 09588220701865474

Elliot, A. J., & Thrash, T. M. (2002). Approach–avoidance motivation in personality: Approach and avoidance temperaments and goals. *Journal of Personality and Social Psychology, 82*(5), 804–818. doi:10.1037//0022-3514.82.5.804

Ellis, D. (1986). Social science information research. *Journal of the Association for Information Science and Technology, 37*(2), 86-88.

Ellis, R. (1997). *Second language acquisition*. Oxford: Oxford University Press.

Erez, A., & Judge, T. A. (2001). Relationship of core self-evaluations to goal setting, motivation, and performance. *Journal of Applied Psychology, 86*(6), 1270-1279. doi:10.1037//0021-9010.86.6.1270

Field, A. (2000). *Discovering statistics using spss for windows*. London: Sage.

Gardner, R. C., & Lambert, W. E. (1959). Motivational variables in second-language acquisition. *Canadian Journal of Psychology, 13*(4), 266-272.

Gardner, R. C., & Lambert, W. E. (1972). *Attitudes and motivation in second-language learning.* Rowley, Massachusetts: Newbury House Publishers.

Gardner, R. C., Smythe, P. C., & Brunet, G. R. (1977). Intensive second language study: Effects on attitudes, motivation and French achievement. *Language Learning*, *27*, 243-261.

Gardner, R. C., & Tremblay, P. F. (1994a). On motivation, research agendas, and theoretical frameworks. *Modern Language Journal, 78,* 359-68. doi:10.1111/j.1540-4781.1994. tb02050.x

Gardner, R. C., & Tremblay, P. F. (1994b). On motivation: Measurement and conceptual considerations. *Modern Language Journal, 78,* 524-27. doi:10.1111/j.1540-4781.1994.tb02073.x

Garrett, N. (1991). Technology in the service of language learning: Trends and issues. *The Modern Language Journal, 75,* 74-101. doi:10.1111/j.1540-4781.1991.tb01085.x

Garrett, N. (2009). Computer-assisted language learning trends and issues revisited: Integrating innovation. *The Modern Language Journal, 93,* 719-740. Retrieved from http://www.postgradolinguistica.ucv.cl/dev/documentos/90,901, Computer-assisted_garrett_2009.pdf

Getkham, K. (2010). A Corpus-based analysis of applied linguistics research articles: A multidimensional analysis. In Moskowich-Spiegel Fandino. I., Garcia, B., Martin, I., & Sandino, P. (Eds.), *Language windowing through corpora. Visualizacion del lenguaje a traves de corpus. Part I. Proceedings of CILC 2nd International conference on corpus linguistics.* University of a Corunan, Spain.

Godshalk, J., Swineford, F., & Coffman, W.E. (1966). *The measurement of writing ability*. New York: College Entrance Examination Board.

Grabill, J. T., & Hicks, T. (2005). Multiliteracies meet methods: The case for digital writing in English education. *English Education, 37*(4), 301-311. Retrieved from http://tccl.rit.albany.edu/knilt/images/9/99/GRABILL,_HICKS.pdf

Greasley, P. (2008). *Quantitative data analysis using spss: An introduction for health & social science.* New York: McGraw Hill.

Haines, C. D. (2004). Assessing students' written work: Marking Essays and reports. In Falchikov (Ed.), *Key guides for effective teaching in higher education,* (pp.76-81). London: Routledge Falmer.

Heift, T., & Rimrott, A. (2012). Task-related variation in computer-assisted language learning. *The Modern Language Journal, 96*(4), 525-543. doi:10.1111/j.1540-4781.2012.01392.x

Hicken, S., Sullivan, H., & Klein, J. (1992). Learner control modes and incentive variations in computer delivered instruction. *Educational Technology Research and Development, 40*(4), 15-26.

Hui, W., Hu, P. J. H., Clark, T. H. K., Tam, K.Y., & Milton, J. (2007). Technology-assisted learning: A longitudinal field study of knowledge category, learning effectiveness and satisfaction in language learning. *Journal of Computer Assisted Learning. 24,* 245-259. Retrieved from http://www.sciencedirect.com/science/article/pii/S037872 0603000508

Institute for Digital Research and Education. (1995). *Factor analysis using SAS Proc factor*. Texas: The University of Texas Austin.

Johnson, M. D., Mercado, L., & Acevedo, A. (2012). The effect of planning sub-processes on L2 writing fluency, grammatical complexity, and lexical complexity. *Journal of Second Language Writing, 21*, 264-282. Retrieved from http://dx.doi.org/10.1016/j.jslw.2012.05.011

Kachru, B. B. (1985). Standards, codification and sociolinguistic realism: The English language in the outer circle. In Randolph Quirk and Henry Widdowson, (Eds.), *English in the world: Teaching and learning the language and literatures* (pp. 11-30). Cambridge: Cambridge University Press.

Kachru, B. B. (1992). Models for non-native Englishes. In Braj B. Kachru, (Ed.), *The other tongue. English across cultures* (2nd ed.). (pp. 48-74). Urbana: University of Illinois Press.

Kennedy, A. W. (2007). *Laying the cornerstone, building the foundation: An analysis of a computer-assisted vocabulary learning program as a tool for productive and receptive vocabulary learning in the foreign language classroom* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 3313725)

Khamkhien, A. (2010). Thai Learners' English Pronunciation Competence: Lesson learned from word stress assignment. *Journal of Language Teaching and Research, 1*(6), 757-764.

Kinzie, M., Sullivan, H., & Berdel, R. (1988). Learner control and achievement in science computer-assisted instruction. *Journal of Educational Psychology, 80*, 299-303.

Kongkerd, W. (2013). Teaching English in the era of English used as a lingua franca in Thailand. *Executive Journal, 33*(4), 3-12.

Krashen, S. D. (1998). *Second language acquisition and second language learning.* New Jersey: Prentice-Hall International.

Kucuk, T. (2009). *University preparatory school students' and teachers' perceptions of computer-assisted language learning environment* (Master's thesis). Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.633.3259&rep=rep1&type=pdf

Lamy, M. N., & Hampel, R. (2007). *Online communication in language learning and teaching.* New York: Palgrave Macmillan.

Lantolf, J. P., & Pavlenko, A. (1995). Sociocultural Theory and second language acquisition. *Annual Review of Applied Linguistics, 15,* 108-124.

Lea, S. J., Stephenson, D., & Troy, J. (2003). Higher education students' attitudes to student centered learning: beyond 'educational bulimia'. *Studies in Higher Education, 28*(3), 321-334.

Levy, M. (2009). Technologies in use for second language learning. *The modern language Journal, 93,* 769-782. Retrieved from http://teachinga secondlanguage.webs.com/ Levy. pdf

Lin, H. F. (2007). Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions Hsiu-Fen Lin Department of Shipping and Transportation Management. *Journal of Information Science, 33*(2), 135-149. doi:10.1177/ 0165551506068174

Liou, H. C. (2012). The roles of second life in a college computer-assisted language learning (CALL) course in Taiwan, ROC. *Computer Assisted Language Learning, 25*(4), 365-382. doi:10.1080/09588221.2011.597766

McDonald, J. H. (2014). *Handbook of biological statistics* (3rd ed.). Baltimore: Sparky House Publishing.

McDonough, J., & Shaw, C. (2011). *Materials and methods in ELT.* Massachusetts: Blackwell Publishing.

McHugh, M. L. (2007). Standard error: Meaning and interpretation. *Biochemia Medica, 18*(1), 7-13. Retrieved from http://www.biostathandbook.com/ standarderror.html.

McKay, M. T., Perry, J. L., & Harvey, S. A. (2016). The factorial validity and reliability of three versions of the aggression questionnaire using confirmatory factor analysis and exploratory structural equation modelling. *Personalities and Individual Differences, 90,* 12-15. doi:10.1016/j.paid.2015.10.028

Merriam, S. B. (2009). *Qualitative research: A quide to design and implementation.* San Francisco: Jossey-Bass.

Meskill, C., & Ranglova, K. (1996). Sociocollaborative Language Learning in Bulgaria. In Warchauer and Kern (Eds.), *Network-based language teaching: Concepts and practice*, (pp. 20-40). Cambridge: Cambridge University Press.

Mindog, E. (2016). APPs and EFL: A case study on the use of smartphone apps to learn English by four Japanese university students. *The JALT CALL Journal, 12*(1), 3-22. Retrieved from http://files.eric.ed.gov/fulltext/EJ1107946.pdf

Minghe, G. (2012). Analysis on the feature of network: Based language learning in China. *Canadian Social Science, 8*(5), 178-182. doi:10.3968/j.css.1923669720120805.5893

Mynard, J. (2007). A blog as a tool for reflection of english language learners. *Asian EFL Journal, Novembe,* 1-10. Retrieved from http://www.asian-efl-journal.com/ptaJul15jm.pdf

Navés, T. (2006). Analytical measures of learners' written interlanguage. *University of Barcelona*. Retrieved from http://diposit.ub.edu/dspace/bitstream/2445/11565/3/NavesAesla2007RoundTable.pdf

Noytim, U. (2010). Weblogs enhancing EFL students' English language learning. *Procedia Social and Behavioral Sciences*, *2*, 1127-1132. doi:10.1016/j.sbspro. 2010.03.159

Nunan, D. (2004). *Task-based language teaching.* Cambridge: Cambridge University Press.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.

Otto, S. E. K., & Pusack, J. P. (2009). Computer-assisted language learning authoring issues. *The modern Language Journal, 93,* 785-801. doi:10.1111/j.15404781.2009. 00973.x

Oxford, R., & Shearin, J. (1994). Language learning motivation: Expanding the theoretical framework. *Modern Language Journal, 78,* 12-28.

Ozturk, E. (2012). Contemporary motivation theories in educational psychology and language learning: an overview. *The International Journal of Social Sciences, 3*(1), 33-46.

Park, T. (2004). Scoring procedures for assessing writing. *TESOL & Applied Linguistics*, *4*(1), 1-21. Retrieved from http://www.tc.columbia.edu/ academic/tesol/WJFiles/pdf/ Park_Forum.pdf

Plass, J. L., & Jones, L. C. (2005). Multimedia learning in second language acquisition. In R. E. Mayer (Ed.), *The Cambridge handbook of multimedia learning,* (pp.467-487). New York: Cambridge University Press.

Pollock, J., & Sullivan, H. (1990). Practice mode and learner control in computer-based instruction. *Contemporary Educational Psychology*, *15*(3), 251-260. doi:org/10. 1016/0361-476X(90)90022-S

Pope, C., & Golub, J. (2000). Preparing tomorrow's English language arts teachers today: Principles and practices for infusing technology. *Contemporary Issues in Technology and Teacher Education, 1* (1). Retrieved from http:// www. citejournal.org/vol1/iss1/currentissues/english/article1.htm

Raby, F. (2007). A triangular approach to motivation in computer assisted autonomous language learning (CAALL). *European Association for Computer Assisted Language Learning*, *19*, (2), 181-201. doi:10.1017/S0958344007000626

Redmond, B., Galvin, A., Archbold, T., Barrett, T., Harty, L., Jennings, D. & Surgenor, P. (2012). *UCD teaching and learning report*, 12-16. University College Dublin. Retrieved from http://www.ucd.ie/teaching/resources/

Richards, G. (2000). Why use computer technology. *English Journal, 90* (2), 38-41. Retrieved from https://books.google.co.th/books?id=xQI8DZr-NTsC&pg=PA337&lpg=PA337&dq=Richards,+G.+(2000).+Why+use+computer+technology.+English+Journal,+90+(2),+3841.&source=bl&ots=pxfaw7ePvd&sig=AgYJWwvbrpwlYbDhCFcBzGpRM&hl=th&sa=X&ved=0ahUKEwi5k8KDw7LUAhVDMY8KHaR3BusQ6AEIOzAB#v=onepage&q=Richards%2C%20G.%20(2000).%20Why%20use%20computer%20technology.%20English%20Journal%2C%2090%20(2)%2C%2038-41.&f=false

Richards, J. C. (2006). *Communicative teaching today*. New York: Cambridge University Press.

Rietveld, T., & Van Hout, R. (1993). *Statistical techniques for the study of language and language behavior*. New York: Mouton de Gruyter.

Rovinelli, R. J., & Hambleton, R. K. (1977). On the use of content specialists in the assessment of criterion-referenced test item validity. *Dutch Journal of Educational Research, 2,* 49-60.

Ruangmanamongkol, K. (2002). *Developing assesment of oral presentation skills for advanced english conversation* (Research Report) Language Institute Chulalongkorn University. Retrieved from http://www.culi.chula.ac.th/library/researchchula/Kalayanee.pdf. [in Thai]

Sakai, H., & Kikuchi, K. (2008). An analysis of demotivators in EFL classroom. *System,* (*37),* 57-69. doi:10.1016/j.system.2008.09.005

Sawangwan, S. (2013). The use of computer-assisted language learning and multimedia toward developing motivation for undergraduate students in Thailand. Proceedings from *ICADA 3rd International Conference on Advancement of Development Administration,* National Institute of Development Administration, Thailand.

Shuh, K. A., Hernandez, D. A., Grimes, D., & Warschauer, M. (2010). Laptops and Fourth-Grade Literacy: Assisting the jump over the fourth-grade slump. *The Journal of Technology, Learning, and Assessment, 9*(5), 1-45.

Spolsky, B. (2002). Prospects for the survival of the Navajo language: A reconsideration. *Anthropology & Education Quarterly, 33* (2), 139-162. doi:10.1525/aeq.2002.33.2.139

Suhr, D., & Shay M. (2008). *Guidelines for Reliability, confirmatory and exploratory factor analysis.* Denver: SAS Institute.

Suwanarak, K., & Phothongsunan, S. (2008). Attributions of high achieving Thai university students perceiving themselves as failures in English usage. *8th Annual South East Asian Association for Institutional Research (SEAAIR) Conference Proceedings,* 4-6 November 2008. Pp. 587-599.

Swain, M. (1995). The output hypothesis: Theory and research. In E. Hilkel (Ed.), *Handbook of research in second language teaching and learning,* (pp.471-481). New York: Routledge.

Swain, M. (2000). The output hypothesis and beyond: Mediating acquisition through collaborative dialogue. In J. P. Lantolf (Ed.), *Sociocultural theory and second language learning,* (pp.97-114). Oxford: Oxford University Press.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). New Jersey: Pearson Allyn & Bacon.

Tashakkori, A., & Teddlie, C. (2010). *Handbook of mixed methods in social and behavioral research* (2nd ed.). New York: Sage.

Taylor, P. G. (2000). Changing expectations: Preparing students for Flexible Learning. *The International Journal of Academic Development, 5*(2), 107-115.

Teng, B., & Sinwongsuwat, K. (2015). Teaching and learning english in Thailand and the integration of conversation analysis (CA) into the Classroom. *Canadian Center of Science and Education, 8*(3), 13-23.

Thai Qualifications Framework for Higher Education. (2006). *Section c characteristics of programs and expected outcomes in domains of learning.* Retrieved from http://www.mua.go.th/users/tqfhed/news/FilesNews/Files News2 /paper2.pdf

Thorne, S. L., Black, R. W., & Sykes, J. M. (2009). Second language use, socialization, and learning in internet interest communities and online gaming. *The Modern Language Journal, 93,* 803-821. Retrieved from https://www.academia.edu/1910673/

Tran, P. (2016). Training learners to use Quizlet vocabulary activities on mobile phones in Vietnam with Facebook. *The JALT CALL Journal*, *12*(1), 43-56. Retrieved from http://journal.jaltcall.org/articles/121Tran.pdf

Truscott, S., & Morley, J. (2001). Cross-cultural learning through computer-mediated communication. *Language Learning Journal. 24*, 17-23.

UCD Centre for Teaching and Learning. (2005). *Course design.* Retrieved from http://www.ucd.ie/teaching/good/cou3.htm

Ushida, E. (2005). The role of students' attitudes and motivation in second language learning in Online Language Courses. *CALICO Journal, 23*(1), 49-78.

Vedder, I., & Kuiken, F. (2007).Task complexity and measures of linguistic performance in L2 writing. *Walter de Gruyter IRAL, 45,* 261-284. doi:10.1515/IRAL.2007.012

Vygotsky, L. S. (1987). Thinking and Speech. In R.W. Rieber & A.S. Carton (Eds.), *The collected works of L.S. Vygotsky, Vol. 1, Problems of general psychology* (pp.39-285). New York: Plenum Press.

Wang, F. (2008). Motivation and English achievement: An exploratory and confirmatory factor analysis of a new measure for Chinese students of English learning. *North American Journal of Psychology*, *10*(3), 633-646. Retrieved from http://kczx.gzhu.edu.cn/coursecenter/filesupload/homework/2.pdf

Wang, S., & Vasques, C. (2012). Web 2.0 and second language learning: What does the research tell us?. *CALICO Journal, 29*(3), 412-430. Retrieved from http://camilla vasquez.com/pdf/WangVasquez_Web2_CALICO.pdf

Warschauer, M., & Grimes, D. (2007). Audience, authorship, and artifact: The emergent semiotics of Web 2.0. *Annual Review of Applied Linguistics, 27*, 1-23. doi:http://dx.doi.org/10.1017/S0267190508070013

Warschauer, M. (1996). Motivational aspects of using computers for writing and communication. In M. Warschauer (Ed.), *Telecollaboration in Foreign Language Learning: Proceedings of the Hawai'i symposium. (Technical Report No.12)*. Honolulu, Hawai'i: University of Hawai'i, Second Language Teaching & Curriculum Center. Retrieved from http://www.lll.hawaii.edu/ nflrc/NetWorks/ NW1/

Warschauer, M., & Kern R. (2000). *Network-based language teaching: Concepts and practice.* Cambridge: Cambridge University Press.

Wolfe-Quinterero, K., Inagaki, S., & Kim, H. Y. (1998). *Second language development in writing: Measures of fluency, accuracy, and complexity (Technical Report No. 17)*. Honolulu: National Foreign Language Resource Center.

Wright, B. E. (2007). Public service and motivation: Does mission matter?. *Journal of Public Administration Research and Theory, 11*(4), 54-64. Retrieved from http://workspace.unpan.org/sites/Internet/Documents/UNPAN93022.pdf

Yilmaz, K. (2008). Constructivism: Its theoretical underpinnings, variations, and implications for classroom instruction. *Educational Horizons, 86*(3), 161-172. Retrieved from https://www.jstor.org/stable/42923724?seq=1#page_ scantabcontentscre

Young, C. A., & Bush, J. (2004). Teaching the English language arts with technology: A critical approach and pedagogical framework. *Contemporary Issues in Technology and Teacher Education, 4*(1), 1-22. Retrieved from http://www.citejournal.org/volume-4/issue-1-04/english-language-arts/teaching-the-english-language-arts-with-technology-a-critical-approach-and-pedagogical-framework

Young, C. A. (2001). Technology integration in inquiry-based learning: An evaluation study of students' implementation and perceptions of a web-based electronic portfolio (Doctoral dissertation, University of Virginia). *Dissertation Abstracts International, 62*(1), 70.

Young, C. A., & Figgins, M. A. (2002). The Q-folio in action: Using a web-based electronic portfolio to reinvent traditional notions of inquiry, research, and portfolios. *Contemporary Issues in Technology and Teacher Education, 2*(2), 1-22. Retrieved from http://www.citejournal.org /vol2/iss2/english/article1.cfm

Yubero, N., Elche, L., & Anastasio, O. (2017). Cyberbullying victimization in higher education: An exploratory analysis of its association with social and emotional factors among Spanish students. *Elsevier, Computers in Human Behavior, 75*, 439-449. doi:10.1016/j.chb.2017.05.037

Zhao, N. (2009). *The minimum sample size in factor analysis*. Retrieved from https://www.encorewiki.org/display/~nzhao/The+Minimum+Sample+Size+in+Factor+Analysis

APPENDICES

APPENDIX A

Pretest and Posttest

DIRECTIONS:

You will have 2 hours to write a 1 page, well-organized essay on the following topic. Before you begin writing, consider carefully and plan what you will say. Make sure you proofread your essay before handing it in. You are allowed to use paper, pencil, pen and correction pen for pretest whereas a computer with Microsoft Word for posttest.

TOPIC:

My feeling about English writing

APPENDIX B

Holistic Scoring Rubric

6 (Advanced) These papers clarify a position on the issue defined in the prompt, developed with extensive and compelling evidence. Organization is unified and logical, with effective transitions. Language use is fluent with well-controlled sentences, clear and effective expression of ideas, and precise word choice. While there may be a few errors in grammar, usage, and mechanics, an outstanding command of language is apparent.

5 (Advanced Proficient) These papers clarify a position on the issue defined in the prompt, developed with moderate and relevant evidence. Organization is unified and coherent, and transitions are used. Sentences are almost always well controlled, expression of ideas is usually clear, and word choice is often precise. While there may be a few errors in grammar, usage, and mechanics, a good command of language is apparent.

4 (Proficient) These papers state and support a position on the issue defined in the prompt, developed with some elaboration or relevant explanation. Organization is generally clear. Sentences are usually well controlled, expression of ideas is usually clear, and word choice is appropriate for the topic. A competency with language is apparent, even though there may be some errors in grammar, usage, and mechanics.

3 (Near Proficient) These papers state and support a position on the issue defined in the prompt, developed with a little elaboration or explanation. Organization is clear enough to follow without difficulty. Sentences are usually well controlled, expression of ideas is at times awkward or unclear, and word choice may at times be inaccurate or inappropriate. A basic control of language is apparent, even though there may be frequent errors in grammar, usage, or mechanics.

2 (Novice) These papers may state a position on the issue defined in the prompt, but development may be minimal or irrelevant. Organization may lack clear movement or focus, making the writer's ideas difficult to follow. Sentences may often be unclear, expression of ideas may often be awkward or unclear, and word choice may often be inaccurate or inappropriate. Numerous errors in grammar, usage, or mechanics show poor control of language and may at times obstruct understanding.

1 (Beginner) These papers may not state a position on the issue defined in the prompt or develop an idea. Problems with organization and lack of focus may make the paper very difficult to follow. Sentences may seldom convey meaning clearly, expression of ideas may be very unclear and confusing, and word choice may often be inaccurate or inappropriate. Severe problems with grammar, usage, or mechanics show very poor control of language and may significantly impede understanding.

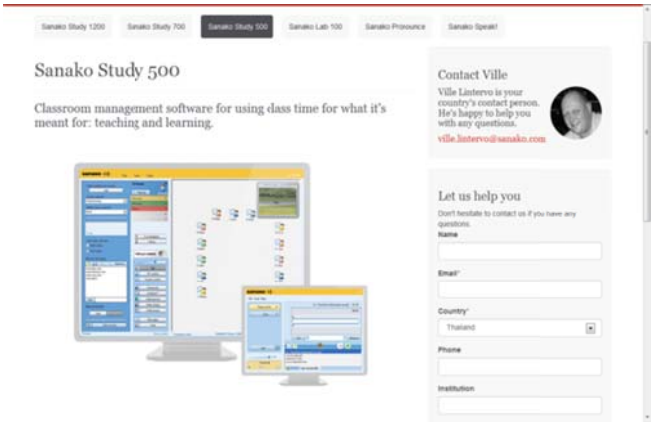
0 (-) These papers cannot be scored with the rubric (completely off - topic, illegible, or inappropriate) or they may be plagiarized.

APPENDIX C

Multimedia Computer-Assisted English Writing

Hardware

Software (In Class)

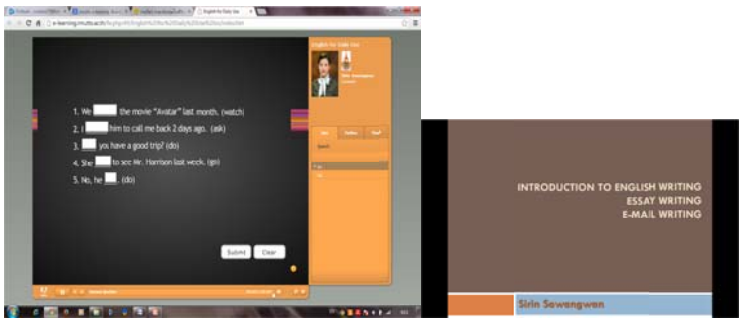


Source: http://www.sanako.com/products/study-500/

Software (Outside Class)

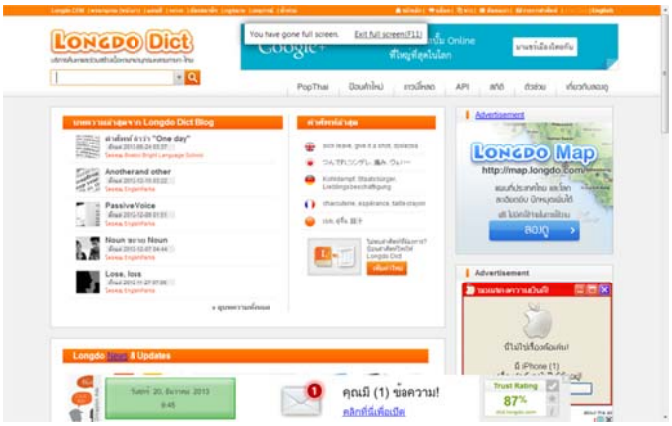
Teaching Materials

Source: http://www.youtube.com/watch?v=AjTuTUI-uVg



Source: http://e-learning.rmutto.ac.th/

Writing Tools



Source: http://dict.longdo.com/

APPENDIX D

Questionnaire Part A

Directions: Please indicate to what extent do you agree or disagree with the following statements.

5= Strongly Agree 4=Agree 3=Neutral 2=Disagree 1=Strongly Disagree

Statements	Level of Agreement				
	5	4	3	2	1
1) I can write better essays when I do them on MCAEW.					
2) Revising my papers is a lot easier when I write them on MCAEW.					
3) I enjoy writing my papers by hand more than by MCAEW. *					
4) I enjoy seeing the things I write printed out.					
5) Writing papers by hand saves time compared to writing by MCAEW. *					
6) I enjoy using MCAEW to communicate with people around the world.					
7) I enjoy using MCAEW to communicate with my classmates.					
8) I am more afraid to contact people by MCAEW than in person. *					

9) I enjoy using MCAEW to communicate with my teacher.					
10) If I have a question about my writing, I would rather contact my teacher in person than by MCAEW.					
11) MCAEW helps people learn from each other.					
12) An advantage of using MCAEW is you can contact people any time you want.					
13) Writing by MCAEW helps me develop my thoughts and ideas.					
14) Using MCAEW makes me feel part of a community.					
15) Using MCAEW is a good way to learn more about different people and cultures.					
16) Communicating by MCAEW is a good way to improve my English.					
17) Learning with MCAEW gives me a feeling of accomplishment.					
18) Writing by MCAEW makes me more creative.					
19) Using MCAEW gives me more chances to write authentic English.					
20) I want to continue using MCAEW in my English classes.					
21) Using MCAEW is not worth the time and effort. *					

Questionnaire Part A (Continued)

Statements	**Level of Agreement**				
	5	4	3	2	1
22) Using MCAEW gives me more control over my learning.					
23) I enjoy the challenge of using MCAEW.					
24) Learning English with MCAEW is important for my career.					
25) I can learn English more independently when I use MCAEW.					
26) MCAEW keeps people isolated from each other. *					
27) I can learn English faster when I use MCAEW.					
28) Using MCAEW gives me more chances to practice writing English.					
29) MCAEW is usually very frustrating to work with. *					
30) MCAEW makes people weak and powerless. *					

Remarks: MCAEW = Multimedia Computer-assisted English Writing

Items on this questionnaire are partially adapted from Warschauer (1996)

* = reversed statement items may be needed

Questionnaire Part B

Directions: Please write your personal information and answer the following questions

Part B1: Demographical Data

1. Name: _____
2. Age: ___ years
3. Sex: ☐ Male ☐ Female
4. Your grade for fundamental English
   ☐ A ☐ B+ ☐ B ☐ C+ ☐ C ☐ D+ ☐ D
5. Major/Field: _____
6. Hometown: _____
7. Average hours in daily use of MCAEW (including mobile Internet):
   _____ hours

Part B2: Preference/Benefit/Issues towards using MCAEW (for semi-structured interview)

Q1. Do you prefer using multimedia computer-assisted English writing?

☐ Yes ☐ No

Why? _____

Q2. Do you think using multimedia computer-assisted English writing help you improve your English writing skills?

Yes☐ No☐

Why? _____

Q3. Strengths and/or constraints of multimedia computer-assisted English writing. Your suggestions are truly needed.

Strength (1) _____

Why? _____

Strength (2) _____

Why? _____

Questionnaire Part B (Continued)

Strength (3) _____

Why? _____

Strength (4) _____

Why? _____

Constraint (1) _____

Why? _____

Constraint (2) _____

Why? _____

Constraint (3) _____

Why? _____

Constraint (4) _____

Why? _____

Suggestions (if any) _____

_____

APPENDIX E

Item Objective Congruency Index and Cronbach's Alpha for the questionnaire Part A and B

Table E5.1 Item - Objective Congruency Index (IOC) for the questionnaire part A

Item	Specialist scores					Total	IOC
	S1	S2	S3	S4	S5		
1	+1	+1	+1	+1	+1	5	1
2	+1	+1	+1	+1	+1	5	1
3	+1	+1	+1	+1	+1	5	1
4	+1	+1	+1	0	0	3	.6
5	+1	+1	+1	+1	+1	5	1
6	+1	+1	0	0	+1	3	.6
7	+1	+1	0	0	+1	3	.6
8	+1	+1	+1	0	+1	4	.8
9	+1	+1	0	0	+1	3	.6
10	+1	+1	+1	0	+1	4	.8
11	+1	+1	0	+1	+1	4	.8
12	+1	+1	-1	+1	+1	3	.6
13	+1	+1	+1	+1	+1	5	1
14	+1	+1	-1	+1	+1	3	.6
15	+1	+1	0	0	+1	3	.6
16	+1	+1	+1	0	+1	4	.8
17	+1	+1	-1	+1	+1	3	.6
18	+1	+1	+1	+1	+1	5	1
19	+1	+1	+1	0	+1	4	.8
20	+1	+1	0	+1	+1	4	.8
21	+1	+1	-1	+1	+1	3	.6
22	+1	+1	0	+1	+1	4	.8
23	+1	+1	0	+1	+1	4	.8
24	+1	+1	0	+1	+1	4	.8
25	+1	+1	0	+1	+1	4	.8
26	+1	+1	-1	+1	+1	3	.6

Item	Specialist scores					Total	IOC
	S1	S2	S3	S4	S5		
27	+1	+1	0	+1	+1	4	.8
28	+1	+1	+1	+1	+1	5	1
29	+1	+1	-1	+1	+1	4	.8
30	+1	+1	-1	+1	+1	4	.8

Table E5.2 Item - Objective Congruency Index (IOC) for the questionnaire part B

Item	Specialist scores					Total	IOC
	S1	S2	S3	S4	S5		
B1/Q1	+1	+1	+1	+1	+1	5	1
B1/Q2	+1	+1	+1	+1	+1	5	1
B1/Q3	+1	+1	0	0	+1	3	.6
B1/Q4	+1	+1	+1	+1	+1	5	1
B1/Q5	+1	+1	+1	+1	+1	5	1
B1/Q6	+1	+1	0	0	+1	3	.6
B1/Q7	+1	+1	+1	+1	+1	5	1
B2/Q1	+1	+1	+1	+1	+1	5	1
B2/Q2	+1	+1	+1	+1	+1	5	1
B2/Q3	+1	+1	+1	+1	+1	5	1

Table E5.3 The output of Cronbach's Alpha for Questionnaire part A

Reliability Statistics

Cronbach's Alpha	N of Items
.858	30

Case Processing Summary

		N	%
Cases	Valid	10	100.0
	Excluded[a]	0	.0
	Total	10	100.0

a. List wise deletion based on all variables in the procedure.

Table E5.3 (Continued)

Item-Total Statistics

Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	100.80	115.511	.006	.862
2	99.90	111.656	.379	.854
3	101.60	118.711	-.157	.875
4	101.20	107.511	.461	.851
5	103.00	110.000	.523	.852
6	101.40	107.600	.362	.854
7	102.10	112.989	.068	.867
8	102.80	109.067	.307	.856
9	101.60	100.489	.464	.853
10	99.90	110.544	.483	.852
11	100.20	99.956	.801	.840
12	100.20	108.400	.512	.851
13	100.70	105.122	.637	.846
14	100.60	106.933	.562	.849
15	100.70	106.456	.552	.849
16	100.00	107.556	.752	.847
17	100.50	104.056	.680	.845
18	100.40	105.822	.638	.847
19	100.40	99.600	.779	.840
20	100.70	103.789	.725	.844
21	103.00	110.000	.523	.852
22	100.50	115.611	.000	.862
23	100.30	107.567	.481	.851
24	100.70	112.011	.272	.856
25	100.30	104.678	.666	.846
26	101.20	112.622	.312	.855
27	101.10	102.322	.578	.847
28	100.60	113.822	.107	.860
29	101.50	118.722	-.281	.865
30	102.60	120.267	-.364	.868

APPENDIX F

Consent Form

My name is Sirin Sawangwan, an instructor from Rajamangala University of Technology Chakrabongse Bhuvanarth Campus, researching on the multimedia computer-assisted English writing and language learning motivation: The effects on English writing performance. I would like you to participate in multimedia English writing class and ask you some question about multimedia computer-assisted English writing. Your answers will only be used by the researcher to learn more about your writing scores, your computer and multimedia utilization, and perception on the use of the multimedia computer-assisted English writing. The teachers and other students in your university will neither know your writing scores nor what and how you answer the questions.

Your teacher have said that I am allowed to spend some time with you while doing pretest, posttest, learning multimedia English writing class and answering these questions. The test time and questions should take about 2 hours each.

The pretest and posttest are writing essays in which the time are set aside for you after your English class. You will not obtain any grades, or marks from the tests. The questionnaire is not a test and you cannot answer them in a wrong way. You will not receive anything for answering the questions.

After we are done, I will thank you, and your answers will help teachers learn about English writing performance before and after the use of the multimedia computer-assisted English writing, your motivation and perceptions toward the use.

I agree to participate in this study.

_____ _____

Signature of student Date

If you have any concerns or questions about this research, please contact Sirin Sawangwan at noxima77@hotmail.com

APPENDIX G

Pretest and Posttest Scores

Pretest		
Score	Frequency	Percent
0	4	2
1	58	29
2	40	20
3	48	24
4	28	14
5	18	9
6	4	2
Total	200	100

Posttest		
Score	Frequency	Percent
0	2	1
1	4	2
2	46	23
3	40	20
4	58	29
5	32	16
6	18	9
Total	200	100

APPENDIX H

5-Factor Model

Rotated Component Matrix					
	Component				
Items	**1**	**2**	**3**	**4**	**5**
i17	0.792				
i9	0.712				
i19	0.634				
i16	0.577	0.537			
i23	0.53				
i10	0.522				
i8	0.469				
i20		0.667			
i13		0.621			
i18		0.564			
i25		0.508			
i11		0.458			
i22					
i3			0.703		
i21			0.668		
i29			0.654		
i30			0.588		
i5			0.56		
i7				0.669	
i6				0.66	
i14		0.508		0.559	
i26				-0.506	
i15					

Rotated Component Matrix					
	Component				
Items	**1**	**2**	**3**	**4**	**5**
i4					
i2					0.646
i24					0.597
i1	0.48				0.542
i27					0.499
i28					0.485
i12					

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

APPENDIX I

6 Factor-Model

Rotated Component Matrix						
	Component					
Items	**1**	**2**	**3**	**4**	**5**	**6**
i17	0.804					
i9	0.71					
i19	0.682					
i16	0.68					
i23	0.551					
i10	0.543					
i18	0.476					
i3		0.723				
i29		0.678				
i21		0.634				
i30		0.601				
i5		0.566				
i7			0.673			
i6			0.653			
i14			0.62			
i26			-0.488			
i15			0.463			
i4						
i28				0.666		
i27				0.613		
i20	0.519			0.523		
i25				0.504		
i22				0.486		

Rotated Component Matrix						
	Component					
Items	**1**	**2**	**3**	**4**	**5**	**6**
i11					0.598	
i13					0.561	
i12					0.558	
i8						
i2						0.663
i24						0.589
i1						0.509

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 11 iterations.

APPENDIX J

Component Correlation Matrix

Component Correlation Matrix

Component	1	2	3	4
1	0.659	-0.405	0.532	0.344
2	0.272	0.907	0.181	0.267
3	0.553	0.093	-0.08	-0.824
4	-0.432	0.071	0.823	-0.362

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

APPENDIX K

List of Excluded Items after Rotation

2) Revising my papers is a lot easier when I write them on MCAEW.

4) I enjoy seeing the things I write printed out.

8) I am more comfortable to contact people in person than by MCAEW.

11) MCAEW helps people learn from each other.

12) An advantage of using MCAEW is you can contact people any time you want.

15) Using MCAEW is a good way to learn more about different people and cultures.

22) Using MCAEW gives me more control over my learning.

24) Learning English with MCAEW is important for my career.

27) I can learn English faster when I use MCAEW.

APPENDIX L

List of Item Statements and Concepts

Item Statements	Concepts
1) I can write better essays when I do them on MCAEW.	Task Completion
2) Revising my papers is a lot easier when I write them on MCAEW.	Instrumental
3) I enjoy writing my papers by MCAEW more than by hand.	Task Completion
4) I enjoy seeing the things I write printed out.	Task Completion
5) Writing papers by MCAEW saves time compared to writing by hand.	Task Completion
6) I enjoy using MCAEW to communicate with people around the world.	Communication
7) I enjoy using MCAEW to communicate with my classmates.	Communication
8) I am more comfortable to contact people in person than by MCAEW.	Empowerment
9) I enjoy using MCAEW to communicate with my teacher.	Communicative Competence
10) If I have a question about my writing, I would rather contact my teacher in person than by MCAEW.	Communicative Competence
11) MCAEW helps people learn from each other.	Learning
12) An advantage of using MCAEW is you can contact people any time you want.	Communication
13) Writing by MCAEW helps me develop my thoughts and ideas.	Autonomous Learning

Item Statements	Concepts
14) Using MCAEW makes me feel part of a community.	Communication
15) Using MCAEW is a good way to learn more about different people and cultures.	Integrative
16) Communicating by MCAEW is a good way to improve my English.	Communicative Competence
17) Learning with MCAEW gives me a feeling of accomplishment.	Communicative Competence
18) Writing by MCAEW makes me more creative.	Autonomous Learning
19) Using MCAEW gives me more chances to write authentic English.	Communicative Competence
20) I want to continue using MCAEW in my English classes.	Autonomous Learning
21) Using MCAEW is worth the time and effort.	Task Completion
22) Using MCAEW gives me more control over my learning.	Autonomous Learning
23) I enjoy the challenge of using MCAEW.	Communicative Competence
24) Learning English with MCAEW is important for my career.	Instrumental
25) I can learn English more independently when I use MCAEW.	Autonomous Learning
26) MCAEW keeps people related to each other.	Communication
27) I can learn English faster when I use MCAEW.	Learning
28) Using MCAEW gives me more chances to practice writing English.	Task Completion
29) MCAEW is usually very easy to work with.	Task Completion
30) MCAEW makes people strong and powerful.	Empowerment

BIOGRAPHY

NAME	Sirin Sawangwan
ACADEMIC BACKGROUND	Master's Degree in Language and Communication from National Institute of Development Administration (NIDA), Bangkok, Thailand in 2005 and a Bachelor's Degree, major in Business Administration from Rajamangala University of Technology Thanyaburi, Pathum Thani, Thailand in 2000
PRESENT POSITION	Lecturer, Department of English, Faculty of Liberal Arts, Rajamangala University of Technology Tawan-Ok, Chakrabongse Bhuvanarth Campus, Bangkok, Thailand
EXPERIENCES	Lecturer, English for International Communication Program, Faculty of Liberal Arts, Rajamangala University of Technology Tawan-Ok, Chakrabongse Bhuvanarth Campus, Bangkok, Thailand Freight Forwarding Sale-Coordinator, Agility Logistics (Thailand) Co.,Ltd. Bangkok, Thailand Tourist Officer, Tourism Authority of Thailand, Bangkok, Thailand