The English as a Foreign Language Writing Classroom and Weblog:

The Effect of Computer-Mediated Communication on Attitudes of Students and Implications for EFL Learning

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by

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Declaration

I declare that all the material which is not my own, has, to the best of my ability, been acknowledged. The material in this thesis has not been submitted previously by the author for a degree at this or any other University.

Signed ..Wei-Chi Chang.. Date ..31st July 2007..

Abstract

Innovative forms of communication technology have generated new educational models and learning environments. Existing literature includes much discussion concerning the consequences of using communication technology in the context of second language learning. However, recent research has not reached any convincing conclusion about the effects of communication technology in EFL teaching and learning. There are still many variables that need to be accounted for when the use of technology occurs in real-life educational environments, particularly when the adoption of a newly developed communication technology – the Weblog – could / may work better for language learners under specific circumstances.

This empirical study focused on whether the use of Weblogs positively changes the learners' attitudes towards EFL writing and their informal use of the English language. Once the focus of this study had been established, the research questions and hypotheses were then addressed as a means of examining the effect of Weblogs. A quasi-experimental research design was applied with a mixed-methods approach to elicit data from 119 EFL students in two universities in Taiwan. The collected data included 112 pre- and 102 post- GEPT exam papers, 119 questionnaire responses and the qualitative data of interviews with 24 research participants. These data were then analysed using inductive (qualitative logic) and deductive (quantitative logic) methods to find out the consequences of the research assumptions.

The results corroborate the theoretical findings on the significance of computer-mediated communication in learners' affective learning. In other words, the use of Weblogs influenced the learners' attitudes towards EFL writing. The combination of quantitative and qualitative findings suggested that Weblog technology engages learners in active reading and encourages learners' reflectivity, collaboration, and participation in EFL writing. Finally, the results also echo the theoretical concerns about the learners' self-efficacy and language register in the context of second language writing.

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Chapter I Introduction

1.1 Introduction of the Thesis

In recent years, the emergence of computer technology has created many opportunities for education; its potential and value for enhancing the learning of foreign languages has also generated a number of possibilities, with many researchers eager to exploit a gap in the area of EFL (English as a Foreign Language). Although we may argue that innovative ideas about the use of technology generate new educational models and learning environments, persuasive argument and evidence are still hard to find in the established research base. While there has been much discussion in the literature concerning the consequences of the use of technology within the context of second or foreign language learning, issues that appear to be worthy of examination are those existing anecdotic research findings about what particular technology worked best for language learners under specific circumstances. We may find that there are large and growing numbers of reports on the topic of computer-related language education, but it cannot be easy to reach an all-encompassing and convincing generalization for all technology-integrated language teaching and learning, because there are still many variables that need to be accounted for when the implementation of technology takes place in a real-life educational environment. In particular, we need control groups to be assigned for comparisons, for example, examining to what extent the technology works better when learners are placed in a position that enables them to participate actively in a task of strategy practice, or in the situation where students come from a variety of technical backgrounds or with different affective status and have to work collaboratively in order to produce the designated project.

The overall aim of this study was to encourage learners' participation in a series of Computer-Mediated Communication (CMC) activities using the Weblog system and to focus on the investigation into any impact on learners' attitudes and performance by looking at whether learners' experience of the Weblog has a positive impact on their learning attitudes or increases their informal use of the English language. With regard to Weblogs, Blood (2002) defines a Weblog as "a coffeehouse conversation in text, with references as required (p1)." In this study, a Weblog was used as a frequent-updated webpage to share, exchange, and publish personal ideas and academic writing tasks.

The study draws on data gathered as part of an experimental research project conducted to examine the attitudinal information in juniors at university level. Both quantitative and qualitative methods were employed to address the research questions relevant to the use of Weblogs for an English writing classroom. This chapter presents background information about the research, which includes a description of the Weblog platform, the EFL writing course in the University of Leader and the University of Southern-Taiwan, the research questions, research procedure and an overview of the methodology.

1.2 Statement of the Research Problem

As more and more people are becoming aware of Weblogs' value to the Internet, both in social communities and in academic fields, it seems that much attention is devoted to the studies of individual development, journalism and interdisciplinary knowledge-sharing (Blood 2002; Paquet 2003). For people who have tried to connect the technical features of the web to the issues of web-based learning and communication, it is worth exploring the potential of Weblog practice in education, and, more specifically, in the area of English language teaching.

While the researcher considers that various "E-approaches", or different media,

form a vital component of web-based language teaching, Weblogs turn out to be slightly different from other communication technologies in terms of the procedure of publishing, the register of language and the level of formality. The nature of Weblogs provides an individual with an opportunity for control over what is being written. Similar to other online communication tools, it also gives a group of people a place where they can interact and respond to each other. From an individual's point of view, a Weblog allows a person to keep their ideas in a form of daily notes or as a journal. To some extent, the practice of Weblog communication may initiate not only online discussion within a group of people but also the activity of knowledge sharing. If we assume that the value of sharing individuals' written work and exchanging opinions may bring an individual or individuals to the stage of reflection on his/her own writing, then we think positively of Weblog in the context of the L2 writing classroom, the feature of sharing and exchanging practice may have the potential to promote the process of L2 writing.

Although the concept of learning and teaching with technology has developed over many years of research and experience with different media forms, at present, there is little evidence of research into the situations in which Weblog may play a role in education, especially in the language learning context. Without research-based evidence, it is difficult to conclude that students can take advantage of such a web-based tool in developing their L2 writing. Also, it is hard to say that teachers who wish to employ the current approach to writing (known as the process approach) benefit greatly by using this 'silent-conversation' tool. This research project, therefore, intends to fill this pedagogical gap.

Another motivation behind this research project arose from a desire to alter EFL students' attitude towards English writing by using the new form of communication technology. From the researcher's teaching experience, which also echoes the point of

view of many researchers and teachers (Charney et al. 1995), it is often difficult for young adults to grasp writing in an academic context and this is often the cause of frustration for students, who eventually decline opportunities to expose themselves in second language writing, or avoid the practice of new writing skills. Many Taiwanese students may suffer during EFL writing and seem passive or even resistant toward learning to write in the classroom. Sometimes, they are reluctant to identify writing problems and have only inappropriate approaches to problem solving. There are, of course, plentiful and plausible explanations. Attention could be paid to the role of teachers in designing the course syllabus and the instruction of writing in an academic learning context. Equally important, however, is that attention should be paid to students' attitudes and beliefs about themselves and about EFL writing. Such attitudes and beliefs may affect the effort and persistence students exert on their work and their willingness to allow new input of knowledge and strategies.

In this study, all undergraduate students in the two target universities (Leader University and Southern-Taiwan University) were required to meet a certain level of English proficiency in order to pass the board of examiners for graduation. Besides, half of the target research participants majored in different subjects such as biotechnology and electrical engineering. They wanted access to knowledge of English to improve their understanding of their specific subject area. Such extrinsic motivations (school requirement and subject demands) may force students to learn to read and write, but do not necessarily indicate that there are enough incentives to encourage students to write, and to change their attitudes and beliefs about themselves in EFL writing. Unlike foreign students in other countries, students in Taiwan have little environmental resources for exposure to English and they have few opportunities to read, speak, or write to others in English. The experience of Taiwanese students whose major is not English language

tells us that exchanges in the English language and the practice of different skills for the purpose of communication can take place only in the classroom. The provision of limited resources for communicative English learning consequently raises another challenge for students who wish to succeed socially, academically, and even professionally both in their language capability and in their own subjects. Hence, the researcher had an expectation that the use of networked technology would not only modify students' attitudes and perceptions towards English writing, but would also improve their performance in writing.

1.3 The Weblog Platform

Weblogs, in general, have the features described by Stone namely "brief, frequently updated posts that are arranged chronologically (2002, p9)." Weblogs often can be recognized by the character of personal reflection and a more free-form style of writing. They can serve as a personal website where the writer can publish his or her essays and express his or her thoughts, ideas, and experiences of professional development. In many cases, Weblogs collect links to other sites with commentaries relating to a particular topic. From a general point of view, Weblogs have many outcomes that change hypertext projects, group communication, and journalism. As for education, Johnston (2002) introduced a Weblog into students' learning for the following reasons. An advantage from the technical point of view is the lack of complexity compared with other web page authoring tools, a free webpage host server, known as 'blogger.com', has made creating and posting to a Weblog much easier than previously, thus students require minimal training to begin their journey with a Weblog and post their comments to the Weblog. Moreover, a Weblog reduces the instructor's workload in maintaining the class webpage. General speaking, a Weblog resembles certain types of online discussion forum, but individuals or a group assume the administrative role of

Weblog organisation and the thread of discussion is often generated around the content posted on the Weblog. Despite the positive features of Weblogs given above, it is still difficult to imagine how Weblogs can be used as a tool to assist students' learning in an English language classroom and what benefits and drawbacks publishing students' work online will bring to them and to the instructor.

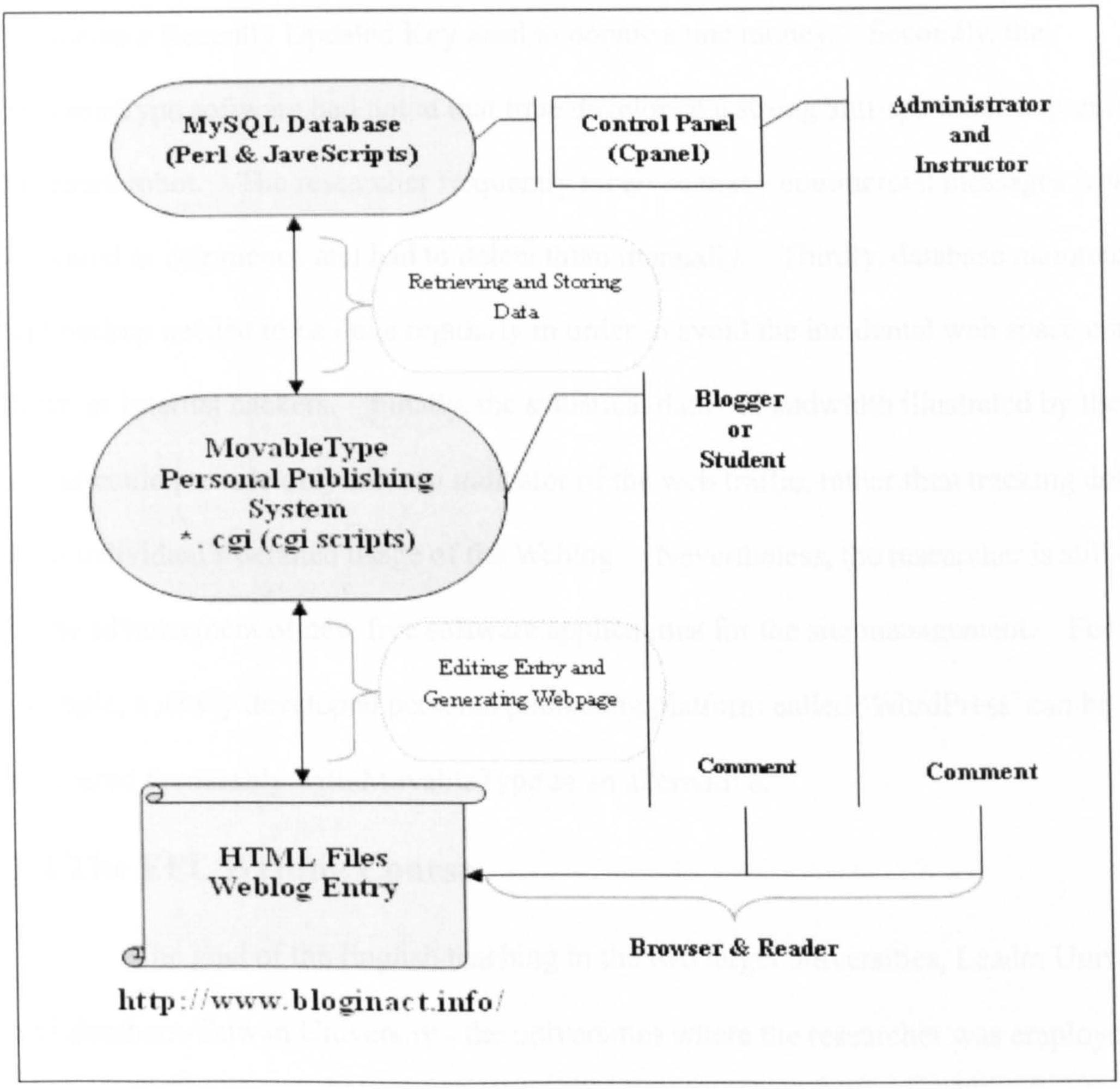
A study presented by Ward (2004) envisioned the potential use of Weblogs as a new way to entice students to communicate through reading and writing. His study highlighted several significances for the effective teaching of writing in the English learning classroom (Ward 2004). Learners who write a Weblog have a genuine audience, which initiates a motive of anticipation for reading and writing. The genuine audience brings their opinions, comments, and criticism, which may challenge the Weblog writers to reflect on what has been written. As a consequence, an authentic, responsive, and networked communication illustrates how such developing technology may reinforce the process of peer-reviewed writing and process-oriented composition. The Weblog writers who constantly update their entries will possibly encourage the audience to visit the Weblog frequently and therefore will be likely to build up their own readership. Ward (2004) particularly observed the Weblog phenomenon with the focus on students' 'dis-inhibition' and reduced 'public self-awareness.' He discovered that this online environment encourages students to communicate without inhibitions and preconceptions. Even some of the quietest students in Ward's class has made significant contributions to the Weblog discussion. Ward's study has, in fact, introduced a good pedagogical example of Weblog application in a second language writing class. However, a sound conclusion on the effect of Weblogs is still hard to achieve if the evidence was based only on the anecdotal self-report and general survey on students' attitudes towards Weblogs, without a comparison with a control group.

Following concerns regarding the above methodological issue, a teacher wishing to increase further the Weblog application and relevant research in the language classroom should first consider the setting up of its technology platform. In general, most Weblogs are hosted free of charge by Weblog providers, such as blogger.com or MSN spaces, who provide templates that require minimal technical skills for the site management. The feature of instant publishing manifests the significance that also makes the Weblog different from other webpage designs. The comments feature, which resembles many online discussion threads, allows the reader to respond directly onto the Weblog and interact with the author asynchronously. The offerings of many free Weblog providers are still growing, but provision of the advanced features and flexibility are sometimes limited.

In order to establish an appropriate Weblog platform better suited for the purpose of this research, the researcher asked for help from an experienced teacher who has used a Weblog for many years and who eventually chose 'MovableType'; this is a free Weblog software provider as well as a sophisticated web-based personal publishing system. Its highly configurable and expandable feature set allowed the researcher to have easy access to the activity logs, full control over multiple authors, better options for archive organisation, and flexible management of comments, drafts, publishing and templates. In addition, the setting of MovableType requires an account on the web space that permits CGI scripts, Perl (Practical Extraction and Reporting Language) installation, an FTP program for uploading the prerequisite files to the web space, and a JavaScript and cookies enabled browser. Therefore, it is necessary to satisfy the above needs and find a web host for the Weblog system. This increased reliability, higher performance, and convenience of data management inevitably is reflected in the cost of the web space rental. The payment of the rental is approximately fifty-two pounds (British sterling)

per year including the fee for the web address. Figure 1.1 shows the Weblog's basic structure and communication between the database, the Weblog system and the users. The web address is http://www.bloginact.info/.

Figure 1.1 Basic Weblog mechanical structure



Bearing in mind the basic structure of the Weblog, it should be noted that it took the researcher a long time to set the database and configure the Weblog system before the commencement of the EFL writing course. In order to run the Weblog interface, the researcher took approximately five months to sort out the problem of compatibility between the database and the Weblog. The engagement of such long working process was unavoidable only if the login records and the access of database were required to serve the research purpose. Nowadays, EFL teachers still can introduce a Weblog to

students by registering a free online Weblog provider (e.g. Blogger.com) without taking too much time and efforts.

There are also a few limitations regarding the adoption of free personal publishing system. Firstly, as the MovableType software is donate-ware, people wishing to receive a Recently Updated Key need to donate some money. Secondly, the MovableType software had not at that time developed a strong anti-spammer to prevent the spam robot. The researcher frequently received many commercial messages which appeared as comments, and had to delete them manually. Thirdly, database maintenance and backup needed to be done regularly in order to avoid the incidental web space crash down or Internet hackers. Finally, the statistical data of bandwidth illustrated by the web server could provide only a broad indicator of the web traffic, rather than tracking down each individual's detailed usage of the Weblog. Nevertheless, the researcher is still open to the advancement of new free software applications for the site management. For example, a newly developed personal publishing platform called 'WordPress' can be compared favourably with MovableType as an alternative.

1.4 The EFL Writing Course

The goal of the English teaching in the two target universities, Leader University and Southern-Taiwan University - the universities where the researcher was employed - is primarily aimed at providing students with individual development through the practice of four different skills (i.e. listening, speaking, reading and writing) in a communicative way. The researcher also had sought to implement the communicative approach towards language learning to which the researcher had been introduced during the CELTA teacher training at International House Newcastle and Master degree course in the University of Newcastle upon Tyne. Nevertheless, the researcher was still open to new approaches and tools conducive to language learning. As an EFL writing teacher, the researcher also

focused on guiding students to improve their English writing skills, and introduced students to the concept of process-oriented composition.

In the official guidelines drawn up by the two target universities for the syllabus of the language course, teaching should make an effort to help students to build up their competence and confidence in using English as a tool for communication (also see Appendix A for the official school document). Therefore, in accordance with the general guidelines provided by the school, the researcher planned and designed the syllabus for the EFL writing course (also see Appendix B for the course outline). In this study, the EFL writing course concentrates on a stage of 'how' to carry out the writing. This stage deals with 'what to say?', 'how to start?', 'why?' and many more questions that should be asked during the process of writing, rather than focusing on a description of the language models (e.g., analysis of text) that can be followed. In other words, the emphasis of 'what' should be achieved in writing becomes less important when the students are just about to learn the key skills and strategies involved in process writing. A sample of detailed lesson plans can be referred to the Appendices (see Appendix C).

During the implementation of the research project, the researcher was in charge of the EFL writing course with 43 participants in the University of Leader and 76 participants in the University of Southern-Taiwan. All of the participants who were involved in the module of EFL writing received the same instructions about the process of writing, but with two groups of students who were taught with Weblog treatments and two groups without (i.e., control and experimental group; also see Figure 3.1 in Chapter 3). For each group of participants, the course of lectures that they were required to attend lasted for approximately five months in a semester, with one hour-long lecture per week (lectures in the University of Southern-Taiwan). Meanwhile, the researcher also paid attention to giving additional lectures on EFL reading (this happened in the

University of Southern-Taiwan) and to teaching a module of language and culture (this lecturer took place in the University of Leader). As a result, the researcher is aware that the intensive course arrangements may have slightly affected the quality of teaching in other modules, because those modules did not form part of the focus of this study.

1.5 The Research Questions, Procedure and Methodology

In light of the discussion above, in this study, the researcher attempted to answer the following questions:

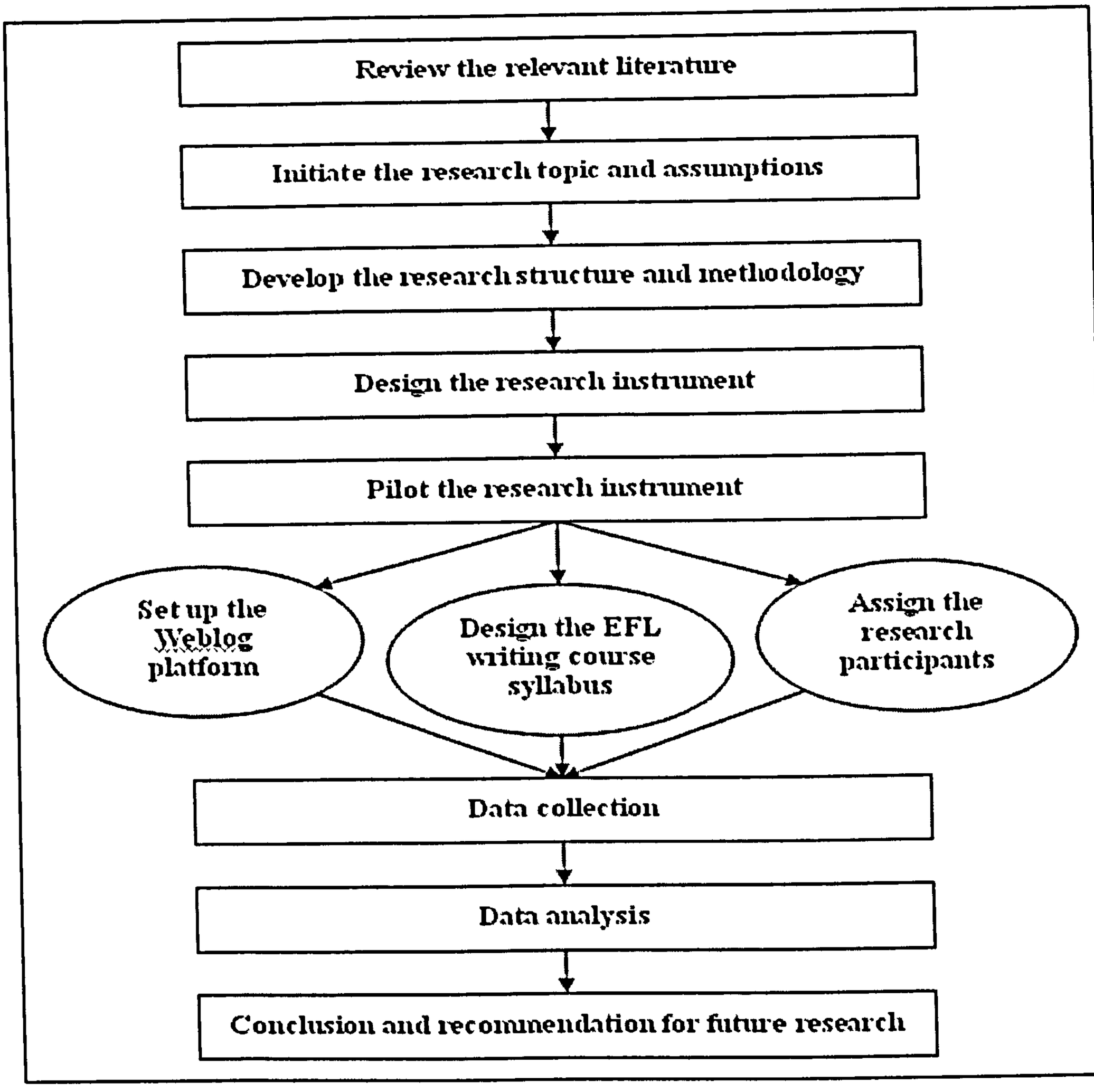
- Does the introduction of Weblog communication change the performance and attitudes of the learners to EFL writing?
- What were the learners' performance and attitudes towards EFL writing before the introduction of Weblog communication?
- Would the use of a Weblog encourage learners to take a more active participation in an EFL classroom?
- Is there any difference between the practice of strategies that are relevant to the writing process between learners who use a Weblog and those who do not?
- Does the Weblog increase the learners' informal use of language?

The research procedure in this thesis is outlined in Figure 1.2 below.

Following the literature review (also discussed later in Chapter 2), the researcher developed the structure of this study, selected the methodology, and then designed the research instruments. The research instruments were pilot-tested before the employment of the data triangulation, which combined an attitudinal questionnaire survey, interviews, a GEPT (General English Proficiency Test) literacy test, and observation from the records of the web server to examine the effect of Weblog intervention on students' writing performance and their attitudinal tendencies in the two universities (see Appendices D, E,

and F for the questionnaire, interview scheme and the GEPT literacy test). The purpose of the former was to examine the opinions that students had about themselves, EFL writing, and computer-mediated language writing, and then to analyze the data for significance in this study. The main purpose of the interviews was to elicit the opinions of students regarding the extent to which the findings from the questionnaires had been confirmed and cross-validated with regard to the eight attitudinal factors. The qualitative data from interviews were also used to identify the implications with relation to the learners' practice of strategy and informal use of language. The purpose of using records from the web server, in turn, was to strengthen the findings from the quantitative survey in relation to students' participation in the Weblog activities. The use of the GEPT literacy test was to ascertain the level of students' English proficiency as proof of there being no discrepancy between groups of students and to examine the relationship between different treatments and the learners' subsequent writing performance. Data from different sources were collected and subsequently analysed at the end of the writing course. The results of quantitative data analysis, the findings from relevant literature and interviews were then integrated and used to answer the research questions. Finally, conclusions and further research suggestions were drawn from the major findings.

Figure 1.2 The research procedure



1.6 Summary

In this chapter, the researcher discussed the purpose of the study and briefly explained why there may be a need for further experiment to obtain a more valid, reliable, and robust conclusion. The researcher also introduced the Weblog technology for the potential use in an EFL writing classroom and identified some possible technical problems and constraints during the setting up of a Weblog platform. Then the researcher presented basic information about the EFL writing course in this study. An introduction to the research process and methodology, which combines an experimental treatment with the mixed-methods survey, was outlined at the beginning of this thesis.

In the next chapter, the researcher will review the relevant literature regarding the development of language teaching with computers, and the theories and research on second language acquisition and EFL writing.

Chapter Ⅱ Literature Review

2.1 Introduction

There is little doubt that the technological revolution of the last decade has transformed the way in which educational resources and information are distributed in different institutional settings, and on many different levels (McLoughlin and Luca 2002; Sharpe and Bailey 1999; NAACE 2002). Particularly, Internet-related or network-based technologies in the field of education and training have created opportunities for the development of effective teaching and learning models (Crook 1996; ITiCSE'97 1997; Lim and Chai 2004; Rafaeli 2004; SocITM 2002; Turner and Stylianou 2004; Wen et al. 2004). Based on the notions that computer technologies facilitate interactive learning and offer learners the richness and depth of authentic materials, many language teachers have begun to favour computer-assisted instruction since the late 1980s (Ahmad et al. 1985; Bush and Terry 1997). Teachers have become eager to adopt any technology-based application for language teaching in order to maximise the potential for language development. The consequence of using technology is that it also forces language teachers to develop the critical skills necessary to evaluate technology and its use in the context of second or foreign language learning (Kassen and Higgins 1997). However, given the incredible technological changes since the early 1970s, empirical research in the field of foreign language writing has not yet unearthed a convincing all-encompassing description of how good online writing is achieved, and the extent to which electronic media have changed students' linguistic development, as well as writing style (Warchauer 2004). While there has been discussion in the literature concerning the quantitative evidence of students' on-line text production, what is important in this study

is an examination of how computer technologies have affected the theories and approaches of foreign language learning, or vice versa, with particular emphasis on the assessment of computer-mediated foreign language writing. Two major elements of this chapter concerning the advancement of modern technology in educational settings, and the theoretical prominence of constructive learning, will be discussed in relation to the field of English language teaching and learning.

The first section of this chapter begins with a historical review of how Computer-Assisted Language Learning (CALL) has been implemented within a theoretical framework. A review of the current debate on the content and pedagogical issues of web-based learning experiences will follow. Next, a consideration of the learning theories and processes as they relate to a classroom environment will follow after an introduction to new teaching and learning experiences with Computer-Mediated Communication (CMC). In fact, in the present paper, no attempt will be made to formulate or elaborate any overarching theory of second language acquisition.

The second section of this chapter is concerned with L2 process writing. It has been argued that writing in its natural state is influenced by social and cognitive discursive factors (Myles 2002). In other words, writing is not a passive process, but an active process of responding and clarifying meaningful information. A successful writer will then process useful information texts in meaningful ways. Hedge (2000) contributed to a comprehensive understanding of process writing when she suggested that writing involves complicated cognitive processes that continuously engage writers in the process of organizing, planning and revising written information. She also claimed that the concept of process writing provides clues for teachers to develop tasks aimed at giving student writers a "greater control over the cognitive strategies involved in composing" (ibid, p308).

2.2 The Development and Background of Language Teaching with Computers

An understanding of how people conform to their environment so as to enrich their learning experience effectively is a key concern for the design and implementation of computer-assisted language learning and teaching. Learning theories that have been developed and discussed by many educators over the years have often had a profound influence on the use of technology in education, as well as in second and foreign language learning (Conway 1997; Warchauer and Kern 2000). However, the development of instructional technology is also influenced by pedagogical methods.

When considering the development of instructional technology, Conway (1997) creates detailed categories of technology that support specific techniques for teaching and learning.

Table 2.1 Models of instruction and technology support *Adopted and revised from Judith Conway (1997)*

Models of Instruction and Technology Support				
	Educational Psychologist	**Methods and Approach**	**Example of Computer Applications**	**Function of Application**
Behaviourism	Operant Conditioning (B. F. Skinner)	Direct Instruction and Explicit Teaching	• Jurassic Spelling • Animated Multiplication and Division • Super Solvers: Out-numbered	Drill and Practice
			• The PLATO system at the University of Illinois	Drill and Practice
			• Introduction to Microsoft Works • DaisyQuest • Daisy's Castle • Welcome to Physics	Tutorial
Cognitive and Constructive perspectives	Social Development Theory (L. Vygotsky) John Dewey Constructivist Theory (Jean Piaget; Jerome Bruner)	Cooperative or Collaborative learning	• word processor: Word • Spreadsheets: Excel, Lotus 1-2-3 • Desk top publishing: Microsoft Publisher • Multimedia Media Presentation: Power Point • Multimedia encyclopaedias: World Book; Encarta97; Britannica CD97 • Mindscapes: How Your Body Works	Tool and resource for project work
		Cognitive Apprenticeship	Electronic Emissary Project at the University of Texas at Austin	Digital exchange of ideas
		Discovery Learning	"Operation Frog"	Simulation

From this support, educators are able to accomplish behavioural, cognitive, and constructive goals in ways they could never have done before. For example, many classroom applications of computer software were in the form of drill and practice programs. There are many that address the task of providing guided and independent practice to learners. This type of program provides a systematic method for presenting materials in small steps, by pausing to check for student understanding, and effectively teaching mathematical procedures.

2.2.1 Historical Review of CALL

2.2.1.1 Behavioural Approach to CALL

The earliest application of computers to teaching represented the basic concepts and principles of the behaviourists of the 1960s (Allen 1972; Ahmad et al. 1985). Behaviourists assume learning is a sequence of stimulus and response moves. Appropriate responses can be "reinforced" by the "repetition of continuous paring with consequences" (Burton et al. 2004). Therefore, the focus of repetition and practice is a key strategy with instructional designs following behaviourist theories.

This behavioural approach also influenced the design of Computer-Assisted Learning models. Many CALL programs that used mainframe or microcomputers in the 1970s, at a time when the accuracy of learners' responses played a central role for learning, offered various repetitive instructional patterns. In schools, the concept of behavioural theory encourages teachers to address specific objectives and learning outcomes, particularly when developing their lesson plans for teaching. Consequently, language-learning programs focusing on repetition and practice, such as vocabulary drill and translation practice, would be used to force learners to receive all necessary critical information from the teacher and the instruction/textbook. Teachers are required to evaluate the success and failure of the students to receive information and then the

teachers are able to determine what must be taught next. Hence, knowledge is viewed as given and absolute.

Based on behavioural changes, the technology offers various instructional patterns that can be repeated until learners become familiar with them. Programs can be designed for a specific goal concerning a particular knowledge and skill. However, many educational psychologists have criticized behaviourism as oversimplifying human behaviour in the areas of problem solving and learning strategies. This criticism came from behavioural theorists who are primarily concerned with the observable indicators of learning. For that reason, what happens inside the brain is something with which many psychologists have become increasingly concerned. These factors, combined with the fact that the earliest CALL programs tended to be "unsophisticated, generally allowing only one acceptable response per item, propelled CALL into its second generation" (Warschauer and Kern 2000, p9) and redirected the behavioural view of learning and instructional design of CALL to the cognitive learning paradigms.

2.2.1.2 Cognitive Approach to CALL

While discussion has continued regarding the observable behaviour resulting from exposure to different stimuli, cognitivism concentrates on the area of mental processes. Winn (2004) points out that cognitive theories investigate the descriptions of schemata and mental constructions. In comparison with the behaviourist position, the definition of cognitive psychology clearly highlights the fundamental problem of behaviourism in considering only an account of observable variables such as the stimulus given to human beings and any consequent response to that stimulus; thus, the concept of cognitive theory accounts for just the information processed in our brain (Groome 1999). In other words, is the scientific experiment of recording externally behaved responses being constrained or restricted by the elimination of studies regarding information

processed in mind when most cognitivists claim the importance of inner mental processes? Moreover, if the root of cognitive development is to elaborate the understanding of how individuals' operate meaning and organization in response to their own experiences, then the cognitive concept must acknowledge the processes of perception, memory and symbolic representations (Andrade and May 2004). A more practical view of cognitive concept is to investigate "those structures and processes whereby human beings selectively take into their minds aspects of external events, sort out these initial impressions, either reject or store them and, finally, retrieve and use these systematically stored contents of the mind when required in order to carry out the activities of their daily lives" (Turner 1984, p2).

Following the line of cognitive reasoning, learning becomes a process of diagrammatic representations of schemata to memory where they may be processed or changed, but the design of cognitive tasks still focuses on the given cognitive objectives and on prescribed instructional strategies to balance the behavioural objectives.

In order to achieve cognitive goals for learning, educational technologists have sought to expand the role of computers by taking on a guiding, questioning role, which involves informing students what they are doing and how they are going to do it. In other words, it is suggested to learners that they should be taught explicitly about the strategies they can use, or they should engage, to reflect on how they are learning. Therefore, cognitive instructional designs have evolved into a nonlinear process. Based on these cognitive principles, CALL in the mid 1970s placed less emphasis on repetitive drills, and more on students' mental constructions of second and foreign language processes (for example, prompting, modelling questions and strategies, demonstrating, and helping students reflect on what they had done, how they did it and how well it was done). Persuading learners to focus on the process of what they do may be a new

experience for many. In a CALL situation, the computer, as a pedagogue taking on a magisterial role, can get learners to focus on what they have just experienced, or encourage them to become more aware of the learning process. The design of the tasks in CALL materials may require some kind of instructional features that prompt learners to reflect on what information is needed for the task, and activate the learners' metacognitive skills in order to manage cognitive processes. Students' initial replies to questions may be vague and they may need to be pushed to think and justify their responses. Such an approach needs to build students' awareness of their language learning and mental processing in a gradual way.

2.2.1.3 Constructive Approach to CALL

When a cognitive analyst is concerned with examining learning at the level of individual sentences in which one's linguistic competence is based solely on the practicing of the rules, another shifted cognitive aspect of learning is solely dependent on whether or not the language learner is cognitively and socially capable of conceiving external messages based upon his or her unique set of experiences and can interpret the message from self-expression. While the judgement as to whether something is or is not 'a piece of information given' is independent of meaning, the analyst is left with challenges to answer questions regarding whether knowledge can be built through the interpretation of meaning from one's own experiences as well as the portrayal of social performance negotiated during interaction (Jonassen et al. 1995). It is important to address the above points because an increasing number of cognitive scholars and researchers working within an open-ended philosophical framework have considered the real world situation as a complex social network and, thus, have focused more on epistemological assumptions of constructivism. That is a perception of knowledge as a 'function of how the individual creates meaning from his or her experiences; it's not a

function of what someone else says is true' (ibid, p11).

One of the cognitive constructivists, Bruner, acted on the basic premise that he was right to visualise the learner as an active processor who explores the reality through multiple representations, and discovers and constructs his or her own knowledge (Bruner 1966). Subscribing to this notion consequently requires the advocators of cognitive constructivism to consider the following principles of constructivistic learning (Kearsley 1999):

1. Instruction must be concerned with the experiences and contexts that make the student willing and able to learn (readiness).
2. Instruction must be structured so that it can be easily grasped by the student (spiral organization).
3. Instruction should be designed to facilitate extrapolation and/or fill in the gaps (going beyond the information given).

The principles of learning from the above-mentioned cognitive perspective by Bruner (1966) only represent one particular conceptual framework within constructivism. In fact, recent constructivists believe that people actively construct meaning within situated contexts of social interaction involving a complex range of factors (Park and Lee 2004; Crook 1996). Learners are still required to make extensive use of cognitive techniques, such as predicting and creating. In constructivism, learning is affected by the context, and the beliefs and attitudes of the learner. Autonomous active engagement is introduced to help an individual construct his or her own meaning. Opportunities are also given to engage learners in co-operative learning and discussion with other learners.

Based on the idea that the individual learns and gains knowledge through worldly experience, technology certainly offers the possibility of customizing learning to individual needs and teaching methods. Computer-based materials can be designed in such a way that it is the learner who chooses how to learn from them: learners can choose the time, pace, and order of progression through such material. Technology also

provides access to shared information and knowledge building tools to help learners to construct shared knowledge collaboratively (Jonassen and Rohrer-Murphy 1999). The constructivist period of CALL in the 1980s, therefore, moved its pedagogical position from a dominant position to a more advisory one.

However, some argue that where more freedom is given to learners to explore knowledge, unwanted experiences may result. For lower ability learners, cognitive demands may cause them to lose their way in self-regulated learning, as they access mass information from either the material itself or the Internet. A more problematic issue, in a pragmatic sense, is whether lower level ability learners would be capable of accurately reproducing the process of how and what they think, in other words, to think how they think and what is in their mind (as most cognitive constructivists are interested in knowing what students learn and the process by which they do so). Moreover, as Warschauer and Kern (2000) point out, CALL applications still lacked a provision for communicative response options and practice of meaning negotiation.

2.2.2 Social Development Theory and Collaborative-Based Interpretation for Second/Foreign Language Education

What the preceding sections have proposed is that there are some fundamental perspectives to which the theorists and researchers can adhere whilst investigating the nature of human knowledge. They can either interpret knowledge as being actively constructed, on the individual level of a cognitive structuring process basis (see the section 2.2.1.2 and 2.2.1.3), or they can apply external beliefs about the gradually changed intellectual landscape to account for the behaviours negotiated on a social interaction basis. Of crucial importance is the existence of any belief that these well-proposed cognitive perspectives cannot be favored with a single perspective if we try to provide a broader picture of what is being developed in the field of constructivism.

Although many aspects of human problem solving, learning and language use can be successfully explained through the cognitive perspectives of mental representation and procedures, critics of cognitive advocates have offered a revolutionary challenge. It is argued that most cognitive theorists tend to disregard the significant role of physical environment and social effects in human thinking. Nonetheless, before one can agree with such ostensibly controversial views, one must fully understand the implications of cognitive and social standpoints.

Within the field of social constructive development and language learning, Kern (2000) notes, "the predominance of cognitive research on L2 reading and writing makes it easy to forget that literacy is a socially constructed phenomenon, not a naturally occurring process ... reading and writing are communicative acts in which readers and writers position one another in particular ways. Texts do not arise directly and naturally from thought, but develop out of an interaction between reader and writer" (p34). In the social constructive profession, overly emphasising the production of autonomous discourse and accurate contextual structure may separate the cognition from communication. Discourses and language forms can be better understood as meaning resources reflected in particular ways and in particular communicative conditions (Hymes 1971). According to what American sociolinguist, Dell Hymes, suggests, knowledge that enables one to produce and understand the discourses and language forms has a social basis (ibid, p9). Recent literatures concerning the integration of computer technology and education also emphasise the importance of social context in cognition and see the process of understanding the knowledge as being distributed collaboratively between two people or individuals in a community (Maor 2003). A view of social constructive learning is, therefore, gradually accepted by most foreign language teachers as well as by the researcher, that is to say, the discussion of interaction, collaboration,

communication and learning in social discourse situations becomes a prominent educational topic today. For the above reasons, the constructive frame employed in the following explanations falls solely within the niche of a collaborative, that is, Vygotskyan, line of reasoning and presents socio-cultural/socio-cognitive conceptions of constructing messages through communicative acts.

Proponents within Vygotskyan readings have promoted the notion that individuals learn to master tools and signs (cultural artefacts) by interacting with more competent members of society (for example, parents or teachers) (Vygotsky 1978). For Vygotsky, language, as a type of socially constituted and historically developed artefact as well as other forms of signs (for example, writing, number systems), plays a central role in the process of reflecting and elaborating experience both on the individual level and the social level. Vygotsky (1978) explained that the process of intellectual growth is distributed among the initial start of dependency on other people and the eventual independence and self-regulation. It is a process of transformation from interpersonal dialectical communication into intrapersonal thinking as a consequence of an increasing ability to reconstruct psychological activity (ibid. p126). From Vygostsky's perspective, an explanation of the transitional stage from lower order (elementary psychological processes) into higher order mental functions (more complex processes) has contributed to the account of human thinking and the change in individuals' behaviour in the course of development and depends on how the individual incorporates the use of signs as a basic means for directing and mastering the psychological processes, that is, the mediation processes (van der Veer and Valsiner 1994, p207). Although a certain number of Vygotsky's ideas regarding the classification of what constitutes lower order or natural mental functions, remains unfinished for others, such as the development of the ZPD concept through dialectical processes (Lantolf and Appel 1994, p5; Wertsch 1985, p197;

Kinginger 2002, p245), his observation of intellectual development was fundamentally correct to establish a link between activity and participation in culturally and socially organised practices. Notwithstanding the above ambiguous part of conceptual development, the ZPD (Zone of Proximal Development) in Vygotsky's theory has become a successful construct in promoting the importance of learners' participation in a community. In other words, the ZPD construct has provided a prominent and pervasive belief in the explanation of how the learner's mental ability could be developed with the help of others within social interaction. With this belief in mind, the ZPD is " the distance between the actual development level as determined by independent problem-solving and the level of potential development as determined by problem-solving under adult guidance or in collaboration with more capable peers" (Vygotsky 1978, p86).

Apparently, an epistemological understanding of ZPD seems to suggest that the potential learning or proximal development is constrained and can be assessed within the empirical indicators of mental testing implications (Morris 2004). In fact, more common interpretations of ZPD are considered in various psychological, educational, and linguistic oriented disciplines as a metaphorical tool applied through unequivocal educational or behavioural learning objectives (Kinginger 2002). In the domains of foreign language education, Kinginger (2002) elaborates three different interpretations of ZPD, namely, skills, scaffolding and metalinguistic interpretations.

The skills interpretation is an especially common discussion for a communicative language-learning situation. Pedagogical challenge and instructional assistance, which has been stressed in the design of tasks and promotion of group participations (the qualities of practices), provide students with opportunities to undertake tasks that are slightly above their individual current level of ability so that individuals

may come to that knowledge on their own. Having started with the 'skills' related interpretation of ZPD, the view of the foreign language classroom focuses attention on the social interaction through the qualities of practices. Therefore, learning by working collaboratively in the target language has the potential outgrowth of skill acquisition (ibid, p253).

The scaffolding interpretation is also salient for discussions under the headings of social interaction and second language acquisition as well as other disciplines that are beyond the scope of second language studies. The ZPD construct as the scaffolding model was further envisaged in a more constructivist sense by Wood, Bruner and Ross (Wood et al. 1976). Learning in the zone of scaffolding occurs only when a knowledgeable other is providing the necessary input within a learner's current and potential developmental stage. The 'scaffolding'-oriented view of ZPD has paid particular attention to the significance of the social and cognitive benefits of the 'social other' (assistance from more knowledgeable peers or teacher). In other words, a teacher's assistance can act as a scaffolding unit only when the learners' minds' cognitive activity is ready to be triggered.

The metalinguistic interpretation focuses on the conceptual application of ZPD in the second/foreign language classroom with more concerns about the process of meaning negotiation. Linguistic knowledge can be built within the classroom interaction embedded in a given collaborative task. It is the effort of collaborative work that encourages learners to reflect on what has been produced through the use of signs and tools (spoken or written language). The outgrowth of the internalisation of linguistic structures and of language has less to do with teacher's assistance, but rather is related to the teacher's provision of organised and managed group work for students' metalinguistic reflection. Again, students' developmental cognitive processes are concerned more with

how they encounter language-related problems in the interactive work than with the input or output from teacher and students themselves respectively. While proponents of ZPD have paid attention to the significance of language production and the active role of learners in producing language output, Swain (2000) has confronted such pedagogical issues by reinterpreting the metalinguistic concept as a more social-community oriented phenomenon, and stating that:

> *Collaborative dialogue is problem-solving and, hence, knowledge-building dialogue. When a collaborative effort is being made by participants in an activity, their speaking (or writing) mediates this effort. As each participant speaks, their 'saying' becomes 'what they said' providing an object for reflection. Their 'saying' is cognitive activity, and 'what is said' is an outcome of that activity. Through saying and reflecting on what is said, new knowledge is constructed (p113).*

Whether the pulse of such interpretations is contingent on the individual, on the teacher, or on the social other, truism and idiosyncratic notions of ZPD still provide little in the way of accounting for the distance between a learner's actual development level and their potential learning performance.

Following the concept of Vygotsky's theory of social developmental construct, learning is seen as a social construction of meaning. Accordingly, the goal for the majority of constructivist language teachers is to create the potential learning event that is more closely related to the collaborative practice of the real world for learners. A learner's ability to solve a problem with the assistance of more able peers is indicative of their current capacities and potential learning outcomes as they may acquire the necessary skills to manage the given tasks through the active exchange of the learner's use of spoken or written language. Additionally, the use of computer technology and networked communication has been said to be the effective tool for the exposure of

in-depth and reflective discussion in a collaborative-based environment. In other words, educational technology or networked-based learning has been providing an alterative dimension for learners easily accessing or widening the Zone of Proximal Development.

2.2.3 Computed-Mediated Communication and Second/Foreign Language Writing

Since the advent and proliferation in the mid 1990s of computer networks as a means of providing learning environments that support constructivist approaches to learning, there have been a number of studies concerned with the issue of online technical features in educational settings. Many researchers have tried to connect networked technical features to the engagement of online courses by underlying the pedagogical and instructional principles, particularly in second or foreign language education (Aalst 2006; Ferdig 2006; Kern 2006; Peterson 1997; Warschauer et al. 1996). The introduction of networked technical features means people who use any web-mediated manifestation of applications are able to send their message to one or many people simultaneously. For example, using networked applications like E-mail or electronic bulletin boards, the message can be sent asynchronously, and the response is posted in a web-manifested space to be accessed and read by many people in their free time.

Once most educators became aware of the changing features of computer technologies (from stand-alone CD-ROM to networked transmission), a conceptual understanding of computer network development with the distinction of synchronous and asynchronous communication technologies was also proposed with an analytical framework employed for the examination of the current teaching and learning paradigms (Romiszowski and Mason 2004). Clearly, the use of computers in more recent years has been expanded as a medium of communication. The term, 'Computer-mediated Communication' (CMC), was subsequently used to describe "the process by which people

create, exchange, and perceive information using networked telecommunications systems that facilitate encoding, transmitting, and decoding messages" (December 1996).

From a teaching perspective, Warschauer et al. (1996) located a conceptual bridge between several types of CMC (for example, Email, and both synchronous and asynchronous conferencing) and the process of social communication. They believed that the use of CMC in language education would have the effect that most social psychologists endeavour to promote, namely, the salience of facilitating social interaction and social discourse. This endeavour is crucial because it underscores the salient features of CMC in promoting collaborative learning. Peterson (1997) echoes this perspective by stating, "the notion that computer networks can be used to empower learners draws on earlier educational models that stress the beneficial effects of cooperative, socially based learning" (p 33). If the learner is actively reacting to the online messages either by reading or by responding to them, then the notion of social empowerment for learners is in fact a spur for most interactionist SLA (Second Language Acquisition) theorists who have been willing to see the influential change in learners in second language learning.

The above description has given only a sketched scheme of CMC associated with constructivist theory and second language acquisition. Therefore, on what has the advancement of CMC actually been focused and how has it been proved as a key to benefit the proposed research? What is the quality and quantity of relevant research on the use of CMC in the L2/foreign language classroom? Additionally, what is the connection between the theoretical understanding of educational technology, the EFL classroom, and second language acquisition within this study? Given the proposed experimental project and Weblog technology in this study, asynchronous-featured communication therefore is of paramount importance to the following discussion. The

connection between educational technology, EFL classroom and SLA will be revisited in a later section.

In the observation of updated computer technology, the basic feature of asynchronous network communication allows learners to "shape the nature of the exchange, but also prompts students to review posted information and analyze their own ideas before responding because they are not constrained to respond immediately. Furthermore, …text-based online communication has the potential to strengthen writing skills and encourage more deliberate articulation of ideas" (Pena-Shaff and Nicholls 2004, p244). Learners in such an asynchronous environment have enough time to reflect and absorb the given information at their leisure. Most networked programs also permit the transmission of audio files, imageries and animated graphs rather than simply provide the function of hypertext. By using asynchronous communication technology, learning becomes more flexible and varied through the provision of reciprocal channels. The opportunities that asynchronous technology can offer for second language learners increases, in particular, not only the exposure to the target language, but also enriches their experience of working with others through writing and reading. Compared to the conventional language classroom, the distinct feature of asynchronous learning is its mobility for interaction, this 'mobility', which rejects the static knowledge acquisition functioning behind the notion of independent learning, has given language learners easy access to a collaborative environment (Gould 2005). Second language learners who work with asynchronous communication technology can type extended messages to make sense of their own writing for others whenever they need to or want to without the constraints of time and space.

One may make the assumption that language learners or teachers may find some benefit in any opportunity among these networked circumstances with the provision of

idiosyncratic and innovative models of asynchronous learning, but it is not sufficient to warrant a transformational consequence in language performance and other affective factors. For this, consideration needs to be given to the extent to which the use of CMC actually contributed to the language learning. More specifically, what has been found in the current research on CMC with regard to foreign language writing?

Before answering the above questions, it is worth noting that most studies took computer-mediated communication as a means to promote interactive competence, collaborative learning projects, reflective thinking, active participation in a learning community, and of course, to outline the potential of computer networks for various educational disciplines (Chun 1994; Fujiike 2004; ITiCSE'97 1997; Wen et al. 2004; Bullen 1998). Despite this wave of interest, which has swept across foreign/second language education, it can be argued that the quantity and quality of studies to have emerged comparing the conventional and the CMC situated classroom has not been sufficient to instigate a revolutionary research paradigm. Most of the literature on CMC-related topics is anecdotal rather than empirical (Romiszowski and Mason 2004) and only a small portion is concerned with well-defined variables in particular settings (in this case, settings within the field of CMC used in second/foreign writing classroom).

To give an example that is relevant to the present research, Sullivan and Pratt (1996) conducted a comparative study of 38 ESL students in two different learning contexts to examine their attitudinal change to writing in the classroom and the effect on their written language. They claimed that writing in a computer-assisted classroom encourages active participation and has more effect on students' discussion than has writing in a traditional classroom. Interestingly, the quantitative analysis did not provide strong evidence showing the affective outcomes that would demonstrate the distinct difference in the scale of students' attitudes towards writing as the result of comparing

learning in the computer-assisted classroom and the conventional classroom. However, the low number of students in this piece of research does not allow any conclusive evidence to be gained. It is problematic to achieve a persuasive statement indicating that the increase of time spent on writing improves writing skills (Sullivan and Pratt 1996, p500). In particular, there was no further investigation and no detailed descriptions of the analytical techniques used to assess the quality of students' written outcomes or any comparison of students' linguistic performance in two different learning contexts.

In another example that is also relevant to the present study, Warschauer (1996) conducted an empirical research within the context of the second language composition class to examine the equality of students' participation. Data collected from students' written language were computed using the Computerized Language Analysis program to calculate the participation percentage per interlocutor. Students' language production was also used to compare the language complexity of target students firstly in the situation of traditional face-to-face classroom discussion with that of the same students later in the electronic discussion with a counterbalanced design of student assignment, so all subjects had experience of working through both face-to-face and electronic discussion. The finding of the quantitative analysis reveals positive outcomes, with a difference in participation percentages as a result of conducting an electronic discussion. Clearly, an approach to a more balanced participation can be achieved by using computer-mediated communication in the writing classroom. In addition, the quantitative and qualitative analysis of students' conversation indicates that the innate character of written communication, on the one hand, generates more formal and complex language output both lexically and syntactically than does face-to-face discussion in second/foreign language settings. Examples taken from students' written communications show that there is a tendency for students to use formal expressions such as "in my opinion", "based

on my experience", "such as", and "therefore" (ibid, p19). On the other hand, the electronic-featured language output weakens the performance of the verbal back-channel (e.g. er.., em.., well), repetition of questions and rephrased sentences. Nevertheless, the article by Warschauer (1996) highlighted the pedagogical possibility of employing different learning experiences for the promotion of equal participation as well as the practice of formal expressions and the use of complex language.

Even more recent research into the ESL writing classroom reports that patterns of interaction occur differently when second language (L2) writers make responses to tutors in online tutoring sessions compared to those of L2 writers in the context of face-to-face tutoring (Jones et al. 2006). The article closely examines how interlocutors utilise various interactive strategies to control the flow of discussion from a more social-cultural perspective. Jones and his research fellows (2006) suggest that the feature of computer-mediated interactions is often the reason for this egalitarian communication. Computer-mediated communication often has an effect on a shifted authority from a teacher-dominated discussion to a student-centred conversation. In an online environment, teachers have had their ability to exert power removed from the discussion. Thus, the control of message exchanges returns mainly to the learners for further information sharing and the maintenance of other leading turns (ibid). Another factor contributing to students' language awareness is the difference between the discussion produced in face-to-face tutoring and in the online discussion. Students in online sessions are concerned more about 'global' aspects like the content and process of writing rather than the detailed textual issues whereas linguistic problems like grammar and vocabulary are more frequently the topics of discussion when students are engaged in the context of face-to-face tutoring. However, what have not been further discussed in the research are the subsequent outcomes of linguistic exchange, affective change and

language learning experience.

Returning to the afore-mentioned question, 'to what extent has the use of CMC actually contributed to the language education?' research into the use of CMC in an L2 context has provided the pedagogical implications for learners to improve their interpersonal communication and ability in language classroom by participating in linguistic interactions. Given that the above examples of empirical evidence have been adequately discussed in relation to L2 writing, the next research agenda will be of particular importance for the conceptual alignment between the contribution of CMC and the relevant theory of second language acquisition.

2.3 Theory and Research on SLA and EFL Writing

The nature of second language acquisition is a highly complex process (e.g. see Chomsky's cognitive representation of language learning and Krashen's "***i*** + 1" concept in the later section **2.3.1**) as well as a progression of a constantly reflective product (e.g. see the process-oriented instruction in the later section **2.3.3** for further explanation). Certainly, there are many discussions and debates in the field of SLA research regarding language learning and teaching. All these argumentative works provided the researcher with a source of information that is relevant to the current study of CMC in the language classroom. The purpose of this section is not to attempt to scrutinize closely a developed body of SLA enquiry, or to provide a full coverage of the research into second/foreign language writing. Rather, it aims to review existing theories, focusing on some prominent viewpoints of SLA and referring to the application of CMC in second language learning and teaching. Since the aims for this research have emphasized the use of learning technology in second language classrooms, concerns about differential accounts of SLA and EFL writing are clearly needed for the potential outstanding practice of CMC.

2.3.1 A Brief Overview of Second Language Acquisition

There is a history of conceptual development of second language acquisition presented by various researchers at different points in time, with different attention paid to language learning for the pedagogical implications in a second/foreign language classroom. Each presented perspective on language learning has contributed to the construction of L2 acquisition theories and models paralleling with an overlapping period in the transformational proposal of CALL (see section 2.2 for the change in CALL). In the early stage of L2 research, most researchers drew on the behaviourist view of the learners' external reinforcement to emphasize the importance of language input and the practice of incomprehensible language phrases. It was also claimed that learners' second language performances were strongly affected by their first language when a contrasting analysis was adopted to examine the difference between learners' native and second language production.

Following the flow of developmental change in learning theory, behaviourists' accounts of language learning were targeted to search for more developmentalist views of learning with critiques purposed by some cognitivists, for example, Chomsky (1957). The cognitive revolution was certainly sparked by an internal mental view of language input: it was argued that language acquisition could be best explained through the mental representation of particular individuals. According to this point of view, the language input that learners received can only be seen "as a trigger that set off some internal language acquisition device" (Ellis 1994, p243). In Chomsky's interpretation of the human language faculty, the grammatical system is processed individually through innate cognitive structure (Cook 1988; Chomsky 2000). The view that knowledge of language is much more innate than previously recognized contributes to a pedagogical shift in accounts of language perception and production from conceiving the presentation of

structures for accurate practice to acknowledging learners' mental construction of a second language system as an active learning process (Warschauer and Kern 2000).

This cognitive perspective continues to focus attention on the relationship between input and the mental construction device for second language acquisition. It was even less feasible to maintain the structural belief in fostering learners' correct responses to linguistic stimuli once Krashen (1985) had further proposed the *Input Hypothesis*. The basic notion of input hypothesis is to claim that learners progress through the rules of language according to a natural order. The acquisition of a new linguistic feature involves the process of receiving comprehension input. This comprehension-based account of second language development derived from Krashen hypothesizes that the knowledge of language can reach the learner's mental acquisition device to achieve a higher level of competence through the '*i + 1*' procedure. According to Krashen (1985, p2), the provision of comprehension input should be given structures that are slightly beyond the learner's current level of competence (Krashen 1985). If we presume that a learner's current level of competence is '*i*', then giving them a comprehension input of '*i + 1*' can promote the next developmental position in terms of syntactical complexity in a language. Mitchell and Myles (2004) elaborate upon the notion of comprehension input by stating that 'input which is too simple (already acquired) or too complex will not be useful for acquisition" (p47). Given the above description, it seems clear that Krashen's 'i + 1' theory corresponds to Vygotsky's ZPD theory; children can comprehend and achieve their potential level (Krashen 1981; Ellis 1997). From the researcher's point of view, Krashen's theory focuses less attention on learners' productive skills at the first stage of second language learning (for example, speaking and writing). Rather, language learners should be firstly provided with enough comprehensible input for the initiation and activation of the acquisition device. Subsequently, the correct

production (speech or written language) from individuals may be expected if an understanding of input can reach the acquisition device. In addition, Krashen's theory of learning and acquisition including language performance have made an individual inner mental mechanism indistinct to be explained and analysed, thereby enabling teachers of foreign languages difficult to decide how much pragmatic work they should offer to learners. The acquisition in Krashen's view represents the outcome of normal, but meaningful communicative exchanges in speech, rather than being the result of a shared endeavour as the negotiation for a target achievement within community learning. In other words, the process of language acquisition is separate from language learning, and is the two are not necessarily related. To make this point clear, evidence to support this view was found when foreign language teachers realised that learners may have understood the rules of grammar but be unable to produce the correct grammar in spontaneous conversation. Conscious learning with direct teaching or the correction of learners' errors does not mean that learners will eventually turn the learnt knowledge into the subconscious process necessary for acquisition. Krashen's position on language learning was also criticised by other researchers for being vague and imprecise (Mitchell and Myles 2004; Skehan 1998), and this raises the question of how much and what comprehensible information should be given to learners in order to identify their level ***i***, and enable them to reach the level ***i + 1***? However, the vagueness of the theory gives rise to the pedagogical implication that it is not easy to prepare for the input. Moreover, Krashen believes that good language learners have a 'lower' level of **affective filter** to 'let that input in'. Learners with low self-esteem or low confidence will be unlikely to receive information leading to successful language learning. Although it has been argued that the account of Krashen's affective hypothesis has not been fully explored, most researchers and teachers agree that affective variables play a vital role in the process

of learning a language.

The cognitive perspectives of language learning also influence the approaches to the teaching of reading and writing. An individual psycholinguistic process becomes a teaching focus when learners are trained to read and write with a variety of cognitive strategies, such as top-down and bottom-up strategies for reading, problem-solving and collaborative tasks for process writing.

During the late 1970s and 1980s, the account of second language acquisition represents a diverse explanation of how a language is understood in the process embedded within socio-cultural contexts. It transpires that variables relating to the cognitive, affective, and social aspects of a human being are interrelated factors that affect the development of individuals' language learning. Mentalists' generative tradition of the human mind in developing language competence has expanded from an initial focus on individual linguistic competence to an emphasis on interpersonal communicative competence. From the socio-cognitive and socio-cultural perspectives of language learning, approaches to literacy teaching have placed an emphasis on the reinforcement of student interaction and communication in a learning community. In other words, increased attention is paid to learners' engagement in extensive discussion through reading and writing in order to develop individuals' learning strategies and to internalise the knowledge.

2.3.2 Technology and Writing

It has long been documented that the use of networked technology in the second or foreign language course has broken the pattern of routine conventional teacher-centred, large-group interaction into a more student-centred, individualised working environment (Warchauer 2004). This change is considered by many researchers as a positive opportunity to promote collaborative learning in the classroom (Sullivan and Pratt 1996;

Kern 1995; Barnes 1994; Li 2000; Brett and Nagra 2005). They claim that the nature of electronic communication through writing allows students to explore and develop their opinions on important topics related to second language writing (Warschauer 2004, p2). Especially, computer-mediated communication provides learners with a less threatening environment for the authentic use of the target language (Chun 1994). Realising the inherent attractiveness of networked technology, one distinctive influence of computer-mediated communication is also the creation of a social and affective learning space for the learning community (Warschauer 1999). Moreover, language production via electronic discussion can be recorded for the purpose of analysing the linguistic characteristics of students' written discourse.

Among the various forms of networked technology for online messaging, the instant publication offered by Weblogs is the latest asynchronous computer-mediated communication tool for information sharing and personal web-publishing. As a way of publishing and sending one's own work from one computer to more computers within the networked community, embedded in Weblog technology are several advantages for language learning. Instructions and course handouts via the Weblog delivery are made available to students for online downloading at anytime. Writing Weblog entries and responding to Weblog entries also creates an authentic purpose and audience for writing, which are features rarely seen in conventional writing classes. In a collaborative manner, the use of Weblogs engenders a 'sense of ownership', helping students to make more comments to each other than their teacher could provide (Duber 2002). Weblog writing allows students to engage in a given online collaborative writing activity such as planning a trip and composing a letter of complaint. This involves students in planning, drafting, editing and revising their writing before it becomes public, thus enhancing the process of writing in a social community. Since Weblog technology has created the possibility of a

different writing experience, the opportunity for writing is no longer restrained in a limited practice of space and time. The allowance of flexible time and space offers students greater room for reflective thinking. Subsequently, there will be more cognitive possibilities taking place in the process of comprehending linguistic input and producing more complex and elaborate written language.

Although the benefits of using different CMC tools in the EFL writing classroom have been acknowledged, concerns continue with regard to the ways in which writing changes in the electronic sphere. The changes are often considered in debates on whether these variations of writing products are beneficial or not. On the one hand, language learning in an informal place where the communication is conducted online helps people have fewer inhibitions, thus cutting down on social anxiety and developing confidence (Ward 2004). In this study, in general and in most CMC contexts 'informal' means that student communication and interaction have no restricted schedule or place where the topic of discussion can change during the course of the interaction (Contreras-Castillo et al. 2004). On the other hand, students typically encounter many special linguistic characteristics of computer-mediated texts, such as repeated letters for a prosodic or vocal expression, all capitals or extra spacing for emphasis, emoticons for personal feelings, special abbreviations or acronyms for functional language and other net-lingo.

Another concern of many educators is that the convenience of Internet search engines and the rapid growth of online discussion forums facilitate plagiarism by making it easy for students to cut and paste available texts from the online resources around the world to be used for the student's course requirements or essay needs (Warschauer 2004). On the contrary, network technology has also made it easy for the plagiarism to be checked through the Internet or informally through the search engines (Hafner 2001).

The issue of plagiarism in the EFL classroom has challenged most teachers as language learners need to be taught the value of the ownership of writing and be prevented from doing ill-informed essay writing; at the same time, they may be encouraged to improve their language use by modelling and copying the words of others (Pennycook 1996). In any computer-related language-learning environment, a new era of network technology certainly has had an impact on the way language instructors focus on this issue and the approach to help learners in advancing their understanding of the nature of their writing.

2.3.3 Process-oriented Instruction

Although the current research has demonstrated that there are links and similarities between first language writing and second language writing (Peregoy and Boyle 2001; Leki 2000), this section focuses mainly on second/foreign language writing and will touch only slightly on the research of first language writing, as much of the L2 writing instruction still looks to first language perspectives on writing for insights.

Research on second language writing, like the research on second language acquisition, has witnessed a developmental change in the ways that writing skills are taught. The focus of writing instruction has moved from the correctness of the final written product to the creativity of the written process. By the 1960s, many teachers realised that the product-oriented approach and the emphasis on the correctness of the text have somehow impeded the expressive goal of writing. In other words, the instructions given to students for writing were constrained within the teaching of a discrete grammatical, rhetorical and mechanical structure rather than the fostering of communicative ability. The view that writers should concentrate on correctness while drafting ideas has led to a dreary practice in writing and has made students see writing as a task to be dreaded, rather than as an opportunity to develop their ideas and to form their ideas collaboratively into a well-organised content. Therefore, the creative thinking and

the self-expressive goal of writing have come to be valued over reiteration of the teacher's thoughts and models.

Since the process approach towards writing has received renewed interest and emphasis for learning, communicating and interacting with peers in the first language context, the focus has been not so much on the final product, but on the different phrases of writing and the self-discovery process. It is not surprising that ESL (EFL) teachers have been enthusiastically encouraged by the ways that process-oriented instruction can offer to the future change in students' L2 writing. They started importing new process approaches into L2 from L1 writing instruction, and saw the applied linguistic orientation for the training of L2 writing as an ineffective and punitive-seeming approach (Leki 2000). Freedman et al. (1983, p4) also point out that "conventional composition teaching focused on the message, the product, the written composition, analysing style, organizational patterns, rules of usage. The new rhetoric, in contrast, has consciously and deliberately shifted its focus to the encoder or writer, investigating especially the process of writing itself and the developing of writing abilities within that encoder."

In the new process approaches, the concern of linguistic focuses (for example, vocabulary, grammar, contrasting rhetorical orientations) was addressed as an afterthought only at the end of the writing process. Instead of the conventional view of the composing process derived from a conventional applied linguistic perspective in L1 (form-dominated approach) being gradually dropped, the teaching of second language writing favoured taking into account convincing depictions of the expressive and exploratory tradition using the process approach. Teachers of second language writing, then, encourage their students to experience manageable and interrelated phases of the writing process: pre-writing, drafting, revising, editing and publishing. During these interrelated phases of the writing process, students have to think through the given topic

and generate ideas with more information exchanges in a group. To keep a constant flow of writing and let the students' ideas go onto screen or paper expressively, teachers have reduced their concerns about the perfection in form or language mechanics when students are at the stage of drafting. In the phase previous to students' own writing being completed or published, the role of writing is to enhance the quality of written expression. Students are encouraged to revisit their drafts either with the feedback from teachers or from their peers. Following up the feedback given from their colleagues and practice of revision allows students to convey their ideas more effectively. Lastly, students' written works are polished with a corrected version of language mechanics (for example, spelling, punctuation and grammar) for final publishing. By sharing and reading each other's writing, students are trained to concentrate on writing for their own discourse community and thus they are more aware of the nature of tasks as well as the language mechanics. The purpose of writing, and the awareness of the target audience, shifts their attention to a better management of written expression. As a result, students have the opportunity to experience the value of readership.

The process-oriented approach to writing is especially valuable for training English learners in various aspects of writing, such as practicing journal writing, stories, letters, biographical pieces, persuasive arguments, and academic essays (Horowitz 1986; Peregoy and Boyle 2001), not only because it allows students to write from their own experiences, but also because it encourages them to work cooperatively for clear expression and self-reflection during revision and editing. Cooperative work in conjunction with the interaction among students promotes overall language development, because the communicative exchange of each other's opinion through oral discussion generates a great deal of 'comprehensive input' (Peregoy and Boyle 2001). Furthermore, the aspect of readership that stresses the importance of the role of the reader or target

audience considers the process of writing to be a kind of social practice (Leki 2000).

The different perspective of writing instruction that the researcher has presented above has avoided the discussion of contentious proposals in the academic field. In other words, the researcher has not tried to demolish the linguistic notion of product-oriented teaching, but rather has attempted to build up a better relation between the adopted writing instruction and the use of Weblog technology. The reason behind this is that a feature of Weblog technology is that it provides opportunities for students to manage more easily the different writing strategies (see Weblog section for more detailed description of Weblog features and interface). The use of Weblog technology also comfortably fits the adoption of process-oriented instruction. It is claimed that Weblogs provides the writers (the maintainers) with a place to work out their thinking and build up self-awareness simultaneously, consequently developing their critical thought (Blood 2002). Composing with a Weblog will demonstrate that sharing information is easy. As a Weblog takes the form of periodical publishing, it is designed to be easily updated and edited. It enables users to re-visit others' writing many times and make responses or comments to the writer at any time. In the networked technology, people who use a Weblog to publish their writing find it easier to develop their social connections, practising the strategies of process writing and inviting participation with both their learning community and other readers around the world. Therefore, it is highly possible that students will experience a different attitude towards Weblog writing along with the process-oriented instruction.

2.3.4 Issues on Self-efficacy and Attitudes towards EFL Writing

The former instructional tribulations illustrate an institutional act of theoretical reflections and demonstrate an instructional move of teaching from the conventions governing the organisation of rhetorical acts and the manipulation of language forms to

the evolution of the new procedural concerns. Although an array of writing researches shows a developing interest in discovering what the process-oriented approach actually contributes to the learners' conscious mind (for example, cognitive schemata) and how other extraneous learning elements may affect the second language writers, a number of writing researchers agree that issues of self-efficacy, attitudes, motivation and apprehension are more or less related to individuals' achievements in writing (Pajares 2003; Collins and Bissell 2004; Graham et al. 1993; Kear et al. 2000; Phinney 1991; Pajares and Johnson 1993; Peregoy and Boyle 2001; Raimes 1998).

In the past, issues concerned with motivation or attitudes relating to second language achievement have been widely discussed in second-language acquisition (SLA) areas (for example, see Gardner and Lambert (1972) and Gardner (1985) for more information about the global discussion of motivation and attitude in second language learning). It also has been generally accepted by several researchers that students' self-perceptions of their own competence, attitudes, and orientation lead to motivation, which in turn offers a promising avenue of writing instruction (Beach 1989; Faigley et al. 1986). Presently, effort is being devoted to the study of motivation and motivation-associated variables such as writing apprehension, but there are still few data on the attitudes toward writing, particularly the attitudes toward using computers in the writing class. Besides, it is believed that "the more computers there are in education, and the more learners use them, the better equipped those learners will be in the modern world" (Williams 1991, p4). Needless to say, an observational assessment of the intricacies of individuals' affective variables requires attention to attitudinal factors and consciousness of self-beliefs. Consequently, this research followed the tradition of methodological subscription with revised quantitative measures in the attitudinal survey and focused selectively on the students' affective factors, such as the attitude toward

writing and the attitudinal changes toward using computers in the writing class.

The data interpretations from some attitude-related research ventures also provide some statistical evidences about the direct and indirect effects of belief on writing performance (Collins and Bissell 2004; Pajares 2003). Specifically, this fundamental underpinning of data evaluation reveals a general value of affective variables stating, "writing self-efficacy makes an independent contribution to the prediction of writing outcomes and plays the mediational role that social cognitive theorists hypothesise (Pajares 2003, p145)." Whether or not the evaluation did suggest a prominent value of such a self-regulating perspective in relation to the writing product or process, a basic knowledge and overall understanding of students' attitudes toward writing will help illuminate the potential benefits of writing instructional practices. The findings from other relevant attitudinal researches will also prelude an introduction to this study for the investigation of an interventional program in writing.

Consequently, what has been proposed in the preceding section regarding Krashen's affective hypothesis may also find a supplementary interpretation of personal affective components (for example, self-confidence, self-efficacy, and other attitudinal or motivational constructs) from a synthesis of research findings that address the relationship between the 'affective filter' and language learning performance (see also section 2.3.1 for Krashen's affective factors). For the teaching of writing, such a view of self-regulating possession obviously has suggested the importance of understanding how the attitudes and beliefs that students hold about writing may influence the process and product of their writing.

2.3.4.1 Definition of Attitude and Self-Efficacy

The word 'attitude' concerns a state of mind involving personal beliefs or feelings that we hold to act in certain way. According to Oppenheim (1992, p174),

attitude is "a state of readiness, a tendency to respond in a certain manner when confronted with certain stimuli." For instance, if someone has a strong feeling or belief about using computers as a model of learning, this feeling or belief will influence his/her willingness to try or to accept the technology or program for learning. This concept of attitude attempts to explain why people have either positive or negative tendencies toward some objects, events, or persons, and then make different choices or responses to certain things. In general, attitude is a kind of inner psychological trait understood with both internal and external conditions to influence one's tendency to act in a particular way (Moallem 1999). Although the students' affective component in most studies frequently refers to their emotional perception of working with a computer, it mainly refers to students' feelings and beliefs concerning the intervention of computer-mediated communication technology (Weblog) in the English writing course in this study.

Consideration is also given to another affective variable in this study – writing self-efficacy. When a psychological interpretation of self-efficacy is being considered and adopted, it can be regarded as a belief about "one's perceived capability and self-efficacy defined in terms of individuals' perceived capabilities to attain designated types of performances and achieve specific results (Pajares 1996, p546)." It has been reported that a belief in self-efficacy is correlated with academic performance (Collins and Bissell 2004). In addition, a psychological research completed by Bandura (1977) has proposed a theoretical framework of behavioural change, postulating the mediational role of self-efficacy as key elements in the exercise of individual decision-making and pursuit of action. Other researchers suggest that people who believe they are capable of performing academic writing tasks make more of an effort to manage their cognitive strategies, and so self-reflect more (Pintrich and Groot 1990; Pajares 2003). Most importantly, the results of some investigations into attitudinal, behavioural changes show

that the development of self-efficacy beliefs (for example, a belief in an individual's writing capability or grammar performance) can possibly be affected by the environmental changes, attributional feedback, or goal setting influence, then these beliefs will have a direct or indirect influence on their academic performance or task accomplishment (Pajares 2003; Collins and Bissell 2004; Bandura 1977; Pajares 1996).

2.4 Summary

In this chapter, initially, the researcher has reviewed the historical development of CALL within a theoretical framework and instructional principles for implementing computer-mediated communication within the concept of social cognitive theory. We understand that computer technology creates some new uses for the medium that had not been previously envisioned and which take teaching and learning approaches in new directions, pushing back the boundaries of our experience in terms of the time and location. We may agree that the computer is a responsive medium offering reliable feedback to learners on their performance. Also, it is a highly interactive tool in that the learners can keep their learning continuous or repeat sections, in order to evoke and maintain the greatest benefit from it.

As acknowledged during the later introduction to second language acquisition and EFL writing with computers, the creation of a social and affective learning space can be the key to the process-enhanced instruction for EFL writing. The successful experience of writing can possibly be affected by the interplays between the changes of environmental settings and the influential factors about personal attitudes and self-beliefs. The application of Computer-Mediated Communication in writing may have a potential power to take a reflective role in individuals' learning process and to influence the choices individuals make and, possibly, lead to greater efforts and persistence on their part.

Finally, the validation of and further insight into the role of computers in

educational settings is enhanced by questioning the methods and approaches in relation to relevant psychological theories. The current study also contributes new findings to address gaps in the research literature by revealing the evidence that has informed new technology media attempting to interplay between learning and written communication. The core perspectives concerning learners' affective variables can also assist in understanding the consequences and the process of writing, and how to intensify them.

Chapter Ⅲ Research Methodology

3.1 Introduction

Experimental research has been creatively used in the field of natural science since the seventeenth century. The systematic control of physical conditions and randomized assignment to treatment were considered the primary emphasis of practice or techniques for evaluating the effect of interventions. Consequently, the philosophical idea that deliberate manipulation is central to answering questions and hypotheses, and therefore provides valid causal inferences, was widely accepted as the common experimental mode of inquiry. This mode even became a guiding model for social science, particularly in the field of psychology and education during the nineteenth century. Besides, similar methodological developments have been discussed over the past 40 years in the area of educational technology (Ross and Morrison 2004).

Although the strength of experimental design was recognized and used to derive principles, or to question the acceptability and effectiveness of teaching and learning interventions, there has been a strong tendency for most recent social researchers to believe that the need to understand human factors should also be taken into account (Shipman 1981).

This chapter discusses and analyses methodological issues and the reasons for combining quantitative and qualitative approaches as a mixed-methods research design for the current study. The study was conducted based on the established experimental paradigm with a further modification of the target sampling. In the following sections, the background of the study will be given in terms of the type of research, research focuses and research questions. The next session documents the details of the piloting of

the research instruments. A section relating to the instructional technology platform, the subjects and sampling used for carrying out the experimental research will be presented, followed by the description of the methods used for data collection. Factors affecting the validity and reliability of the results, the method of presenting the results, any extraneous variables and possible ethical considerations will also be discussed.

3.2 Research Design

In this study, the researcher followed the paradigmatic view advocated by Campbell and Stanley (1963, p4) who proposed that "experimentation is a refining process superimposed upon the probably valuable cumulations of wise practice." There has also been a fair amount of historical review of the research paradigms concerning educational technology (Warschauer and Kern 2000; Ross and Morrison 2004). It is documented that the concepts of cognitive learning theory and constructivism have led to a new perspective on the adoption of different research methods. Researchers who have been aware of the individual learning experience and mental processes are gradually putting more emphasis on the complementary role that qualitative measures can play. Interestingly, research on network- based language teaching or learning still maintains the experimental approach as the fundamental process to examine the constructs. As Warschauer and Kern (2000, p14) stated "*The corpus of NBLT (Network-Based Language Teaching) research includes few published studies that examine in depth the development of discourse and discourse communities in online environment. Those studies that have been published have tended to focus on the most quantifiable and easily measured aspects of online communication.*"

To strengthen this experimental study design, the researcher also adopted data triangulation, combining both quantitative and qualitative methods to investigate the same issue of Weblog impact and students' attitudinal change in the EFL writing classroom.

3.3 Quasi-Experiment

The type of experimental design in this study is called a quasi-experiment. In an ideal situation, an experiment should have at least a treatment, one outcome of which is to be measured, randomized assignment to groups, and other comparisons from some possible factors that can be inferred to the different treatments. Most experimental design uses a control group and an experimental group or even more than one experimental group, and the groups receive different treatments. In order to establish causality, a researcher should try to make the value of extraneous variables that may influence the dependent variable equal for the two groups, and have a change in the independent variable (Verma and Mallick 1999).

There is no doubt that the allocation of a randomized sample aims to provide "an effective method of eliminating bias that might otherwise enter into the experimental design and of minimizing the influence of extraneous variables" (ibid, p97). However, very often in educational research, it is difficult to assign individuals or larger groups of students to treatments at random. Therefore, the term 'quasi-experiments' was used to denote "experiments that have treatments, outcome measures, and experimental units, but do not use random assignment to evaluate the treatment-caused difference" (Cook and Campbell 1979). An example taken from this study illustrated a situation where the researcher as a teacher had to be allowed one first period class in the morning and another afternoon class to have CMC instruction delivery because that was when the computer clusters were available, and he selected the other two classes to have the traditional lecture mode. Due to school regulations and teaching resources, it is also impossible to randomly assign the target group of students equally into two treatments in the University of Southern-Taiwan. Therefore, a quasi-experiment was employed to examine the research questions. Table 3.1 and Figure 3.1 present a scheme that attempts to

summarise the overall structure of this experimental design and the sampling issue.

Table 3.1 Sampling and Research design

<table>
<tr><td></td><td>Control group</td><td>Experimental group
Weblog intervention</td></tr>
<tr><td colspan="3">Module on general English writing for the 3rd year students</td></tr>
<tr><td colspan="3">Pre-test</td></tr>
<tr><td rowspan="2">Leader University</td><td colspan="2">Department of Applied English</td></tr>
<tr><td>Code: M203 – Group 2
Textbook: Great Paragraph
Students: 22
Hours per week: 2</td><td>Code: A404b – Group 1
Textbook: Great Paragraph
Students: 21
Hours per week: 2</td></tr>
<tr><td rowspan="2">Southern - Taiwan University</td><td>Department of Electrical Engineering</td><td>Department of Biotechnology</td></tr>
<tr><td>Code: K401 – Group 4
Textbook: Great Paragraph
Students: 38
Hours per week: 1</td><td>Code: E002 – Group 3
Textbook: Great Paragraph
Students: 38
Hours per week: 1</td></tr>
<tr><td colspan="3">Post-test</td></tr>
</table>

Students' learning performance was evaluated based on the results of the GEPT literacy test both before and after the completion of the writing course. Clear speaking, GEPT stands for General English Proficiency Test and it includes listening, speaking, reading and writing tests in which the standardized tests are organized by the Ministry of Education in Taiwan. In this study, a mocked GEPT reading and writing test (see Appendix F) was employed and adopted to serve the purpose of language assessment. Information about students' attitudes towards EFL writing was gathered through pre- and post-questionnaires.

As the table above shows two groups (Group 1- A404b and Group 3-E002) received a different learning mode that incorporated the Weblog instruction, and the other two groups were given the traditional mode of lectures. This was designed to test whether the Weblog instructions could have an effect that would influence students'

performances and perceptions in CMC mode in respect of their English writing class. Although all the target students were not statistically assigned at random according to the table of random digits, the researcher managed to have the first experimental and control group with even and odd numbers allocated respectively. The pre-test and post-test design with nonequivalent groups and with a further modification can also be represented as follows:

Figure 3.1 Structure of experiment

Group	Random assignment	Pre-test	Treatment	Post-test
Experimental G1	R	O_1	X	O_2
Control G2	R	O_3		O_4
Experimental G3		O_5	X	O_6
Control G4		O_7		O_8

According to Cohen et al. (2000, p127), a quasi-experiment has a methodological limitation in terms of its internal and external validity when the bias of the sample selection is introduced for the comparison groups, particularly when "intact classes are employed as experimental or control groups." Threats to internal validity will be even greater if such a selection bias interacts with other extraneous factors (for example, unreliable tests or instruments, the loss of subjects). In order to avoid such bias, the pre-test questionnaire survey and the mock exam of the GEPT literacy test were employed to ensure the equivalence of all target research participants in their English proficiency and their attitudinal tendencies before the experiment. Further details of validity and reliability can be referred to in section 3.9.4 in this chapter.

3.4 Research Focus

This section presents a perspective that attempted to investigate the impact of the use of a Weblog (also called blog) as a tool in the EFL writing classroom, to

understand the processes, products and other experiences associated with the application of Weblog, and finally, to analyse and evaluate the effects in the following chapters.

From a practical point of view, the overall aim of this research was to encourage learners' participation in a series of Weblog activities and to focus on the causal influences attributed to students' attitudes and performance.

In addition to this primary aim, there were a number of secondary objectives:

- To involve students in group discussion
- To give teachers a source of evidence whereby they can examine the characteristics of students' work for further research projects
- To provide students with an opportunity to practise their writing and to increase their experience of E-learning

3.5 Research Questions

The main research question in the study was as follows:

What effect does a Weblog have on the L2 writing performance?

Several subsidiary issues were also considered:

a. Does the introduction of Weblog communication change the performance and attitudes of the learners to EFL writing?

b. What were the learners' performance and attitudes towards EFL writing before the introduction of Weblog communication?

c. Would the use of a Weblog encourage learners to take a more active participation in an EFL classroom?

d. Is there any difference between the practice in strategies that are relevant to the writing process between learners who use a Weblog and those who do not?

e. Does the Weblog increase the learners' informal use of language?

3.6 Hypotheses

According to the research questions, the following hypotheses were developed as testable questions to be explored empirically.

Hypothesis 1: The Weblog will influence the attitudinal performance of the experimental groups, which will show a statistical difference if we compare the control and the experimental group (independent t-test).

Hypothesis 2: There will be a significant difference between the sample mean (a known value 3 as a neutral attitude) and the population's mean attitudes towards EFL writing in the control and experimental groups before and after the experimentation (one-sample t-test).

Hypothesis 3: There will be a difference between the mean attitudinal performance before and after the experimentation in the experimental group. In addition, there will also be a difference between the mean attitudinal performance before and after the conventional classroom teaching in the control group (paired t-test).

Hypothesis 4: Comparison of the change in mean attitudinal performance after a period of teaching will show there to be a significant difference in the value of changes between the control and experimental groups (independent t-test).

Hypothesis 5: There will be a relationship between students' technical experience and students' writing attitudes (One-Way ANOVA test).

Hypothesis 6: As a baseline assessment, there will be no significant difference in students' English proficiency between the two groups at the beginning of

the course (independent t-test).

Hypothesis 7: There will be a significant improvement between the pre- and post-test results of both groups of students, but the Weblog teaching will have a more significantly improved EFL literacy performance than will the conventional classroom teaching approach (paired and independent t-test).

Hypothesis 8: The experimental group will show greater improvement in their performance of EFL writing than will the control group (independent t-test).

Hypothesis 9: The variation of students' GEPT literacy performance will be strongly related to their Weblog login frequencies (correlation analysis).

Hypothesis 10: There will be a significant difference in the number of students' visits of the Weblog each month and the various ranges of bandwidth each month (One-Way ANOVA test).

3.7 Pilot-testing of Research Instrument

The pilot study was carried out on undergraduate students who were taking degree courses in three different universities that were not used but were similar to the population of the present study. It was hoped that carrying out the pilot study would mean that the subsequent sample might be less affected by any possible extraneous variables, and would help the researcher in the process of developing a reliable assessment instrument, formulating survey items to measure participants' attitudes toward EFL writing, self-efficacy and their attitude toward items associated with CMC and computers in EFL writing. In other words, the aim of the pilot study was to allow the researcher to determine the adequacy of the instructions to respondents completing a

self-administration questionnaire and to make it more likely that flaws in the questionnaire would be detected (Czaja and Blair 1996; Bryman 2001).

The researcher developed 35 items that were used in the pilot version of the instrument. These items were written after the researcher had reviewed instruments developed in a number of academic research papers published in the area of E-learning and language teaching, and had screened them for ideas. This led to the construction of a prototype instrument that consisted of three different themes representatively titled 'attitudes toward EFL writing', 'self-efficacy' and 'attitudes toward using computers in EFL writing' with Likert-type scales for responses.

In order to provide an appropriate form of survey instrument for group administration within a short period of time, all items in the pilot questionnaire were translated into Chinese. This translated version of the questionnaire was revised based upon the feedback provided by two college lecturers and one professor within an educational specialty. Their comments helped the researcher to improve the clarity of items and to make decisions on the types of questions. Due to the limited time and human resource, a "back-translation" technique was not conducted to confirm the congruence of meaning from Chinese to English version of survey instrument. The researcher is aware that the reliability and the validity of research instrument as well as the collected data might have been affected, particularly when the collected data in the later stage of the study (e.g. Chinese transcription from interview) and the survey instrument (e.g. back-translated English questionnaires) can't ensure the congruence of meaning (see section 3.9.4 for detailed discussion on reliability and validity).

The revised questionnaires (see Appendix D for the final version of the questionnaire survey) were then distributed to a sample of 210 students from year 1 to year 4 in two different universities in Taiwan. Of these, 163 students completed and

returned the questionnaires. Most of them skipped two items within the personal information columns and left the open-ended question blank. Therefore, those questions were revised.

In order to construct a new, smaller set of variables that better expressed that which was common in the original set of variables, the factor analysis with the application of the principle component method was applied as a data reduction method. As Dunteman (1989, p7) states, the purpose of conducting such techniques of factorial analysis is to reduce the number of variables and to detect any structure in relationships between variables, more specifically, to classify variables more precisely in the instrument. Subsequently, the factor analysis of pilot-testing results suggested that a model with eight factors would be adequate to represent the data (as shown in Table 3.2). Based on the results reported in the "Rotated Component Matrix" and the distribution of the items in the "component loading plot", it was suggested that items A1~A5 should be loaded primarily on Factor 1 and items A6~A8 be loaded primarily on Factor 2. As shown in Table 3.2, items B3~B6 had loadings greater than 0.4 on Factor 3, whereas items B1, B2, B7 and B8 had loadings greater than 0.4 on Factor 4. Moreover, items C1~C5 were loaded mainly on Factor 5 and items C6 and C12~C14 were loaded mainly on Factor 6. The results also indicated that Factor 7 contained items C8~C10 with loadings over 0.4 and items C7, C16, C17 and C18 were loaded primarily on Factor 8. The above results revealed that the items designed to measure eleven subscales had to be reduced, as the original assumption of twelve subscales within three aspects was not supported (see Table 3.3). An eight-factor solution appeared to be more appropriate.

In addition, reliability is essentially a synonym for consistency and replicability of instruments and of groups of respondents (Cohen et al. 2000, p117). It is a requirement for validity. A reliable instrument can reduce threats to validity at the

design stage of a research study. Internal consistency was computed for each individual factor and the combined factors within the three different aspects (see Table 3.4). The patterns of inter-item correlations were also examined to see how well the grouping of items into eight different factors was supported.

The analysis of the data suggested that the scale had a high reliability coefficient (Cronbach's $\alpha = .925$). The data was also computed to show the correlations among the groups of items with different factors.

Table 3.2 Results of factor analysis

Aspects	Factors	Items	Factor Loadings	Initial Eigenvalues	Variances Loadings	Cumulated Variances Loadings
Attitude toward EFL writing	Factor 1 Attitude	A3	.829	3.398	42.480	42.480
		A2	.731			
		A4	.853			
		A1	.705			
		A5	.764			
	Factor 2 Preference	A7	.878	1.859	23.234	65.713
		A8	.864			
		A6	.407			
Self-efficacy	Factor 3 Self-efficacy	B5	.856	4.108	51.345	51.345
		B4	.793			
		B6	.681			
		B3	.625			
	Factor 4 Enjoyment	B8	.744	1.036	12.950	64.295
		B1	.601			
		B2	.845			
		B7	.663			
Attitude toward using computers in EFL writing	Factor 5 Perspective	C3	.854	6.829	37.937	37.937
		C4	.768			
		C2	.756			
		C1	.720			
		C5	.499			
	Factor 6 Productivity	C12	.708	2.138	11.879	49.816
		C13	.700			
		C15	.641			
		C14	.626			
		C6	.471			
	Factor 7 Collaboration	C10	.773	1.112	6.177	55.993
		C11	.748			
		C9	.626			
		C8	.578			
	Factor 8 Participation	C7	.748	1.031	5.726	61.718
		C17	.700			
		C18	.596			
		C16	.367			

Table 3.3 Original subscales before pilot-testing

Aspects	Subscales	Item
Personal information		1,2,3,4,5,6,7,8
Students' attitudes toward EFL writing	Attitude	A1, A2, A3, A4
	Productivity	A5
	Acceptance or preference	A6, A7, A8
Students' self-efficacy	Enjoyment	B2, B8
	Confidence (self-efficacy)	B1, B3, B4, B5, B6
	Anxiety	B7
Students' attitudes toward using computers in EFL writing	Enjoyment	C2, C6
	Productivity	C1, C4, C5, C8, C10, C11, C12, C13, C14, C18
	Anxiety	C3
	Prestige	C7
	Willingness	C9, C15, C16, C17

Table 3.4 Reliability analysis

Factors (grouping of items)	Cronbach's α
Combined factor 1 & 2	***.862***
Factor 1 (items A1~A5)	.862
Factor 2 (items A6~A8)	.713
Combined factors 3 & 4	***.855***
Factor 3 (items B3~B6)	.814
Factor 4 (items B1, B2, B7, B8)	.766
Combined factors 5 to 8	***.899***
Factor 5 (items C1~C5)	.820
Factor 6 (items C6, C12~C15)	.815
Factor 7 (items C8~C11)	.778
Factor 8 (items C7, C16~C18)	.726
Combined all factors	***.925***

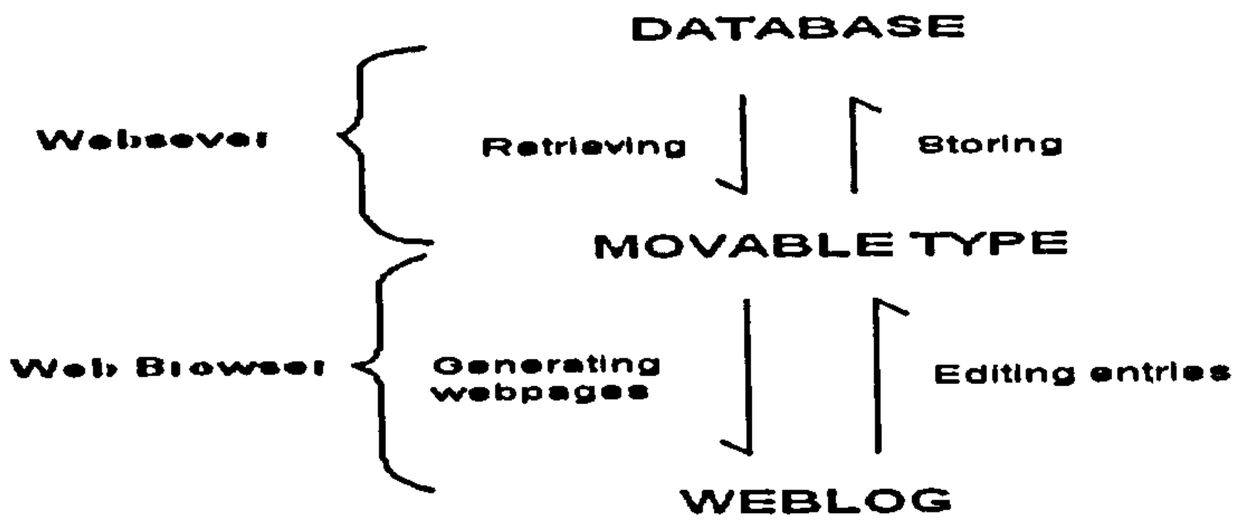
Note. ***α ≥ .80: a high reliability; α ≥ .70: an adequate reliability***

3.8 Technology Platform and the Subject

3.8.1 Technology Platform

Nowadays, many free Weblog providers can be found on the Internet. Although they provide a user-friendly interface and a one-button publishing control panel to edit and post the entries, the inflexibility of maintenance, the administrative role of managing Weblog configures and the authority of accessing database were considered to be the limitations of putting free Weblogs in a setting that could accommodate the educational research purpose. Therefore, a more interactive and free software

application, Movable Type, was chosen to be the web-based publishing system. An account on a paid webserver that runs CGI scripts, Perl and a SQL-based database was used for the storage of the Movable Type data.



3.8.2 Schools

This research study took place at two sites in the south of Taiwan. The researcher worked as a part-time lecturer at the Department of Applied English in the University of Leader and also delivered lectures at the Language Centre of the University of Southern-Taiwan. The Department of Applied English was established in 2000 with the focus on developing students' linguistic skills and fostering cultural awareness and social competence. According to the principles published by the Language Centre in the University of Southern-Taiwan, English language teaching is based on the concept of making English learning communicative. In order to develop students' confidence and competence in using English as a tool for communication, the aim of the centre's program is primarily to train non-majors to acquire the strategies needed to become successful language learners. Both universities have more or less the same objectives for preparing students as competent language users. There is a minor difference between the selected research sites concerning the schools' course orientation as well as the background. For the University of Leader, the English curricular content is based on the scope of developing students' ability to apply language skills in areas as diverse as education, business and community service, whereas the University of Southern-Taiwan aims to

upgrade the quality of foreign language teaching of vocational education, such as electronic engineering and Bio-technology. Despite the minor difference between the goals of the target universities, this difference may be the cause of extraneous variables which are difficult to be measured. To achieve the consistency of research experiment, the researcher was able to maintain the content and teaching materials the same for each university.

3.8.3 Participants

The target learners as mentioned above were from two universities. One hundred and nineteen students at their third year of study participated in this research study.

In the University of Leader, the researcher was invited to deliver lectures to 45 students majoring in Applied English at the beginning of the semester. Forty-three students managed to complete the course. It is worth nothing that those students who nominally came at the third year of study with various educational background were actually reading for their two-year senior college degree. Although the students had been taught English for many years, most of them had achieved their English proficiency at the level of lower-intermediate.

In order to maximise the generalizbility of the target population, the research study was replicated in the University of Southern-Taiwan. The researcher made an effort to negotiate the issues regarding the English writing course, the research framework and the research requirements with the course coordinator in the Language Centre. Course and classroom arrangements across two different disciplines were eventually settled in response to the available conditions and terms, for example, year of students' study, course timetable, facilities, clusters and centre's aims for English learning. There were 76 students in their third year of university study with half of them majoring in

electronic engineering and the other half majoring in bio-technology. Noticeably, the participants from the University of Southern-Taiwan had technical knowledge from vocational education, but were not majoring in English. The level of participants' English language proficiency varied from beginner to lower-intermediate. Most students in the subject of electronic engineering were male, and mixed gender was found in students who were majoring in bio-technology.

3.8.4 The Course

According to the course description, the module of English composition was compulsory for both groups of target students in the two universities. The English composition course offered in the Leader University included two hours per week for each class, requiring two credits for the completion of the course. For students in the Southern-Taiwan University, one credit hour was required for each composition class and an extra credit hour for reading. The course lasted for 18 weeks in both universities. The detailed course outline, course design, and a sample of a lesson plan can be found in the Appendices (see Appendix A, B and C).

3.9 Data collection and procedure

3.9.1 Data collection instruments

There was one primary approach to the systematic direct observation of the subjects being studied in this research. The focus was on the measurement of the interaction between the variables as a result of the intervention. Therefore, students' attitudinal questionnaires concerning the postulated constructs were developed from the literature. This data-gathering technique is often categorised as a quantitative approach. It is believed that the application of a quantitative approach transforms the characteristics of the research subjects from a complex phenomenon into a reduced number of

measurable and quantifiable variables; therefore, attempts have been made to portray a statistical analysis and describe the evidence of the hypothesised relationships between many variables (Suen and Ary 1989).

Although the responses given by the participants can be refined and analysed straightforwardly with the detailed planning of the quantitative instrument, the result often fails to consider the features of individuals or to offer and an in-depth understanding of the phenomenon under study. One way of avoiding the superficial understanding from quantitative data is to adopt a qualitative approach. Hence semi-structured interviews were conducted to collect the interpretative data. The purpose of using semi-structured interviews was to maximize the accuracy of questionnaire measures.

The researcher also administered the GEPT (General English Proficiency Test) reading and writing test. The scores of the GEPT test were not only used for the purpose of examining the equivalence between the experimental and the control groups at both selected sites, but also for seeking any possible statistical significance over a period of time. Additional information about students' online participation could be tracked and computed from the Weblog login system as a part of data-collection.

Given the limits of time, number of words, purpose of study and energy analysis here, therefore, this study focuses only on the differences relating to learners' attitudinal outcomes and interpretative information (self-report from student interviews).

3.9.2 Data Collection Procedures

At the commencement of the course, in total 123 questionnaires and the GEPT reading and writing tests were originally administered to the participants at both selected sites. Two participants from each university dropped out of the course and the study the midway. The remaining 119 participants as well as learners completed the course and continued to participate in the study.

As mentioned in Chapter 1 (also see Figure 1.2), the pre-test of attitudinal questionnaires and the GEPT tests were administered to the participants at the two target universities before the course commencement. As soon as all participants had completed the course, the post questionnaires were distributed, and the re-tests of GEPT were given to the participants a week after their final diagnostic exam (end-of-term exam). All participants were informed that the questionnaire would be used only for academic purposes and that no negative or positive points or opinions would be taken into account while judging their performance in their final exam. Both pre- and post questionnaires were administered in the presence of an observer as well as of the researcher. For the ease of data-encoding, every questionnaire was labeled with the participants' student numbers.

Interviews were conducted with the participants the day after their final exam had been taken. This semi-structured interview aimed to gather information about the attitudes towards EFL writing, the practice of strategies, the evaluation of and reflections on the course and the written assignments.

With the advantage of technology, it was highly possible that the Weblog login tracking records could be retrieved from the database anytime after the completion of the course.

3.9.3 Data Analysis

According to Punch (1998, p128), the benefits of using a statistical analysis are to keep the researcher close to the data and to understand the distribution of each variable across the survey respondents. For the quantitative data collected in this study, the researcher carried out a series of statistical analyses. The responses to student attitudinal questionnaires, the scores of GEPT test and the Weblog records were encoded and transformed into numbers and scores that could be estimated using the SPSS statistical

software application. The computed means and other estimates were used to determine whether there was any agreement between the data and the null hypothesis, followed by the use of a paired T-test and an independent t-test. One-way analysis of variance (ANOVA) was used to test interval data to determine whether participants' responses in respect of different levels of technical experience with different CMC tools were significantly different in the incremental changes of eight attitudinal dependent variables (the eight attitudinal factors). For the purpose of examining participatory activities, ANOVA was then again used to test the interval data to ascertain if there were significant differences between the Weblog visits each month as well as the bandwidth each month. A correlation test was also employed to ascertain if the Weblog login frequencies were significantly correlated with students' GEPT literacy performance.

As a consequence of conducting the above statistical analysis, it was expected that the findings would inform the researcher whether the predetermined variables were of paramount importance in affecting learners' attitudes and outcomes, and to clarify whether the anticipated variables, such as the various technical experiences, could possibly be the sources of the response difference.

With regard to the interpretative information from the interviews, Bell (1999, p135) points out the benefits of interviews in that they can be used to seek information that written responses might conceal. Unlike the analysis of quantitative data, there are less well-established and standard rules for the analysis of qualitative data. In the process of conducting the interviews, questions were designed to elicit responses that could be compared with and interpreted alongside those arising from the questionnaire. As soon as the audio-recorded responses were transcribed, the transcript contents were then coded and categorized into different factorial items and issues according to the attitudinal factors and the research questions. To be more specific, each extract/excerpt

of responses was given a code, which was named for a specific issue (for example, code B2 for self-efficacy) for discussions regarding a particular research question. Subsequently, the codings of all the extracts were accumulated and put together for comparison with the questionnaire results. Thus, the similarity/difference of concepts or issues could be discussed and cross-examined with the evidence provided by the quantitative and qualitative results, eventually forming a meaningful statement to each research question.

During the process of qualitative analysis, such work involves not only summarizing the mass of collected data into more manageable proportions but also presenting the results in a way that communicates the most important and emergent features. This is an extremely demanding and time-consuming process. In fact, the process involves the approach of coding, categorization and comparison as a way of analysis techniques. The current qualitative findings in this study provided appropriate quotations as evidence to cross-validate and complement the results of quantitative analysis (see Chapter 4). After the completion of the quantitative and qualitative analysis, it was possible to integrate the two types of evidence and represent the empirical findings in respect of each research question.

3.9.4 Reliability and Validity of the Study

The use of multiple methods, know as triangulation or data triangulation, is often suggested by many researchers when a more holistic view of educational outcomes is being investigated (Cohen et al. 2000). The extended concern of research approaches includes time triangulation (pre- and post- test) and space triangulation (sample selection from two universities).

Given the research designs and data-collecting strategies described above, this study has demonstrated ways of approaching validity and reliability.

- Internal validity

This quantitative study illustrates the nature of internal validity by considering those potentially problematic variables, such as the level of students' general English proficiency, the year of participants' study, the instruction being delivered by the same instructor, the course materials, the students' technical background and the experience of using Weblog and so on. The researcher acknowledged the difficulty of controlling the availability of facilities and the participants' educational background. Therefore, the researcher had ruled out alternative explanations by incorporating such considerations into the sample and site selection process. In the research planning stage, the researcher developed the hypotheses by interpreting the relationship between the variables in the study. The researcher used the pre-test/pilot phase to improve the accuracy of the research instruments. Hence, content validity was checked by a formal review of items by experts. Bias could have been reduced by the random assignment of participants to each group in one of the universities. In this current research design, a distinction between the current study and the previous researches done by others is the research design, in which the participants were not assigned to different treatments at different times during the experiment. Another concern raised about a threat to internal validity here (Creswell 2003, p171) is that the diffusion effect might possibly have occurred when the participants of the experimental and control groups talked to each other in the University of Leader, but this was not the case in the University of Sourthern-Taiwan.

In the qualitative data analysis, the recoding and translation of transcripts was agreed by the researcher himself and his colleague. However, the coding of each item and the translation of data into categories was accomplished only by the researcher. To some degree, the internal validity might have been affected (LeCompte and Goetz 1982). Nevertheless, the above precautions gave the researcher confidence by eliminating some

threats to the internal validity of the study.

- External validity

The evidence indicates that the selection of sites and subjects is not a fair representative sample for all universities in Taiwan. Conditions set out for other settings may have different arrangements of computer clusters, school disciplines, course objectives and network technology. Furthermore, individuals may bring their own technological training background, level of linguistic knowledge and attitude towards the use of CMC for the purpose of learning a language. Hence, the findings of the quantitative data might be internally valid, but not externally valid for all university settings in Taiwan. For the qualitative interview, it was difficult to meet the demands of external validity because the replication of social circumstances and the generalisability across social settings were made less possible by individuals' differences and by the small samples in the qualitative research (LeCompte and Goetz 1982).

- Content validity

Generally speaking, the view of content validity is based on the measurements against the relevant content domain or items for the construct. It is assumed that the instrument must show a good detailed description of the content that it purports to cover (Cohen et al. 2000). To draw inferences with a higher degree of content validity, the researcher considered the adequacy of the content of the measuring instrument, and developed the items comprising the independent variables (Weblogging experience) in relation to the conceptual description in the study.

- Construct validity

Regarding construct validity, a research must demonstrate the validity of each measure by presenting the constructs in an adequate way. There should be no conflict between the measures and the theoretical context, therefore, lending validity to the

interpretation of measurement.

- Reliability

In any quantitative research, reliability is claimed to be a central concept in measurement, and it concerns consistency (Cohen et al. 2000; Bryman 2001, p70). Given the established concept-indicator idea of measurement, the researcher obtained significant scores on coefficient alpha. As stated in section 3.7, the reliability coefficient of the research instrument should preferably be higher than 0.8. The values of statistical significance indicate that the measuring instrument was deemed to have reached acceptable levels. During the process of data analysis, attention was also paid to the inter-rater reliability. The scores of the participants' GEPT literacy tests were checked and evaluated by two markers in order to eliminate any bias or subjectivity. By doing this, the measures could achieve higher reliability in this research.

3.9.5 Strengths and Limitations of the Research Methodology

The distinction between qualitative and quantitative data or inquiry has led to protracted arguments with the proponents of each proposing the merits and disadvantages of adopting either inductive or deductive approaches (Shipman 1981; Patton 1990; Hoepfl 1997).

This research primarily followed the determined principles and structures of an experimental research. The above descriptions relating to the research design also introduced the difficulties in quasi-experimental research that may engender possible disappointing results when the educational innovation is being evaluated.

Apart from the extraneous factors (students' maturation, the effect of the researcher as the instructor, and so on) that may single out the problem of understanding the subjects, particularly "why" and "how" individuals comprehended the Weblog tasks in the process of writing, the school settings, course orientation, size of population and

limited time allowed in conducting this experiment might affect the generalizability of the result. A further investigation on different patterns of Weblog intervention (for example, organising individual Weblogs instead of having a group Weblog) is suggested with students at a higher level of English proficiency.

In addition to the above highlighted extraneous factors, the researcher allows the possibility of Hawthorne effect (Cohen et al. 2000) to explain the subtle difference between the Weblog treatment and the conventional classroom teaching. The attributes of the effect in our finding might have been due to the participants' interests and novel experience of the Weblog. Extended discussion of the Weblog attributes with qualitative analysis can be found in the section of data analysis and results (see section 4.5.1 and 4.5.2 in Chapter 4).

3.9.6 Ethical Considerations

All social science researchers must inevitably take into the account the ethical effects of data collection from people and about people (Punch 2005; Cohen et al. 2000). Cohen and his colleagues (2000, p63) raised the concern of 'deception' in experimental research, addressing the problem of any treatment of participants from whom the true purpose and conditions of the research should not be concealed who should not be misinformed about what is going on.

In this study, the appropriate ethical standards were maintained as conscientiously as possible throughout the research process. In this case of educational research, the universities' policies and relevant administrative procedures were followed. Besides, the faculties were informed of the purpose of this research in advance. During the process of manipulating the Weblogs, the provision of personal login IDs and passwords enabled every participant to access the Weblog platform securely and privately.

The removal of any possible offensive messages, obscene links or mail spams was ensured by constant monitoring of the Weblog platform for the purpose of education. At the data collection stage, considerations were given to the informed consent, anonymity, and confidentiality of participants' questionnaire data and interview responses. In the analysis of qualitative data, the respondents in this study were given English pseudonyms to protect the confidentiality of interviewees. All participants in the experimental mode of learning were informed of the purpose of this study. Precaution was also taken regarding the issue of the researcher himself as an observer as well as a grader of the students' performance. To avoid bias, a second grader was invited to ensure the fairness, impartiality and reliability of students' literacy performance.

At the end of the research, the findings of this study were made available to all research participants. In addition, an effort was made to make the report of any technical shortcomings and the refection of significance as clear as possible for appropriate parties.

3.10 Summary

This paper has reviewed the experimental study in terms of the methodologies. The principle of conducting a piece of quantitative research was introduced. As a finished product, the researcher has demonstrated the conceptual clarity and the fit between the component parts of the research project (for example, reciprocal influence between question and methods). Both quantitative and qualitative methods, the piloting of the research instrument, and the data collection processes were deliberately designed so as to assure the validity and reliability of data. The results of the data analysis are detailed in Chapter 4 while the discussion of research questions and conclusion of this study will be reported in Chapter 4 and 5.

Chapter Ⅳ Data Analysis and Results

4.1 Introduction

The purpose of most research projects in the area of social science is to draw a general conclusion about what has been actually observed in an existing condition. To achieve the goal of generalisation, researchers may encounter the difficulties in obtaining reliable and generalisable evidence. When dealing with quantitative data, it is also a challenge that most concepts are conveyed in mathematical language and statistics.

Section 4.2 in this chapter is concerned with the presentation of quantitative responses from 119 students. It presents the quantitative results of the study, beginning with the clarification of the data collection instrument, through the application of different tests and measurements and finally provides the statistical evidence from the observed data.

Section 4.5 deals with the other sources of evidence from 24 participants. The information was collected from each school qualitatively through interviews and Weblog tasks. Such qualitative data provided rich materials, which helped the researcher better understand and interpret the results from different points of view.

4.2 Aims of the Questionnaire

The aims of collecting responses from questionnaires were to:

- collect background information for the target population, used for clarifying the issues of students' technological experience, gender, specialties, year of study, English writing experience and CMC to control and manipulate the extraneous variables.
- probe into students' perspectives on three major different aspects of the

research, namely, attitudes toward EFL writing, self-efficacy and attitudes toward using computers in EFL writing by distributing pre- and post-questionnaires, used to study the incremental changes after the experimentation.

- examine the key issues (*also mentioned in the section of Hypotheses in Chapter Three)*:

***Key issue 1*:** As an illustration of the eight different writing attitudinal scales, the intervention of Weblog will influence the mean scores of experimental groups statistically.

***Key issue 2*:** In consideration of the sample population's favourite tendency towards the eight writing attitudinal scales, the mean score of the sample population to the known value (mean = 3; neutral statement) will have a difference in the control and in the experimental groups before and after the course.

***Key issue 3*:** Examination of the experimental group's mean scores before and after the intervention will reveal a difference in the students' writing attitudes. In comparison with the experimental group, the mean scores of the control group will show a difference in the students' writing attitudes before and after the experimentation.

***Key issue 4*:** By comparing the change in the mean scores after a period of teaching, the value of the changes for the different groups will be significantly different.

***Key issue 5*:** The experience of using different CMC tools will have a greater influence on the changes in the mean scores when we examine the relationship between students' levels of technical experience and

students' writing attitudes.

Key issue 6: In assessing the students' English proficiency, we assume that there will be no significant difference between the two groups at the beginning of the course.

Key issue 7: In assessing the students' English proficiency (reading and writing), we assume that the result will find a significant difference between pre- and post-test results, but the intervention of Weblog teaching will have brought about a greater improvement in performance than will have the conventional classroom teaching approach.

Key issue 8: After a period of teaching, we assume that the experimental group will show greater improvement in their writing than will the control group.

Key issue 9: In assessing the variation of students' GEPT performance relating to their login frequencies, we assume that this pair of variables is strongly related.

Key issue 10: By comparing the computational records of visits and bandwidth, we assume that the results will find a significant difference between each month in conjunction with students' participation.

4.3 Descriptive Statistics of Quantitative Data

4.3.1 Background Information

In this study, 119 student questionnaires were distributed at the University of Leader and the University of Southern-Taiwan both at the beginning and at the end of the course (see Appendix D). The pre and post course questionnaires were both distributed in the presence of the researcher, in case the subjects encountered any problems in comprehending the questions in this survey.

The questionnaire was organized into several sections. Section 1 asked eight questions relating to the students' personal information and their technological background. One reason for examining the subjects' background information was that the researcher was concerned about a number of variables operating that were difficult to control and possibly could affect the results. Therefore, access to the subjects' background information was necessary, as this would provide additional evidences with the possibility of explaining the relationship between the extraneous variables and the subjects' outcomes.

As can be seen from Table 4.1, there were unbalanced gender proportions in the target sample of the population as well as in each group. The number of male students was slightly greater than the number of female students. Most male students of the target sample population in the University of Southern-Taiwan (36 male students) majored in electrical engineering. In the real educational setting of the Southern-Taiwan University, it was impossible to assign male and female students randomly into each group with an equal number of each gender.

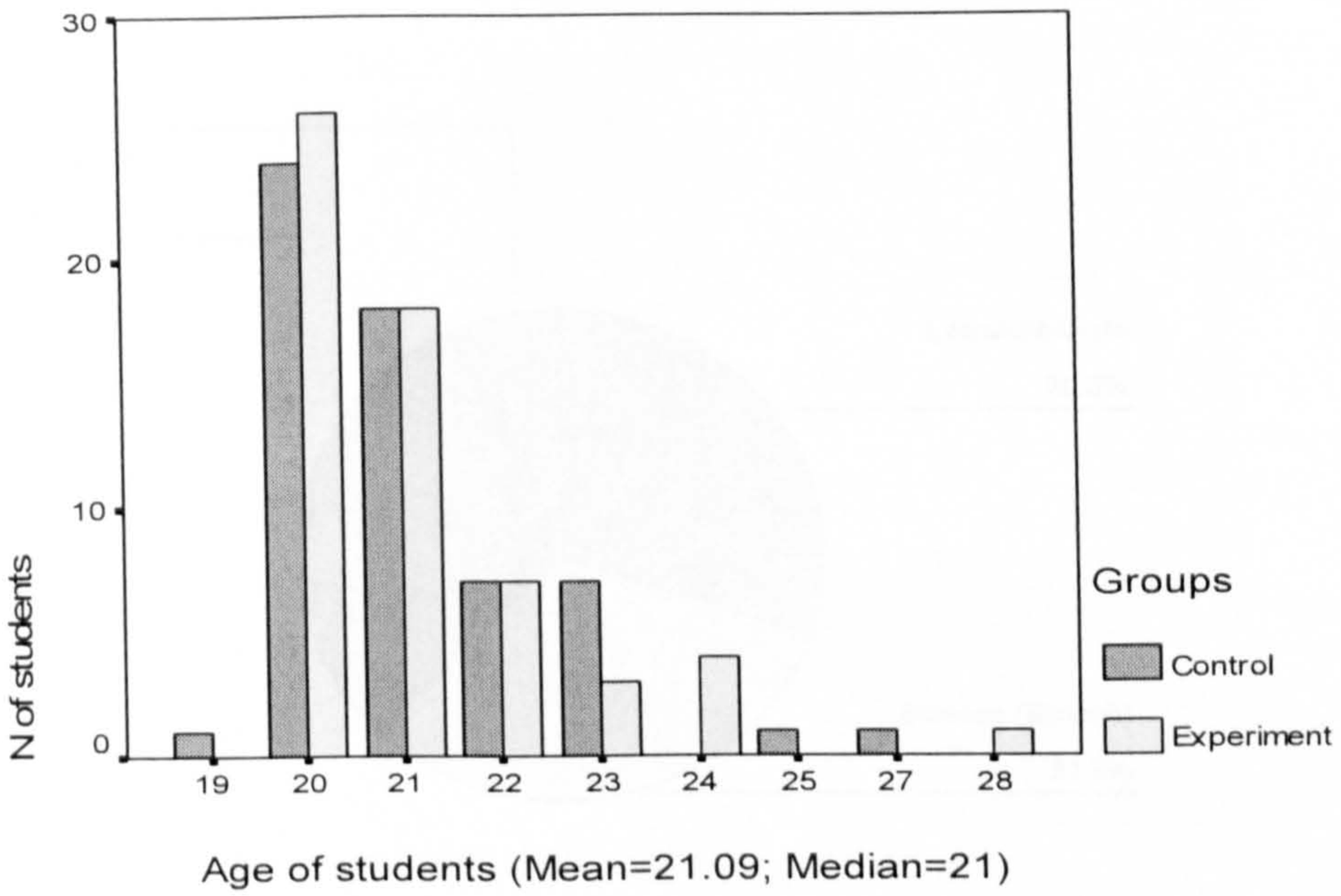
Table 4.1 Gender of sample population in two different universities

	University of Leader				University of Southern-Taiwan				
	Teaching Approaches (groups)				Teaching Approaches (groups)				
	Control		Experiment		Control		Experiment		
	N of students	%	N of students	%	N of students	%	N of students	%	
Male	12	54.5%	5	23.8%	36	94.7%	16	42.1%	69
Female	10	45.5%	16	76.2%	2	5.3%	22	57.9%	50
Total	22		21		38		38		**119**

Data collected from the descriptive statistics on age in Figure 4.1 revealed that the students' age ranged from 19 to 28 with an average age of 21, which was representative of students undertaking their first degree programme at their junior level in

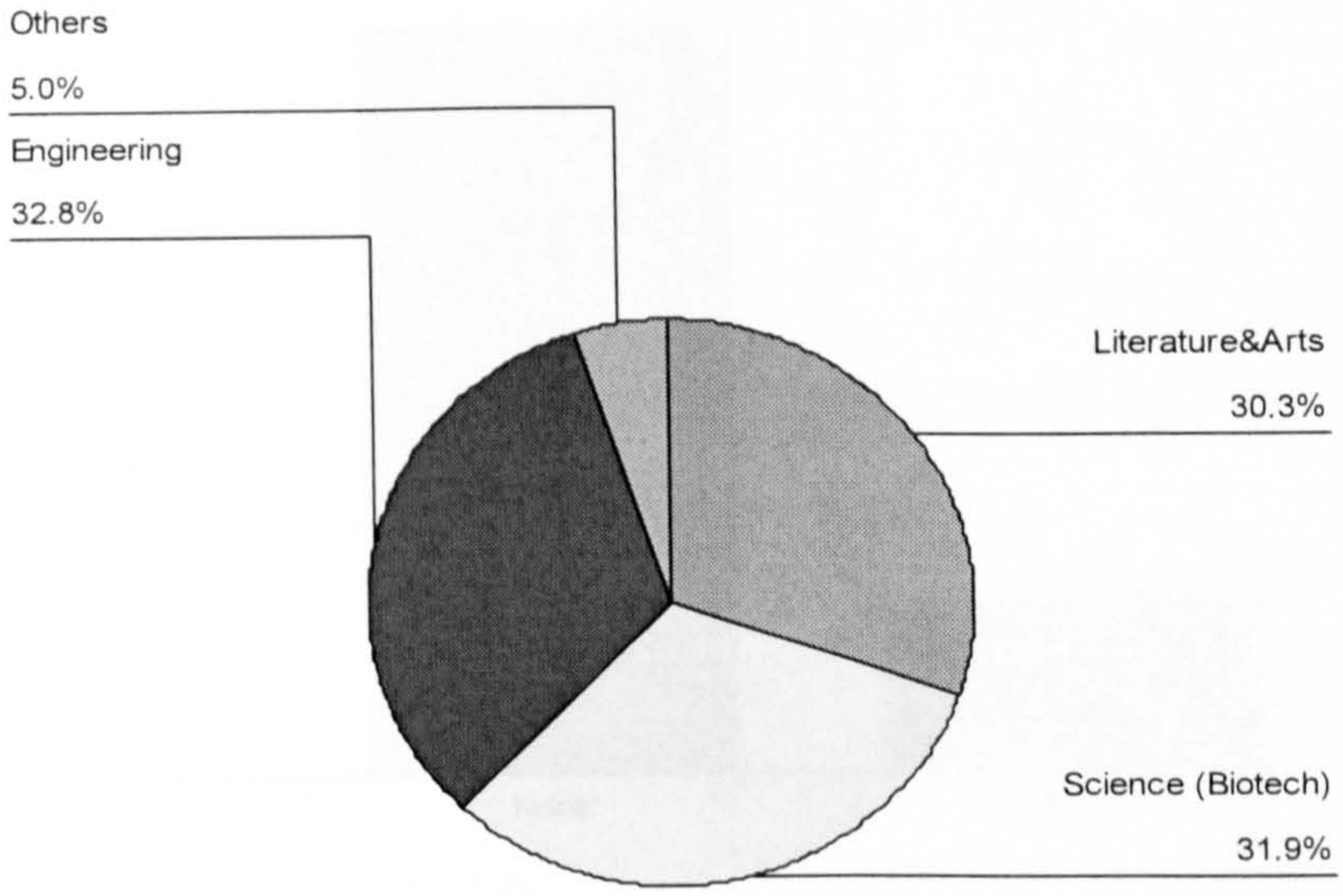
the universities.

Figure 4.1 Age of students in each group



The first four questions in the questionnaire (section 1) were concerned with more detailed information regarding the participants' major of study, the result of a recent English test before the course started, their previous score in the English writing test and their experience on the English writing course that had been taken previously. Figure 4.2 shows the major of studies in which the participants specialised. We can tell from Figure 4.2 that the percentage of participants undertaking the subject of biotechnological science is practically comparable to that of students majoring in electrical engineering with 32.8 % of the total. Similarly, 30.3% of participants were pursuing their first degree in the area of literature and the arts. According to the responses given by the remaining 5% of participants who categorized themselves as in the other major of study group, the researcher found that the minority of students were all from the Department of Applied English. Therefore, 5% should be included in the group of literature and the arts.

Figure 4.2 Major of Study



As indicated in Figure 4.3, the majority of participants had no record of any English language test before the commencement of the experiment. Only 15% of participants achieved a score of over 450 in the TOFEL test. Although the minority of participants acknowledged that they had taken the TOFEL test, they were unable to retrieve the score of their TOFEL result.

Figure 4.3 Result of English language test

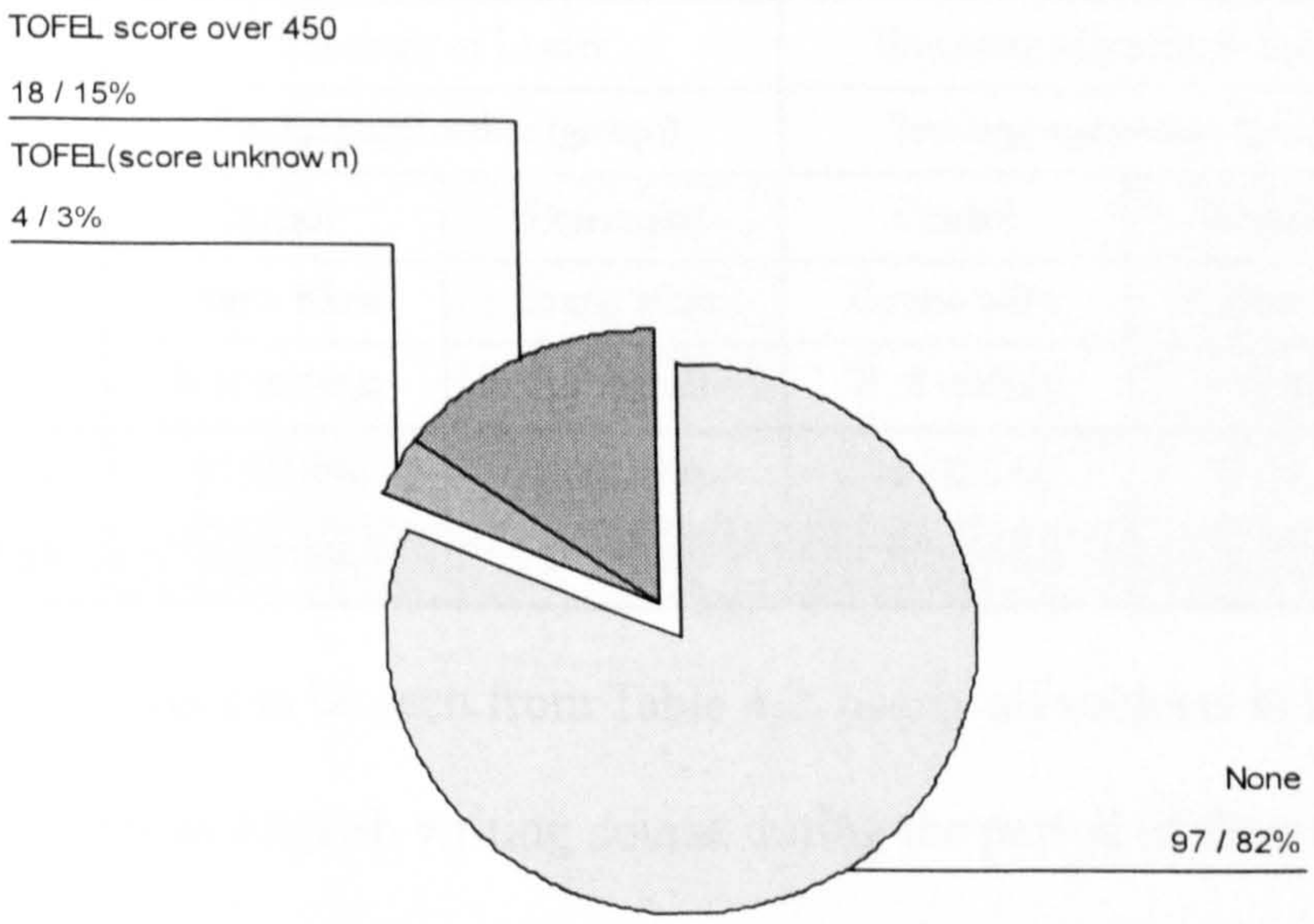
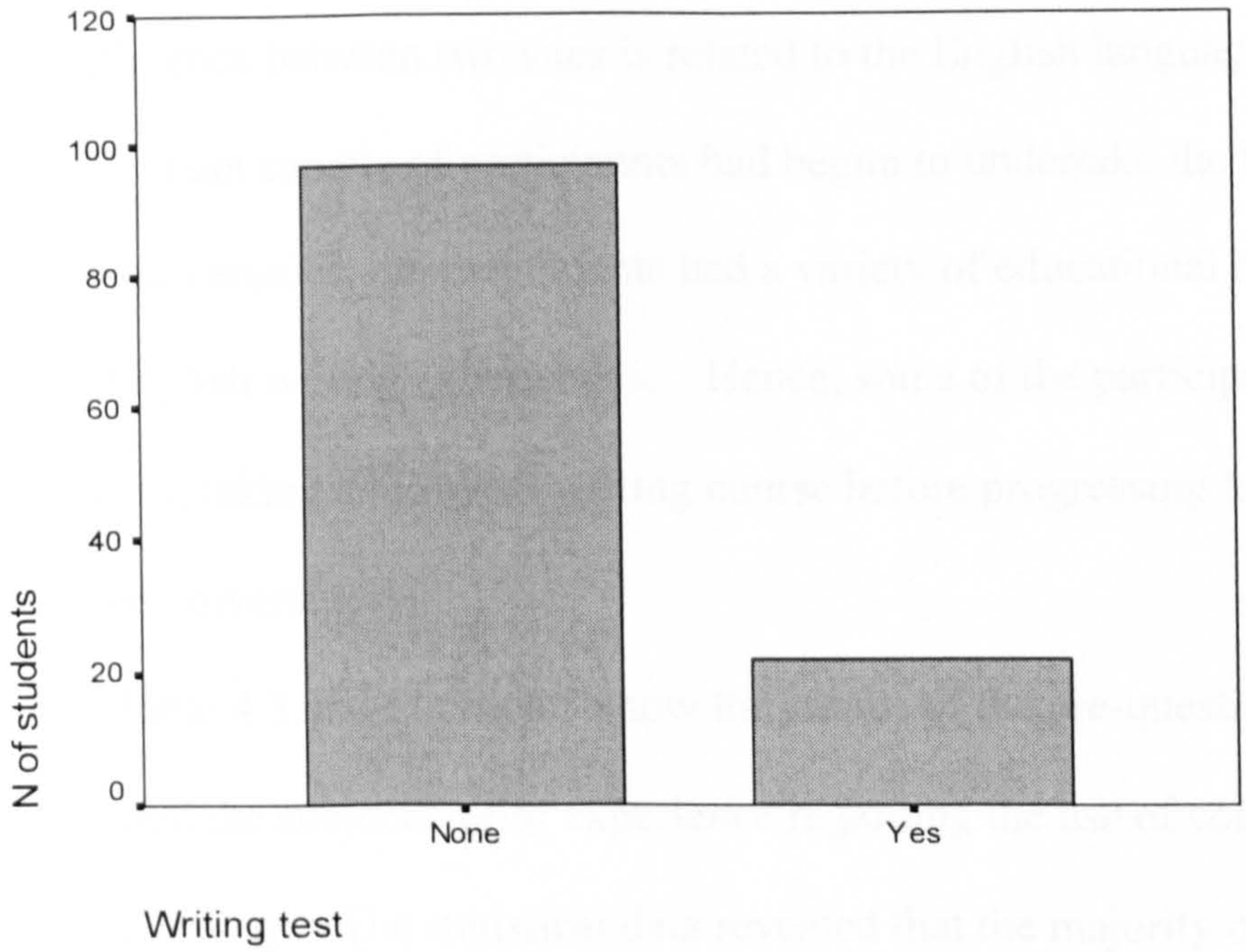


Figure 4.4 Experience of English writing test



The information given by most participants showed that there was no record of their result in the English writing test. In other words, they had no experience of taking any formal or informal English writing test before the course began. A few responses from 22 participants stated that they had taken an English writing exam, but no record of their scores was retrieved. Therefore, it was impossible to establish the standard of English writing among the groups of participants.

Table 4.2 Experience of English writing course

	University of Leader		University of Southern-Taiwan		
	Teaching approaches (groups)		Teaching approaches (groups)		
	Control	Experiment	Control	Experiment	
	Course taken	Course taken	Course taken	Course taken	
	N of students	N of students	N of students	N of students	
1 Yes	18 (81.8%)	18 (85.7%)	12 (32.4%)	9 (24.3%)	57
2 No	4 (18.2%)	3 (14.3%)	25 (67.6%)	28 (75.7%)	60

As can be seen from Table 4.2, nearly all subjects in the University of Leader had taken an English writing course during the period of their study in the college, whereas over half of subjects in the University of Southern-Taiwan had no experience of

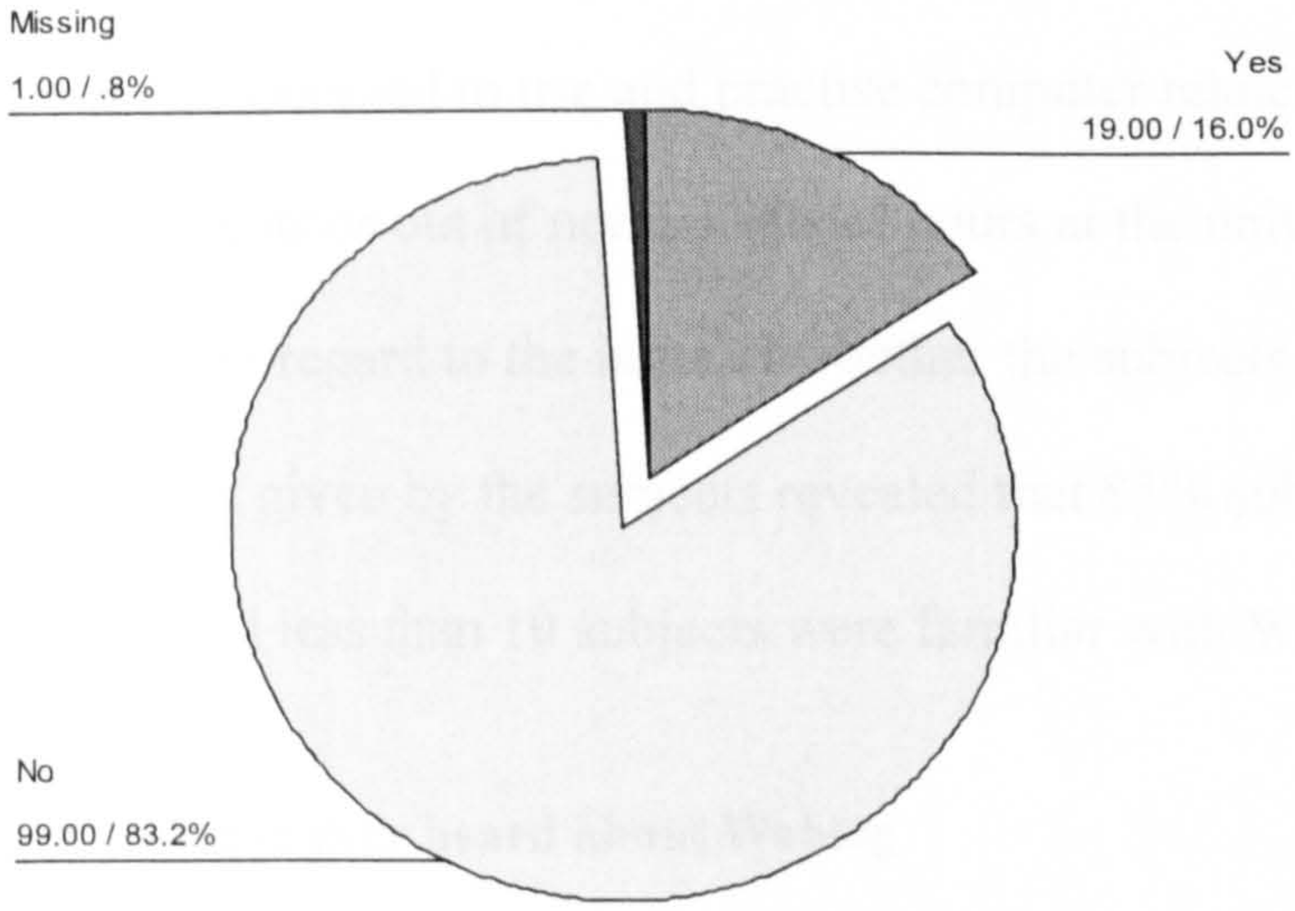
taking an English writing course. In this survey, the researcher found that the reason for such a difference between two sites is related to the English language curriculum. Before the target sample of participants had begun to undertake the bachelor course in these two universities, the participants had a variety of educational backgrounds and different English writing experiences. Hence, some of the participants had no experience of taking an English writing course before progressing to the junior level of study at the universities.

Table 4.3 and Figure 4.5 show the results of the pre-questionnaire, which sought to understand the subjects' prior experience regarding the use of computers in English language learning. The statistical data revealed that the majority of subjects had no experience of using computers for English learning, and only a few of them had used computers in English learning.

Table 4.3 Experience of using computers for English learning

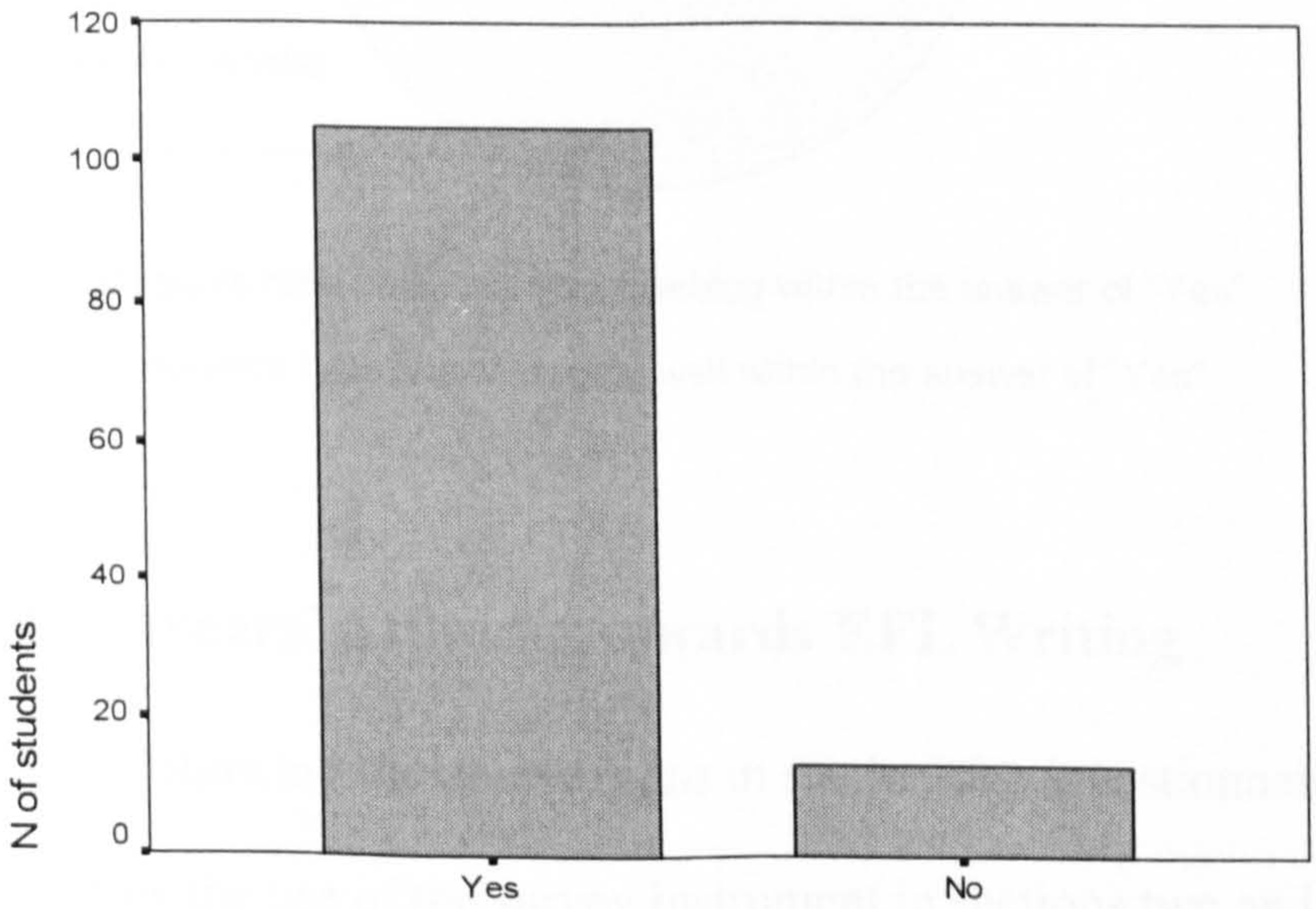
	University of Leader				University of Southern-Taiwan			
	Teaching approaches				Teaching approaches			
	Control		Experiment		Control		Experiment	
	learn English with PC				learn English with PC			
	N of Stu.	%	N of Stu.	%	N of Stu.	%	N of Stu.	%
1 Yes	6	27.3%	7	33.3%	3	7.9%	3	8.1%
2 No	16	72.7%	14	66.7%	35	92.1%	34	91.9%

Figure 4.5 Experience of using computers for English learning



The pre and post responses to question six in section 1 (see Appendix D) was analysed by employing the one-way ANOVA analysis, which compares several means between groups (see section 4.3.3.4).

Figure 4.6 Access to personal computer at home or dormitory

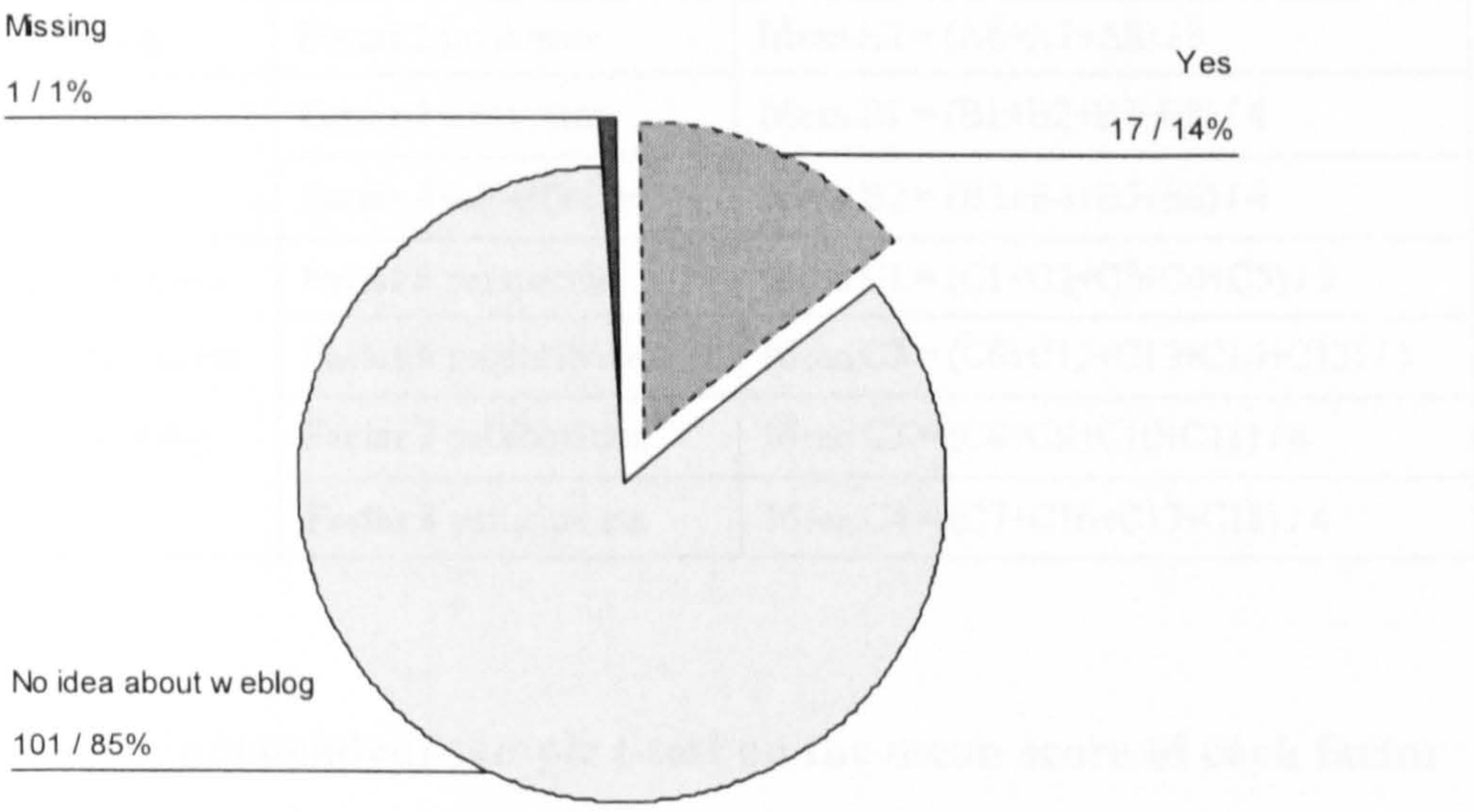


The above graph (Figure 4.6) indicates the accessibility of computers at individual subjects' homes or dormitories. The overwhelming majority of subjects were

able to access computer facilities at home after school hours. Although there was a significant minority of subjects who did not have a computer at home or in the dormitory, they were encouraged to use and practise computer related activities for their homework and Weblog entries out of normal school hours at the university's computer cluster.

With regard to the issue of whether the subjects had any impression of Weblogs, the responses given by the subjects revealed that 85% subjects had no idea about what a Weblog is and less than 10 subjects were familiar with Weblogs (see Figure 4.7).

Figure 4.7 Have ever heard about Weblog



4.3.2 Learners' Attitudes towards EFL Writing

Following the observations in section one (questionnaire), evidences were also gathered by the use of the survey instrument in sections two and three that dealt with three different themes representatively titled 'attitudes toward EFL writing', 'self-efficacy' and 'attitudes toward using computers in EFL writing' with Likert-type scales for the responses. In order to know whether the new teaching approach

significantly outperformed the traditional one, most responses in sections two and three (see Appendix D) that contained numerical values measuring each individual response were evaluated by the proper tests using the statistical software SPSS. Next, the researcher carried out many different tests of significance firstly by finding out the mean of a set of observations for each individual within each factor. The values of each item (as well as observation) within a factor were added up and then divided by the number of observations, shown as Table 4.4 below.

Table 4.4 The mean score of observational items within factors and aspects

Attitude toward EFL writing	**Factor 1** general attitude	Mean A1 = (A1+A2+A3+A4+A5) / 5
	Factor 2 preference	Mean A2 = (A6+A7+A8) / 3
Self-efficacy	**Factor 3** enjoyment	Mean B1 = (B1+B2+B7+B8) / 4
	Factor 4 self-efficacy	Mean B2 = (B3+B4+B5+B6) / 4
Attitude toward using computers in EFL writing	**Factor 5** perspective	Mean C1 = (C1+C2+C3+C4+C5) / 5
	Factor 6 productivity	Mean C2 = (C6+C12+C13+C14+C15) / 5
	Factor 7 collaboration	Mean C3 = (C8+C9+C10+C11) / 4
	Factor 8 participation	Mean C4 = (C7+C16+C17+C18) / 4

4.3.2.1 An independent sample t-test on the mean score of each factor

To examine the first key issue, the researcher evaluated the differences in means between two groups using an independent sample t-test shown as Table 4.5. For the null hypothesis H° there is no difference between the control and the experimental group ($p>0.05$). If the observed outcome takes a value that is against the null hypothesis, that is, $p<0.05$, it can be claimed that the alternative hypothesis has been proved and there is a statistical difference between the two groups. In the above example, the most observed p-value falls the range within which the researcher would accept H° at the 5% level ($p>0.05$), except for the factors Mean C2, Mean C3 and Mean C4 in the post-test. The observed outcomes of Means C2, C3 and C4 in the post-test suppose the alternative

hypothesis is true. This indicates there is a statistical difference between the two groups after the experimental group received a different teaching method in respect of the factors of ***productivity, collaboration and participation*** (see Table 4.5).

Table 4.5 The independent sample t-test on the mean score of each factor

Factor		Control group N=60 (Mean ± SD)	Experimental group N=59 (Mean ± SD)	t	Sig.(2-tailed)
Pre-test	Mean A1	3.407 ± 0.7915	3.512 ± 0.6911	-0.772	0.442
	Mean A2	3.1111 ± 0.75581	3.2429 ± 0.64870	-1.020	0.310
	Mean B1	2.6333 ± 0.58125	2.5424 ± 0.59116	0.846	0.399
	Mean B2	2.1125 ± 0.65326	2.0805 ± 0.63728	0.270	0.787
	Mean C1	3.2000 ± 0.54617	3.2169 ± 0.56359	-0.167	0.868
	Mean C2	3.1433 ± 0.55368	3.2339 ± 0.63371	-0.831	0.408
	Mean C3	3.4333 ± 0.64089	3.4831 ± 0.71599	-0.399	0.690
	Mean C4	3.1917 ± 0.62837	3.2839 ± 0.73762	-0.735	0.464
Post-test	Mean A1	3.5500 ± 0.68951	3.6441 ± 0.64974	-0.766	0.445
	Mean A2	3.5111 ± 0.72217	3.5198 ± 0.72257	-0.065	0.948
	Mean B1	2.9000 ± 0.56411	3.0381 ± 0.61730	-1.275	0.205
	Mean B2	2.2958 ± 0.60627	2.3432 ± 0.65142	-0.411	0.682
	Mean C1	3.6067 ± 1.01378	3.6339 ± 0.64770	-0.174	0.862
	Mean C2	3.4300 ± 0.53593	3.6678 ± 0.66396	-2.152	**0.033 < 0.05**
	Mean C3	3.4542 ± 0.59392	3.6949 ± 0.61425	-2.174	**0.032 < 0.05**
	Mean C4	3.2625 ± 0.51754	3.5551 ± 0.68712	-2.620	**0.010 < 0.05**

4.3.2.2 One sample t-test on the mean score of each factor for the two groups

Regarding key issue 2, the researcher was interested in knowing whether or not the mean differences between the control and the experimental group were both consistent with an assumed mean value 3 (neutral responses to the statement). One sample t-test, therefore, was employed to analyse the data. Given the sample population size n = 60 and n = 59 respectively and the assumption that the observed variable had a normal distribution (n>40, Moore 2000, p380), the researcher developed the null hypothesis with

a 5% level of significance ($\alpha = 0.05$). Were there no significant difference between the assumption and the sample mean, the null hypothesis would be H^0: μ (χ : mean)= 3. In conducting the hypothesis test, there was no particular interest in the direction of the deviation; the researcher considered sample mean deviations on either side of the null hypothesized population mean (H^1: mean $\neq$ 3).

Table 4.6 One sample t-test on the mean score of each factor for the two groups

Factor		Control group N=60, df=59			Experimental group N=59, df=58		
		Mean ± SD	t	Sig. (2-tailed)	Mean ± SD	t	Sig. (2-tailed)
Pre-test	Mean A1	3.4067 ±0.79145	3.980	.000	3.5119 ±0.69110	5.689	.000
	Mean A2	3.1111 ±0.75581	1.139	.259	3.2429 ±0.64870	2.877	.006
	Mean B1	2.6333 ±0.58125	-4.886	.000	2.5424 ±0.59116	-5.946	.000
	Mean B2	2.1125 ±0.65326	-10.523	.000	2.0805 ±0.63728	-11.083	.000
	Mean C1	3.2000 ±0.54617	2.836	.006	3.2169 ±0.56359	2.957	.004
	Mean C2	3.1433 ±0.55368	2.005	.050	3.2339 ±0.63371	2.835	.006
	Mean C3	3.4333 ±0.64089	5.237	.000	3.4831 ±0.71599	5.182	.000
	Mean C4	3.1917 ±0.62837	2.363	.021	3.2839 ±0.73762	2.956	.004
Post-test	Mean A1	3.5500 ±0.68951	6.179	.000	3.6441 ±0.64974	7.614	.000
	Mean A2	3.5111 ±0.72217	5.482	.000	3.5198 ±0.72257	5.525	.000
	Mean B1	2.9000 ±0.56411	-1.373	.175	3.0381 ±0.61730	.475	.637
	Mean B2	2.2958 ±0.60627	-8.997	.000	2.3432 ±0.65142	-7.744	.000
	Mean C1	3.6067 ±1.01378	4.635	.000	3.6339 ±0.64770	7.517	.000
	Mean C2	3.4300 ±0.53593	6.215	.000	3.6678 ±0.66396	7.726	.000
	Mean C3	3.4542 ±0.59392	5.923	.000	3.6949 ±0.61425	8.690	.000
	Mean C4	3.2625 ±0.51754	3.929	.000	3.5551 ±0.68712	6.205	.000

The above figure reveals that the aspect of Mean A2 in the control group supports the null hypothesis, meaning students in the control group had a neutral statement for their writing preference before they received the lectures, but this had changed by the end of the semester. A greater number of positive responses were given for the attitude towards the writing preference by the students in the control group at the

end of the course. Table 4.6 also shows that there were negative representations of the students' mean scores on the factor of enjoyment and self-efficacy in the stage of the pre-test. In other words, students in both the control and the experimental group had no confidence in building their self-efficacy before the commencement of the course. Noticeably, the observations at the end of the course produced an exciting result when the students gave their responses to the questions regarding their attitude toward enjoyment. Statistics indicated that there was no significant difference between the assumption of Mean B1 in the post-test and the sample mean. Therefore, both groups showed a change from an unfavourable attitude to a neutral attitude toward the factor of Mean B1 at the end of the course. However, the negative representation of students' self-efficacy remained the same over a period of time.

Apart from the negative agreements given by all participants with regard to the aspect of self-efficacy, positive attitudes toward the other factors were obtained both before and after the course.

4.3.3 The Effect of the Weblog Intervention on Learners' Attitude towards EFL Writing

As part of the study to evaluate differences in students' attitudinal performances over a period of time, a statistical examination was given to the group of students who had participated in the weblog activities. A paired t-test was used to compare the experimental group's mean scores before and after an intervention.

4.3.3.1 Paired t-test on the mean score of each factor for the experimental group

Table 4.7 Paired t-test on the mean score of each factor for the experimental group

Factor 1 ~ 8 (A1, A2, B1, B2, C1, C2, C3, C4)	Experimental group N=59, df=58			
Pairs (pre-test and post-test)	Mean ± SD	(Paired differences)		
		Mean ± SD	t	Sig.(2-tailed)
Mean A1 Post Mean A1	3.5119 ± 0.6911 3.6441 ± 0.6497	-.01322 ± 0.6608	-1.537	0.130
Mean A2 Post Mean A2	3.2429 ± 0.6487 3.5198 ± 0.7226	-0.2768 ± 0.8262	-2.574	**0.013**
Mean B1 Post Mean B1	2.5424 ± 0.5912 3.0381 ± 0.6173	-0.4958 ± 0.5770	-6.599	**0.000**
Mean B2 Post Mean B2	2.0805 ± 0.6373 2.3432 ± 0.6514	-0.2627 ± 0.6621	-3.048	**0.003**
Mean C1 Post Mean C1	3.2169 ± 0.5636 3.6339 ± 0.6477	-0.4169 ± 0.7650	-4.186	**0.000**
Mean C2 Post Mean C2	3.2339 ± 0.6337 3.6678 ± 0.6640	-0.4339 ± 0.7993	-4.170	**0.000**
Mean C3 Post Mean C3	3.4831 ± 0.7160 3.6949 ± 0.6142	-0.2119 ± 0.7249	-2.245	**0.029**
Mean C4 Post Mean C4	3.2839 ± 0.7376 3.5551 ± 0.6871	-0.2712 ± 0.7547	-2.760	**0.008**

In order to find out whether there is no significant difference between the performance mean scores before and after the Weblog intervention in key issue 3, a paired t-test was used to test the null hypothesis. As can be seen from the figure above, the null hypothesis can be rejected since the p-value fell below the specified level α, except the factor of Mean A1. Therefore, we know that the Weblog intervention did change students' attitude with regard to most factors. However, the students' general attitude was not affected by performing the Weblog practices.

4.3.3.2 Paired t-test on the mean score of each factor for the control group

To find out whether the performance of the control group would have the same statistical result same as the performance of the experimental group the researcher replicated the statistical procedure of the paired t-test to compare the mean score of each factor for the control group.

Table 4.8 Paired t-test on the mean score of each factor for the control group

Factor 1 ~ 8 (A1, A2, B1, B2, C1, C2, C3, C4)	Control group N=60, df=59			
Pairs (pre-test and post-test)	Mean ± SD	(Paired differences)		
		Mean ± SD	t	Sig.(2-tailed)
Mean A1 Post Mean A1	3.4067 ± 0.79145 3.5500 ± 0.68951	-0.1433 ± 0.84780	-1.310	0.195
Mean A2 Post Mean A2	3.1111 ± 0.75581 3.5111 ± 0.72217	-0.4000 ± 0.96804	-3.201	**0.002**
Mean B1 Post Mean B1	2.6333 ± 0.58125 2.9000 ± 0.56411	-0.2667 ± 0.55400	-3.728	**0.000**
Mean B2 Post Mean B2	2.1125 ± 0.65326 2.2958 ± 0.60627	-0.1833 ± 0.66998	-2.120	**0.038**
Mean C1 Post Mean C1	3.2000 ± 0.54617 3.6067 ± 1.01378	-0.4067 ± 0.98323	-3.204	**0.002**
Mean C2 Post Mean C2	3.1433 ± 0.55368 3.4300 ± 0.53593	-0.2867 ± 0.64558	-3.440	**0.001**
Mean C3 Post Mean C3	3.4333 ± 0.64089 3.4542 ± 0.59392	-0.0208 ± 0.72529	-0.222	0.825
Mean C4 Post Mean C4	3.1917 ± 0.62837 3.2625 ± 0.51754	-0.0708 ± 0.73082	-0.751	0.456

For the null hypothesis, it is assumed that there is no change in students' attitudes if the p-value falls between a two-sided rejection region that cuts off 2½ % in each tail, for a total of $\alpha = 5\%$. Thus, in the process of statistical testing, the alternative hypothesis stated is that there is a significant difference in the students' mean performance scores before and after delivering the conventional type of writing course if $p < 0.05$.

Statistics in Table 4.8 indicate that there is a statistical difference at the significant level $p < 0.05$ in the light of the factors of Mean A2, Mean B1, Mean B2, Mean C1 and Mean C2. However, the statistical test of the mean performance scores on Mean A1, Mean C3 and C4 accepted the null hypothesis.

The statistical results given so far, in Table 4.7 and Table 4.8, have indicated that an attempt to introduce the influence on students' general attitude (Mean A1) did not achieve a positive result in the two groups. In other words, students in the two groups did not have an observed change in their impression of learning about how to develop

their English writing in general after the semester. Although the evidence has indicated that the differences in the matter of enjoyment, self-efficacy, CMC-related perspective and productivity were statistically significant in both groups, an influential conclusion of whether the cause of the significances could be attributed either to either the teaching approach or to the writing course material can hardly be drawn. However, it is important to appreciate that a difference in the mean performance between the two groups was found after statistical testing regarding the factors of CMC-related collaboration and participation. A significant level of change in the students' attitude towards CMC-related collaboration and participation was observed in the experimental group, but there was no evidence indicating a positive improvement with statistical significance in the control group while examining the factors of participation and collaboration.

4.3.3.3 Two sample (independent) t-test on the change of mean scores (incremental mean scores) of each factor for the two groups

Given the above statistical results showing that some observed differences of the both groups were identified with attitudinal change in the factors of preference, enjoyment, self-efficacy, CMC-related perspective and productivity, it is still difficult to conclude that the observed evidence in the dependent variables of performance in the experimental group achieved a higher level of change in comparison with the control group. To find out this, the researcher conducted a further independent t-test analysis for key issue 4. This analysis measured the probability of obtaining the respective mean levels of attitudinal changes (the incremental change of mean scores).

Table 4.9 Independent t-test on the mean level of attitudinal changes for the two groups

Abbreviated D letter represents the mean level of attitudinal change D Mean A1 = Post Mean A1 – Mean A1; D Mean A2 = Post Mean A2 – Mean A2; etc.				
Factor	**Control group N=60 (Mean ± SD)**	**Experimental group N=59 (Mean ± SD)**	**t**	**Sig. (2-tailed) df = 59+58 = 117**
D Mean A1	0.1433 ± 0.84780	0.1322 ± 0.66084	0.080	0.937
D Mean A2	0.4000 ± 0.96804	0.2768 ± 0.82618	0.747	0.457
D Mean B1	0.2667 ± 0.55400	0.4958 ± 0.57702	-2.209	0.029
D Mean B2	0.1833 ± 0.66998	0.2627 ± 0.66213	-0.650	0.517
D Mean C1	0.4067 ± 0.98323	0.4169 ± 0.76500	-0.064	0.949
D Mean C2	0.2867 ± 0.64558	0.4339 ± 0.79927	-1.106	0.271
D Mean C3	0.0208 ± 0.72529	0.2119 ± 0.72489	-1.437	0.153
D Mean C4	0.0708 ± 0.73082	0.2712 ± 0.75471	-1.471	0.144

Again, had the researcher postulated a two-tailed hypothesis, most significant values would not have been found. As can be seen from Table 4.9, the differences between two means of attitudinal changes from the two sets of values were not statistically significant in the factor of A1. Similarly, there were no significant differences between the two groups when the means of attitudinal changes were compared in the light of factors A2, B2, C1, C2, C3 and C4. However, it is exceptional that from eight factors examined only factor B1 has a statistically significant difference at the level of 0.029, smaller than 0.05 and so the null hypothesis is rejected.

The values of significance indicate that for seven out of the eight factors, both groups have changed their attitudes towards writing self-efficacy, preference and CMC-related EFL writing at almost the same average level. The fact that the mean difference of the factor B1 is at a significant level means that the Weblog intervention in the experimental group had a larger effect on students' attitudes towards enjoyment than conventional teaching had on the control group. The attributes of such change can be further explored when we come to the discussion of qualitative data analysis (see section 4.5.1). Students in the experimental group were more likely to enjoy writing in English

and had increased their potential for using English to express their thoughts and ideas more frequently.

4.3.3.4 One-Way ANOVA on the change of mean scores (incremental mean scores) of different level of technical experience (between groups) with different CMC tools

Table 4.10 One-Way ANOVA

Abbreviated D letter represents the mean level of attitudinal change D Mean A1 = Post Mean A1 – Mean A1; D Mean A2 = Post Mean A2 – Mean A2; etc.								
Experience Grouping: 1: Never 2: Sometimes 3: Often	**Factor (Sig.)**							
	D Mean A1	D Mean A2	D Mean B1	D Mean B2	D Mean C1	D Mean C2	D Mean C3	D Mean C4
Word Processor Experience	Between groups df = 2; Within groups df = 114; Total df = 116							
	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05
Blackboard System Experience	Between groups df = 2; Within groups df = 116; Total df = 118							
	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05
E-mail Exchange in English	Between groups df = 2; Within groups df = 113; Total df = 115							
	> 0.05	**0.027** Post Hoc 1-3: 0.029 2-3: 0.036	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05
Other Online Discussion	Between groups df = 2; Within groups df = 114; Total df = 116							
	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05
Online English News Reading	Between groups df = 2; Within groups df = 114; Total df = 116							
	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05
Online Information Search	Between groups df = 2; Within groups df = 114; Total df = 116							
	> 0.05	> 0.05	> 0.05	> 0.05	> 0.05	**0.034** Post Hoc 1-2: 0.103 2-3: 0.143	> 0.05	> 0.05
Online Chatting in English	Between groups df = 2; Within groups df = 114; Total df = 116							
	> 0.05	> 0.05	> 0.05	**0.036** Post Hoc 1-3: 0.066 2-3: 0.185	> 0.05	> 0.05	> 0.05	> 0.05

Table 4.10 demonstrates the significant differences between different group means in connection with a list of independent groups design for the key issue 5. One-way ANOVAs were employed to test our assumption and were used to focus on the difference in the means of eight attitudinal dependent variables and seven independent

variables with three levels of technical experience. To clarify the various technical experiences, the researcher had groups of 'never', 'sometimes' and 'often' as a representation of three different levels instead of the control and the experimental group. It should be noted here that the post-course students' technical experience (after a semester) was the source for this statistical examination.

Based on Table 4.10, we may conclude that there was some relationship between students who had never used and those who had often used the CMC-related tools. The result was found to be particularly significant in conjunction with students' technical experience of using E-mail, online information search and online chatting tools (for example, Google search and MSN messenger) to communicate in English. Table 4.10 reveals that students who had often used Email showed a stronger mean score on their writing preference compared with those who had never, or only sometimes used Email to communicate in English. Similarly, students who had often chatted to each other online in English showed that this had had a statistical effect on their self-efficacy when compared with the other two groups. When examining the variables of online information search, the result shows that students who had never had experienced of online searching tools responded as being less active on the productivity scale (attitudinal change of productivity) compared with the group of students with the given answer "sometimes." Moreover, the statistical result also indicates that there was a significant difference between the groups of students with the given answer "often" and the group of "sometimes" on the attitudinal change of productivity.

From the above table, it can be seen that there were not many variables that could have affected the change in the mean scores for different attitudinal factors. In other words, some possible extraneous variables above can be identified and the evidence of such can be collected when the researcher comes to explain further the impact of

Weblog implementation.

4.3.4 The Effect of Different Teaching Approaches on Learners' Learning Outcome

As an EFL writing instructor as well as a researcher, the researcher's focus was not only on the learners' attitude towards EFL writing but also on the quantitative data of the learning outcomes. In the following section, the quantitative data of students' performance will be examined by looking at the scores of pre- and post- GEPT literacy tests in the experimental group and the control group. The GEPT test, Intermediate 1 mock exam paper was the baseline assessment measure used to evaluate whether the two groups of students had the same level of ability of English literacy and if the students had achieved the standard of the adopted and modified version of GEPT criteria (see Appendix G for rubrical criteria). In addition, exactly the same exam paper was used for the post-test after approximately five months of an EFL writing course, so any possible improvement in their writing can be observed by examining the scores statistically. The GEPT test is a recognized language proficiency test by the Ministry of Education in Taiwan. The test is administered at five levels; Elementary, Intermediate, High-Intermediate, Advanced and Superior. As the research study was conducted with a focus on EFL writing, the researcher only adapted and adopted the reading with multiple choice and paragraph-writing component from the test at the Intermediate level. Besides, all the target sample of students in both universities were required to pass the GEPT test at the Intermediate level before they were ready to graduate. This proposal of institutional requirement is also supported by the Ministry of Education in Taiwan.

Table 4.11 Mean performance levels of GEPT test

		Pre-test (n = 112; 94.1%)		Post-test (n = 102; 85.7%)	
Group		Mean of total score	Mean of writing score	Mean of total score	Mean of writing score
Control	Mean±SD n	28.8818 ± 10.85637 n = 55	5.8636 ± 4.71449 n = 55	30.8846 ± 10.49865 n = 52	6.1827 ± 4.52122 n = 52
Experimental	Mean±SD n	29.7368 ± 9.35276 n = 57	4.8860 ± 3.62902 n = 57	31.2500 ± 9.61464 n = 50	6.7300 ± 3.56315 n = 50

From the figures in Table 4.11, it can be seen that the averages of the pre-test were at relatively the same level with the mean score of 28.8818 in the control group and 29.7368 in the other group, therefore indicating that the two groups were at approximately the same proficiency level in English literacy. Table 4.11 also indicates that neither group of students met the 60% standard of English proficiency in literacy, nor the 60% standard of paragraph writing assessment with the mark of 34 in total. One may argue that the use of the GEPT test is questionable as it is a test of general English usage that does not evaluate the performance in writing particularly and may not be directly related to what had been taught during the course. The researcher had several reasons of using the GEPT test as the measuring instrument. Firstly, the GEPT test is perceived by the Ministry of Education to be a valid, fair and reliable check for each level of ability in English. Secondly, writing performance can be assessed depending on the type of measure used and also depending on the purposes for which it is used, for example, as a diagnostic or as a proficiency test. Thirdly, the researcher had modified and adopted the GEPT criteria for assessing students' writing with reference to the course content and syllabus. Therefore, the ability to use lexical and grammatical structures to create sentences that are connected to one another to produce an organized and coherent paragraph was incorporated into the marking rubric.

Another issue of using this indirect measure (a general English proficiency measure) to evaluate students' writing performance is the subjective assessment of the individual markers were the students' writing not evaluated by the central of GEPT

organization. Any bias or subjectivity in the evaluation of an indirect measurement could weaken the quality of internal consistency. Attention must be paid to achieve a certain degree of inter-rater reliability. Apart from the multiple-choice reading test, students were given the test with another component of descriptive paragraph-writing in the GEPT test paper. The paragraphs were then read and evaluated by two markers using the same marking rubric. A third marker would have been asked to evaluate the students' paragraph writing had there been a discrepancy between the two markers. In the process of assessment, all copies of the GEPT exam paper were firstly posted to the second marker without any marking on them. The researcher then evaluated the same paragraphs and marked on their original exam paper to establish the reliability of the results. Not all of the target students participated in the pre- and post-test. As can be seen from Table 4.10, over 90% of students took the pre-test and 85.7 % students participated in the post-test.

The following graphs in Figures 4.8 and 4.9 indicate that the results of the GEPT literacy test from the two markers were highly correlated at the beginning and end of the term. Figures 4.10 and 4.11 show that there was no significant difference between the two markers in terms of the evaluation of the students' paragraph writing. There is a strong correlation between the scores of the two markers in the pre-writing test at Pearson Correction Coefficient R level of 0.870, and a reasonably high correlation in the post-writing test.

Due to the limited time and word limit, the correlation between students' self-efficacy measure and GEPT performance, the results of other formative assessments (for example, midterm and end of term exams) and monthly diagnostic writing tests, in conjunction with direct writing paragraphs, were not compared in this study, but can be used as a reference to allow for further comprehensive analysis of qualitative data.

Figure 4.8 Inter-rater reliability of pre-test scores

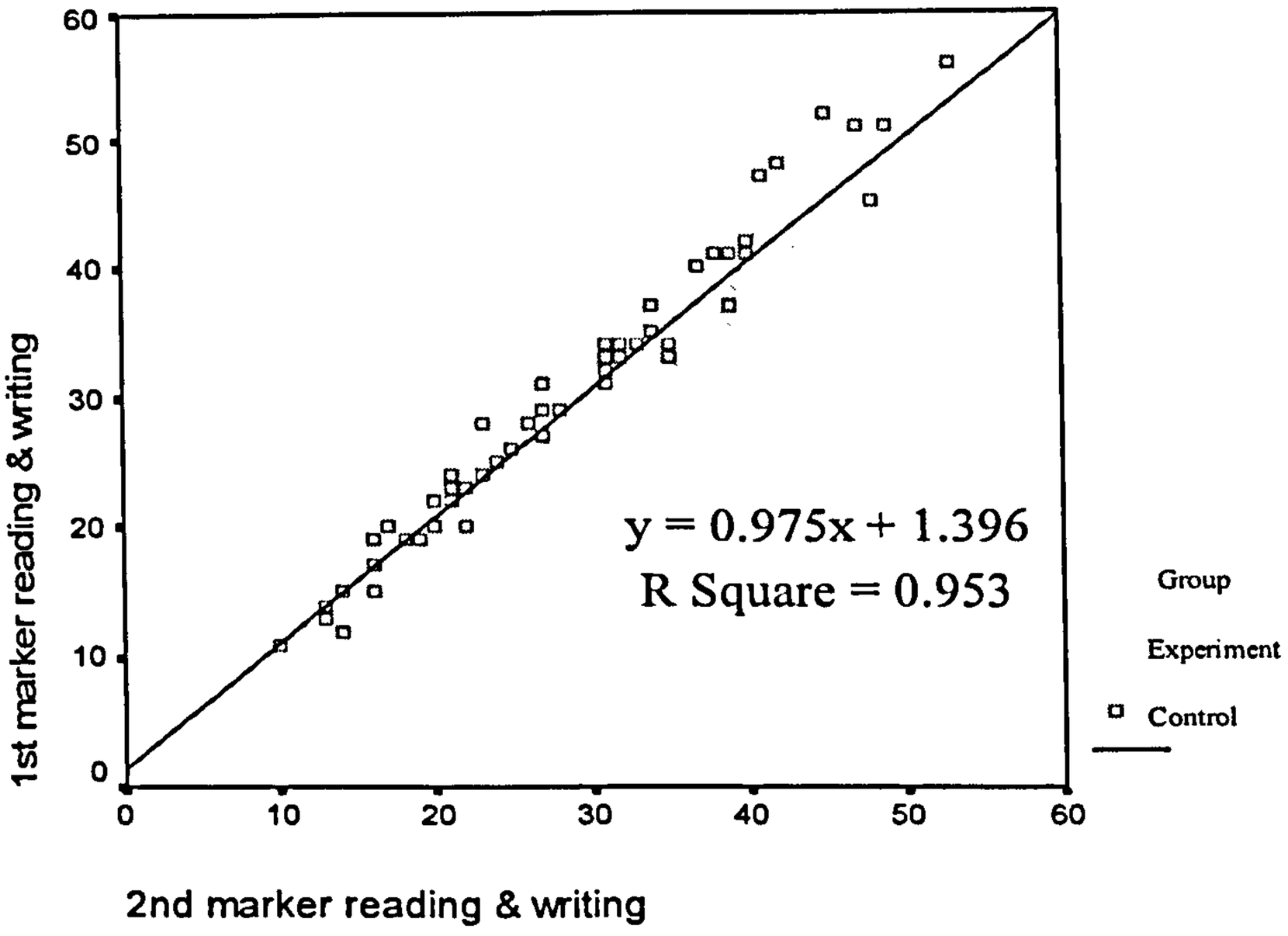


Figure 4.9 Inter-rater reliability of post-test scores

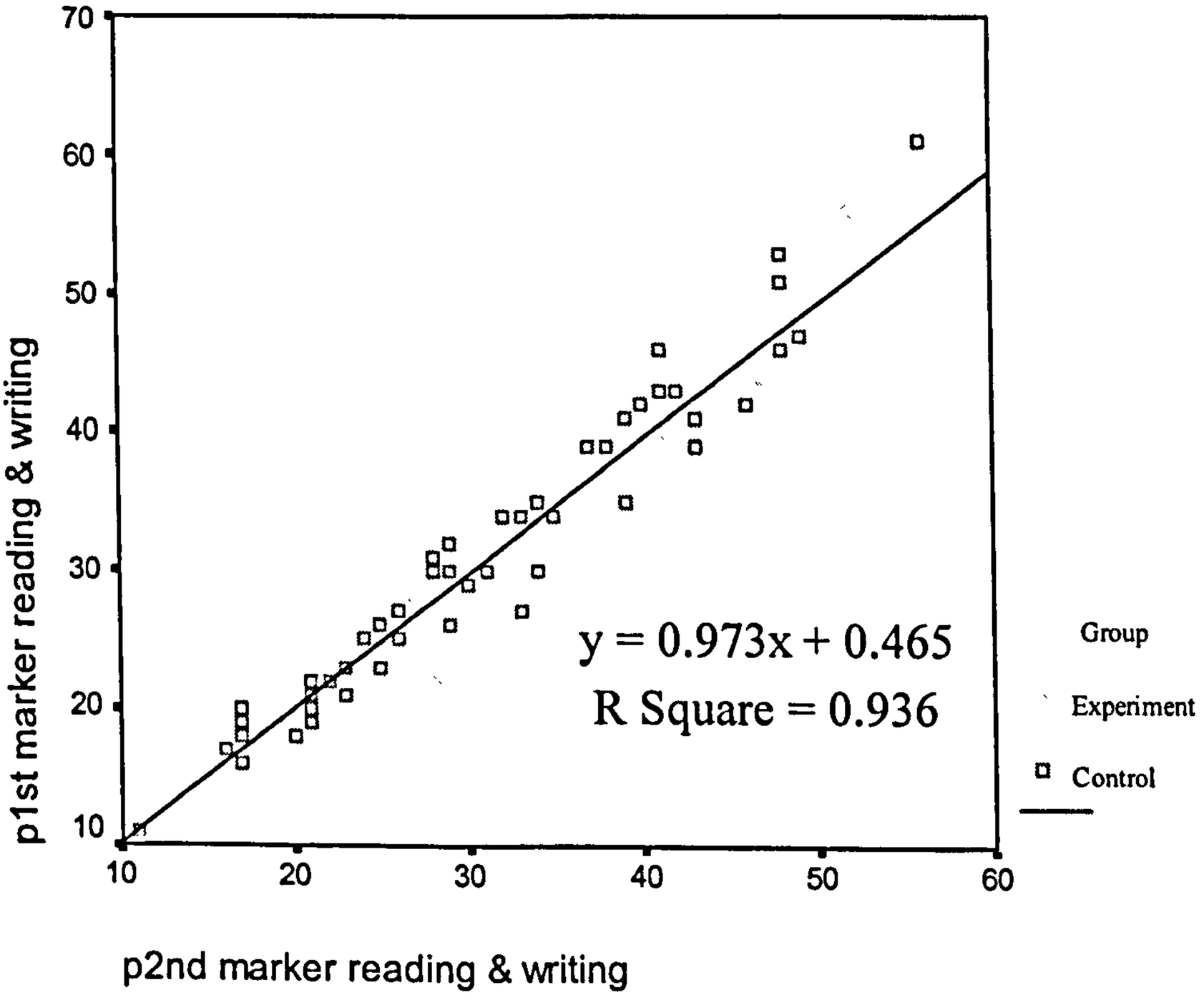


Figure 4.10 Inter-rater reliability of pre-test writing scores

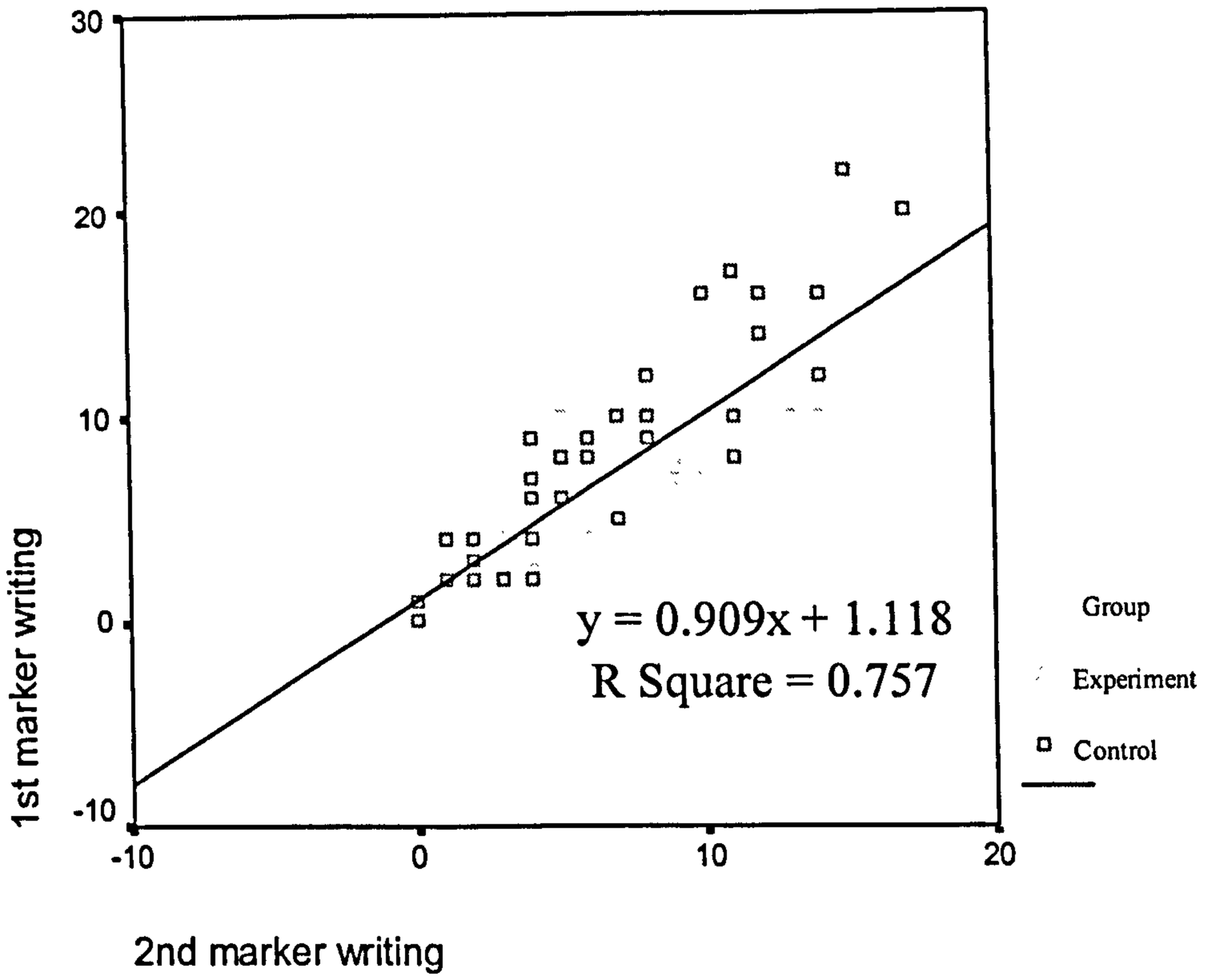
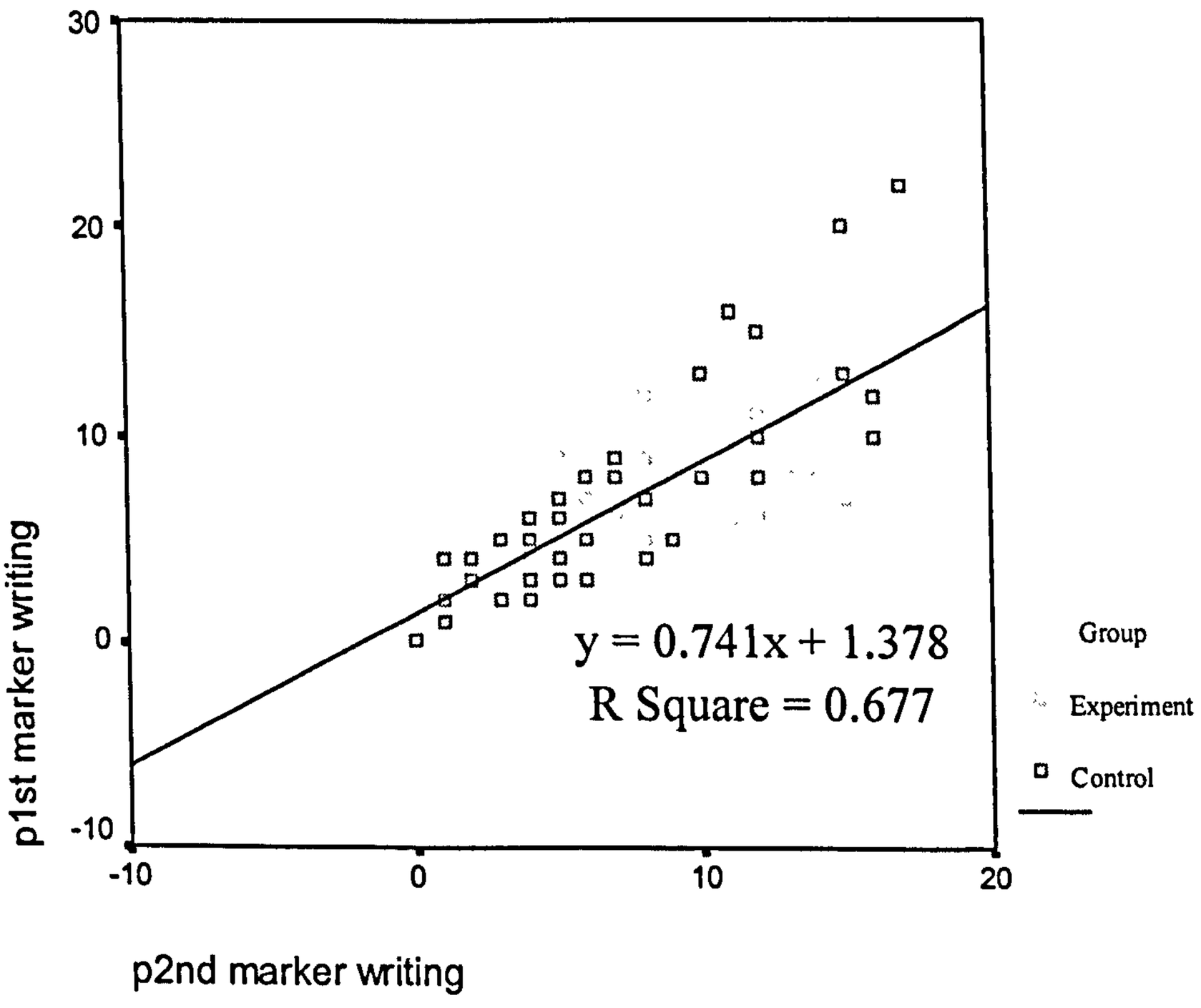


Figure 4.11 Inter-rater reliability of post-test writing scores



4.3.4.1 Independent sample t-test on the mean performance levels for the two groups

Table 4.12 T-test on the mean performance levels for the two groups in pre-test

	Control group n=55 (Mean ± SD)	Experimental group n=57 (Mean ± SD)	df	t	Sig. (2-tailed)
Pre-test	28.8818 ± 10.85637	29.7368 ± 9.35276	110	-0.447	0.656
Pre-test (writing)	5.8636 ± 4.71449	4.8860 ± 3.62902	110	1.232	0.220
Post-test	30.8846 ± 10.49865	31.2500 ± 9.61464	100	-0.183	0.855
Post-test (writing)	6.1827 ± 4.52122	6.7300 ± 3.56315	100	-0.677	0.500

From the above independent sample t-test, we may conclude that there is no significant difference between the control and the experimental group in their performance of the pre-test, nor in their writing for key issue 6. Therefore, we once again confirm that the two groups were at approximately the same level of English proficiency and writing performance at the beginning of the course. In addition, there is no difference between the post-test scores of the control and experimental groups, but there is a difference in the gain of writing scores between the two groups (see Table 4.14).

4.3.4.2 Paired t-test on the mean performance levels for the two groups

Table 4.13 Paired t-test on the mean performance levels

Pairs	Mean ± SD		(Paired differences)			
			Mean ± SD	df	t	Sig.(2-tailed)
All students	Pre-test Post-test	28.7598 ± 10.2268 31.0637 ± 10.02686	-2.3039 ± 9.66010	101	-2.409	**0.018**
Control group	Pre-test Post-test	28.1731 ± 10.43978 30.8846 ± 10.49865	-2.7115 ± 10.00605	51	-1.954	0.056
Experimental group	Pre-test Post-test	29.3700 ± 9.63720 31.2500 ± 9.61464	-1.8800 ± 9.36916	49	-1.419	0.162

In this section, key issue 7 is reviewed and then the results of the statistics are presented.

Key issue 7: *In assessing the students' English proficiency (reading and writing), we assume that the result will find a significant difference between pre- and post-test results, but the*

intervention of Weblog teaching will have brought about a greater improvement in performance than will have the conventional classroom teaching approach.

The result of a paired t-test on the mean scores of the GEPT test indicates that there is a difference over a term of teaching. The averages of students' GEPT scores in the post-test were higher than in the pre-test if we compare the mean scores of all students in the two universities instead of the two individual groups (see Table 4.13). In other words, the level of improvement was statistically significant when comparing the pre- and post-test results of all the target students. However, the results did not find a statistically significant difference between the pre- and post-test results in the control group, nor in the experimental group. This finding can be referred to a statistical issue when discussing the sample size of the population. When the sample size of the population is small, the difference between the mean score of two groups needs to be quite large to reach a level of significance when tested by the t-test (Verma and Mallick 1999). In this case, the researcher suspected that the result of a minor difference within the control and the experimental group might have been an underlying cause that deserved further investigation. Therefore, firstly the change in students' GEPT scores over the term in the control group was compared with that of the experimental group. Secondly, a comparison of student paragraph writings of both groups was conducted using an Independent t-test for key issue 8.

Table 4.14 Independent t-test on the mean change of GEPT performance and writing scores

	Control group n=52 (Mean ± SD)	**Experimental group n=50 (Mean ± SD)**	**df**	**t**	**Sig. (2-tailed)**
Incremental GEPT scores (improvement)	2.7115 ± 10.00605	1.8800 ± 9.36916	100	0.433	0.666
Incremental GEPT writing scores (improvement)	0.8173 ± 2.48333	2.0300 ± 2.30662	100	-2.553	**0.012**

With reference to key issue 8, we hypothesised that the experimental group would show greater improvement than would the control group in their writing after a period of teaching. From the above series of t-tests on the mean scores of students' GEPT performance, we may conclude that there was an improvement in students' overall GEPT test results. However, a comparison of students' GEPT scores between the control and the experimental group does not indicate that there was a significant increase in the scores of any particular group or that one group was superior to the other.

Based on Table 4.14, it is important to note that the difference in writing improvement between the two groups is significant at $p = 0.012$. Given the smaller number of students in the experimental group while assessing the mean scores of the pre- and post-test results, statistical results have also shown a greater degree of difference between the two groups. So, in this research, key issue 8 is confirmed with the statistical evidence indicating that the experimental group showed greater improvement than did the control group in writing using the Weblog intervention.

4.3.4.3 Correlation between students' login frequencies and their GEPT performance

In this section, key issue 9 is reviewed and the results are presented.

Key issue 9: *In assessing the variation of students' GEPT performance relating to their login frequencies, we assume that this pair of variables is strongly related.*

The evidence in Table 4.14 provides the researcher with a meaningful indication of the need to conduct a further statistical investigation. As soon as it was found that the degree of writing improvement of the experimental group was greater than that of the control group, the researcher wondered what other aspects of the technology might make a difference in students' writing performance. A correlation analysis therefore was used to examine the relationship between the login frequencies and the GEPT performance. It

is worth noting that every student in the experimental group required a unique login ID and password in order to publish their work or manipulate the group Weblog in favour of their own preferences or to edit and revise the entries. There was no requirement for security access for a student just to read or browse through others' Weblog entries. In fact, the above efforts of utilizing the group Weblog were encouraged, but the login frequencies of individuals were recorded without showing their records on the web pages. The researcher assumed that a more frequent use of the group Weblog would be reflected in the writing score.

Table 4.15 illustrates a summary of the students' login records obtained from the main Weblog control panel and correlations between login frequencies, the incremental GEPT writing scores and the incremental GEPT scores in total at the beginning and the end of term.

Table 4.15 Correlation between the login frequencies and the GEPT performance

	Mean ± SD	N	Correlations	Pearson Correlation	Sig.
Login frequencies	20.34 ± 7.725	59	**Between the login frequencies & the incremental writing scores**	0.035	0.811
The incremental writing scores	2.0300 ± 2.30662	50	**Between the login frequencies & the incremental GEPT literacy scores**	0.204	0.155

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

GEPT literacy scores = GEPT reading scores + GEPT writing scores

Based on Table 4.15, it is observed that the relationship between the login frequencies and the incremental GEPT writing score or scores in total is not at a statistically significant level. Students' login frequencies clearly are not correlated with their GEPT performance.

4.3.5 Learners' Participation of the Weblog Activities

This section concentrates on the manipulation of different variables to examine the significance of their relationship for key issue 10.

Key issue 10: *By comparing the computational records of visits and bandwidth, we assume that the results will find a significant difference between each month in conjunction with students' participation.*

The following Table 4.16 demonstrates the relationship between the number of visits and the bandwidth in each month using the statistical analysis to examine the quantitative records retrieved from the web control panel.

Table 4.16 One-Way ANOVA

	Month						
	Grouping: 1: September 04 – 15 days 2: October 04 – 31 days 3: November 04 – 30 days 4: December 04 – 31 days 5: January 05d – 20 days	df: Between group = 4 Within group = 122					
		Sum of Squares	**Mean Square**	**F**	**Sig.**	**Post Hoc Test (Scheffe test)**	
						Group pairs	Sig.
Number of visits	Between group	187481.399	46870.350	46.752	0.000	1 – 3; 3 – 1	0.000
						1 – 4; 4 – 1	0.000
						1 – 5; 5 – 1	0.000
	Within group	122310.018	1002.541			2 – 3; 3 – 2	0.000
						2 – 4; 4 – 2	0.000
						2 – 5; 5 – 2	0.000
						3 – 5; 5 – 3	0.000
						4 – 5; 5 – 4	0.005
Bandwidth	Between group	20266455529.87	5066613882	9.756	0.000	1 – 3; 3 – 1	0.000
						1 – 4; 4 – 1	0.002
						2 – 3; 3 – 2	0.001
	Within group	63360817435.31	519350962.6			2 – 4; 4 – 2	0.006

Figure 4.12 Mean of number of visits from September 04 to January 05

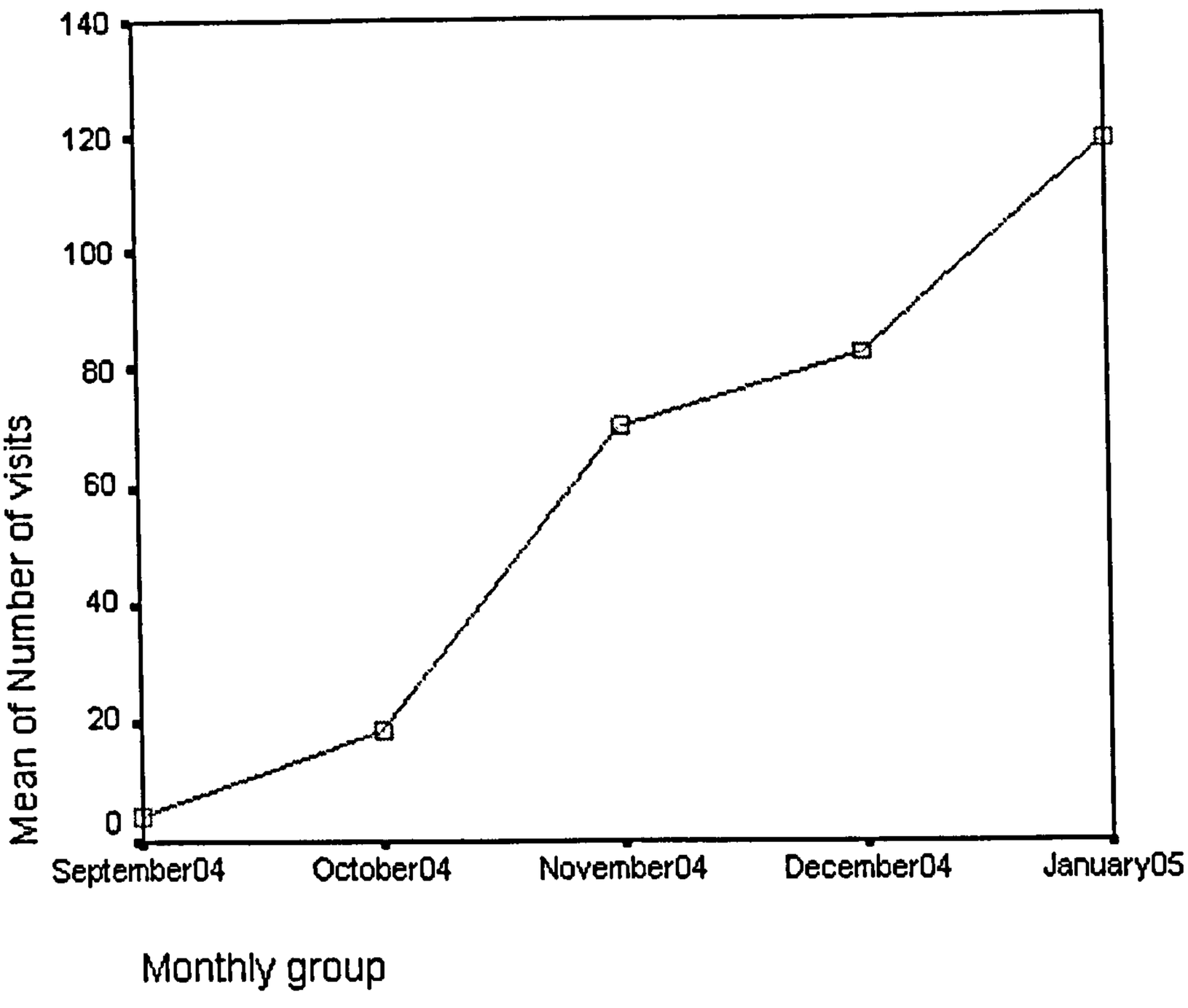
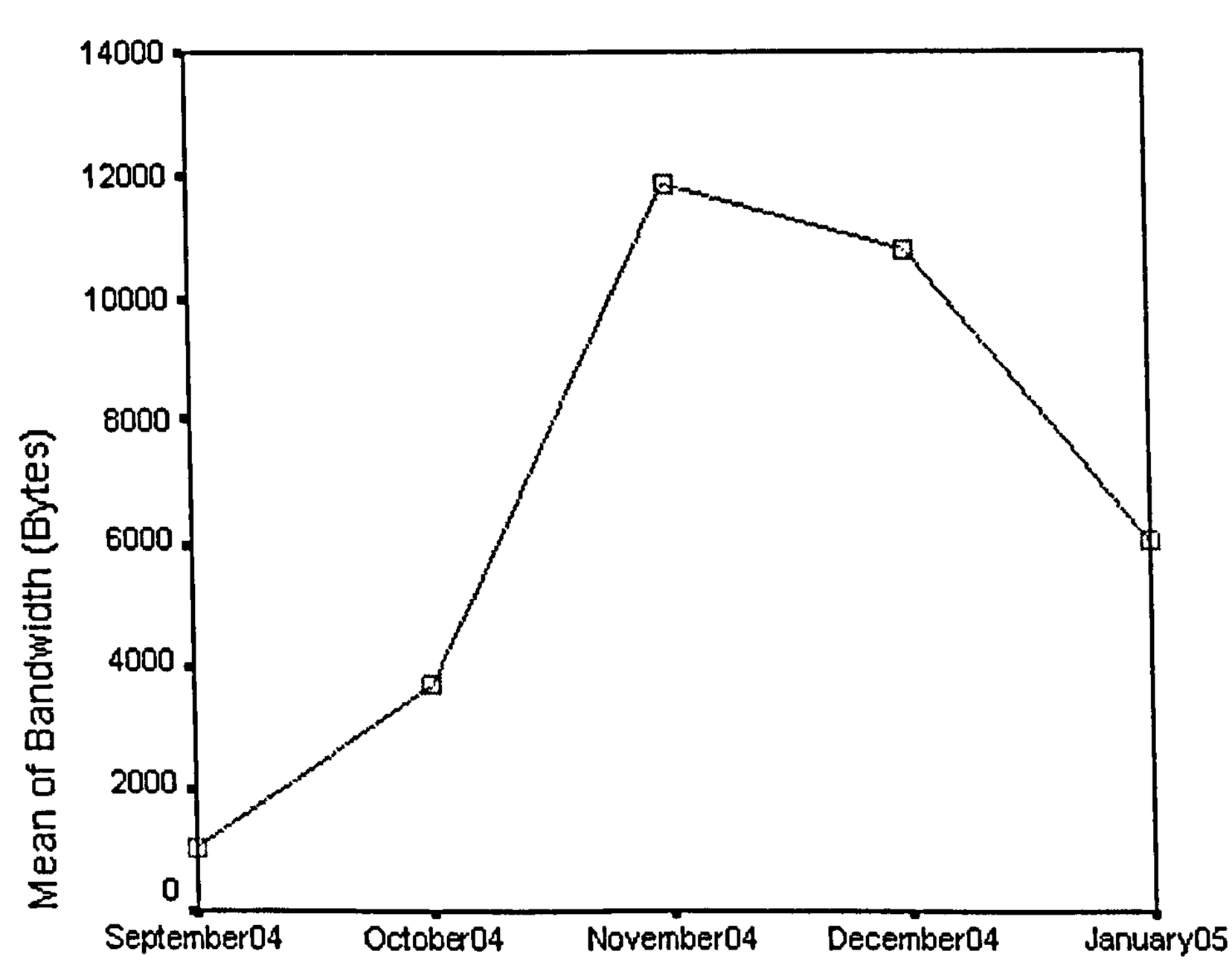


Figure 4.13 Mean of Bandwidth from September 04 to January 05



Based on Table 4.16, the results find a significant difference between the frequency of the students' visits to the Weblog each month and the various ranges of

bandwidth each month. Differences between the numbers of visits each month were statistically significant based on the Post Hoc test. As Figure 4.12 also illustrates that the number of visits to the Weblog has an inclination towards the end of term, the evidence indicates that the students tried to read or browse the Weblog more frequently then than they did in the first two months. However, the direct measure of students' participation did not find a dramatic use of bandwidth in the last two months of the term. Although the result of the ANOVA analysis on the usage of bandwidth from September 2004 to December 2005 returns with a statistically significant level, Figure 4.13 demonstrates a declination of bandwidth usage in January 2005. The above observation of declination can show only that the majority of students reduced the frequency of uploading or downloading files. In other words, the majority of students possibly engaged less in the activity of Weblog editing towards the end of term. Thus, the statistical number of use of bandwidth indicates a drop in Figure 4.13.

Prior to the exploration of the t-test result from the above section 4.3.3 that also has a positive finding in connection to students' participation, it was intriguing to obtain more first-hand information from other sources of data in this study such as students' interview responses.

4.4 Objectives of the Interview

As mentioned in the methodological chapter, apart from the questionnaires, responses obtained from the interviews with students with regard to the research questions were additional sources of evidence in this research. The aims of collecting responses from interviews were to:

- probe into students' perspectives on three major different aspects, including the attitude toward EFL writing, self-efficacy and the attitude toward using

computers in EFL writing by conducting midterm- and post- interviews, which were used to check against and supplement the evidence collected from the questionnaires and other sources of evidence, for example, archival records on the Weblog.

- understand the institutional role of the Weblog and discover the problems that the students and the teacher might encounter in this network educational setting.
- complement, cross-validate, and interpret the findings from the quantitative analysis.
- answer the research questions.

4.5 Interpretive Presentation of Qualitative Data

As noted in Chapter 3 and in section 4.4, the purpose of using semi-structured interviews with 24 students as part of the survey was to gain more in-depth information and to avoid getting simple yes-no responses. Some data collected from the questionnaires might have been superficial. Therefore, further explanation could be provided through interviews. Twelve participants from each group voluntarily answered the interview questions in Chinese, which were audio-recorded and subsequently transcribed. Some of the interview responses were selected and translated into English according to the research focus and then summarized for description and analysis. The number of interviewees is not truly representative, but the comments collected from them do accurately reflect their experience of writing and their Weblog experience.

The interviews were carried out within three weeks of the end of term according to the flexibility of the participants and the time they were available to provide. However, the participant validation was neglected due to the workload on the researcher

(see section 3.7 and section 3.9.4 in Chapter 3). The reliability and validity might have been improved if the interpreted student responses were confirmed by the participants themselves. Although the interview questions indicated not only the researcher's interest in this study, but also the participants' views on the course content, students' language awareness, teaching skills and the usage of technology (see Appendix E), the analysis of interview data mainly focused on representing the relationship between the dependent variable and some observed variables in connection with the research topics. Apart from the responses relevant to the research focus, other responses that were elicited to probe the issues of course content and teaching skills were retained only for the purposes of the researcher's personal reflection and further research and will not be discussed in this study. According to the scale of this research, it is difficult to conduct a comprehensive and all-encompassing study within the constructivist research paradigm. Notwithstanding the factors of course content and teaching skills may likely to affect the results, the researcher managed to follow the mixed-method research for the research questions using appropriate methodology (see Chapter 3) and maintained the consistency of course content and teaching skills for all students.

When analyzing the interview responses, the researcher actively searched for regularities and patterns (a set of key words and phrases) as well as the stipulated items shown in the quantitative section.

4.5.1 Perspective of Learners' EFL Writing Attitude

The analysis of the interview data was utilized to discuss students' perceptions of EFL writing and their implementation of Weblog writing practice, which encompassed the following factors as the coding categories: 1) students' general attitude towards EFL writing; 2) students' preference of EFL writing; 3) students' enjoyment of Weblog tasks and non-Weblog tasks; 4) students' self-estimation of their writing performance;

5) students' perspective on computer-mediated communication; 6) students' productivity; 7) students' collaborative learning; 8) students' participation in computer-mediated communication; 9) practice of strategies; 10) formal or informal use of language; and 11) others. Each of these factors is accompanied by excerpts from interviews and is summarized in Tables to illustrate that factor.

During conversations with interviewees, the researcher found that opinions about EFL writing varied from dislike to very positive after a semester of teaching. Although there was one interviewee reported that she disliked writing in English, there was no further evidence indicating that other interviewees had very negative attitudes toward EFL writing. Regarding the student who still disliked EFL writing, **she seemed to lack self-confidence and to under-estimate herself as seen in the excerpt below.**

Excerpt 1 (dislike in control group)

S (Byrel): I think I still dislike writing, yep .. still don't like it!

T: Are you talking about English writing?

S (Byrel): Yes. It is because I spent too long doing the assignments. I realized that I'm always struggling with my writing, for example, what to begin with and then how to develop? I know we've been taught all of these, but I just don't think I'll be able to handle it, putting concepts of writing into practice. I understand the concepts of what you taught, but it's another story when it comes to me.

Excerpt 2 (neutral attitude in control group)

T: How do you feel writing in English after being taught for a semester?

S (Peter): Do you mean learning attitude?

T: Nope. It's how you feel about it.

S (Peter): Feel.... How do I feel about writing in English...?

T: After being taught for a semester.

S (Peter): I learned grammar, sentence structure and some tenses...

T: Do you dislike or like writing in English, negative or positive about it?

S (Peter): It's ok. But I'd give up if the assignment were too difficult.

In the above case, the students did not give a further or more explicit explanation of why and how they had tried to confront or solve the problem. From the above excerpts, the problem turned out to be **her personal feeling of being "unable to do it."** This can be compared with the views of students who agreed with an opinion of "a feeling of struggling" in the experimental group; **they continued with a more clear idea of what concerned them and seemed to be more aware of the difficulties of language structure as follows.**

Excerpt 3 (neutral attitude within experimental group)

T: How do you think about writing in English, in general? What's your opinion?

S (ChuLun): Do you mean writing attitude?

T: Yep.

S (ChuLun): So so.

T: What do you mean by that?

S (ChuLun): It's OK. It's not dislike, nor am I very willing to do it. It's neutral.

T: Do you think it's easy, just about your level or difficult?

S (ChuLun): It's difficult.

T: Can you develop more on that?

S (ChuLun): I think I'd say it's the structure of writing that makes it difficult.

Excerpt 4 (awareness and positive preference within experimental group)

T: How do you feel about what you've achieved if you look back on your writing over a semester?

S (Marco): I think...er...

T: In terms of this semester.

S (Marco): I don't think I had enough practice of writing. It makes me feel I've been lazy somehow.

T: Any more? What do you think about your writing with regard to the fluency, vocabulary, grammar and the content or the organization, and so forth?

S (Marco): I don't feel confident about my writing. That's my major problem. I'm not sure whether I've got it right or wrong. I realized that my writing would be published on the web and it would have to be good. I also realized that it hadn't been proof-read by anyone else. I tend to think it's not a good piece of writing if I hustle to publish the draft on the Weblog. So I also seek help from other English teachers to make comments on my writing. I would prefer to have my writing reviewed and revised before publishing. Of course, I know that I made many mistakes, but I'd still hope that the one I posted on the web would be the best.

Again, it was found that most interviewees from both the control and the experimental groups had neutral attitudes towards EFL writing in general. Only a few interviewees gave a negative impression of EFL writing. Nevertheless, those negative responses revealed that an issue of self-efficacy had come to play a role in their writing. While highlighting the issue of students' self-efficacy, the opinions from seven out of twenty-four student interviewees firstly pointed out that either having their writing proofread or peer-reviewed, and having suggestions from others or simply reading others' writing would encourage them to learn and help them in developing their writing.

However, four student interviewees (one from each group) argued that having their writing exchanged or reviewed by others would have no effect on the development of their writing. Students who discriminated against the practice of peer-reviewing had doubts about their own ability to evaluate the quality of their colleagues' work. Hence, they would prefer not to have their writing exchanged or reviewed by their colleagues. It is clear that a few student interviewees suspected that, due to their poor English proficiency, they would be unable to highlight some questionable reading. The following excerpt is taken from one student interviewee in the control group who was not in favour of peer-reviewing or exchange-reading.

Excerpt 5 (negative preference in control group)

T: How do you feel about the tasks you've been given with regard to the peer-review and exchange-reading?

S (YiHua): Exchange-reading?

T: Yep, the one where you read about your colleagues' writing.

S (YiHua): er...

T: Do you remember an example task I've done in the classroom? That's also a way of peer-review. You read one piece of writing from your colleagues, and see if you ...

S (YiHua): But, the problem is that our English is not as good as yours (teacher), and what we know about the English language is far more less than you know (teacher). Moreover, I believe that most of us are at the same level of English proficiency. Therefore, I don't think it's possible to spot the mistakes in our colleagues' writing after reading it.

T: So you don't think it's useful!?

S (YiHua): Nope, I don't think it's useful. I disagree!

Interestingly, the above response was similar to that of the other three student interviewees who disagreed with the usefulness of peer-reviewing and exchange-reading.

The student interviewees who supported the idea of peer-reviewing and exchange-reading believed that the practice of exchange-reading would promote their English learning. The following example is taken from one student interviewee in the control group indicating that he learned how to edit his writing and how to develop the sentence after reading others' writing.

Excerpt 6 (positive preference in control group)

T: How do you feel about the tasks you've been given with regard to the peer-review and exchange-reading?

S (WeiTing): I feel I can,... I found that the way I develop the sentence using many clauses to present an idea is less skilful than that of my colleagues. I found others could express the meaning fully of what they want to say in their sentence with minimal clauses.

T: emhmm.

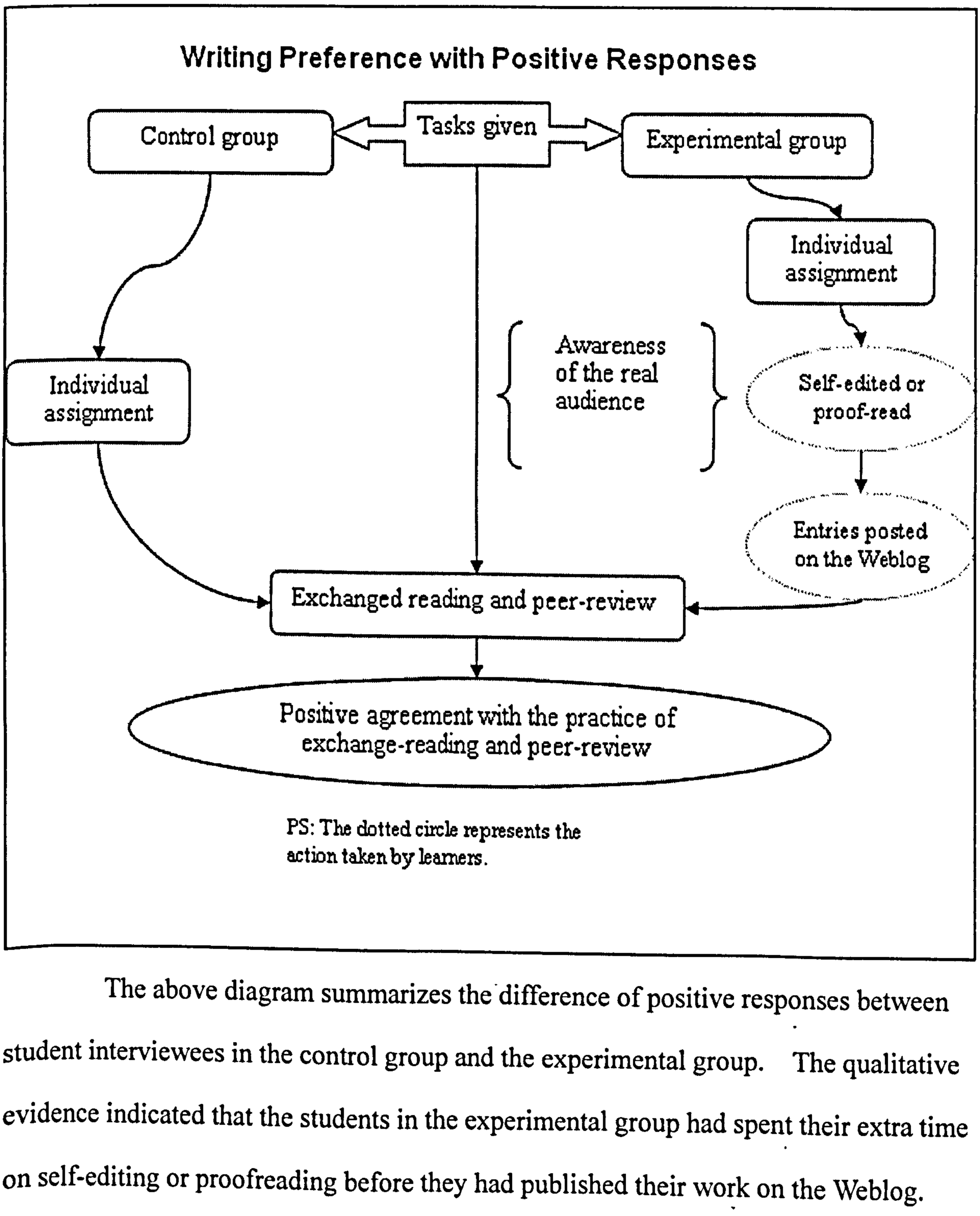
S (WeiTing): This is what I can learn from this practice. I would like to think about the way I develop my sentence and compare my writing with that of others. So I can learn from others and I will try to incorporate the knowledge of what I've just learned next time when I write. As for the evaluation of others' writing, I'm not myself confident about it, well, if it is not too difficult, I might be able to understand.

T: So, do you think it's useful?

S (WeiTing): Yes, it is. I can learn from others. For example, like...some vocabulary my colleagues used in their writing that I may have never seen before, so I can learn and so...

Among the group of student interviewees who gave a positive statement on their writing preference (exchange-reading and peer-reviewing), a slight difference between the control and the experimental group still can be found if we compare the responses shown in Excerpt 4 (experimental group)and Excerpt 6 (control group). The following diagram shows the difference of what was mentioned above.

Figure 4.14 Exchange reading and peer-review in diagram



The above diagram summarizes the difference of positive responses between student interviewees in the control group and the experimental group. The qualitative evidence indicated that the students in the experimental group had spent their extra time on self-editing or proofreading before they had published their work on the Weblog.

They realized that their postings would not only be read by their colleagues, but also by other people outside the classroom. Aa the tasks given to both groups were similar, it is possible that the nature of the Weblog technology gave the students a "Weblog sphere" to develop a sense of real audience. Therefore, students who cared about their writing on the Weblog being read by others outside the classroom would spend more time on the designated tasks. In other words, there would be more exposure to the practice of writing if students were encouraged to post their writing on the Weblog. Besides, the more actively students participate in the practice of Weblog entries, the more likely they are to engage in an ongoing process of writing.

When asked, "How do you feel when you work on your writing tasks after a semester and did you enjoy the writing tasks?" ten student interviewees recognized that the approach of classroom teaching and the way they learnt how to write were different from what they had experienced before; 16.7% of all respondents (four student interviewees from all experimental groups) developed their comments with a positive answer as they had enjoyed using the Weblog to read and write entries. One of the above respondents even mentioned that she had a most memorable Weblog task, which required the student to complete a story chain using some linking words. However, the other 16.7% of all respondents denied their enjoyment of writing tasks. The negative responses can be exemplified by the following points:

- One student interviewee was struggling every time when developing a paragraph.
- A lack of motivation was the result if the student failed to accomplish a task that had a certain level of difficulty.
- One student had simply no interest in English writing.
- One student still preferred to have a conventional classroom type of teaching.

The positive comments with regard to the factor of enjoyment can be summarized as follows:

- The students were gradually achieving the course requirement and enjoyed the variety of given tasks after a semester of teaching.
- The challenges of using the Weblog interface became easier over a semester.
- One of the students found it interesting to have the task of a story chain done on the Weblog.
- They enjoyed reading other people's Weblog entries.

When examining the descriptive data, the researcher also found that some students' opinions seemed to imply the feelings of being "**unwilling, incapable, deficient or diffident**", as was discussed in the beginning of this section. Sometimes, the issue of "self-efficacy" was naturally brought up by the student interviewees themselves when they were asked about their attitudes toward the EFL writing. Hence, the researcher was prompted to ask the students about the beliefs that they had about their capabilities for writing.

General speaking, the majority of both groups' responses involved more negative judgments of their confidence in writing than positive ones. In fact, excerpts 1, 2, and 4 and the following excerpts all reflect the issue of the students' self-beliefs about writing and the confidence about their own writing performance.

Excerpt 7

T: How do you view your writing skills, for example, the structure, organization, vocabulary, grammar, punctuation, etc? And do you think you've improved?

S (Kyle): I do feel that I've improved. Yes, it's better than before.

T: In what way? Can you give an example?

S (Peter): I know more words!

K (Kyle): Yes, I've learned more vocabulary. To be honest, I was unwilling to read the articles and texts assigned by you, but now I am taking it seriously.

Excerpt 8

T: Can you give your judgment by telling me any number from 0 to 100 as a measure of your capability for writing? How would you rate it?

S (Peter): I'd give 55 for myself.

T: Why?

S (Peter): I think I know too little about English words.

T: Any others?

S (Peter): How would I be able to compose if I didn't know the words? I can only do it by filling in Chinese words in the text. It doesn't work, right!? I feel it's too tedious if I keep trying to work out the English words in a sentence so I can clearly express the meaning. .

T: Erm.

S (Kyle): As for me, I give myself a score of only 50. To be honest, I have problems with the usage of grammar. My poor vocabulary is another big problem. When talking about autonomous learning, I think I haven't tried my best, I haven't tried hard enough. I do feel that you (teacher) have done your best in your teaching. For me, learning should be continued due to my low English proficiency and my ability to compose. ...

Excerpt 9

T: How would you judge yourself by telling me any number from 0 to 100 as a measure of your capability for your composition?

S (Jay): Me? Well, it's about a score of 65 maximum.

T: Why and in what way?

S (Jay): The content of my compositions.

T: Can you develop on that?

S (Jay): Because I've got poor knowledge of the grammar usage and I sometime put the tense in a sentence incorrectly. That's it! ..... and I'm not myself confident enough to write the assignment. ...

Excerpt 10

T: Jill, you've just finished talking about the group work, and now please tell me about your self-judgment of your capability for writing.

S (Jill): I think I'm doing better than before.

T: In what way?

S (Jill): Writing!

T: What do you mean by that?

S (Jill): I mean ... er...like brainstorming, organizing passages in a correct order.

T: Ok, do you mean the process of writing?

S (Jill): Yes.

Excerpt 11

T: ... What about you? JunYu, how would you judge your writing? How do you look at your composition? You can assess your ability to use (possess) vocabulary, grammar or other writing skills, writing processes, etc.

S (JunYu): Very poor.

T: In what way?

S (JunYu): I think and put the Chinese words first if I do not know what it is in English. After that, I check the dictionary. I also don't think I'm qualified to make comments on my ability of the grammar usage because I have little knowledge of grammar. Erm.. that's it. ...(continues)... And after a semester, I

still feel that I haven't developed my level of English proficiency.

Excerpt 12

S (WeiTing): Er... yep, I think I learned English by repetition and by rote. We hardly had opportunities to speak and use English before. But now we are forced to speak and use English in the classroom. I do feel that it's fine to do it in this way. I was afraid of speaking in English due to a feeling of my English being poor. And now I've found that everyone in the class is doing ok...er...yes, I think I'm slightly better than before. ...

Excerpt 13

T: How would you judge yourself at English?

S (YiHua): Me! Er... I think I'm really bad at English. For example, I've forgotten the vocabulary you taught before, except the frequently used words. It's hard to remember those words with many letters ...

Excerpt 14

T: How would you judge your English writing from the beginning of the semester up to now?

S (Doreen): I feel I'm doing less well than before.

T: Why?

S (Doreen): 'Cos I... ,er..., I'm not talking about a year ago, I mean I got a score of 79 for my English composition when I took my university entrance exam. But I got less than 79 recently. I have no idea of what I have to write for the test now. I think I do not work as hard as I did.

T: What do you mean by that?

S (Doreen): In what way?

T: In what way do you think you're doing less well than before? For example,

vocabulary, grammar, skills of writing, content or other tasks?

S (Doreen): It's vocabulary! I'm doing ok with my grammar. In my opinion, I think the sentence is correct if the writing flows smoothly after reading it. And I believe that there is always a word which I'm able to manage for the replacement of an unknown lexical item. Moreover, I think I'm also doing less well on my skills of writing.

Excerpt 15

S (Byrel): I think I've a problem with my vocabulary. As for the grammar, it is always my weakness. When I read a text, I'm able to recognize the words if I've learned them before. But I haven't got any clue of how I can apply the words in my writing. Er...

S (Doreen): Don't know how to use it!?

S (Byrel): Yep, and other writing skills. I don't know what to say actually, I just feel that my English composition is poor.

Excerpt 16 (experimental group)

S (Nicole): I don't think I've done well for my writing this semester.

T: In what way?

S (Nicole): All. All of it!

T: All of it!?

S (Nicole): Yep.

T: Do you mean vocabulary, grammar, other skills and the tasks, etc.?

S (Nicole): Yes. I realize that I could have done better in the use of vocabulary in my writing. ...

Excerpt 17 (experimental group)

T: How do you judge your writing performance?

S (ChuLun): Not good.

T: Why and in what way do you think so?

S (ChuLun): All of it.

T: Why?

S (ChuLun): I have not learned enough words in English.

Excerpt 18 (experimental group)

T: Cindy, can you evaluate your judgment by telling me any number from 0 to 100 as a measure of your belief in your writing capability?

S (Cindy): I think I only have 50.

T: Of what?

S (Cindy): Probably I haven't learned enough words in English and understood too little about lexical items, or grammar. It is also possible that the teaching approach was not good. I don't think I was taught in a proper way before. These are the two major reasons why I've given a low score for my writing.

Excerpt 19 (experimental group)

S (Hannah): Writing an exposition!? I'm not good at it. I think it is a big challenge for me to write such a style of writing tasks.

T: So you still prefer to have the tasks I assigned before in relation to the story-based writing!?

S (Hannah): Yep, I'm more interested in authoring a story.

Excerpt 20 (experimental group)

T: ok, what do you think about your writing after a semester of Weblog practicing? Do you think you've changed or improved?

S (Kay): I think yes.

T: What? In what way do you think so? Structure, organization or overall content?

S (Kay): Speed of typing! (smile)

T: Speed of typing!?

S (Kay): I felt we were forced to learn how to utilize the computer.

T: So you think you've improved your technical skills!?

S (Kay): It's getting better in terms of the Weblog utilization. And when you are using the computer, you think the lines as quickly as you are typing. It means you also get used to the speed of your typing.

T: What lines? What do you think when you type?

S (Kay): I tend to think about the whole structure of my writing rather than just the words (vocabulary) in English.

T: The structure of your paragraph?

S: (Kay): Yes. That's what I mean.

Excerpt 21 (experimental group)

S (Felicity): I felt ok with my grammar as a whole, but I don't think I have enough words in English to use in my writing.

Excerpt 22 (experimental group)

S (WenChuan): Honestly, I don't think that the revision of our writing on the Weblog has had a big impact on my writing.

T: Can you develop more on that?

S (WenChuan): 'Cos I, erm... for myself, I'm not at a high level of English proficiency. As for the paragraph writing, I would say that it is easier to write with computers than to write by hand. When I read the corrections either by you or others, I would ask myself "Why?" and why should the corrections be done in this way. I tend to think that it must be the mistakes I've made, or the word I used to develop my sentences is problematic. I believe that my writing

is always problematic. Every time when I read the feedback with some corrections of my writing, I don't feel ashamed about my poor writing. In fact, I believe that my English writing is just as poor as it was. Sometime I would just... .

When the student interviewees were asked directly or indirectly about their views of their writing capability and performance over a semester, the overwhelming majority of their responses involved more **skill-related concerns** about their writing than concern for other issues. Such skill-related concerns include the amount of vocabulary they had learned, their usage of grammar how they managed the organization of the paragraph and the process of writing they experienced. They believed that the ability to possess various writing skills is important in terms of the development of their writing. However, there was no sign in the above excerpts of any belief that the students had developed their self-perceptions of competence by interpreting information. Put simply, most student interviewees did not feel confident about their writing particularly with regard to their writing skills. Neither was the solution of encountering and overcoming their low self-estimation given by the respondents themselves. Consequently, the beliefs they held combined with a lack of confidence might affect or stop the persistence and perseverance they exert when challenges and obstacles arise as the evidence shows in excerpt 2. A judgment of personal efficacy from one student interviewee also involved the **task-related concerns** in their writing. The evidence from excerpt 19 indicated that the confidence that one student had to write a story was greater than the confidence they had to compose an exposition.

From the statistical analysis of the students' self-efficacy, the researcher did not find a significant difference quantitatively between the students in the control and in the experimental group; however, the researcher did note a subtle qualitative difference. As

shown in excerpt 12, a response provided by one student interviewee in the control group revealed that the process of their learning was influenced by an environmental force. Due to the course demands, students in both groups were strongly encouraged to practise their English speaking in the classroom. The practices also included some writing assignments, take-home exchange reading and practice of proofreading. The students in the experimental group were also given similar *environmental mediated learning* with the tasks and demands. There was, however, a difference between the two groups in terms of the process of writing that was engaged in with and without the computer-mediated environment. As excerpt 4 and Figure 4.14 show above, the student recognized the value of his writing, and his response indicated that the computer-mediated learning had influenced his process of writing indirectly before the students were encouraged to make comments on others' writing. This is in contrast to the other group, where no evidence was found from the qualitative data to suggest that most students in the control group had a greater willingness to emphasize the writing stage of revision, particularly when they were completing the draft of their assignment. Hence, it is possible to conclude that students in the experimental group were more active in participating in the process of revision and self-correction rather than simply reacting to the designated revision tasks.

4.5.2 The Effect of Weblog Intervention on Learners' EFL Writing Attitude

For the questions assessing students' perception of Weblog practices, responses were divided into the following categories: (5) students' perspective on computer-mediated communication, (6) students' productivity, (7) students' collaborative learning, (8) students' participation in computer-mediated communication.

When the students were asked how they perceived the integration of Weblog practice in the EFL writing classroom, the most common responses with the clearer

descriptions involved the promotion of their English literacy abilities. The majority of the student interviewees believed that the Weblog practices would promote their reading and writing in English. Examples of other responses in respect of the attitudinal factor of students' perspective on computer-mediated communication also included "**It's easier to do the work**"; "**I feel it is fun**"; "**It's easier to revise the work.**"

Table 4.17 presents the student interviewees' responses by attitude and factorial item for the category of students' perspective on CMC. It should be noted that the responses with very short or simple answers like "yes", "no", "ok" or "so so", etc. were excluded from the following tables. Unfavourable attitudes toward the use of the Weblog in general were also found while examining the student interviewees' responses. Statements given by two students indicated that the worries they had were more "**process and technical**" related. As shown in Table 4.17, one student was not satisfied with an additional process of transferring the manuscript onto the Weblog entry. Although the student had a complaint about the above keyboarding work, the opportunity of re-visiting his/her own written work was a consequent result of familiarizing him/herself with his/her own work. Another worry indicating that students were concerned about spending a lot of time on the Weblog manipulation is unavoidable. To be able to manipulate the Weblog application with ease, a few training sessions and basic practices are necessary for some routines and formulae involved with uploading files, accessing and logging onto the Weblog, making comments and posting entries. As for the complaint that all the instructions were written in English, the researcher believes that the purpose of having all the instructions written in English was to generate opportunities for more exposure to the English language.

Table 4.17 Responses in relation to students' perspective on CMC

(5) Perspective on Computer-Mediated Communication	
Responses with different attitudes and opinions	**Hannah:** *"I feel it's complicated to use computers in writing because you need to transfer what you wrote onto the computer. It slows down my speed of writing."* **Kay:** *"It took us a lot of time to familiarize ourselves with the Weblog manipulation. And it looked more complicated and hard as soon as we saw those instructions written in English. In the beginning of the semester, I felt it was a tedious job to run manipulate the Weblog settings."*
Responses with positive attitude and opinions	**Tiffany:** *"It's convenient to write something on the computer & publish our writing, because I was and am used to keyboarded writings. We also have to submit our assignment and print it out in A4 size with Word format. It's just an extra move if our manuscript has to be handwritten."* (easier to do the work) **Yolanda:** *"I feel it's easier to read and search some information I want for writing. It's also easier to find and revisit the handouts, messages and read other people's writing on your Weblog."* (to promote English literacy abilities) **CheLun:** *"Overall, I feel it's very interesting to use Weblog in writing. I've never experienced it before."* (to have fun) **Hannah:** *"The only advantage of using computers in writing is that computers help us to revise our work and make the revision easier."* (easier to revise the work) **Felicity:** *"I feel that I learned a lot from reading through the articles you published on the Weblog and enjoyed accessing the links you added on your Weblog to other websites for more resources and information."* (to promote English literacy abilities) **Ryan:** *"Except doing our assignment on the Weblog, I did visit the Weblogs and check to see if there were new entries from other students from time to time, and I was just reading it through."* (to promote English literacy abilities)

The semi-structured interview with open-ended questions was also designed to elicit students' opinion about their feelings of creativity in the Weblog EFL environment. Responses from students did not show any negative statements within the attitudinal indicator of students' productivity. As shown in Table 4.17, some excerpts extracted from students' responses clearly pointed out that the use of the Weblog in EFL writing gave students more chances to practise English reading and writing. Students who gave a positive agreement on the factor relating to their productivity further indicated that they had learned another way of improving their English simply by taking both technical and mental challenges embedded within the given Weblog tasks. The given Weblog tasks certainly reached a certain level of difficulty, which may possibly have been beyond the students' ability, therefore challenging the students to work out the problems. The students who had a lower English proficiency may have dropped out of the course or have

given up exerting themselves as regards problem-solving when they felt that the task was too difficult for them. However, this was not the case for all of the research participants in this study. A response given by one interviewee, Nan, indicated that some students felt frustrated and were unable to comprehend the reading texts if they met too many unfamiliar words and grammatical problems. In order to keep the consistency of the experimental research design and instructions for the target sampling, the researcher had to maintain the same level of difficulty within the given Weblog tasks for all the research participants.

Responses from students showing different attitudes and opinions (see Table 4.18) also led the researcher to hold a new viewpoint on what effect the Weblog had on students' productivity. According to the responses given by two students, Macro and Hannah, the nature of the Weblog tasks obviously provided opportunities and challenges for the practice of English. Students were able to generate, discuss and share their personal ideas and suggestions on a task, but the lack of knowledgeable peers or further assistance from the teacher could be a restraint across the Zone of Proximal Development. In other words, students could hardly construct their own knowledge and develop their understanding of the target texts.

Overall, the responses relating to the category of students' productivity still supported the quantitative findings that the Weblog intervention changed the students' attitudinal standpoint on the productivity with a statistical significance.

Table 4.18 Responses in relation to students' productivity

(6) Students' Productivity	
Responses with different attitudes and opinions	**Macro:** *"This is my first time writing in English by computer. I prefer to have my manuscript on paper first, after that I keyboard it again in an electronic format."* **Hannah:** *"We did try to discuss our assignment online using MSN messenger. However, there was no conclusion after all. Sometimes, the written communication or expression may not be as clear as the verbal communication. Besides, everyone has different opinion or suggestion. It's very difficult to integrate all of these suggestions into an essay."*
Responses with positive attitude and opinions	**CheLun:** *"I would prefer to type English with computers."* (enjoy writing in English by computer) **Cindy:** *"I feel.... Yeah, I think Weblog is also a way of practicing English. Although the way of learning is kind of informal, I would still do it. I mean I would still concentrate on my writing."* (good way to improve English; chances to practice English) **Felicity:** *"I personally have a positive attitude toward the Weblog. You knew that you were going to write something on it. In order to produce something on the Weblog, I have to read and search some information on the net. By doing the above, I feel I've also learned a lot."* (good way to improve English; chances to practice English) **Ryan:** *"It's a challenge to use the Weblog in English writing, of course. We had different writing topics for the Weblog discussion each time. I feel that we have more exposures to English now than before. And I also feel that everyone is more willing to express their opinions and write about what they think with regard to different topics."* (chances to practice English; willing to write in English) **Nan:** "I think that the Weblog is nice in some ways. For example, I wouldn't feel like producing the next entry on the Weblog without having read any of the comment lines. (more willing to produce entries)

While reading the transcripts, some writing behaviours that evolved from the analysis of students' responses were identified as an attitudinal indicator in connection with the factor of students' collaborative learning. Students' responses exemplified both the strong points and the weak points of using the Weblog in the EFL writing context. On the positive side, most respondents from the interviews noted that much attention had been paid to the development of thoughts, ideas and understanding of other people's writing for the accumulation of **writing experience.** This is crucial for building up a collaborative writing environment because the researcher found that their ***writing experience involved an interaction between the individuals and the writing platform, a platform where the instructor could set up collaborative tasks, and where the students could communicate through the use of the comment feature in the Weblog technology.*** Students learned from each other in order to complete the individual tasks. According to

students' responses, they spontaneously searched other people's entries on the Weblog for better ideas, linguistic items (for example, vocabulary, grammar, punctuation and so on) or alternative uses of English words, so that they could produce their own work by referring to other people's texts. In this context, the Weblog offers opportunities for learners to learn from each other with a variety of text types and styles.

Reading this explanation of the positive side, however, the researcher wondered whether instructors using the conventional classroom-teaching approach would need to be convinced of the new Weblog challenges and provisions. Some students complained that the use of the Weblog was being too tied up in bureaucracy and it was unnecessary for the task of group discussion. On one hand, some tedious typing work from paper to the Weblog might have been the cause of students' disappointment, and on the other hand, the researcher assumes that such tedious work invites the learners to visit their own written work again. The issue of students' complaints raised here can also be further explored from a pedagogical point of view in the future study. The Weblog practice certainly disappointed students' expectation of real-time communication. Students who lived and stayed with their classmates in the same accommodation would not derive much benefit in terms of time-saving and synchronous communication. Since the Weblog has been defined as an asynchronous technology, it is an inevitable problem when a communication is required for a real-time conference or instant electronic discourse.

Table 4.19 shows the excerpts of students' responses in relation to the factor of collaborative learning. Most responses indicated that the provision of the Weblog feature has the potential to increase students' willingness to write and to provide a variety of text type and styles for learning from peers. This interview result confirms the statistical finding that the use of the Weblog facilitates students' learning collaboratively compared with conventional classroom teaching.

Table 4.19 Responses in relation to students' collaborative learning

(7) Students' Collaborative Learning	
Responses with different attitudes and opinions	**Kay:** *"I feel that the group Weblog is somewhat inconvenient. Troublesome! You know that there is always a distinction between written communication and oral communication. Sometimes what he thought may not be the same as what he wrote on the Weblog. And it's time-consuming to wait for the comments from my classmate. It would be easier if we just talked to each other."* **Ryan:** *"Weblog is not the same as MSN. If the Weblog can be developed as MSN, I believe that everyone would use the Weblog to discuss our assignments synchronously. Because I think not all of us are used to discussing our assignments on the Weblog. We quite often do the discussions face to face before we post our entries individually."* **Ivy** (control group)**:** *"Regarding the group project, I don't usually meet up with our group members and discuss the work because it is easy to get distracted and blank-minded, and it happens even after our group discussion. I prefer to think and work alone."* **JinCai** (control group)**:** *"I feel that there is almost no discussion while we have our own group discussion. I think we are gossiping!"*
Responses with positive attitude and opinions	**Nicole:** *"To speak more specifically, I think it's good to be able to read other people's writing and it's also good that other people would also be able to make comments on your writing. But! I'd like to use the Weblog even more only if you (the instructor) give us more feedbacks and comments."* (willing to use the Weblog if there is any question or comment) **Tiffany:** *"I can tell there are many different styles of writing on the Weblog."* (opportunity to learn from each other with a variety of text types and styles) **Felicity:** *"I found that some people have more considered thoughts than I have when discussing the same topic on the Weblog. Sometimes you'll find even better words or ideas about the usage of grammar by reading other people's Weblog. Then you start thinking about the reasons why other people can produce such good pieces of work and I cannot. I'm also afraid that people do not understand what I've written on the Weblog as all of my entries were written in English."* (opportunity to learn from each other with a variety of text types and styles) **Ryan:** *"Of course I do visit some students' Weblogs and read their entries. Sometimes I would make copies of their entries or the sources they posted on the Weblogs for the purpose of learning if they were attractive and special."* (opportunity to learn from each other) **Ryan:** *"I feel I've improved more or less my ability to write by reading and comparing other people's writing on the group Weblog. It seems to me that I can develop my thoughts much quicker when I write and faster than writing by hand."* (to develop thoughts and ideas)

4.5.3 Learners' Participation in the EFL Classroom

In this study, designated collaborative project works and individual assignments were given to students in both the control and the experimental group. The only difference between the control and the experimental group was the presentation of their assignment and project work. Students in the experimental group had to use the Weblog

to present their assignment and the project work. Discussion of their work could be conducted through the use of the comment feature on the Weblog.

The result of the qualitative responses in relation to students' participation was varied. Students who gave a positive opinion or a neutral agreement saying 'it's OK' were satisfied with the use of the Weblog for reading and writing. Alternative opinions about the participatory thought indicated that there was an inactive participation in the Weblog publication. The student who proposed the above comment voiced discontent about their needs being ignored. The student further proposed a reason that might possibly have affected their participation, saying, "*the reason is that we are not actively engaged in English discussion. We are passive about English... and we only feel that we want to read the Weblog entries when we find there is a need to learn or there is something interesting to us.*" From the researcher's point of view, conducting a needs analysis for the instruction was not necessary in this study as it would have created an additional extraneous variable. Having two different materials or instructions for the target sampling in this experiment might consequently have resulted in a different research outcome and complex causality.

An opinion that differed from that of the experimental group showed a difference between the use of Weblog communication and conventional face-to-face discussion. The use of Weblog communication avoided what most students complain about regarding conventional face-to-face discussion, namely, that one person controls or dominates the discussion. Thus, the use of Weblog technology provides the opportunity for equal participation in a group discussion after normal classroom hours.

Table 4.20 shows the evidence that students made some comments with particular focus on their participation in the EFL writing classroom and the Weblog practices. Responses from the both the control and the experimental group can be used

to explain the quantitative findings that a significant difference was found between the two groups.

Table 4.21 presents an inductive summary of students' responses in relation to eight different attitudinal factors.

Table 4.20 Responses in relation to students' participation

(8) Students' Participation	
Responses with different attitudes and opinions	**JunYu** (control group): "I don't think the group project has achieved its aims and goals, because there is often one person taking the job over for the whole group, honestly." **YiHua** (control group): "We all meet up at school for group discussion and project work. Generally speaking, we discuss what to write and how to write. There are not many opportunities given for discussion after class and we only meet up for discussion when we got an assignment." **Byrel** (control group): "It's ok regarding group work. But I just feel that not everyone participate in it even if we have arranged a meeting to discuss this work. You find that there is always one person dominating the speech, or those particular ones who always do all the work. So I think it is only 'they' get improved." **Nan:** "There wasn't a high percentage of participation in posting the Weblog entries. I think the reason is that we are not actively engaged in English discussion.... We only feel that we want to read the Weblog entries when we find there is a need to learn."
Responses with positive attitude and opinions	**Ryan:** *"I normally check on our Weblog twice or three times a week, sometimes more than three times when I have an assignment that needs to be published on the Weblog. I sometimes return to other people's Weblog entries and read them again."* Furthermore, Ryan said "if you talk about the group discussion on the Weblog. I do feel about 80% ~ 90% of our group members are willing to participate in group discussion online. But we still use MSN to conduct our discussion for Weblog entries."

Table 4.21 Summary of students' responses

	University of Leader		University of Southern-Taiwan	
	Control 6 students	Experiment 6 students	Control 6 students	Experiment 6 students
Factor 1 General Attitude	- feels that he has more positive attitude towards EFL writing after a semester. - feels that would be fine if he were given more chance to practise. - dislikes EFL writing.	- feels that he has struggled with the structure of a paragraph. - feels that he has a neutral attitude towards EFL writing. - feels that she is willing to write in English more than ever before.	- feels that he has a neutral attitude towards EFL writing. - feels that it is useful when the example of writing can be adopted into his 'love letter'.	- feels that he is more willing to read and write in English for general purpose after a semester.
Factor 2	- feels that it is positive to have his	- feels that it is positive if there are	- feels that it is useful about peer revision.	- feels that she is willing to compare her

Preference	writing proof-read by peers. - feels that it is useful about peer revision. - feels that he enjoys peer revision. - dislikes peer revision.	opportunities given to individuals to compare their writing with others. - feels that she is not particularly interested in peer revision. - feels that he is in favour of peer revision.	- feels that there is nothing improved or learned after peer revision.	writing with that of others. - feels that it is not very useful to have a peer review, because they think they have not achieved the level
Factor 3 Enjoyment	- feels that it is difficult about structuring & organizing the paragraph (spend more than half an hour in a paragraph). - feels that he is likely to give up if it is too difficult. - feels that it is getting better after a semester and it's not as hard as the beginning of the course - feels that it is a fun to do the group assignment. - enjoys the variety of given teaching material & teaching approach throughout a semester.	- feels that he has no particular interests or in favour of English writing. - feels that it is interesting regarding one of the online Weblog tasks (story chain). - feels that it is complicated in manipulating the Weblog interface in the beginning of the course. - still feels that using computers to discuss the given tasks with the classmates is a kind of nuisance.	- feels that he is getting more and more interests with English learning and writing. - feels that he is willing to learn English after a semester. - thinks that sometimes it is fun to write assignments, it all depends on the workloads & exams.	- thinks that she enjoyed reading some articles posted by the instructor. - thinks that she enjoyed using Weblog to read other people's entries.
Factor 4 Self- efficacy	- feels that it is better with the use of vocabulary in written English. - feels that she still needs to improve the knowledge of vocabulary. - feels that she still has problems with grammar in written English. - feels that there is a lack of confidence in himself about grammar. - underestimates his own ability of learning.	- did not feel confident in writing, especially when he knew that their writing was to be posted on the web. - feels that he is deficient in the knowledge of vocabulary. - feels that he is diffident about his English.	- feels that his language proficiency were still at the same level as before. - does not think that his English language proficiency is low, but he has a feeling of lacking lexical knowledge.	- feels that the scarcity of her lexical knowledge hinders her progress of writing.
Factor 5	- feels that she is fed up with some	- feels that it is convenient to use	X	- feels that the Weblog can promote their

Perspective	take-home exercises.	computer in EFL writing, because they are used to it. - feels that it is very interesting to use Weblog in writing. - feels that it is complicated to use computer in writing, because you need to transfer what you wrote onto the computer.		English literacy ability - feels that it is very convenient to search the information they want by both the Weblog and the search tool bar. - feels that she can learn something by clicking the links provided by the Weblog.
Factor 6 Productivity	X	- feels that he prefers to type rather than write. - feels that his writing has improved by posting his work on the Weblog. - feels that the Weblog is also a way of writing practice.	X	- thinks that she has learned something from the web; she has to search some information online in order to produce her own writing and post on the Weblog.
Factor 7 Collaboration	X	- feels that it is interesting to read others' writing and to compare the writing with others. - feels that he is eager to read the instructor's comments and responses. - feels that it is a bit disappointing if she receive no online feedback from the instructor.	- feels that it is useless of doing face-to-face group discussion, it turned out to be gossiping.	-- feels that Weblog helps them learn from each other. - thinks that her writing is not good enough after comparing it with that of others.
Factor 8 Participation	- thinks that a group meeting often falls into a one-person dominated speech.	- thinks that he joins or reads the discussion twice or three times a week. - think the same as they used to.	- feels that it is pointless of doing group project, it turned out to be one-man project work. - feels that group discussion only happened when they need to submit the group project or group assignment. - feels that there is almost no group discussion out of the class hours.	- joins or reads the discussion twice or three times a week - feels that 80% of group members were willing to participate in group discussion online, but they would prefer to have synchronous communication. - feels that there was an inactive participation.

4.5.4 The Difference between the Practice of Strategies

Another focal point of the interview transcript analysis was to identify whether the students performed a different attitudinal or behavioural change in the practice of strategies through the use of the Weblog. Given the same academic tasks with the same process-oriented instruction in both groups, the students all had a different writing experience with different types of writing tasks. The responses of all students interviewed showed that they were aware of the process-oriented writing instruction and thought this way of writing enriched their writing experience. However, it was not considered as a source of exemplification if the students produced some common responses like "*OK, or it's fine, I just feel I improved my writing*" without any further explanation regarding their practice of strategies.

Some distinctive features of students' practice strategies can be found in their responses and these will be juxtaposed with the data of this study to illustrate the following attributes.

1. Frequent exposure to English reading
2. Recurrent comparison with peers
3. Constant self-editing and proof-reading for the web publication
4. First language interference

Attribute 1: Frequent exposure to reading English

In the data of the interview transcriptions, the majority of students in the experimental group identified themselves as "lurkers", reading other people's entries as they surf the Weblog or other web resources. Consequently, it would not be prudent to use these data as exhaustive examples of evidence showing a difference in students' practice of writing strategies; excerpt 23 highlights a short comment reflecting one of the students' behaviours in her Weblog practice, and excerpt 24 illustrates a less active

contribution to the Weblog comment. The latter example shows how the provision of the Weblog platform made little difference to the students' practice of strategies. Rather, the provision of the Weblog platform should not be seen as having an obstructive impact on students' literacy learning, but should be contingent on the instructional focus of writing in the EFL classroom.

Excerpt 23 (experimental group)

S (Hannah): Okay, I agree that I was not very active in making contributions to the Weblog entries. Rather, I would like to read! For me, I was not so willing to post my entries up to the Weblog. I have to think what I'm going to post... .

The preceding string of personal reflection is one that is representative of students' behavioural change on the Weblog activities.

Excerpt 24 (experimental group)

T: To what extent and in what point do you like the Weblog so far?

S (Felicity): I like the way I can read other people's writing although I keep quiet sometimes and don't make any comment on it. But, uh..

T: But you still can read other people's writing without the introduction of the Weblog. I mean you can read your colleagues' writing as long as you ask them to show you their writing. It doesn't make a big difference with the assistance of computer-mediated communication in the computer classroom, does it?

S (Felicity): No, it doesn't. But I just feel embarrassed.

In excerpt 24, the student presumes that reading other people's writing in the

conventional EFL classroom is the same as invading other people's privacy. However, as soon as the writing is published on the Weblog, it is recognized as an open-to-public source for reading.

Excerpt 25 (experimental group)

S (Ryan): I think the autobiography is an introduction of each individual. I simply want to know more about my colleagues, so I go on the Weblog and read their profile. For other writing tasks or entries, I think I would like to read about other people's travel experiences and their experience of English learning.

T: Haven't you read each other's personal profiles before?

S (Ryan): Do you mean before posting them up on the Weblog?

T: Yes.

S (Ryan): We had no chance to read each other's autobiographies before they were posted up. It was a take-home assignment, wasn't it!? We only got a chance to read others' writing after they had posted their writing up on the Weblog.

Given the above conversation between the interviewer and the interviewee, it should not be hard to see that the opportunity for reading is still limited and constrained within a group or a local community if the students follow the conventional way of learning in an EFL writing classroom. In other words, students have more exposure to a wider range of English texts for reading with the assistance of the Weblog platform.

Attribute 2: Recurrent comparison with peers

The transcriptions of the interviews unequivocally demonstrate the substantiation of attribute 2. Examples from the previous section (see Table 4.18 for Felicity's response) and the following two excerpts illustrate that students who had

experience of the Weblog practice also had a rudimentary grasp of exploratory learning. In addition, an emulation of others' writing was found when the students found a better usage of English words.

Excerpt 26 (experimental group)

S (Ryan): .....I think we all recognize our own capability of English. Compared to my colleagues, we are not much different regarding writing. I will keep it in mind only if I read something that is particularly special....

Excerpt 27 (experimental group)

S (Nan): ..... I still quite often misunderstand some words. Knowledge of vocabulary is not enough. I also feel embarrassed or ashamed of being laughed at if I make a mistake in my writing.....but I've found it gets easier if I write in emulation of other people's writing.

Attribute 3: Constant self-editing and proofreading for the web publication

Students' responses from both groups reveal that they have worked through a series of different writing activities and this is a new, fruitful and interesting writing experience for them. Most interviewees recognized the given tasks of the process-oriented writing approach and they all experienced the strategies that the process writing involved. However, responses from the students who were taught in the conventional EFL writing classroom did not reveal clear evidence of their utilization of writing strategies, or any exemplification of a particular change in learning strategies. For the students who had experienced the Weblog practice throughout the course, the interview data demonstrated the substantiation of attribute 3. The first exemplar validates the premise of constant self-editing. The second example identifies

proofreading as an effect of the Weblog-rendered phenomenon.

Excerpt 28 (experimental group)

S (Marco): ... ...I realized that my writing would be published on the web and it had to be good. ... ... I would prefer to have my writing reviewed and revised before publishing. Of course, I know that I made many mistakes, but I still hope that the one I posted on the web would be the best. (see also Excerpt 4)

Excerpt 29 (experimental group)

S (Nan): I do realize that anything posted up to the Weblog is opened to the public, therefore I do check and recheck what I've written. In addition, I believe that my grammar is appalling, so I sometimes ask for help from people who study applied linguistics. They teach me or correct my grammar, so I can revise my English before posting it up to the Weblog. It helps. ... .

Qualitative data from all interview transcriptions indicated the consequences of a difference in students' practices of strategies. However, the researcher is aware that the evidence explaining the consequences of 'how' the students practice a strategy or 'how' they make any change of their learning strategy by the features of Weblog technology is still slight.

Attribute 4: First language interference

While reading the transcriptions of all students' responses, the common features and phenomena of students' first language interference were found in the process of analyzing students' different practices of strategies. Therefore, two representative examples of students' responses indicating what might hinder their flow of writing are

presented.

Excerpt 30 (control group)

S (WeiTing): I write, I write in Chinese first. And I'll translate it into English. At the same time, I'll check the coherence of my writing in the English version. However, I do find the way that writing in Chinese first and transliterating later is done with hesitation. Then I try to simplify my Chinese version of writing in order to convey my meaning in English more easily... .

Excerpt 31 (experimental group)

S (Ryan): Up to now, I still think in Chinese more when I draft my English assignment. I normally have a thought in the Chinese version as a start and then consider the way of converting it into English. It's like 'Chin-glish'.

Excerpts 30 and 31 reveal a significant problem during the process of writing; the strategy students used in their second language writing here more or less involved the transliteration of their first language. Students' responses reveal that they had not yet developed a set of procedures to govern the process of moving from their first language to the second language. The above-mentioned comments indicate that although this issue might not be of interest to the current research focus in this study since the research techniques required for the understanding of language production would be different from those used in this study, it would, however, provide initiative ideas concerning the bilingual area for further investigation.

4.5.5 The Learners' Informal Use of Language

Evidence from the interview transcripts did not explicitly substantiate the claim that language produced in the computer-mediated communication is much more informal than a conventional submitted EFL assignment. An awareness of academic content seems to be consciously prompting students during the process of their writing. One student's response reflects the convention of Weblog activities during the taught course. The following excerpt reveals the formality of the Weblog tasks.

Excerpt 32 (experimental group)

S (Kay): The topic you've given to us seems... make people feel... er-, it's very formal anyway. It makes me feel like I don't want to give it a try. Hm..., because what you've given is just so serious. So I felt would be boring if we followed the discussion. I think we can make it lively in a way we can discuss. It doesn't need to be the topic of academic writing. I think we can invite more different topics for discussion and .....

There are two possibilities why the interviewee Kay showed in the interview a reduction in her willingness to try the assignment. The first possibility might have come from Kay's need to learn what she considers of interest to her. The second alternative might stem from the whole of the Weblog settings in the EFL writing course. Although the use of the Weblog provides flexible access and a relaxed environment for the communication out of classroom hours, the nature of the EFL writing course created an academic atmosphere. Students were still aware that the use of Weblog communication was part of their writing course. Therefore, the content of communication may not be a chat room-like written discourse, but the type of the Weblog communication is in between informal conversation in a chat room and very formal academic discourse.

Online evidence demonstrates that the majority of Weblog entries including designated tasks, personal reflection and weekly entries had the tendency to use formal academic expressions such as 'therefore', 'furthermore', 'in addition', and so on. However, students' comments on entries showed a frequent use of emoticons throughout the texts such as ^_^ for a smile and ^^||| for embarrassed. Interestingly, the performance of verbal back-channel (for example, er.., em.., well), and the repetition of questions and rephrased sentences are hardly seen in students' comment texts. Table 4.22 demonstrates some representative examples of Weblog entries and featured student comment messages.

Table 4.22 Representative examples of Weblog entries and comment messages (Note: the copy of students' original text contains grammatical errors)

Examples of Entries
Topic: Weekly Entry (Posted by 193h0026 at 12:03pm in S.T.U. Blog F) The weather is very good this Saturday, at afternoon goes to An-ping with friend. Along the way passes through the An-ping cannel, feeling very grand view. ... ... There has the famous Tainan snack, such as fried won-ton and conserves, etc. In addition, also has many handicrafts, such as skin product and money pocket, etc. ... ... Topic: My Travel Experience (posted by 193h0017 at 01:28pm in S.T.U. Blog D) My travel experience is interesting in New Zealand, because the people were very friendly and the traffic was also very good over there. Although the travel was for visit my good friend, we went to play in a village... .... Topic: Travelling by airplane (Posted by 193h0009 at 06:35am in S.T.U. Blog A) Travelling by airplanes are faster than trains, buses, cars and motorcycles. On the airplane, airhostesses of the airlines are beautiful and ..... and the last, the airport was far from the downtown area. In conclusion, I think traveling by airplanes was better than most ways of traveling because it is convenience , comfortable and fast. ... ...
Examples of Comment Messages
Comment (posted by Nan at 04:05pm in S.T.U. Blog C) First of all, thanks for you pointed out my mistake. I usually make a mistake about the word recently because "apply" often occurs in the textbook of my biochemistry. ^_^ When I use the word, do I must put a comma before "etc."? Is it wrong I don't put a comma? Comment (posted by Jones at 04:56pm in S.T.U. Blog B) I feel very happy to do your classmate Jenny; you make me feel as like as my sister. You are an easy-going and enthusiastic person, and if you have a free time want go shopping you may ask me to go together =..= . Comment (posted by Hannah at 09:12pm in Leader University EFL Writing Pro D) Thank you ~~ Zoe ~~ @_@ I have to see a doctor and take medicine. But I don't think it will be OK. Because I always cough all day. >_<||| Comment (posted by Hannah at 12:29am in Leader University EFL Writing Pro D) Hello! Florence, Thanks for you leave the message for me. But I have question want to ask you. ... ... However, thanks your care. ^0^ Comment (posted by Florence at 12:50am in Leader University EFL Writing Pro D) Hi, Hannah: Of course you didn't see my English name in your class. I don't belong to your class, and I'm not a student of Leader. I just want to have some exchanges with you guys in English. Do you feel better now? ^^

There has not been any quantitative counting for the use of formal expressions as the focus of the research interest is not the students' use of formal expression. However, the researcher found that only 15 comments were produced with verbal back-channel (onomatopoeic or stylized spelling) out of 227 comments (6.6%). The examples of verbal back-channel including 'hey, haha, oh, wow and Mnn' and are listed as follows:

Table 4.23 Frequencies of informal written discourse – verbal back-channel

Verbal back-channel	Hey	Haha or hehe (Laugh)	Oh	Wow	Mn or Um
Frequencies counts	1	7	4	1	2

Furthermore, there was no evidence of the repetition of questions and rephrased sentences in students' comments. According to the online evidence of Weblog entries and comment messages, it is not possible to conclude that the use of Weblog communication increased the students' informal use of English.

4.6 Summary

Given the concerns about the presentation of quantitative responses, the quantitative results are at the heart of the data-probing resolution of this study. Background information, statistical findings and the significance of group differences represent the relevant EFL writing experience of target learners, attitudinal performance and the possible effect of the Weblog intervention on learners' attitudinal changes.

With reference to Table 4.1, we learn that there was unbalanced gender in the target sample of the population as well as in each group. The researcher is aware that it was not possible to modify the administrative arrangements for the sample assignment to have an equal number of both genders. Therefore, the attention of this study moved away from the discussion of any relationship between gender and the subjects' outcomes. Before the EFL writing course for this research began, other relevant background information had revealed that the target sample of participants had graduated from various educational backgrounds, each with a different focus on English language education, different experiences of English writing courses, different results of English writing tests and almost no experience of using computers in their English learning. Hence, the researcher conducted the pre- and post- GEPT literacy test as one of the measurements for

students' writing performance.

The results shown in Table 4.5 to Table 4.16 corroborate and confirm the statement that most key issues have been discussed with description, elaboration and a few discrepancies. Key issue 7 and key issue 9 in section 4.2 are not supported by the evidence of the quantitative findings. Based on the quantitative findings, students who experienced the Weblog communication had a more positive attitude toward the factors of productivity, collaboration and participation. The researcher found that after a semester of the EFL writing course with the Weblog intervention, students who often used Email reflected a stronger attitude towards their writing preference compared with those who never or sometimes used Email to communicate in English. This means students who use Email frequently are more likely to welcome suggestions and to invite readers or to have their writing proofread by others. As we know, Email and Weblog are both manifested as a kind of asynchronous communication. The feature of Weblog also provides learners a platform to make comments and the above writing activities as Email does. Therefore, it is possible to assume that Email activity helps the learners to adapt themselves in some Weblog writing tasks, particularly when they were asked to proofread and make suggestions on other's writing. Similarly, students who are well-practised at online chatting have more confidence in their second language writing. When examining the relationship between the use of online information searches and the attitudinal factors, the results show that students who had never used online searching tools were less active in their productivity.

With reference to key issue 2, the result shown in Table 4.6 indicates that the students have preferences for nearly all (seven) writing attitudinal scales, which means the mean score of the sample population compared to the known value (natural attitude) is different. This happened to both the control and experimental groups before and after

the experiment. A noticeable problem was also identified when attitudinal factors were examined. There was negative representation of students' self-efficacy and it remained the same over a period of time.

The wealth of data provided by the quantitative analysis and interview techniques also demonstrates the fact that students in the experimental group were more likely to enjoy writing in English and considered the possibility of using English to express their thoughts and ideas more frequently.

Although the quantitative findings proved that neither group was superior to the other in their performance of the English proficiency test, the qualitative data identified some possible attributes of the Weblog practice that may have influenced students' practice of strategies, particularly in the EFL writing classroom (see section 4.5.4).

Table 4.24 shows a summary of the quantitative findings in relation to the key issues in section 4.2 and the next chapter will bring together all the evidence to discuss the research questions.

Table 4.24 Summary of quantitative findings

Related Research Questions	Key Issues (Assumptions)	Status
Does the introduction of Weblog communication change the attitudes or performance of the learners to EFL writing?	1. As an illustration of the eight different writing attitudinal scales, the intervention of computer-assisted-communication will affect the mean scores of the experimental groups statistically.	√ **Quantitative analysis confirmed the assumption in terms of productivity, collaboration and participation. (see Table 4.5)**
What are the learners' performance and attitudes towards EFL writing before the introduction of Weblog communication?	2. In consideration of sample population's preference for the eight writing attitudinal scales, the mean score of the sample population to the known value (mean = 3; natural statement) will have difference on control and experimental groups respectively before and after the course.	√ **Quantitative analysis confirmed the subtle differences for most attitudinal factors, except self-efficacy. (see Table 4.6)**
Does the introduction of	3. Examination of the experimental group's mean scores before and after the	√ **Statistical evidence**

Weblog communication change the attitudes or performance of the learners to EFL writing?	intervention will reveal a difference in performance of students' writing attitudes. In comparison with the experimental group, the mean scores of the control group will have a different performance of students' writing attitudes before and after the experimentation.	**confirmed the subtle differences for most attitudinal factors, except general attitude in experimental group. (see Table 4.7) Also, the statistical findings confirmed the subtle differences for most attitudinal factors, except general attitude, collaboration and participation in control group. (see Table 4.8)**
	4. By comparing the change of mean scores after a period of teaching, the value of changes will be significantly different between two groups.	√ **Subtle differences were confirmed for most factors, except self-efficacy. (see Table 4.9)**
	5. The experience of using different computer-mediated communication tools will have a greater influence on the changes of means when we examine the relationship between students' technical experience and students' writing attitudes.	√ **The differences were confirmed in terms of how frequent learners' use Email, information search and chatting online. (see Table 4.10)**
What were the learners' performance and attitudes towards EFL writing before the introduction of Weblog communication?	6. In assessing the students' English proficiency, we assume that there will be no significant difference between the two groups at the beginning of the course.	√ **There was no major difference between the two groups. (see Table 4.12)**
Does the introduction of Weblog communication change the attitudes to or performance of the learners in EFL writing?	7. In assessing the students' English proficiency, we assume that the result will find a significant difference between pre- and post-test results, but the intervention of CMC teaching will have brought about a greater improvement in performance than will have the conventional teaching approach.	≠ **Although there is a greater improvement in performance with all the target students, the evidence did not support one group is superior to the other. (see both Table 4.12 and 4.13)**
	8. After a period of teaching, we assume that the experimental group will show greater improvement than will the control group in their writing.	√ **There is a minor difference in the gain of writing scores between the two**

		groups. (see Table 4.14)
Would the use of Weblog encourage the learners to take a more active participation in an EFL classroom?	9. In assessing the variation in students' GEPT performance related to their login frequencies, we assume that this pair of variables is strongly related.	**≠ Statistical findings suggested that there was no relationship between login frequencies and GEPT performance. (see Table 4.15)**
	10. By comparing the computational records of visits and bandwidth, we assume that the results will find a significant difference between each month in conjunction with students' participation.	**√ There was a significant difference between the visits each month. Statistical findings also suggested that a significant difference was found in terms of the bandwidth within 4 months period (see Table 4.16)**

Chapter V Discussion for Research Questions

5.1 Introduction

This chapter presents a discussion based on the results presented in the previous chapter. The researcher used data from the questionnaires to answer the research questions and hypotheses described in Chapter 3. The material derived from the student interviews will be helpful at this point for cross-validating, complementing and elucidating the questionnaire findings in respect of the impact of CMC on students' attitudinal change in the second language writing classroom. In the following sections, the findings of the quantitative analysis with regard to the ten hypotheses will be discussed as regards each research question, and the information derived from student interviews will also be presented in relation to the relevant research questions.

Table 5.1 The presentation of research questions

Research Questions	Source of Evidence
a. Does the introduction of Weblog communication change the attitudes of the learners to EFL writing?	Information retrieved from the quantitative data analysis of the key issues 1,3,4,5,7, and 8, pertaining to eight different writing attitudinal scales; interpretative data from student interviews (also see Section 4.5.1 and 4.5.2 in Chapter 4)
b. What were the learners' attitudes towards EFL writing before the introduction of Weblog communication?	Information retrieved from the quantitative data analysis of the key issues 2 and 6, pertaining to eight different writing attitudinal scales
c. Would the use of a Weblog encourage learners to take a more active participation in an EFL classroom?	Information retrieved from the quantitative data analysis of the key issues 9 and 10, pertaining to eight different writing attitudinal scales; interpretative data from student interviews (also see Section 4.5.3 in Chapter 4)
d. Is there any difference between the practice in strategies that are relevant to the writing process between learners who use a Weblog and those who do not?	Information retrieved from the qualitative data analysis of students' interviews (also see Section 4.5.4 in Chapter 4)
e. Does the Weblog increase the learners' informal use of language?	Information retrieved from the examples of Weblog entries and the analysis of students' interviews (also see Section 4.5.5 in Chapter 4)

Table 5.2 The representation of each attitudinal factor

Attitude toward EFL writing	Factor 1 **General attitude**	Individuals' readiness and overall tendency to respond to the general questions in the context of English writing, particularly when asked about the feelings of writing for different purposes and opportunity for more English writing
	Factor 2 **Preference**	Individuals' feelings about having their English writing proof-read, to be read and suggested by peers
Self-efficacy	Factor 3 **Enjoyment**	Individuals' feelings about their confidence in expressing their ideas clearly in English writing and like or dislike of writing in English
	Factor 4 **Self-efficacy**	Individuals' beliefs of their capability (confidence) to handle the use of vocabulary, grammar, organization in English writing and overall writing
Attitude toward using computers in EFL writing	Factor 5 **Perspective**	Individuals' feelings about using computers in developing English literacy abilities, revising written work, reducing anxiety and for improved English essay writing
	Factor 6 **Productivity**	Individuals' feelings about using computers for more English practices, more positive willingness to write, more creativity and a good way to improve English by communicating through online discussion board
	Factor 7 **Collaboration**	Individuals' feelings about the willingness and enjoyment of using computers to communicate with peers, to make comments and questions through online discussion board, and feelings about learning from peers through the Weblog, and feelings about commenting, responding to peers through the online discussion board service (Weblog) for developing thoughts and ideas
	Factor 8 **Participation**	Individuals' feelings about their interests in knowing more about online discussion board (Weblog) for effective English literacy development, feelings about their willingness to participate in a group discussion online and feelings about seeing their own written work online

5.2 Discussion for Subsidiary Research Questions

In order to answer the main research question, the following several subsidiary issues should be first discussed:

5.2.1 Discussion of Students' Attitudinal Change in Two Different Instructional Settings

The theoretical perspectives on the use of computer-mediated communication in education as well as the awareness of EFL writing in a different range of discourse conventions, mentioned in Chapter 2, have demonstrated that asynchronous electronic discourse not only offers a new way of interacting and collaborating for the process of learning, but also provides an instructional model to foster active cognitive processing, emulation, reflective inquiry and metacognition. In comparison with any conventional face-to-face EFL writing classroom, learning with networked-based or CMC tools enriches the experience of online linear written interaction and leads students' into a more focused idea-generating process without any digressions during the composing process (Schultz 2000). Apart from fostering active cognitive processing, emulation, reflective inquiry and metacognition, a review of literature also corroborates the salient features of CMC in promoting the equality of students' participation and active engagement in meaningful, motivated communication activity using the target language. According to the social constructive perspectives outlined in the literature review, the integration of computer technology and education increases the relative exposure for in-depth and reflective discussion in a collaboration-based environment. Once a learner has engaged in co-operative or collaborative learning and reflective discussion with other learners, they participate in the process of understanding knowledge in a social context. Thus, the potential outcomes of intellectual development increase through the active exchange of the learners' use of written language. A number of recent researches have emphasised the way that language content and communication develop during the use of computer networks, but the research findings still cannot lead to a conclusive judgement (Warschauer and Kern 2000). Given some of the research examples mentioned in 2.2.3 Chapter 2,

anecdotal and various outcomes of computer-mediated communication in the EFL context still can be seen when a particular educational setting is conducted. Nevertheless, such consequences reflect a transformational circumstance when the application of technologies, instructional approaches to second language teaching, theoretical perspectives of second language acquisition and the change of curricula all come to play in catalysing the conceptual transformation on the part of learners and educators.

As mentioned in Chapter 3, this experimental study was carried out at two universities both of which have two different instructional settings. It is mainly concerned with the quantitative study of attitudinal change as a comparative instance in which students in one kind of instructional setting have been influenced in their attitudinal performance by the intervention of the Weblog activities. In order to respond to the current research queries regarding the attitudinal change of students, the researcher applied the mixed method approach and data triangulation to extract as many details as possible regarding the particular attitudinal features of EFL writing as well as students' attitudes towards the use of the Weblog in EFL writing classroom.

The quantitative presentation of students' responses in Chapter 4 substantively confirms what has been found from the theoretical perspectives regarding the use of CMC in language education. With reference to Table 4.11, the statistical result of students' GEPT (General English Proficiency Test) shows that a positive change in students' EFL writing scores could more or less be attributed to the intervention of the Weblog communication. Based on the rubric (see Appendix G), students may have improved production of their written work in terms of their overall organisation of the argument, paragraph level development, coherence, sentence construction, and linguistic mechanics (for example, vocabulary, grammar and punctuation). However, without further detailed qualitative analysis or adopting discourse analysis or conversation analysis, it is difficult to

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conclude which precise component of students' writing products can be developed through use of the Weblog. According to the research focus, this study does not attempt to conduct a comprehensive discussion on the developmental change of students' written products with a specific focus on each EFL writing component and texts. Rather, this study mainly draws attention to students' affective factors such as attitude, self-efficacy and emotional responses, as they relate to the use of the Weblog, which may help or hinder EFL writing. The standard of students' written products therefore is a subsidiary and subsequent outcome of the experiment.

Based on the literature review, we also know that the representation of the role affective factors play in EFL learning can act as a sliding barrier that prevents the processing of input (Hedge 2000; Krashen 1985). Hedge (2000) has indicated that "learners who have generally negative attitudes towards English learning will have a high affective filter" (p21). Although the literature has provided only slight evidence to explain the precise functioning of the affective filter by Krashen, the concept of the filter highlights the role of the teacher in creating conditions conducive to EFL learning. Hence, it would be an incentive to teachers if the use of the Weblog communication directly or indirectly affects students' learning in the EFL writing classroom.

In Chapter 4, the statistical evidence revealed that learners whose communications and given tasks were conducted through the utilization of the Weblog had a positive view of their EFL writing experience in connection with the attitudinal factors of **productivity, collaboration and participation.** The interpretation of productivity indicates that students were willing to practice English creatively in the situation where the computer was used as a tool for communication, individual assignments, and group work. The attitudinal factor of collaboration indicated that they enjoyed using the Weblog to communicate with their classmates if they had questions and comments. Students agreed

that the Weblog activities helped them to learn from each other and therefore to develop their thoughts and ideas. In the experimental mode of instruction, students' quantitative responses indicated that they enjoyed seeing their written work in an online published format. They were also interested in knowing more about using the Weblog for developing their English literacy. Compared to the group who underwent the conventional mode of instruction, people who had experience of the Weblog communication had a stronger inclination to use English in reading and writing. Therefore, with the Weblog intervention, students will be more likely to participate in discussions.

In answering key issue 3, mentioned in the previous chapter, the researcher found slight variations in students' changes of attitude before and after the course (paired t-test for each group). The Weblog intervention did change students' attitudes with regard to the factors of preference, enjoyment, self-efficacy, CMC-related perspective, productivity in a CMC situation, collaboration in a CMC condition, and participation in CMC-related tasks. At the same time, the conventional group of students also had a similar level of performance. Both groups of students had changed some of their attitudes towards most of the attitudinal factors. The only difference between the two groups of students was that students who received conventional instruction showed no observable change in their impression of **CMC-related collaboration and participation**. Again, the evidence confirmed what had been found in key issue 1 after statistical testing. However, it is still problematic to claim that the Weblog intervention influenced students' behaviour and performance based on the similar responses collected from the two groups. The following key issue is therefore needed for further explanation.

Key issue 4 examined the value of the changes (how much the students' mean score changed in their attitudinal performance) for the two groups, using an independent t test. The researcher attempted to find out whether those dependent variables of attitudinal

performance in the experimental group had achieved a higher level of change in comparison with the control group. The result shows that the Weblog intervention had a greater effect on students' attitudes towards the factor of **enjoyment** within the aspect of self-efficacy than had the conventional method. In other words, students in the experimental group were more likely to enjoy writing in English and showed an increased possibility of using English to express their thoughts and ideas more frequently.

The discussion so far has centred on the observed differences between the two groups in the process of examining the factors of **enjoyment, collaboration and participation**, but there has been no observed difference with regard to students' general attitude, preference, self-efficacy, CMC-related perspective and productivity. Although the statistical evidence indicates no significant difference between the two groups of students regarding their general attitude towards EFL writing and some of the other attitudinal factors, we know that the information obtained from the interviews can potentially produce a rich store of attitudinal and perceptual expressions for the further interpretation of research findings (Oppenheim 1992).

Discussion in reviewing students' qualitative responses attempts to seek any possible attribution and association that can permit the researcher to identify influences. The above quantitative result found no difference between the two groups within the attitudinal aspect of EFL writing, but the data collected from students' qualitative responses revealed that most interviewees from both groups had a neutral attitude towards EFL writing in general. Interviewees who had generally negative impressions of EFL writing demonstrated an issue of self-efficacy. When the respondents were asked about their negative impressions, they often continued with an answer stating that they were either "unable to do the task" or they "struggled." In addition, student interviewees who discriminated against the practices of peer-review also doubted their ability to evaluate their

own and their colleagues' work. In other words, they would prefer not to have their writing exchanged or reviewed by their colleagues. Lack of confidence and poor English proficiency highlight the possible reasons why students are not in favour of peer-reviewing and exchange-reading and why they dislike EFL writing.

While highlighting the issue of self-confidence, which was identified in both groups, the researcher also found a slight difference between the two groups in the factorial examination of writing preference. Figure 4.14 in Chapter 4 summarized the subtle difference of positive responses between the two groups. The evidence indicated that students who experienced the Weblog practices would spend more time on self-editing or proofreading before publishing their work on the Weblog. Students also realized that their postings would be read not only by their colleagues, but also by other people outside the classroom. **A sense of real audience** certainly helped the students to reflect more on their own writing.

In a review of the qualitative findings, interpretations of student interviewees' responses illustrated both positive and negative attitudes towards their EFL writing. Some students attributed their satisfaction with and enjoyment of EFL writing to the variety of the given tasks (for example, story chain). As the course was conducted over a semester, some students encountered fewer problems in using the Weblog interface than they had encountered previously. According to section 4.5.1 in Chapter 4, the negative responses implied the students' unwillingness to confront the challenge of the given tasks (for example, one student interviewee was struggling each time they had to develop a paragraph). A lack of motivation was also a consequence of the student failing to accomplish a task that had a certain level of difficulty. Interviewees who gave negative opinions about the enjoyment of EFL writing simply had no interest in EFL writing and preferred to be taught in a conventional way. Strictly speaking, even if some interviewees'

responses from the experimental group had shown a positive comment in their attitudinal factor of enjoyment compared to the interviewees from the control group, this would not have constituted proof of a distinct difference between the two groups. From the analysis of all interviewees' responses, it is difficult to reach a conclusive judgment of a difference between the two groups of students with regard to the attitudinal factor of enjoyment. However, the qualitative interpretation helped the researcher in understanding the reason 'why' students produced different attitudinal outcomes.

Earlier, the researcher discussed three different attitudinal factors within the aspects of attitude towards EFL writing and self-efficacy, on the assumption that the statistical comparison of the two groups could indicate whether a difference in the students' self-belief over a period of time can be found. Again, the researcher did not observe any major effect of any causal influence on students' self-efficacy, but the researcher highlighted a further implication during the course of finding differences between interviewees' responses in the control and the experimental group. From excerpts 7 to 22 in Chapter 4, it could be deduced that the majority of both groups' responses involved more negative judgments of their confidence in writing, and interpreting information from the excerpts found no sign of any belief that the students had developed their self-perceptions of competence. A weak sense of confidence and skill-related and task-related concerns may all consequently affect or even stop the persistence and perseverance students exert when challenges and obstacles arise in their writing. The review of literature in Chapter 2 also indicated that the value of such self-regulating possession (self-beliefs), in this case, students' self-efficacy, would make an independent contribution to the prediction of writing performance (Pajares and Johnson 1993; Pajares 2003; Colins and Bissell 2004). There was, however, a difference between the two groups in terms of the willingness to emphasize the writing stage of revision. The students in the experimental group were more likely to

appreciate their own writing (for example, excerpt 4 in Chapter 4) and more willing to participate in the process of revision and self-correction rather than simply reacting to the designated revision tasks.

Key issue 5 examined the relationship between students' technical experience and students' writing attitudes. The purpose of this statistical examination was to seek any possible extraneous variables that might play a role in explaining the previous findings of some significant differences between the two groups or attitudinal changes within each group. As with the assumptions discussed earlier, different statistical findings indicated that there were three major differences between the two groups in reference to students' attitudinal factors of enjoyment, collaboration and participation. Here, the evidence of the one-way ANOVA test shows that students' attitudinal change of ***writing preference*** could be associated with their frequent exchange of Emails in English, but were not necessarily correlated to each other. Experience of online chatting (for example, MSN messenger) in English had a statistical effect on the students' ***self-efficacy***. Moreover, a comparison between students who had **'never'** experienced, **'sometimes'** or **'often'** experienced an online information search found a strong connection with their attitudinal change of ***productivity***. There is a significant difference between the groups of students with different levels of experience of searching for online information. Bearing in mind the above findings, it should be noted that different technical experiences such as **Email exchange, online chatting** and **online information search** represent a form of social learning activity and social interaction. These technical experiences can play a role as a facilitator when students are engaged in the context of collaborative or cooperative learning. In Section 2.2.2 of Chapter 2, it was shown that the account of intellectual development has a basis in a social interaction. In addition, the collaborative effort that encourages learners to reflect on what has been produced through the use of written language in the context of

social interaction promotes the salience of in-depth and reflective discussion and raises a potential access to the process of transformation from interpersonal dialectical communication into intrapersonal thinking as a consequence of an increasing ability to reconstruct psychological activity (also see Section 2.2.2 in Chapter 2). With the evidence of theoretical suggestions and the statistical findings, the researcher believes that the extraneous variable of an individual's technical experiences not only affects learners' attitudinal performance regarding their preference, belief, and productivity in the EFL writing classroom, but also forms a type of collaborative practice for pedagogical implication in helping learners to build up their own potential learning or proximal development.

In key issues 7 and 8, the researcher examined the students' pre- and post- GEPT literacy test results and the 'change' of GEPT writing scores using a paired t-test and an independent t-test respectively. It was assumed that students who had experienced the Weblog communication would not only demonstrate a change in their attitudinal behaviours, but also have a different outcome for their writing performance in the test. The results indicated that there was a statistical significance when the researcher compared the mean score of the pre- and post-test results with those of all the target students. The target sample of students showed an improvement in their GEPT literacy performance scores after the course. However, it is impossible to conclude that one teaching method has been found to be superior to the other based on the above overall literacy performance. So far, it is difficult for the cause of the difference in improvement between the two groups to be judged and acknowledged with reference to any single independent variable; there was not enough persuasive evidence indicating a better achievement on the overall literacy test for a particular group. As mentioned in Chapter 4, such a finding can also be referred to as a statistical issue when discussing the sample size of population. When the sample size of a

population is small, the difference between the mean score of two groups needs to be quite large to reach a level of significance when tested by a t-test (Verma and Mallick 1999). From the quantitative point of view, key issue 7 should not be confirmed without the support of other statistical findings and a statistical interpretation of significance. Therefore, the researcher conducted a further investigation into the 'change' of GEPT scores over the term and particularly drew attention to the 'change' in students' writing scores. In the end, the difference in writing improvement between the two groups is at a significant level. The statistical result shows a greater degree of difference between the control and the experimental group in writing. In this case, key issue 8 is confirmed with the statistical evidence that the experimental group showed greater improvement in their writing products than did the control group. With reference to the marking rubrics, they indicated that students might show better achievement in their overall organization of the argument, paragraph level of development and coherence, sentence construction, and writing mechanics (for example, use of vocabulary, grammar and punctuation).

5.2.2 Discussion of Students' Attitudes towards EFL Writing before the Course Commencement

The examination of the attitudes and beliefs that students hold about writing and their competence as first language writers in general is seen as a key part of understanding the thought processes underlying the compositions of students (Graham et al. 1993). In the same way, also mentioned in Chapter 2, the examination of affective factors equally deserves attention, as most researchers try to evaluate the students' second language writing from a variety of cognitive aspects. Discussion of students' attitudes towards EFL writing before the course commencement not only provided an understanding of what the target students believed about their own writing capabilities, which may influence how frequently and how well they write, but also helped the researcher in observing a comparable

consequence of what the eventual shape of students' attitudes towards the EFL writing with and without the intervention of CMC would be.

The review of the literature suggested that second language writers are often assumed to have a greater variety of affective variables to impede or facilitate 'the delivery of input' than have language writers (Krashen 1982), and to have attitudes that are more negative in their second language writing than have first language writers (Phinney 1991). Krashen (1982, p31) claimed that those whose affective beliefs, such as attitudes, motivation and self-confidence, are optimal for second language acquisition will not only seek and obtain more input, they will also have a lower or weaker filter (see also Chapter 2). A task for effective language teachers is to create an environment where learners can receive comprehensible input and engage in a less threatening situation (ibid). As a consequence, the researcher believes that any environmental mediated instruction that is possibly conducive to second language writing or learning needs investigation and examination for further pedagogical application.

In Chapter 4, the researcher evaluated the differences in means between the two groups using an Independent t-test for the pre-test. The result of the quantitative analysis, represented in Table 4.5 in Chapter 4, demonstrated that ***there was no observed difference between the two groups of students at the beginning of the course.*** As mentioned in Chapter 3, the purpose of conducting the pre-test and independent t-test as a baseline observation was to validate the quantitative data collection and analysis. Analysis of the sample population's favourite tendency towards the eight writing attitudinal scales was also conducted using a one-sample t-test. The decision to conduct a one-sample t-test for each group helped the researcher to understand the target students' attitudinal tendencies before and after the experiment, observing and interpreting whether the tendency of students' attitudes presented within each group was negative, neutral or positive. The presentation

of the pre-test demonstrated that the students in both groups had negative attitudes towards the aspect of self-efficacy (factors of enjoyment and self-efficacy) and a positive tendency towards the factors of general attitude and all CMC-related factors. This indicates that all target students at the beginning of the course formed a stronger affective filter by interpreting the negative comments from the statistical data. The students in the control group also had a neutral statement for their writing preference during the pre-test phase. At the end of the course, the students in the control group had changed their attitudinal tendencies from a neutral to a more positive statement with regard to the factor of writing preference, and from a negative to a neutral statement with regard to the factor of enjoyment. In comparison with the experimental group, students had a positive attitude towards the factor of writing preference in the pre-test and this remained the same in the post-test. Statistical representation also illustrates that students in the control and the experimental groups had similar attitudinal performances on the attitudinal factor of enjoyment in the pre-test and post-test – from negative to neutral.

With reference to key issue 6, the interpreted result of students' GEPT literacy performance revealed that the averages of the pre-test results were at relatively the same level with the mean score of 28.8818 in the control group and 29.7368 in the other group. The result of the independent sample t-test also indicated that there was no significant difference between the control and the experimental group in their performance of the pre-test, therefore indicating that the ***two groups were at approximately the same proficiency level in English literacy***. Based on Table 4.11, we can tell that neither group of students met the 60% standard of English proficiency in literacy, or the 60% standard of paragraph writing assessment, having a mark of 34 in total.

The above evidence relates to the following issues. Firstly, there is the issue of whether or not the relationship between self-efficacy beliefs and writing achievement

outcomes are correlated. A review of many research findings has suggested that self-efficacy has proven to be a more consistent predictor of behavioural outcomes and can be frequently correlated with students' academic performances and achievements (Pajares 2003; Colins and Bisell 2004; Pajares and Johnson 1993; Pajares 1996; Bandura 1977). In this study, the researcher did not conduct a further examination into the relationship between self-efficacy and students' GEPT performance due to the constraint of word limits and the research focus. Nevertheless, the researcher is fully aware that low self-efficacy was an inherent problem among students in the two target two universities and should receive increasing attention in EFL education.

Secondly, there is an issue in which internal validity may have been weakened by the equivalence across the groups, which was not assured via random assignment before the experiment (Creswell and Clark 2007; Cohen et al. 2000). Nevertheless, one site of allocation has made the experimental and the control groups as equivalent as possible in the University of Leader (also see Chapter 3), leaving the other site of allocation conducted without random assignment in the University of Southern-Taiwan. To minimize the threat to the validity of the research, the researcher conducted a follow-up quantitative analysis on other potential extraneous variables (students' technical experiences) for an alternative causal explanation of the effect of dependent variables. By examining and eliminating the possible extraneous variables in this study, it was expected that the result of the quantitative analysis would be closer to a valid measure of students' attitudinal behaviour and change in terms of what the questionnaire was originally supposed to measure. Furthermore, the researcher assigned equal sample sizes of students from the same population for the qualitative data collection and comparison (12 interviewees from the control group and 12 interviewees from the experimental group). From the methodological point of view, the researcher has tried to assess validity in terms of the overall design and potential threats to

validity in data collection and analysis.

To achieve better inference quality (known as validity), the researcher drew attention to the exploration of students' responses with any particular pattern or phenomenon identified from the interview transcripts. Again, the analysis of the interview transcripts indicated some differences between the control and the experimental group. The figures, excerpts and tables listed in section 4.5 of Chapter 4 highlight some differences and potential issues arising from the qualitative data. The presentation of some differences and attitudinal changes can be found in the discussion in the preceding section 5.1.1.

5.2.3 Discussion of Students' Participation in the Context of the Weblog Communication

Findings from other research often support the claim that computer-mediated communication can contribute to the development of writing skills and the facilitation of group collaboration and the equality of students' participation (see Chapter 2). In a study conducted by Kamhi-Stein (2000), 20 international students pursuing a teacher preparation course titled Methods of Teaching Second Languages experienced both face-to-face discussions and Web-based communication as part of the course requirement in a TESOL programme. The focus of Kamhi-Stein's study was students' participation patterns and attitudes toward the Web-based discussion. The quantitative and qualitative analysis showed that there was no statistical improvement in the balance of participation between native and non-native English speakers when participants engaged in the Web-based discussion. Nevertheless, the examination of students' participatory structure (initiations-responses-evaluations sequence) revealed that the "Web-based communication promoted collaboration and interaction that were driven by the needs and interests of the students" (Kamhi-Stein 2000, p447). The transcripts of the Web-based interactions

reflected a higher degree of peer support and a lower number of dialogic turns contributed by the instructor in the communication. This finding underscores the feature of CMC in providing learners with an environment conducive to collaborative learning.

The review of researches in Chapter 2 and the above study on students' participation in two different types of discussion modes yielded mixed results, depending on whether quantitative or qualitative measures were used, and on the whole research settings in different studies. Despite the mixed results, the finding is consistent with those of many studies with regard to the minimised role of the teacher plays in the Web-based discussion and the easy access to a collaborative working environment. In our current study, the statistical results of quantitative differences in attitudes towards participation and collaboration support the claim that the integration of computer-mediated communication in the EFL writing classroom has the potential to improve students' interaction and to generate more contributions to the group discussion (see the independent t-test and paired t-test in sections 4.3.1 and 4.3.2 in Chapter 4). However, students' participatory patterns/moves and discourses between the two different instructional modes were not compared in this current study. There are many reasons why the students' discourses in group discussions were not selected for the purpose of between-groups comparisons. Firstly, it is difficult to conduct concurrent or multi- observations in a conventional face-to-face EFL writing class where you have participants in large groups, particularly groups of participants in a class where there was only one instructor as well as an observer, monitoring, guiding and managing the group discussion. Secondly, one of the subsidiary aims in this study was to examine the potential effect of CMC in promoting students' participation only within the experimental group. The researcher was able to retrieve the information regarding network activities either from the Weblog system or from the CGI (Common Gateway Interface) control panel, which specifies system activities, logins,

visitors, and bandwidths for the quantitative analysis of students' participatory moves in the experimental group (see **Appendix H** for individual logins and counts of editing). The researcher was then able to compare the participants' login frequencies and the change of writing scores and discovered that there were no significant associations between these two variables. Thus, the researcher was able to determine that the students' login frequencies were not a variable that would influence the result of the students' writing performance.

To observe the students' general participation in the Weblog activities within the experimental group, the researcher examined the number of visits and the bandwidth respectively in terms of the variance between each month (see **Appendix I** for raw data). The statistical analysis found a significant difference in the students' visits to the Weblog each month and the various ranges of bandwidth each month. Figure 4.12 further indicates that, over the term, the students increasingly used the Weblog for the purpose of reading or browsing. The evidence indicates that students had ***more exposure to the Weblog entries*** and ***more participation in reading***, or possibly, in searching for information they wanted in the Weblog. However, the observation of bandwidth usage found a declination at the end of the term. As Figure 4.13 shows in Chapter 4, the statistical number of bandwidths, with a drop in December 2004 and January 2005, indicates less downloading, uploading and access to the Weblog platform in network traffic. In other words, the majority of students participated less in editing as the end of term approached. One reason could be that most students would prefer to play a role as lurkers in the network rather than as writers (because of their lack of self-confidence in EFL writing). It should be noted that the students' participation in the Weblog was not part of the course assessment. Therefore, there may be another reason for the less active participation in editing the Weblog entries – the preparation of other end-of-term exams. Perhaps students in the experimental group had decreased motivation near the end of the course because they were

exhausted by both the preparation for other final exams and by the extra time spent on writing and interacting that they had to do on the Weblog. Findings from the interview data revealed one more reason for inactive participation in the Weblog publication. One student in the experimental group was discontented with the given tasks; the student felt that the information embedded in the given tasks was not interesting enough to stimulate their motivation for writing. These external variables certainly can be taken into consideration to improve the instructions and offer suggestions for further research.

The qualitative evidence from the student interviews revealed a difference between the use of Weblog communication and conventional face-to-face discussion. As illustrated in Table 4.20, the students in the experimental group had no complaints about any dominated speech or one-person controlled discussions, whereas the students in the control group had many criticisms of these issues. According to the students' perspectives with regard to their participation in the EFL writing course, the findings could lend support for what was reviewed in the literature, namely, that computer-mediated discussion has the potential to provide individuals with more equal participation.

Even though the qualitative analysis apparently promotes computer-mediated communication for more equal participation, the researcher is aware of the difficulty of drawing a comprehensive conclusion regarding the difference between the two groups, as no objective assessment measures were adapted or used to compare the result of students' discussions in the current study, such as a qualitative analysis of students' discourse and interaction.

5.2.4 Discussion of Students' Practice of Strategies that are Relevant to Language Learning and the Writing Process in Two Different Instructional Settings

Studies of second language (L2) learning strategies have developed a foundation of terms and concepts based on the cognitive and meta-cognitive process in learning. Scholars who are intrigued by the possibility of language learners becoming more self-reliant in their learning have essentially attempted to unravel the conundrums of individuals' mental processes. In the quest to investigate characteristics of learning strategies, the scope and diversity to approach such issues to label strategies have resulted in the development of a variety of frameworks. Different strategies and ways of categorizing strategies were also revealed by many second language researchers, for example, Ellis (1985), O'Malley and Chamot (1990), Towell and Hawkins (1994), and Cook (1996). These different frameworks with reference to language learning strategies unequivocally highlight the cognitive processes that underlie language learning.

A model for categorizing learning strategies proposed by O'Malley and Chamot (1990) is best suited to the current study because of the exemplification of the general cognitive process that is also identified from the students' interviews. They defined three main types of strategy used by second language learners: meta-cognitive strategies, cognitive strategies, and social strategies. Meta-cognitive strategies involve "planning for learning, thinking about learning and how to make it effective, self-monitoring during learning, and evaluation of how successful learning has been after working on language in some way" (Hedge 2000, p78). Cognitive strategies involve "conscious ways of tackling learning, such as note-taking, resourcing (using dictionaries and other resources, e.g. Internet search), and elaboration" (Cook 1996). Social strategies refer to the learning by interacting with others, such as working with peers or asking for the teacher's help (ibid,

p105). One of the subsidiary aims in the analysis of students' self-reporting from the interviews was to seek any identifiable strategies in relation to the above labels used by the students and to find out if there was any impact of the Weblog intervention that could possibly differentiate the practice of strategies between the two groups.

In the review of research into learning strategies, an interesting example of one such study associated with the use of networked-based instruction was undertaken with 116 international students enrolled in an accelerated four-week undergraduate business computer course to examine the effect of different learning strategies - deep, surface, and undirected- in Web-based instruction as compared to a traditional lecture setting (Sankaran and Bui 2001). Figure 5.1 illustrates Sankaran and Bui's research design. Their study looked mainly at the comparison of learners' performances by different learning strategies in two Web and lecture settings. The result shows that learners had performed equally well in baseline tests (pre- and post-test) using either deep or surface strategies, but learners' performances were negatively affected by the use of undirected strategies. The analysis of the correlation between learning strategies, motivation scores and performance in baseline tests indicated that motivation is significantly correlated to performance in both Web and lecture settings and the higher the learning strategy and motivation scores, the better the learning performance attained during the course. However, it is difficult to assess the accuracy of the causative factor and the quality of inference with some problematic as well as methodological issues. Firstly, the method employed in their study demonstrates a non-equivalent control group design with an unbalanced sample selection. There was no random assignment of students in the two different settings, nor was a matching tactic employed to make the groups as equivalent as possible (Cohen et al. 2000). The insufficient amount of information regarding the target students' background prevents readers from investigating any extraneous variable of the students. Secondly, their study

identifies learning strategies and motivation as two independent variables in which the variables may influence students' learning performances. Different instructional settings are likely to become the confound variables (additional extraneous variables) that affect the result of the comparison. Finally, there was no qualitative evidence for cross-validating or supporting the quantitative findings in their study. By reading the above sample of research articles, the researcher was intrigued by the methodological issue and, therefore, modified the research design for it to best suit the purpose of this current study. Figure 5.2 illustrates a broad picture of the current research design and the details can be referred to in Chapter 3.

Figure 5.1 Individual factors affecting performance in Web vs. Lecture settings (adopted from Sankaran and Bui 2001, p191)

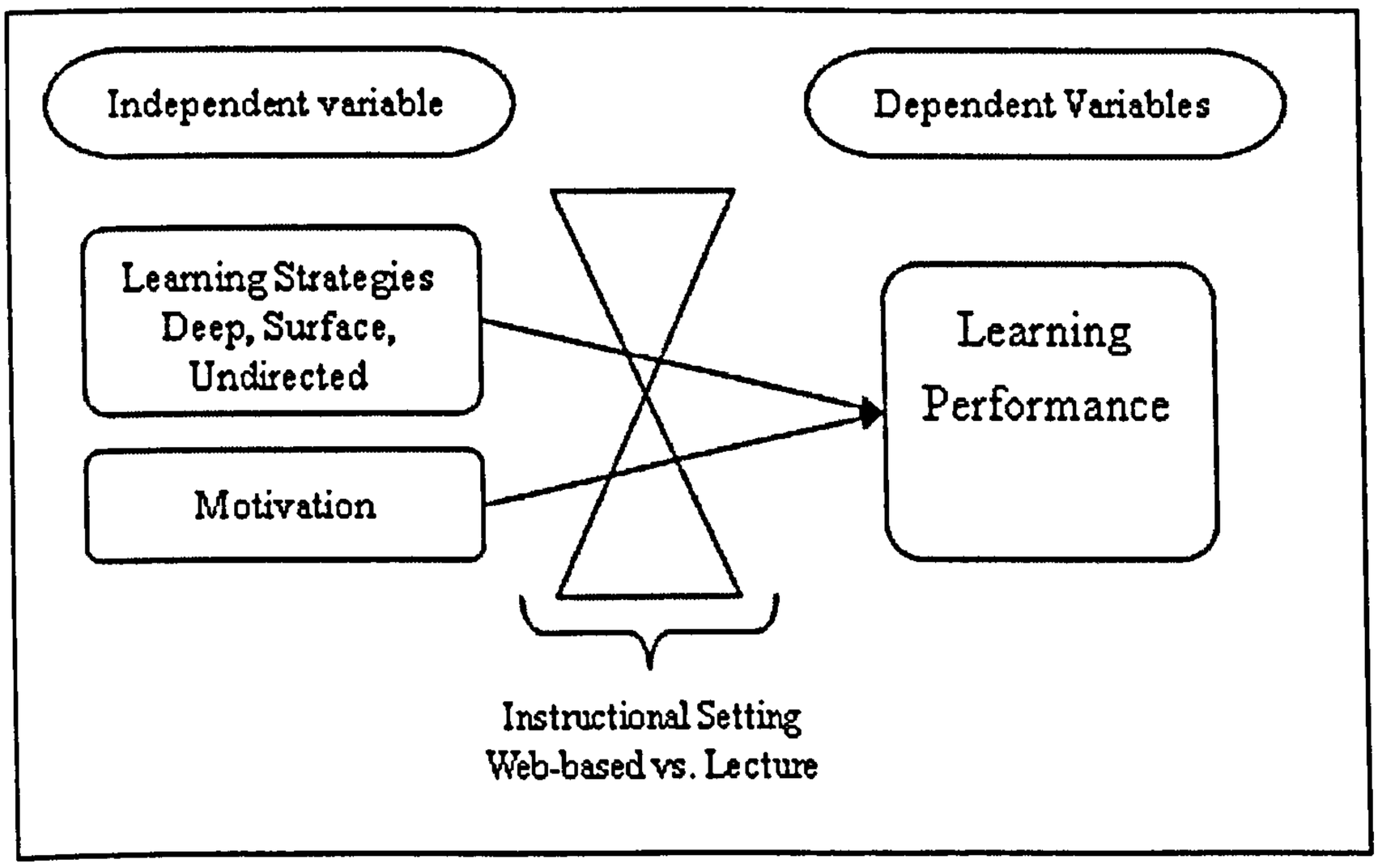
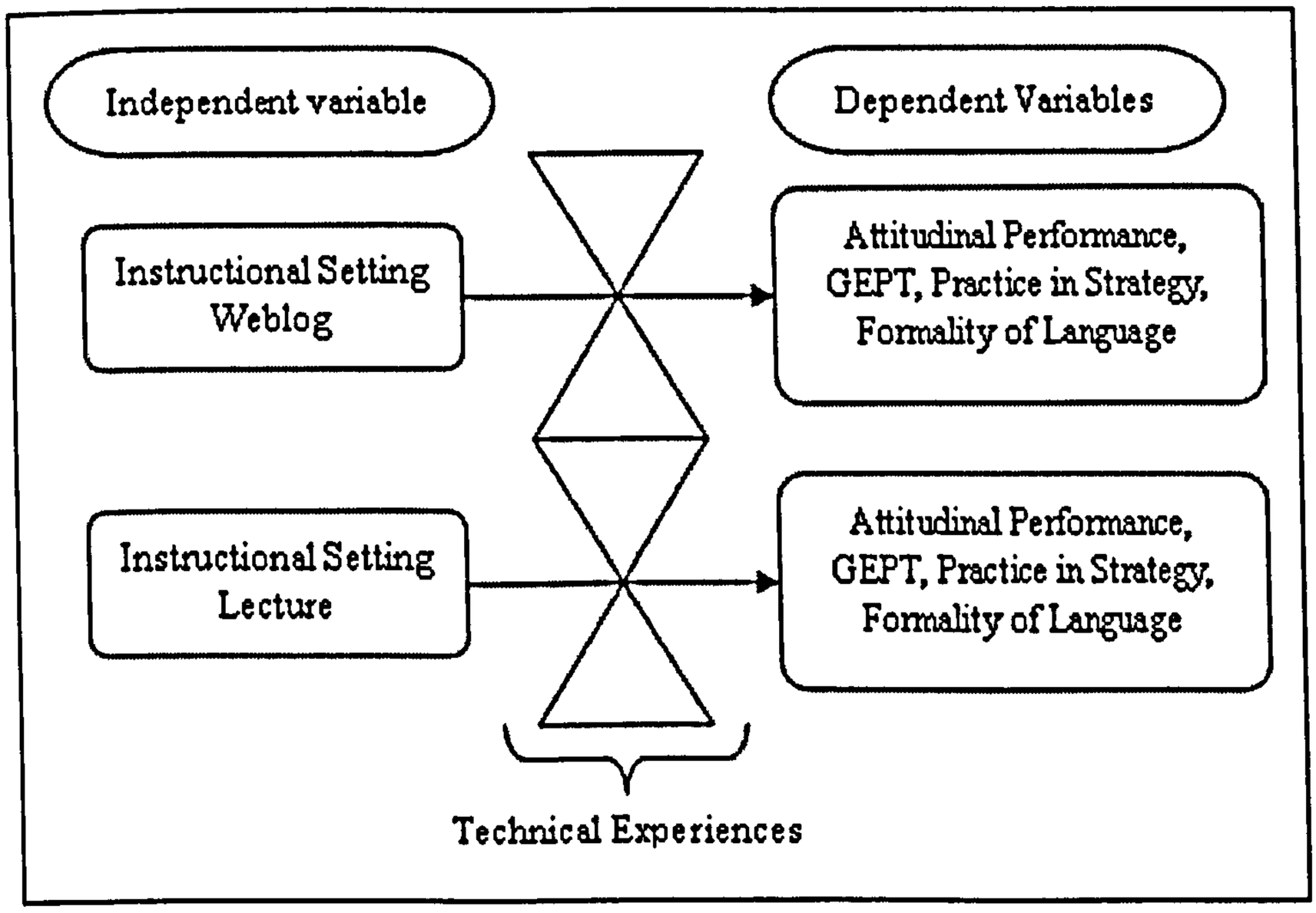


Figure 5.2 Independent variables affecting performance in the Weblog vs. Lecturer settings (the researcher's study)



With reference to the qualitative finding in Chapter 4, observation of self-reports revealed that the difference in the practice of strategies between the two groups involves both cognitive and meta-cognitive strategies employed during students' learning. Students in the experimental group had a more frequent exposure to English through reading the texts on the Weblog. Many students in the experimental group identified themselves as

'lurkers' rather than as writers. As a consequence, students made a less active contribution to the Weblog writing. However, the researcher perceives the issue of being a lurker from a different point of view. If students consciously expose themselves by reading texts on the Weblog with links to other Internet resources, eventually they will be more likely to be engaged in the cognitive process of retrieving and comprehending the information. It has been suggested that the sustained reading can increase students' vocabulary and develop reading habits that extend beyond the normal classroom (Peregoy and Boyle 2001) only if the students can consistently receive 'input'. The more 'input' students are willing to take in, the better the learning from texts will be. According to the evidence of students' self-reports, the use of the Weblog may provide a rich text of information for reading, but it does not provide the students with any approach to reading the texts effectively and purposefully. A practical implication for EFL teaching here, therefore, is to raise the awareness of any available strategies that students need to know and choose from for the composition and comprehension of reading tasks.

In the experimental group interviews, students' self-reflection often addressed the point that, to obtain better learning outcomes, they needed more 'input' from texts so they started searching and reading some information on the Internet for their compositions. In addition, students who had had experience of the Weblog practice also emulated the writing of their peers and sometimes copied their writing. ***The Weblog intervention indeed offers students a place to practise cognitive strategies*** (for example, searching for information or for phrases that are relevant to the task of composition and the designated task). It should be noted that students have to be taught how to evaluate their strategies in terms of their effectiveness and be shown what to do if the strategy they have adopted is not appropriate, such as plagiarism.

Thirdly, students in the experimental group were found to do more constant

self-editing and proofreading before the publication of their written work on the Weblog than did other students. This shows that the Weblog intervention possibly enhanced the strategies involved in the writing process (for example, editing and revising). In contrast to the experimental group, responses from the students who were in the setting of the conventional EFL classroom do not provide clear evidence of their utilization of writing strategies, or any exemplification of a particular change in learning strategies. An effect on students' writing strategies in the process of composition can be supported by the provision of the Weblog platform.

Finally, the qualitative data from all the interview transcriptions identified common features and phenomena with reference to the 'transfer' of students' first language to their new language system. It is also evidenced that much of the students' production of written discourses contained errors, and many of the students' self-reports did also, possibly as a result of being a transliteration of their first language. Such phenomena, in which first language plays a role in students' L2 learning, are often believed to have a negative influence (Ellis 1985). In the attempts to examine the process of SLA, many behaviourists believe that an error is likely to occur in the L2 learning when the patterns or habits of the L1 are different from those of the L2, and any entrenched habit of L1reflects a position of proactive inhibition that may prevent or inhibit the learning of a new language system as a result of strong L1 interference. However, the behaviourist view of L1 interference is challenged by the cognitive view of language learning. The role of L1 should be reappraised and considered as a resource of knowledge that learners can use to initiate utterances when their acquisition of L2 does not meet the demands of the new L2 input (Krashen 1981). A pedagogical implication of the cognitive view of L1 interference is the possibility of incorporating the L1 interference as a learner strategy of communication in the EFL classroom, seeing interference as intercession (Ellis 1985, p37). In other words,

the L1 interference is to be reintroduced as a contributing factor to the L2 development.

5.2.5 Discussion of Students' Informal Use of Language in the Weblog Context

A study conducted by Warschauer (1996) investigated the role of electronic communication in promoting students' equal participation, and his findings also accidentally found that students use language that is lexically and syntactically more formal and complex in electronic discussion than they do in face-to-face discussion. Interestingly, the concept of 'Netlingo' and 'Netspeak' bring similar but variant perspectives under the heading of electronic discourse. In the field of social interaction and the Internet, Thurlow et al. (2004) elaborate upon the term 'Netlingo' and 'Netspeak' with the emphasis on the written language's speed and its informality. 'Netlingo' refers to a scenario where the use of 'language in written conversation relies on creative typology, and many of the traditional rules of grammar and style are sometimes broken – as they always are when we're trying to be laid-back and fashionable" (ibid, p124). Features of Netlingo represent a particular speech community where people communicate in a friendly style of written language, such as minimal use of capitalization, generally less regard for accurate spelling, abbreviations, and acronyms (for example, BTW 'by the way', THX 'thanks'). With regard to Netspeak, it means that the reinstatement of social cues in written discourse is a consequence of highly interactive, dynamic and spontaneous interlocution with multiple participants. Observations of such written discourse often found some common strategies to achieve this interactional style of writing as follows.

- Letter homophones (for example, RU 'are you', OIC 'oh, I see');
- Creative use of punctuation (for example, multiple periods … exclamation marks !!!!!);
- Onomatopoeic and stylized spelling (for example, cooooool, hahahaha, vewy

intewestin 'very interesting');

- Keyboard-generated emoticons or smileys (for example, :-) 'smiling face', ,-) 'winking face', ---<-<@ 'a rose');

(*Adopted from Thurlow et. al. 2004, p125*)

Qualitative findings from this current research did not exclusively prove the claim that the language produced in computer-mediated communication is much more informal than a conventional submitted EFL assignment, nor did it empirically demonstrate the unavoidable change of language production within the niche of 'Netspeak'. From the researcher's point of view, the manifestation of language production online depends on the environmental settings and the nature of the tasks. On the one hand, writing that had a tendency to use formal academic expression was produced when students were trying to accomplish the designated tasks, personal reflection and weekly entries. On the other hand, writing that showed the spirit of 'Netspeak' was used during the communication with other peers through the use of comment messages. To judge fairly, the EFL writing course is inevitably academic and serious in its nature. The students were fully aware of the nature of the academic course and concentrated on their learning. The above evidences of network-mediated linguistic modality used to validate the dynamics of electronic discourse may be restrained by the nature of communication and the context, especially the context and communication within different language settings (for example, the EFL classroom); various cultural backgrounds (for example, cross-cultural communication or conference); and complex personal relationships (for example, talking with friends or talking to teachers). Without a further and more detailed examination of students' written interaction it is not possible to conclude the use of Weblog communication increases the students' informal use of English.

5.3 Discussion for the Main Research Question

"What effect does a Weblog have on the L2 writing performance?"

An overview of all the above discussions of the subsidiary questions relating to the comparisons of the EFL writing attitudinal performance in the two different instructional modes makes it possible to arrive at certain degree of general and broad conclusions as to how learners can best achieve the modified perspectives and modified outcome, and facilitate some cognitive characteristics of learning. The discussion of the research findings in relation to the main research question can be summarized as follows.

Firstly, the review in Chapter 2 of many studies suggested the important role of computers in assisting second language learning and the salient feature of CMC in developing learners' socio-cognitive and socio-affective conditions for their second language acquisition. While the discussion is chiefly concerned with the creation of socio-affective conditions for the development of SLA and such discussion is also closely related to the current research, Chapelle (2001, p50) has further highlighted some predispositions that can be the crucial variables in the learning process, including learners' desire for communication with friends, learners' self-confidence in communication, interpersonal motivation (that is, an incitement for contacting people and dominating the discussion), attitudes, social situation (that is, features of context affecting communication, for example, the Weblog) and communicative competence. These variables are believed to be part of the construct to build up learners' willingness to communicate with others. The conception of ideal socio-affective conditions, therefore, can be interpreted as a learning context in which the learner's possession of disposition to self-beliefs is promoted positively for successful SLA.

Secondly, the current research findings have demonstrated several incremental

changes in learners' attitudinal factors in relation to their productivity, collaboration and participation by the implementation of the Weblog experiment. Again, the finding of a positive tendency toward the factor of productivity supports the above claim that the Weblog intervention has potentially created a beneficial socio-affective condition for the students to practice English creatively. In comparison to a conventional mode of learning in the EFL classroom, the students are more willing to communicate with their classmates by use of the Weblog if they have questions and comments. The result especially indicated that there was a larger incremental effect on the factor of enjoyment with the Weblog experience. However, the quantitative evidence did not show that the experience of the Weblog practice greatly and significantly helped the students in developing their self-confidence in EFL writing. Notably, the above findings within the quantitative analysis of "self-efficacy" aspect (see Table 4.4 in Chapter 4) may suggest that an increase in enjoyment of EFL writing with the Weblog treatment does not necessarily correlate or equate to an increase in self-confidence in the EFL writing activities.

In addition, information retrieved from students' technical backgrounds revealed a relationship between students' different technical experiences and their incremental changes in different attitudinal performance. For example, students' attitudinal change in *writing preference* is associated with their frequent exchange of Emails in English. Experience of online chatting in English is associated with students' *self-efficacy*, and the online information search found a strong connection with their attitudinal change of *productivity*. In this study, these technical experiences are treated as some extraneous variables as well as a representation of a social learning activity and social interaction. With the support of theoretical suggestions in facilitating students' social interaction (see also Chapter 2, section 2.2.2) and the evidence of quantitative findings, the researcher believes that the promotion of students' technical experiences is conducive to learning in a collaborative

environment. With regard to the effect of the Weblog intervention on the students' writing performance, it is possible to conclude that there is a better incremental change in students' GEPT writing scores based on the statistical evidence.

Thirdly, one of the main conclusions that can be drawn from all the in-depth self-reports (student interviews) is that it is very unlikely the students will have a better quality of writing or a reappraisal of their perspectives on the EFL writing if the affective filter remains at a high status during their learning. Lack of self-confidence in EFL writing was found to be a common phenomenon in most students and it highlights the issue of why the students were not actively engaged in the tasks of peer-reviewing and exchange-reading, and why they even disliked the EFL writing. Moreover, one of the major findings from the qualitative analysis indicated that 'a sense of real audience' online can be seen as a motivating force for the target students to reflect on their own writing, explore others' styles of writing and represent the information they observed in their own words. The participation in the Weblog tasks including comments and suggestions made to others can become powerful catalysts for the practice of cognitive strategies. Although the online database revealed that the students had more exposure to the Weblog reading than they had making contributions to the Weblog entries, qualitative self-reports exemplified the potential of the Weblog in raising students' awareness of process-writing strategies as well as their meta-cognitive strategies in writing.

Finally, an additional source of findings from the student interviews demonstrates the influence of formality or informality in written discourse is contingent on the naturalness of environmental settings, communication and the context of learning tasks (for example, making comments to each other in the Weblog tasks).

5.4 Summary

In this chapter, the discussions set out to answer five subsidiary research questions that are central to this current study. Some major findings of the quantitative and qualitative results were employed as important references to illustrate the effect of the Weblog intervention in the EFL writing course. Discussion of each research question also looked into the theoretical perspectives of the use of computer-mediated communication for the support of second language learning and EFL writing.

After several statistical examinations of students' attitudinal performance and writing performance had been conducted, the result clearly indicated there was a starting line for all research participants with no significant difference in the beginning of the course between students who received the conventional EFL classroom lecture and those who had the Weblog-mediated experience. After a semester of teaching in the EFL writing course, the result illustrated a significant difference between the two different instructional modes of learning in relation to the attitudinal factors of productivity, collaboration and participation. The students who experienced the Weblog communication also showed an improvement in their writing score in GEPT performance.

When the qualitative analysis was employed to cross-validate and interpret the quantitative findings, the same result of low self-efficacy was correspondingly illustrated as a reflection of students' cognitive characteristics. Although there was no supportive evidence of greatly improved self-efficacy by the use of the Weblog in the EFL writing course, the qualitative findings suggested that the students in the Weblog experiment developed a sense of real audience and so had an increased willingness to reflect on their own written work for the Weblog publication.

When the researcher reviewed the correlation between the students' login

frequencies and the students' performance, it was found that the login frequencies did not correlate with their writing scores in GEPT, or with the total GEPT scores. Even though the records of login frequencies and of the bandwidth each month did not show a consistent result of increased participation in the Weblog publication (entries), the number of visits each month and the qualitative responses revealed that the students had more exposure to second language texts in the Weblog mode of learning than had the students in the conventional mode of learning. The discussion of qualitative data also showed that the Weblog has a potential effect on the promotion of process writing.

Additionally, qualitative evidence from interviews reflected that many of students' writing strategies involve first language interference. Apparently, the Weblog intervention does not seem to weaken students' practice of 'transliteration' from their first language directly into the second language. With regard to the discussion of informality in the Weblog activities, it is possible to conclude that the naturalness of environmental settings and the context of learning tasks operate as a consequential variable in determining the formality/informality of students' written discourse. Generally speaking, the majority of the Weblog entries still showed formal expressions for academic works, whereas the students' comment entries (comment messages) showed a small portion of 'Netspeak' (6.6%) in their written communication.

Chapter Ⅵ Conclusions

6.1 Epilogue

This thesis was based on an experiment conducted in two universities in Taiwan. A review of the literature helped the researcher identify the need to see whether the Weblog treatment was effective. The research questions and hypotheses were then addressed to find the answers as a means of examining the effect of the Weblog on students' attitudes towards EFL writing and their writing outcomes. The researcher divided the research participants into groups of different experimental treatment and undertook a mixed-methods survey, which combined quantitative and qualitative data to enhance the overall study. Subsequently, the researcher retrieved the numerical records from the network database, collected 112 pre- and 102 post- GEPT exam papers received 119 questionnaire responses, and then interviewed 24 research participants for the data analysis; these comprehensive data from a wide range of sources helped the researcher to discuss the attitudinal tendencies and generalizations as well as providing in-depth knowledge of participants' views on the course of EFL writing and the effect of the Weblog intervention.

As stated in Chapter 1, the focus of this study was the investigation into impact of the Weblog on students' attitudes and their writing performance. To discuss objectively the consequences of several research assumptions in the experiment, this study has given more priority to the deductive method of data collection and analysis (quantitative logic) with reference to the defined variables than to the inductive method of data analysis. However, this experimental research also considered the inductive

approach (qualitative logic) to supplement, cross-validate, support, and explain the experimental outcomes.

As stated in both Chapter 3 and Chapter 4, the formulated hypotheses argued that two different groups (control and experimental) would differ in their attitudes towards EFL writing, writing performance, and perspectives on CMC-related factors. The researcher noted that the answers to the research questions were mixed depending on whether they were quantitative or qualitative findings. The results from the quantitative data did not reflect the students' development of social and cognitive learning through the use of the Weblog in the EFL writing classroom, but the statistical evidence corroborated the theoretical findings on the significance of computer-mediated communication in learners' affective learning. In other words, the use of the Weblog influenced the learners' attitudes towards EFL writing. Although the qualitative findings from students' interviews led to a slightly complex and diverse interpretation of individuals' views, the combination of quantitative and qualitative findings provided a broad generalisations of the students' attitudinal tendencies toward EFL writing and the effect of the Weblog intervention. The mixed results also reminded the researcher to address the following themes:

- **Active reading**

In the process of examining the attitudinal factor of participation, the statistical evidence from the network database and students' self-reports indicated that the students who had the Weblog experience were more likely to participate in reading activities than in writing activities, and they are more likely to browse the Weblog entries for ideas of interest. Students who wrote the Weblog entries were also interested in reading others' writing to obtain better writing prompts. Ward (2004) stated a similar concern but placed more emphasis on the technical feature of Weblogs with regard to active reading.

He believed that it is the feature of a 'constantly updated list of the most recently published blogs in continual rotation' that encourages the learners to read and develop the readership (ibid, p6).

- **Reflectivity, Collaboration and Participation**

Although the same process-oriented writing instruction was given to both modes of learning, the students who had the Weblog writing practices showed a more positive change in their attitudes towards the factors of collaboration and participation in the quantitative findings. In addition, they spent more time on self-editing and proofreading. The researcher was able to identify the possible explanation for the above-mentioned difference between the two modes of learning in their attitudinal changes with the provision of qualitative evidence; the qualitative findings indicated that the use of the Weblog developed the students' sense of real audience. This possible explanation of 'real audience' is closely interrelated with both the notion of 'active reading' and with what Peterson (1997) has suggested is the 'social empowerment' for learners (also see Chapter 2). In other words, it is the sense of real audience that possibly enables the learners to read, write, and reflect on what has been written. If the learner is actively reacting to the online messages by either reading or writing them, he/she will be more likely to participate in a group discussion and make an effort in collaborative learning.

- **Self-efficacy**

The combination of quantitative and qualitative findings did not support the claim that use of the Weblog improved the students' self-confidence in writing at a significant level. The majority of interviewees expressed a great skill-related concern about their writing. There was a lack of self-confidence regarding the amount of vocabulary they had learned, their usage of grammar, their organisation of paragraphs, and the process of writing they experienced. Students generally believed that their

development of writing was 'filtered' through such an affective variable. This finding also echoes the view of self-regulating possession in second language acquisition (see Section 2.3.4 in Chapter 2 for self-efficacy). Nevertheless, the qualitative evidences suggested that the Weblog had an effect on students' willingness to undertake the process of revision and self-correction in their writing.

- **Language Register**

During the review of recent studies on CMC, the researcher found two extremes of critique on the production of written language in the context of technological communication. On one hand, Ward (2004) and Thurlow et al. (2004) voiced concerns about the potential drawbacks of online communication for writing skills that may be developed awkwardly and clumsily with sloppily written language (see Section 5.2.5 for discussion of students' informal use of language). On the other hand, the empirical evidence suggested the innate character of written communication would generate more formal and complex language output both lexically and syntactically in the context of the second language composition class (Warschauer 1996). The finding from this study suggests that the registers of online written discourse are varied depending on the environmental settings (for example, online conference, synchronous or asynchronous network communication) and the nature of the tasks. In this study, the students were fully aware of the academic nature of the course and concentrated on their learning, hence, minimising the possible disadvantages related to sloppy writing.

The above themes of the Weblog effects are a broad picture of the findings using different methods of interpretation. The detailed results and analyses of quantitative and qualitative data can be referred to in Chapter 4. A comprehensive discussion of the findings was conducted and integrated to answer the research questions in Chapter 5.

6.2 Significance of the Study

The significance of this study lies in the empirical evidence of observable changes in attitudes, individuals' participation, and reflection on written products using asynchronous Weblog communication media. The investigation of the Weblog effects also has a number of extensive consequences and makes contributions to the field of computer-mediated learning, second language acquisition and writing in terms of theory, methodology, and pedagogy.

From a theoretical perspective, the review of literature provides a broad picture of technology-enhanced language teaching and learning as well as an overview of the research on second language acquisition. The findings of CMC-related studies identified a problem of limited and anecdotal evidence of causal inferences on the technology-integrated EFL writing class. Historical examination of the literature has demonstrated the process of how different learning theories and technologies interrelate in the language classroom and in the discussion of second language acquisition and writing.

From a methodological point of view, the current study used different sources of data to maximise the internal validity. This thesis presents a distinct design and offers strategies for conducting experimental research built on positivist assumptions and an epistemological understanding of objectivism for the research process. Although the researcher placed more emphasis on the weighting of the quantitative approach in this study, the qualitative data was embedded to allow further exploration, interpretation and explanation of the views of individuals. This decision to adopt both quantitative and qualitative approaches for the research design was made in order to measure and observe the variables in the experiment. In addition, the results of the qualitative analysis also informed the quality of inference after the intervention and demonstrated the diverse

characteristics of individuals.

Finally, from a pedagogical perspective, this study introduced a new form of asynchronous communication media for a more responsive and reflective process of language learning. The process-oriented writing instruction provides students with a full picture of how a composition can be completed through the process of reading, planning, editing and revising. The findings can provide EFL teachers with information that may help their students to confront possible affective variables during the composing process. Contributions of this study were also made to both EFL teachers and students in terms of the potential advantages and drawbacks of the Weblog experience.

6.3 Limitations of the Study

The limitations of this study can be argued in terms of the methodological expansion, technological and instructional provision in the EFL writing context.

In general, this research was constrained by the positivist approach to observing the attitudinal changes and writing outcomes of individuals representative of the target population in the two universities. Due to the constraints of educational settings in the two target universities, the selection of an unequal number of participants, the background of different learning subjects, and the semi-random sampling procedure may not be sufficient for all-encompassing and persuasive conclusions that truly reflect the actual attitudes and development of writing. Nevertheless, the researcher minimized the threats of internal validity by employing the qualitative survey of individuals' experiences, attitudes, and reflections on the EFL writing course and the Weblog usage.

Although the students' meta-linguistic reflection and participatory moves were not discussed using qualitative method to approach the students' written discourses, the other qualitative findings from interviews highlighted the diverse and complex

interpretation of individuals' characteristics and learning. The scope of this study is restricted to 119 students in the two private universities in Taiwan. The findings of this study may have difficulties to be applied and generalised to other students outside the target two universities (Leader University and Southern-Taiwan University) due to some possible extraneous variables (e.g. different educational backgrounds, institutional goals, technological settings and level of English proficiency at the university level).

During the maintenance of the technology platform, the researcher noticed that the commercial spam robots eventually detected the experimental website and some messages were scattered in the comment message boxes at the end of the course. Those spam messages had to be deleted manually. Fortunately, the record of student logs was not destroyed or mixed with incorrect logs of spam activities. Subsequently, the provision of a free personal publishing system has to be expanded and equipped with more advanced anti-spam and anti-spy software applications for the maintenance of a clean Weblog environment conducive to the educational context. Although the web domains and IP addresses can all be traced to discover the source of visits and the bandwidth usages (also, the Weblog interface can retrieve the individuals' login activities), the time is limited for such data collection and analysis. Besides, a person who visited the Weblog with one particular IP address may show another IP address at the next visit. Therefore, the records of visits and bandwidth from the web database (control panel) can only provide a very broad picture of participatory activities.

Finally, teaching in the classroom where the computers and tables are arranged in a fishbone layout is not advisable for group introductory and instructional presentation because students may be distracted by other Internet resources that may be irrelevant to their learning. This problem may exist unless there is better control over students' computer screens.

6.4 Future Research Suggestions and Implications

The premises of this study are that several defined variables were manipulated and compared between control and experimental groups before and after a short period of learning. By conducting the experiment, the quantitative measure of defined variables with supportive evidence from the qualitative analysis enabled the researcher to observe 'what' had been changed or modified as a direct result of using the technological supplement. If a similar research project were to be conducted, it would be preferable to put much more focus on an in-depth qualitative analysis of written communication to examine 'how' the cognitive and meta-cognitive strategies, writing skills, the participatory moves, and the process of writing are developed. In addition, different correlation measurements can also be conducted to test the relationship between attitudinal factors and the writing performance or other well-defined variables.

Issues regarding internal and external validity could also be improved upon in a future study in terms of the selection of research participants (Cohen et al. 2000), indirect measures of more standardized exams (for example, IELTS or TOFEL exam), and a formative assessment of writing performance over time (for example, essays and assignments). The kind of formative measures can accurately assess the students' writing achievement because the information can be obtained throughout the research phrases. As noted previously in section 6.3, the scope of this study was limited due to the time and word limits. Although the findings of the quantitative data can indicated general tendencies and phenomena of the sample population after the intervention of the Weblog-mediated learning, a longitudinal study or case study using qualitative measures to analyse the progress of achievement is still recommended to facilitate understanding of a real innate characteristic of each individual.

The implications for teaching can also be discussed as follows. Firstly, the researcher played a role as a teacher as well as an assistant technician to help the students learn about and become familiar with the Weblog platform. As a result, there was an increased workload as the researcher had to monitor students' writing on the Weblog and maintain the flow of instruction in both the control and the experimental group over a short period of time. The increased workload may have affected the amount of constructive feedback given to the students. Clearly, more assistance from another instructor is needed to help the teacher to provide the feedback and comments for students' writing. Thus, the students may possibly be more aware of the audience and be more motivated to update their writing on the Weblog. In the observations of students' self-reports, the feedback seems to be crucial to the development of their writing skills and it encourages the students to make more contributions to the Weblog entries.

Secondly, the design of the Weblog tasks can be project-oriented and the creation of the Weblog can be individual for a more focused assessment and observation of each individual's achievement. The teacher could set up an additional Weblog with guided instruction, course material, learning resources and samples of students' writing as an open forum for discussion. By opening an additional Weblog for discussion, the information could be collected for the purpose of analyzing students' written discourse with regard to their interaction as well as participation. The teacher could also include an exchange project with other students in other universities or native speakers of English to potentially widen their Zone of Proximal Development and increase their exposure to the target language. The use of the Weblog as a platform for personal knowledge- and experience- sharing certainly promotes the process of reflection and socio-cultural interaction in students' learning.

Finally, the experience of the Weblog intervention in the EFL classroom told the

researcher that students need to be guided and prompted to write their Weblog entries with more questions and a number of task choices. Using the technology for the purpose of group discussion in an EFL learning context does not mean that the technology can stand alone and can consequently succeed in improving the students' learning. In this study, the Weblog was just a technological tool that could be used to mediate the students' process of learning and it acted as an incentive to modify the students' attitudes towards EFL writing. A more important task for teachers who might wish to use the Weblog or other online communication tools would be to spend extra time in preparing the instructional materials, giving assistance and monitoring students' progress, rather than simply letting the technology control the learning.

In sum, this study has made a contribution to the empirical research in the field of computer-mediated communication and second language learning. The decision to employ the mixed-methods approach, which combined both quantitative and qualitative findings, enabled the researcher to draw a valid and reliable conclusion as a firm basis for future research. Possible research projects can be conducted to see the effectiveness and the in-depth understanding of new Weblog technology (multi-media Weblog – Podcasting) in the development of other language skills such as reading and listening.

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Appendix A

School of the Humanities

Language Center

(1) Brief History

In response to our school's aim to internationalization and to the improvement on the quality of the foreign language teaching in vocational education, the Language Center was founded in 2001. The Center is in charge to design and manage the audio-visual rooms and the learning facilities. Furthermore, we are to develop the multicultural language activities in or out of school as well as the affairs related to education. With our outstanding teaching faculty, we have provided extended education courses for adults and instruction for the training of cooperative extension service in the community.

(2) Faculty

Nowadays, the Center is composed of 18 full-time teachers, including 1 assistant professor and 17 lecturers. On the whole, more than 40 full-time and part-time teachers are in charge of the school-wide general courses in English.

■ Assistant Professor

Hwang, Wen-Shann	Ph.D., Curriculum and Instruction—in TESL, The University of Kansas	TESL, Second Language Acquisition

■ Lecturers

Nieh, Peng-Ling	Master of Science in Educational Technology Lehigh University, P.A., U.S.A	English Teaching
Ko, Show-Mei	Department of English National Taiwan Normal University Bachelor of Arts	English Teaching
Tsai, Feng-Li	Azusa Pacific University M.A. Teaching English as Second Language	TESOL
Ou, Shwu-yuan	B.A. in Foreign Languages and Literature National Cheng-Kung University	English Teaching

Yen, Kuei-jen	Master of The Graduate School of Western Languages and Literature Providence University	English
Lin, Ming-Yuan	National Taiwan University Bachelor of Polititcal Science	English
Kao, Chin-Chin	The University of Idaho	English Teaching
Huang, Shu-O	Master of Arts Institute of Western Languages and Literature National Chengchi University	English Literature
Wang, Ying-fen	National Taiwan University Bachelor of Foreign Languages and Literature	Business English Writing
Tsai, Hui-lin	Master of Arts The Graduate Institute of Western Languages and Literature Tamkang University	English Teaching Western Literature
Lo, Ming-fen	Master of Arts in Comparative Literature University of Washington	English Teaching
Chen, Chen-Yin	Indiana University	Language Education
Cherng, Chiou-Yau	M.A. in English as a Second Language, University of Arizona U.S.A	English Linguistics
Wang, Fu-Hsiang	Michigan State University	Business English The Writing Skills of Commercial Correspondence
Lambert, Wendy	National Tsing Hua University	Linguistics

(3) Facilities

There are four language lab classrooms and two self-learning multimedia labs. Self-learning center is equipped with 1 plasma TV, 11 computers for students to watch and listen to channels such as BBC World, ABC, CNN, and NHK. A variety of practical English video/audio tapes and DVDs are available for students to use. On-line self-study software can provide students with opportunities to practice their listening and speaking skills.

(4) Course Objectives

The goal of this center's program is primarily to train non-majors to reach a communicative level of English. Classes opened by the center helps students develop their confidence and competence in using English as a

tool for communication. To achieve the goal, the teachers at the center focus on training students in the strategies needed to be successful language learners and English language users.

In accordance with the school's developing plan, we try to seek, design and provide the soft/hard-ware equipments of language teaching. We hold up the tests of English ability and help to upgrade the quality of foreign language of vocational education. In addition, we also hope to seek cooperation with other schools as well as to promote practical collaboration with enterprises.

(5) Course Descriptions

■ Undergraduate Courses (Course Title, Credits, Course Descriptions)

1. Freshman English (for Non-majors)	3	The objective of this course is to draw out the language knowledge stored in our students — through their high school education, and help them apply it in practical ways for increasing fluency and accuracy as they communicate through English reading, listening, and speaking.
2. Sophomore English	2	The course is intended as an EFL course emphasizing fluency in a general context, i.e. English for general purposes. Students are trained to use their general knowledge about the world to understand and communicate in English.
3. Applied English	2	The emphasis of this course will be particularly on equipping our students with practical test-taking strategies such as the TOEIC/TOEFL tests as well as training them to meet the future needs in career-oriented fields.
4. Advanced English	1	The course, an extended course of Junior English for non-majors, will focus on integrating student's four skills of English language.
5. TOEFL Elite		The course is intended to enhance students' language skills. Students will have opportunities to go through each section of the test with detailed analyses from instructors.
6. Business English	2	Centering on listening and speaking abilities so as to upgrade the knowledge of the expressions and the process of international transactions
7. English for Business Writing	2	The primary object of this course is to provide students with the opportunity to write the kind of clear business English that they will need.
8. Basic English Conversation	2	The course will focus on developing student's oral fluency and vocabulary knowledge. Students will be learning conversational skills through real-life situations and role-plays.

Appendix B

立德管理學院　教學大綱

Leader University: Course Outline

（93）學年度 YEAR　　（1）學期 Semester

課程名稱(Course Name)：英文寫作 EFL Writing

學制(Division):日二技

開課年級(Department and Level)：一 (Level One)

授課教師(Teacher)： Alec Chang

選/必修別 Elective : A404b (M203)

學分及時數：每學期 Each Semester（2）學分

每週 Each week（2）小時

一、課程簡介 Course Introduction: (50~100 字)

Traditionally, an EFL writing course concentrates on a description of the language models (e.g., analysis of text) that can be followed – 'what' should be achieved. Such model-based approaches to EFL writing often provide students with specific samples of language text in relation to particular presentation (e.g. language functions and patterns of organization) so that students have a view of writing with an emphasis on correctness. However, there is an important stage which occurs before these models are introduced - a stage of 'how' to carry out the process. This stage deals with 'what to say?', 'how to start?', 'why?' and many more questions during the process of writing. This course will help you to answer those questions, encouraging you to act as a 'language activator'.

二、 教學目標 Teaching Objectives：

By the end of this module students will be able to:

- apply key skills and strategies involved in process writing to a variety of writing tasks
- share the writing process by discussing the different stages in process writing with other students
- exchange opinions with peers and give constructive feedback on each others' drafts
- critically evaluate, revise, and successfully produce a piece of *quality* writing *(paragraph only)*

By the end of this module students will be aware of:

- the evaluation criteria for writing assessment (at *paragraphic level*)
- the existence and expectations of readership

- the development of coherency for the given tasks as well as the use of vocabulary, sentence structure and grammar

三、教學活動 Teaching Activities（請說明上課方式）：

Some pair work and group work are required throughout the course. This will allow students to discuss each other's ideas and give feedback on each other's work. Students will also be given a variety of tasks for each stage of process writing. Some tasks may require students to work collaboratively.

Writing games will be introduced once or twice a month as warm-up activities. The purpose of using games as part of writing activities is to raise students' interest and confidence in writing.

Students will be encouraged to E-mail each other for the purpose of sharing in the process of writing. The students who participate in the computer-cluster course are encouraged to join a cross-cultural exchange project with overseas' students (by means of discussion board or weblog).

四、教學效果評量 Assessment（請說明成績評估方式）：

40% - monthly assignments or reports

10% - attendance

20% - midterm Exam

30% - final Exam

Monthly assignments or reports

Students are expected to submit four assignments (approximate 120 words each) throughout the course.

Attendance

Students should aim to attend the entire course.

Midterm exam

A diagnostic test will be used after a series of lesson designed to teach some particular points and writing techniques.

Final exam

An achievement test at the end of the course is considered. Alternatively, students submit an assignment at the end of semester one (250~350 words). More detail and evaluation criteria will follow later in the semester.

五、教材或參考書 Recommended Textbooks：

Reading reference:

Hogue & Oshima (1997) *Introduction to Academic Writing*. 2nd & 3rd. White Plains: Longman.

Brookes & Grundy (1998) *Beginning to write*. Cambridge: Cambridge University Press.

Soars & Soars (2002) *American Headway*. Oxford University Press.

六、教學大綱 Course Outline：

週次	日期	課程內容	作業、報告	備註
1	16th Sep	● Introduction to EFL writing ● Student profile		A404b To randomly assign the subjects in the class into two groups.
2	23rd Sep	● From copying to writing ● Process stages: brainstorming & drafting		Distribution of attitude questionnaires 1
3	30th Sep	● From copying to writing II ● Process stages: planning, organising & drafting ● Preparation of writing task 1	Writing task 1 (write about people)	
4	7th Oct	● Review of week 2 & 3 ● Language analysis ● Introduction of correction symbols and peer review checklist	Revision	Baseline assessment for the validation of the target subjects' level
5	14th Oct	● The mechanics of writing ● Process stages: targeting & drafting	Revision	
6	21st Oct	● The mechanics of writing II ● Process stage: editing ● Preparation of writing task 2	Writing task 2 (cultures)	Interview with think-aloud protocol
7	28th Oct	● Review of week 5 & 6 (board game) ● Language analysis: narration & description	Revision	
8	4th Nov	● Confidence building ● Process stage: drafting	Revision	
9	11th Nov	Diagnostic Writing Test		
10	18th Nov	● Review of the midterm exam ● Language analysis ● Paragraph organisation		
11	25th Nov	● Focusing on process ● Process stage: planning		

12	2nd Dec	• Focusing on process II • Process stage: targeting • Preparation of writing task 3	Writing task 3 (social issues)	Interview with think-aloud protocol
13	9th Dec	• Review of week 11 & 12 • Language analysis • More about paragraph organisation	Revision	
14	16th Dec	• Process-oriented writing • Collaborative writing	Revision	
15	23rd Dec	• Process-oriented writing II • Preparation of writing task 4	Writing task 4	
16	30th Dec	• Review of week 15 & 16 • Language analysis	Revision	
17	6th Jan	• Assessment week • The use of video in EFL writing		Distribution of attitude questionnaires 2
18	13th Jan	Achievement Test		
19	20th Jan	Course Evaluation		Interview with think-aloud protocol (voluntary)

南台大學　教學大綱

Southern Taiwan University: Course Outline

（93）學年度 YEAR　　（1）學期 Semester

課程名稱(Course Name)：英文寫作 EFL Writing

學制(Division): 日二技

開課年級(Department and Level)：機電三甲

授課教師(Teacher)： Alec Chang

選/必修別 Elective : K401

學分及時數：每學期 Each Semester（2）學分

每週 Each week（2）小時

Overview of module

Traditionally, an EFL writing course concentrates upon a description of the language models you could follow – 'what' should be achieved. Such model-based approaches to EFL writing often provide students with de-contextualized samples of language text in relation to particular presentation (e.g. language functions and patterns of organization) so that students have a view of writing with an emphasis on correctness. Indeed, the provision of a model offers students with an instant guideline for writing, such as the focus on mastery of language structure through practice. However, there is an important stage which occurs before these models are introduced - a stage of 'how' to carry out the processes. This stage deals with 'what to say?', 'how to start?', 'why?'...and many more questions during the process of writing. This course will help you to answer those questions, encouraging you to act as a 'language activator'.

Module Title	APPROACHES TO EFL (English as a Foreign Language) WRITING				
Module Code		Semester	1	Credit	
Module Instructor	Alec Wei-Chih Chang				
Other Staff	None				
Pre-requisites	None				
Co-requisites	None				
Post-requisites	None				
Availability	Undergraduates taking BAs in Foreign Language Studies or relevant degree courses in relation to General English Language studies. Others with the permission of the Programme Director.				
Aims	• To provide undergraduates with individual development through raising awareness of the writing process by planning their work in the				

	particular conscious way that writing collaboratively involves ● To provide undergraduates with an understanding of basic principles skills, and knowledge required to critically evaluate, revise, and successfully produce a piece of writing *in quality*
Objectives	By the end of this module you will be able to: ● appreciate the complexities, skills and strategies involved in the process of writing ● apply the those skills and strategies to individual's writing and practice good writing habits ● share the writing process by discussing the different stages in the process writing with another person ● exchange opinions with peers and give constructive feedback on each others' drafts ● modify your thought in a display of written communication and improve your first draft ● raise the awareness of the existence and expectations of readership ● familiar with the approaches to process writing

Core Skills: Tick to identify the core skills the module develops

Written Communication	v	Planning and Organization	v
Interpersonal Communication	v	Problem Solving	v
Oral Presentation	v	Initiative	v
Team Work	v	Numeracy	
Adaptability	v	Computer Literacy	v
Other			

Teaching and Learning Methods	**Number/Student Hours**
Lectures: to demonstrate the basic principles of process writing with the implication of Information & Communication Technology	To be announced
Seminars: presentation and/or discussion	
Practical: tasks	
Fieldwork:	
Private Study:	

Other – Group discussion	1 hour per week
Method and Timing of Assessment Individual's participation and progress review Submission of an assignment at the end of semester one (500 words).	
Reading References	
Outline syllabus Understanding about writing in nature ------ Letter writing ---------- Task-oriented writing practice ---------- Essay writing ----------	brief survey and needs analysis on objective target situation needs, subjective learner needs, and learners' present deficiencies practice in strategic thinking and planning, e.g. brainstorming/making lists, group discussion, peer and self-evaluation, drafting, revision practice in comparing and contrasting, gathering and summarizing information, evaluation individuals' organization, rewriting and improving the draft practice in interpreting and incorporating statistical data in an essay, presenting an argument

Appendix C

A sample of lesson plans

Lesson Plan
Topic: From copying to writing

Level: intermediate level | Semester 1, Week 2 | Date: 23rd Sep 04

Skill: Writing

Aims	Stages	Procedures	Focus & Time
Pre-pre-test for the purpose of research		Baseline assessment 1. **Review** first week student handout – tell students to rewrite, do this while students are having their baseline assessment	**50 mins**
	Pre-writing & Drafting	1. **Group students** 2. **Brain-storming** – topic "This is my school life", eliciting students ideas about school life, students can use Internet to search and get the ideas. Ask them to write the ideas on the board. 3. **Handout given** – A404b handout can be downloaded from the Internet. 4. **Warm-up activity – Crazy story (expanding ideas) -** in groups, ask students to write words on the board. The teacher makes start by telling a short story using the word on the board (e.g. once upon a time···.), cross it out if the word is used in the story and then stops. Choose one group. That student will continue the story or make up a new story. This student then chooses the next student to continue the story. The last student must end the story. After the story is over, the students who uses the most words wins the game.	**5 mins** **15 mins**
	Identifying main ideas	1. **In pairs**, read the paragraph in the handout, discuss and circle the main ideas in the paragraph. (from general ideas and topics to specific) 2. **Feedback** – 3. **distribution of Correction Symbols**	**10 mins**
Follow-up	**Practicing**	**Exercise** – free writing on the topic given **Introduce Weblog** to students **Homework**	**10 mins** **10 mins**

Appendix D

Dear esteemed student:

I'm writing to you with regard to a survey conducted by a PhD student at the University of Newcastle upon Tyne. This survey is a part of academic research project that has been undertaken across the field of applied linguistics and E-learning. It requires student participants to volunteer a small portion of their time and to pour their thoughts on the matter of English language learning.

The purpose of this survey is to collect data about students' attitude toward EFL (English as a foreign language) writing and the experience of EFL writing with computer. I am also looking for undergraduate students from various academic disciplines and at different stages of their study that would be able to contribute their own time as individuals or as a group in responding to this survey.

I suspect that the experience of EFL writing with computers would have the impact on students' attitude and writing processes as well as writing products. Therefore, I have chosen to investigate the current situation in order to have a deeper insight into students' learning and give comments on the future English course development in our university. The result of this survey would be reported to our university. Hence, our students would either directly or indirectly benefit from the report being considered as a guide for the course improvement. Our students would also have a different learning experience in the future.

Student will be given a self-response questionnaire containing some items that present a brief and simply worded statement about EFL writing, followed by the number form 1 to 5. Each number corresponds to your feelings about the statement, ranging from very negative to very positive. For some of the statements, you may be required to response with different level of agreement by circling one number that closely represents your own feelings. For example, 1 means total disagreement with the statement, 3 means a neutral feeling and 5 means total agreement with the statement. In addition, this is not a test. Therefore, there is no right or wrong answer to each question.

This questionnaire is only for the use of academic purposes. No personal information that may potentially identify you will go to anyone at your school or other educational institutions. So please answer the questions honestly and carefully. Approximately 25 minutes will be needed to accomplish this self-administrative task.

Your cooperation is greatly appreciated. Thank you for assistance with this project.

Sincerely,

Alec Wei-Chih Chang
School of Education, Communication & Language Science
The University of Newcastle upon Tyne

Section 1: Personal Information

Name of the School: _____

Year of your study: _____ Gender: □ Male □Female

Age _____years

1. Major of study:

□ Arts □ Science □ Engineering □ Education □ Business □ Law □ Medicine & Pharmacy

□ Others _____ (please tick the appropriate box)

2. Result of English language test:

(Tick the appropriate box then state the result of the test)

□ **IELTS** _____ □ **TOEFL** _____

□ **CEEC** (College Entrance Examination Centre in Taiwan) _____

□ Other (please specify)_____

3. The current or previous score of the English writing test that you get:

□ No, I don't have any.

□ Yes, I got the score of _____,

or the level of _____ (intermediate, Upper-intermediate, advanced)

4. During the period of your study in the college, had you taken any English academic writing course or general English writing course

□ Yes. How many semesters of the English writing course did you take? _____

How many hours a week was the course? _____ □ No.

5. Have you ever used computers for learning English?

□ Yes. If yes, How long have you been learning English with computers? _____

□ No

6. Have you ever used a computer to do the following?

Word processing ----------	□ never	□ a little	□ a lot
E-mail ----------	□ never	□ a little	□ a lot
BBS (Bulletin Board System) ----------	□ never	□ a little	□ a lot
Sending/receiving English E-mail ----------	□ never	□ a little	□ a lot
Other online discussion board services----------	□ never	□ a little	□ a lot
Reading English news on the Internet ----------	□ never	□ a little	□ a lot
Finding information for English assignments on the Internet ----------	□ never	□ a little	□ a lot

Chatting with friend in English ---------- | ☐ never ☐ a little ☐ a lot

Others ? _____ | (please specify)

7. Do you have a personal computer at home or at your dormitory? ☐ Yes ☐ No.
8. Have you ever heard about "Blog" (Weblog, = 部落格 = 網誌), a personal web publishing with discussion forum? ☐ Yes ☐ No.

   If yes, how much do you know about Blog? ☐ a little ☐ a lot

Section 2:

How to answer this questionnaire

Directions: Some statements below are about what people do or how they feel when they write, followed by a five-point agreement scale or your emotional state. Circle the number that closely corresponds to your feelings. The numbers represent the following responses.

1. very negative 2. somewhat negative 3. a neutral feeling 4. somewhat positive 5. very positive

A.	☹		😐		☺
1. How do you feel writing in English for general purposes? For example: writing a letter to someone, keeping a diary, writing comments on what you read from your friend, etc.	1	2	3	4	5
2. How do you feel writing in English for special purposes? For example: writing a complaint letter, writing a business letter, writing a letter to apply for a job, etc.	1	2	3	4	5
3. How do you feel writing in English for academic purposes? For example: writing your assignment at school, writing an essay, writing a report at school, etc.	1	2	3	4	5
4. What is your attitude towards writing in English?	1	2	3	4	5
5. How do you feel if you had opportunity to write more in English at school?	1	2	3	4	5
6. How do you feel if your classmates gave you suggestions on your writing (in English)?	1	2	3	4	5
7. How do you feel about having your writing proof-read (in English)?	1	2	3	4	5
8. How do you feel if your classmates read something you wrote (in English)?	1	2	3	4	5

Section 3:

In this session, please refer to the following agreement scale to measure your level of agreement.

1= strongly disagree 2= disagree 3= neutral 4= agree 5= strongly agree

B.	☹		😐		☺
1. I feel confident that I can express my ideas clearly in writing (in English).	1	2	3	4	5
2.I dislike writing in English.	1	2	3	4	5
3. I feel confident that I have no problem with the use of vocabulary in written English.	1	2	3	4	5
4. I feel confident that I have no problem with grammar in written English.	1	2	3	4	5
5. I feel confident that I have no problem with organization in written English.	1	2	3	4	5
6. I feel confident that I'm good at writing (in English).	1	2	3	4	5
7. I feel it is difficult to write in English.	1	2	3	4	5
8. I enjoy writing (in English).	1	2	3	4	5

Section 4:

1= strongly disagree 2= disagree 3= neutral 4= agree 5= strongly agree

C.	☹		😐		☺
1. I feel that I can write better essays when I do them on the computer.	1	2	3	4	5
2. I feel that learning English reading and writing through a computer is fun.	1	2	3	4	5
3. I feel that learning English reading and writing through a computer make me less anxious.	1	2	3	4	5
4. I feel that computer-mediated language learning can promote my English literacy abilities.	1	2	3	4	5
5. I feel that revising my written work is easier when I write them on computer.	1	2	3	4	5
6. I enjoy writing in English by computer more than by hand.	1	2	3	4	5
7. I feel that I enjoy seeing my written work online.	1	2	3	4	5
8. I feel that I enjoy using the computer to communicate with my classmates.	1	2	3	4	5
9. I feel I'm willing to use an online discussion board if I have a question or comment.	1	2	3	4	5

10. I feel that Blog or any online discussion board service helps people learn from each other.	1	2	3	4	5
11. I feel that commenting and responding to others by an online discussion board helps me develop my thoughts and ideas.	1	2	3	4	5
12. I feel that communicating by an online discussion board is a good way to improve my English.	1	2	3	4	5
13. I feel that writing by computer makes me more creative.	1	2	3	4	5
14. I feel that using a computer gives me more chances to practice English.	1	2	3	4	5
15. I feel that I'm willing to write in English if I use a computer.	1	2	3	4	5
16. I feel that I'm interested in knowing more about using online discussion board (for example: Blog) for developing my English literacy.	1	2	3	4	5
17. I feel that I'm willing to participate in a group discussion on line more than in a way that the discussion can take place in the classroom.	1	2	3	4	5
18. I feel that the use of online discussion (like Blog) can help students to learn English reading and writing more effectively than to learn English reading and writing separately in a way that tend to be teacher-controlled, such as classroom teaching methods.	1	2	3	4	5

Appendix E

Interview scheme for experimental group

A404b, E002

1. Experience of using other CMC tools
2. Attitude towards writing with weblog – feelings of presenting their work online
3. Self-evaluation of their writing performance – fluency, vocab, grammar, reading and writing skills and others
4. Feelings about the weblog exercises
5. Preference about the feedback of teacher's correction online
6. Writing better by reading others' comments online or collaborating with each other
7. Self-efficacy
8. Feelings about the course
9. Weblog itself – what did you like or dislike
10. Collaboration, participation and interaction online
11. Writing process
12. How long and how often do they visit my Blog?

Interview scheme for control group

K401, M203

13. Attitude towards writing – How often do they write in English? Anxiety? Strategies? Motivation?
14. Self-evaluation of their writing performance – fluency, vocab, grammar, reading and writing skills and others, structure, organization and content..
15. Feelings about the classroom writing exercises
16. Preference about the feedback of teacher's correction
17. Writing better by reading others' comments or collaborating with each other
18. Self-efficacy
19. Feelings about the course
20. Interaction
21. Writing process

Appendix F

English Proficiency Test
Reading and Writing

學校名稱：_____ 科系年級：_____

性別：□男 □女 年齡：_____歲

姓名：_____ 學號：_____

Part A: Sentence Completion

Choose the best word to complete each sentence. Fill in the answer on your answer sheet.

1. More and more people carry a cell phone _____ convenience.
   a. for the sake of
   b. in addition to
   c. in order to
   d. in terms of

2. The Internet _____ to make a purchase without going outside your home.
   a. enables
   b. makes it possible
   c. contributes
   d. stands for

3. This _____ story will be popular with kids.
   a. disappointing
   b. grim
   c. fascinating
   d. majority

4. Since I feel _____, I think I'd better see a doctor right away.
   a. out of order
   b. off duty
   c. under the weather
   d. peaceful

5. The old solider returned to his hometown

6. Climate, _____, refers to normal weather conditions, not individual change.
   a. at least
   b. once in a while
   c. generally speaking
   d. at first

7. It's strange that George hasn't shown up yet; _____, he's the first to get to the office.
   a. accidentally
   b. normally
   c. coincidentally
   d. purposely

8. Under no circumstances _____ help the person who has been cheating on me.
   a. will I
   b. may I
   c. I might
   d. I can

9. I'm afraid Tom will soon be _____ because he has lost his father's car keys.
   a. in high spirits
   b. in hot water
   c. out of the question
   d. out of mind

10. It was not _____ I read your report

after an _____ of 50 years. a. interval b. interruption c. intersection d. intervene	that I came to appreciate the value of money. a. because b. until c. only d. when
11. I don't know Ms. Smith very well. I think she is a lawyer _____. a. or so b. or something c. or otherwise d. at one time	12. Everyone is impressed by the young lady _____ the red scarf around her neck. a. put on b. in c. wore d. with

Part B: Cloze

There are three passages in this part. Each contains 3 or 4 missing words or phases. Choose the best answer for each missing word or phrase. Fill in the answer on your answer sheet.

Questions 13~16

Exercises are activities __13__ the muscles and improve health. It is better to have regular, mild exercise – such as jogging – than __14__ strenuous exercise once in a while. Exercise helps circulation, and __15__ metabolism. When people want to lose weight, they should exercise __16__ go on a diet.

13. (a) strengthen (b) strengthening (c) that strengthen (d) that strengthening
14. (a) had (b) is having (c) to have (d) have
15. (a) increase (b) increasing (c) increases (d) increased
16. (a) as well as (b) instead of (c) because of (d) more than

Questions 17~19

Over the past few years, a strange fact about Taiwanese pop music __17__ to light: Only ballads make it into the Top 10. Music __18__ are flooded with cheesy love songs about broken hearts. Fortunately, some rock banks have come along and given them some alternatives, right before they were about to __19__ playing CDs.

17. (a) came (b) is coming (c) has come (d) come
18. (a) channels (b) tunnels (c) funnels (d) Chanel

19. (a) obey (b) continue (c) give up (d) think often

Questions 20~22

Here are some travel tips for you. First, __20__ your money at all times. When you go sightseeing, leave spare cash and items of value in the hotel safe. Beware of bag snatchers and pickpockets, especially on crowded buses. Don't leave luggage __21__, especially at railway stations. When __22__, you should report it to the local police.

20. (a) looking after (b) to keep an eye on (c) be unconscious of (d) take care of
21. (a) attended (b) attending (c) inattentive (d) unattended
22. (a) robbing (b) robbed (c) are robbed (d) are robbing

Part C. Reading

In this part there is one short passage. The passage is followed by several questions, each with four choices: A, B, C and D. Choose the best answer, based on what is stated or implied in the passage.

Questions 23~26

For years, psychologists have been studying color preference. They have found that people who like bright colors – such as yellow, orange, and red – are optimists. They enjoy life, and look for excitement. People who like gray and blue, according to the studies, would rather follow than lead. Psychologists have also found that colors affect people. Light and bright colors make people feel happy and attractive. For example, people feel more cheerful in a yellow room than in a dark-green one. Therefore, you can brighten your life with a new shirt or a few cans of paint.

23. An optimist is a person who _____.

(A) paints for a living

(B) looks after your eyes

(C) looks on the bright side of life

(D) can sing very well

24. What is the personality of people who like gray and blue?

(A) They tend to be active.

(B) They prefer to be a leader rather than a follower.

(C) They enjoy life, people, and excitement.

(D) They would rather follow than lead.

25. According to the above passage, which color will make people feel happier?

(A) Gray

(B) Black

(C) Dark green

(D) Yellow

26. According to the passage above, which of the following statement is false?

(A) Light and bright colors help put people in a good mood.

(B) People in the dark colors are happier.

(C) Color psychology helps us understand prople.

(D) Color has some effects on human beings.

Part D. Writing

Read the following passage and try to write a paragraph (about 120 words) according to your personal experience. Please write your opinion on the answer sheet.

Topic: **My school life**

Clues: What did you remember about your school life? Was it interesting or boring? How did you feel when you were an undergraduate student? What did you learn? As a learner, did you enjoy your student life at the university or college?

Adopted from (2002) *Complete GEPT test questions: Intermediate I.* Taipei: AMC publisher.

A sample marking rubric for GEPT literacy test (total score 34%)

	0 - 1%	2% - 3%	4% - 6%	7% - 9%	10%
Overall Organisation of the argument (10%)	Complete lack of organisation. No discernible structural elements are evident.	Disorganised. Some structural elements, such as introduction or conclusion, are present but are not effectively used. May frequently digress from the topic.	Clear attempt to organise. Either all structural elements are present in some form, though some may not be effectively employed, or one element (e.g. counter-argument) is completely missing.	Well organised. All structural elements are evident and these are mostly effectively ordered and used.	Excellently organised. All structural elements are evident and effective.
Paragraph level development & coherence (8%)	No attempt to develop paragraphs. Individual sentences appear unconnected. No topic sentence.	Some attempt to develop paragraphs, but consistently lacks coherence and detail. Few cohesive devices are used and these ineffectively.	Reasonable attempt to develop coherent paragraphs, but generally lacks adequate or sufficient detail. Cohesion between sentences is not always clear.	Paragraphs are well developed and coherent, though detail may occasionally be lacking. Cohesion and reference are generally good.	Paragraphs are well developed and coherent. Cohesion and reference are well presented.
Constructions (8%)	Even simple sentences contain many errors. Does not attempt, or fails completely at complex constructions	Use simple sentences. Complex constructions contain errors that hinder understanding.	Uses slightly complex constructions that may contain errors, but these do not generally hinder understanding.	Uses complex constructions with few errors, which are only minor.	Uses complex constructions with no errors.
Vocabulary & Grammar & punctuation (8%)	Vocabulary is clearly inadequate to the task. Persistent errors in word form and choice. Unacceptable grammar & punctuation mistakes	Vocabulary is barely adequate to the task. Frequent errors in word form and choice often hinder understanding. Many grammar & punctuation errors.	Vocabulary is generally adequate but not extensive. Lapses in word form or choice may be common but these do not hinder understanding. Few mistakes in grammar & punctuation.	Displays a good command of vocabulary. Only minor or infrequent errors in word form and choice. Good grammar & no mistakes with punctuation.	Displays an excellent command of vocabulary. No errors in word form and choice. Good grammar & no mistakes with punctuation.

Appendix H

Blog Activity Log

Chinese Name	Name	School ID	Codes	Logins	Edits
張育嫣	Tiffany	B09305001	1	34	17
許展彰	Ryan	B09305003	2	9	8
柯玟如	Mandy	B09305005	3	24	21
陳貞霖	Nicole	B09305007	4	27	15
洪淑敏	Zoe	B09305009	5	32	22
陳依琳	Frankie	B09305013	6	17	6
林瀚屏	Hannah	B09305015	7	42	28
陳啓鴻	Portas	B09305017	8	24	21
陳政旭	Toler	B09305019	9	9	4
黃惠卿	Kay	B09305021	10	19	16
曾鉅翔	Marco	B09305023	11	26	19
洪曉玲	Felicity	B09305025	12	18	11
翁莉喬	Jessie	B09305027	13	27	16
伍毓琪	Yolanda	B09305031	14	17	16
高筱雯	Albee	B09305035	15	14	21
楊于瑩	Teresa	B09305041	16	13	6
張哲綸	Chelun	B09305043	17	18	24
林秋韻	Joan	B09305047	18	13	6
林筱惠	Cindy	B09305049	19	15	15
何婉嫻	Cherie	B09305045	20	16	14
古月盈	Jessica	B09305039	21	35	23
吳季錠		193h0001	1	28	26
翁嘉偉		193h0002	2	14	12
林怡惠		193h0003	3	28	25
蕭琬瑜		193h0004	4	20	6
賴鴈民		193h0005	5	21	14
蔡中正		193h0006	6	27	14
曾心儀		193h0007	7	9	6
王士毓		193h0009	8	25	13
謝慈芳		193h0010	9	21	11
林芳如		193h0011	10	10	6
吳依庭		193h0012	11	8	5

徐婕棻		193h0013	12	22	18
曾炫凱		193h0014	13	16	9
謝憍慶		193h0016	14	18	15
趙怡鈞		193h0017	15	32	15
楊德茂		193h0018	16	21	6
關崇孝		193h0019	17	22	16
彭淑慧		193h0021	18	16	13
尤佳雯		193h0022	19	17	11
蔡文娟		193h0023	20	28	23
陳建文		193h0024	21	28	10
莊昀修		193h0025	22	14	16
李蕙如		193h0026	23	20	16
洪宸達		193h0027	24	12	7
王志豪		193h0028	25	12	11
王素娥		193h0029	26	29	5
張淑娟		193h0030	27	23	14
何建龍		193h0031	28	18	14
柳冠安		193h0032	29	22	19
邱雅鈞		193h0033	30	15	19
李倩靜		193h0034	31	36	27
蕭宇龍		193h0035	32	14	14
朱智歆		193h0036	33	17	12
邱詩萍		193h0039	34	7	6
黃晨瑄		193h0041	35	13	8
邱育維		193h0042	36	28	12
林鈺寰		193h0043	37	22	15
藍絜瑩		193h0048	38	18	9

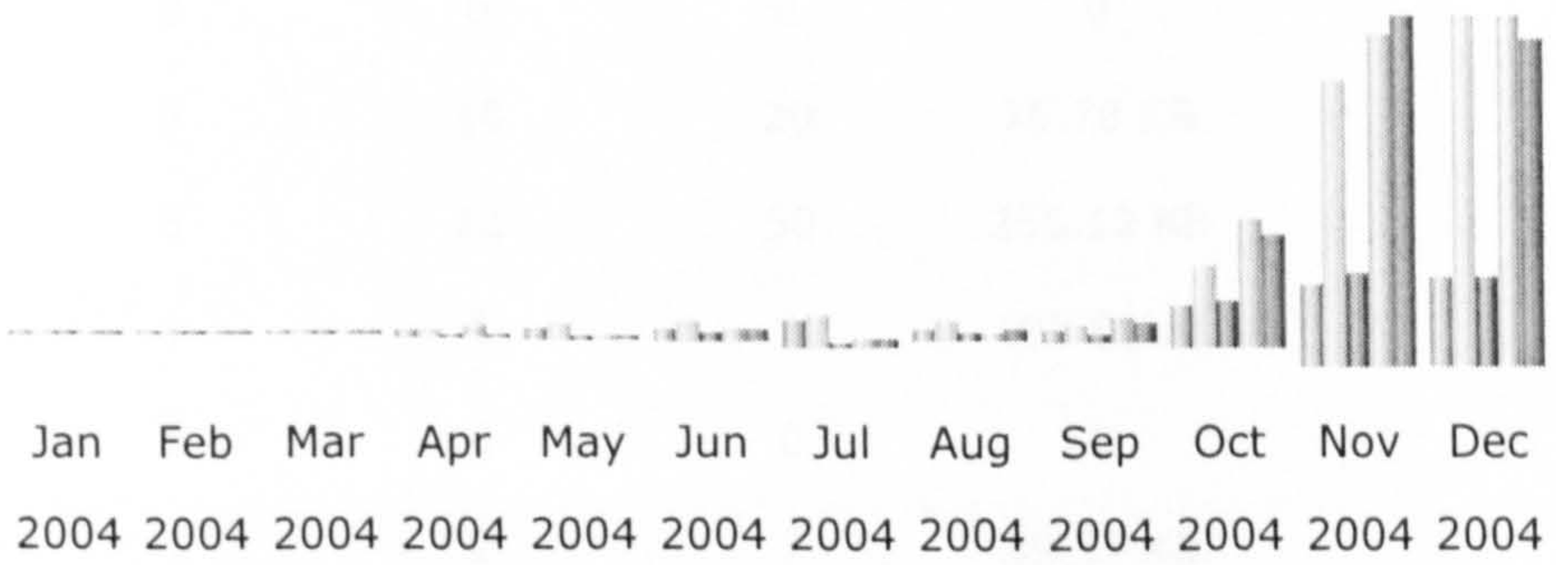
Appendix I

Statistics of the Weblog from Sep 2004 to Jan 2005

Summary					
Reported period	Month Sep 2004				
First visit	01 Sep 2004 - 01:21				
Last visit	30 Sep 2004 - 23:56				
	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Traffic viewed *	**69**	**99** (1.43 visits/visitor)	**1464** (14.78 pages/visit)	**4515** (45.6 hits/visit)	**18.47 MB** (191.06 KB/visit)
Traffic not viewed *			**661**	**887**	**786.27 KB**

* Not viewed traffic includes traffic generated by robots, worms, or replies with special HTTP status codes.

Monthly history



Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2004	0	0	0	0	0
Feb 2004	5	5	8	23	6.84 KB
Mar 2004	12	23	125	679	809.02 KB
Apr 2004	45	56	279	1917	3.16 MB
May 2004	60	92	373	519	1.30 MB
Jun 2004	64	114	889	2173	9.89 MB

Jul 2004	171	222	601	1049	4.30 MB
Aug 2004	65	131	901	1463	9.35 MB
Sep 2004	69	99	1464	4515	18.47 MB
Oct 2004	293	578	10041	27433	114.33 MB
Nov 2004	575	2101	19613	72865	355.40 MB
Dec 2004	645	2561	18795	76345	335.20 MB
Total	2004	5982	53089	188981	852.21 MB

Days of month

Day	Number of visits	Pages	Hits	Bandwidth
01 Sep 2004	3	12	20	64.62 KB
02 Sep 2004	1	2	4	195 Bytes
03 Sep 2004	3	11	21	104.67 KB
04 Sep 2004	2	3	5	195 Bytes
05 Sep 2004	2	72	319	803.53 KB
06 Sep 2004	0	0	0	0
07 Sep 2004	3	10	20	75.70 KB
08 Sep 2004	8	11	50	256.12 KB
09 Sep 2004	1	1	1	195 Bytes
10 Sep 2004	0	0	0	0
11 Sep 2004	1	2	7	39.57 KB
12 Sep 2004	2	4	10	51.73 KB
13 Sep 2004	5	25	39	203.32 KB
14 Sep 2004	4	113	526	1.25 MB
15 Sep 2004	1	46	288	504.14 KB
16 Sep 2004	3	14	56	206.01 KB
17 Sep 2004	2	62	219	459.26 KB
18 Sep 2004	0	0	0	0
19 Sep 2004	0	0	0	0

20 Sep 2004	4	21	39	388.28 KB
21 Sep 2004	5	62	100	898.28 KB
22 Sep 2004	7	50	89	651.09 KB
23 Sep 2004	5	122	316	1.50 MB
24 Sep 2004	5	11	53	269.68 KB
25 Sep 2004	4	38	87	583.95 KB
26 Sep 2004	9	158	341	1.14 MB
27 Sep 2004	1	23	70	613.92 KB
28 Sep 2004	0	0	0	0
29 Sep 2004	8	235	1062	2.44 MB
30 Sep 2004	10	356	773	6.12 MB
Average	3.30	48.80	150.50	630.51 KB
Total	99	1464	4515	18.47 MB

Summary

Reported period	Month Oct 2004				
First visit	01 Oct 2004 - 00:02				
Last visit	31 Oct 2004 - 23:59				
	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Traffic viewed *	**293**	**578** (1.97 visits/visitor)	**10041** (17.37 pages/visit)	**27433** (47.46 hits/visit)	**114.33 MB** (202.55 KB/visit)
Traffic not viewed *			**1975**	**2282**	**4.29 MB**

* Not viewed traffic includes traffic generated by robots, worms, or replies with special HTTP status codes.

Monthly history

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2004	0	0	0	0	0
Feb 2004	5	5	8	23	6.84 KB
Mar 2004	12	23	125	679	809.02 KB
Apr 2004	45	56	279	1917	3.16 MB
May 2004	60	92	373	519	1.30 MB
Jun 2004	64	114	889	2173	9.89 MB
Jul 2004	171	222	601	1049	4.30 MB
Aug 2004	65	131	901	1463	9.35 MB
Sep 2004	69	99	1464	4515	18.47 MB
Oct 2004	293	578	10041	27433	114.33 MB
Nov 2004	575	2101	19613	72865	355.40 MB
Dec 2004	645	2561	18795	76345	335.20 MB
Total	2004	5982	53089	188981	852.21 MB

Days of month

Day	Number of visits	Pages	Hits	Bandwidth
01 Oct 2004	10	21	70	490.43 KB
02 Oct 2004	4	29	76	639.60 KB
03 Oct 2004	7	355	781	3.99 MB
04 Oct 2004	21	212	427	2.20 MB
05 Oct 2004	23	188	550	2.64 MB
06 Oct 2004	23	266	792	3.03 MB
07 Oct 2004	33	625	1516	9.00 MB
08 Oct 2004	24	115	345	1.64 MB
09 Oct 2004	19	66	137	750.62 KB
10 Oct 2004	11	53	89	334.08 KB

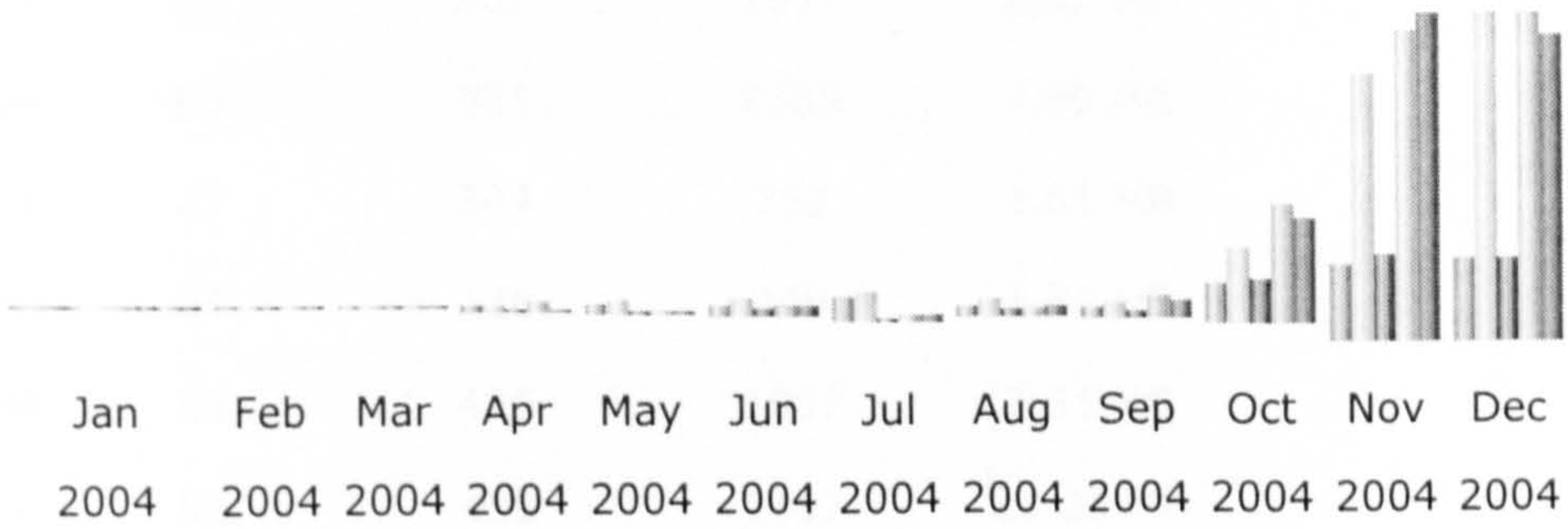
11 Oct 2004	27	109	242	1.86 MB
12 Oct 2004	14	140	570	1.81 MB
13 Oct 2004	22	528	1889	7.62 MB
14 Oct 2004	32	1142	3061	12.41 MB
15 Oct 2004	10	101	157	1.21 MB
16 Oct 2004	3	59	68	553.17 KB
17 Oct 2004	6	11	25	157.64 KB
18 Oct 2004	12	103	242	2.81 MB
19 Oct 2004	6	27	44	233.04 KB
20 Oct 2004	13	108	373	1.27 MB
21 Oct 2004	24	640	1776	10.29 MB
22 Oct 2004	36	1173	2337	8.97 MB
23 Oct 2004	39	120	256	1.51 MB
24 Oct 2004	9	29	50	389.08 KB
25 Oct 2004	11	20	47	166.49 KB
26 Oct 2004	10	40	77	504.56 KB
27 Oct 2004	9	471	1158	6.79 MB
28 Oct 2004	27	731	1622	8.19 MB
29 Oct 2004	66	1215	2880	11.41 MB
30 Oct 2004	11	825	4180	6.71 MB
31 Oct 2004	16	519	1596	4.84 MB
Average	18.65	323.90	884.94	3.69 MB
Total	578	10041	27433	114.33 MB

Summary					
Reported period	Month Nov 2004				
First visit	01 Nov 2004 - 01:18				
Last visit	30 Nov 2004 - 23:55				
	Unique visitors	Number of visits	Pages	Hits	Bandwidth

Traffic viewed *	**575**	**2101** (3.65 visits/visitor)	**19613** (9.33 pages/visit)	**72865** (34.68 hits/visit)	**355.40 MB** (173.21 KB/visit)
Traffic not viewed *			**4674**	**7691**	**12.94 MB**

* Not viewed traffic includes traffic generated by robots, worms, or replies with special HTTP status codes.

Monthly history



Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2004	0	0	0	0	0
Feb 2004	5	5	8	23	6.84 KB
Mar 2004	12	23	125	679	809.02 KB
Apr 2004	45	56	279	1917	3.16 MB
May 2004	60	92	373	519	1.30 MB
Jun 2004	64	114	889	2173	9.89 MB
Jul 2004	171	222	601	1049	4.30 MB
Aug 2004	65	131	901	1463	9.35 MB
Sep 2004	69	99	1464	4515	18.47 MB
Oct 2004	293	578	10041	27433	114.33 MB
Nov 2004	575	2101	19613	72865	355.40 MB
Dec 2004	645	2561	18795	76345	335.20 MB
Total	2004	5982	53089	188981	852.21 MB

30 Nov 2004	81	473	1509	7.86 MB
Average	70.03	653.77	2428.83	11.85 MB
Total	2101	19613	72865	355.40 MB

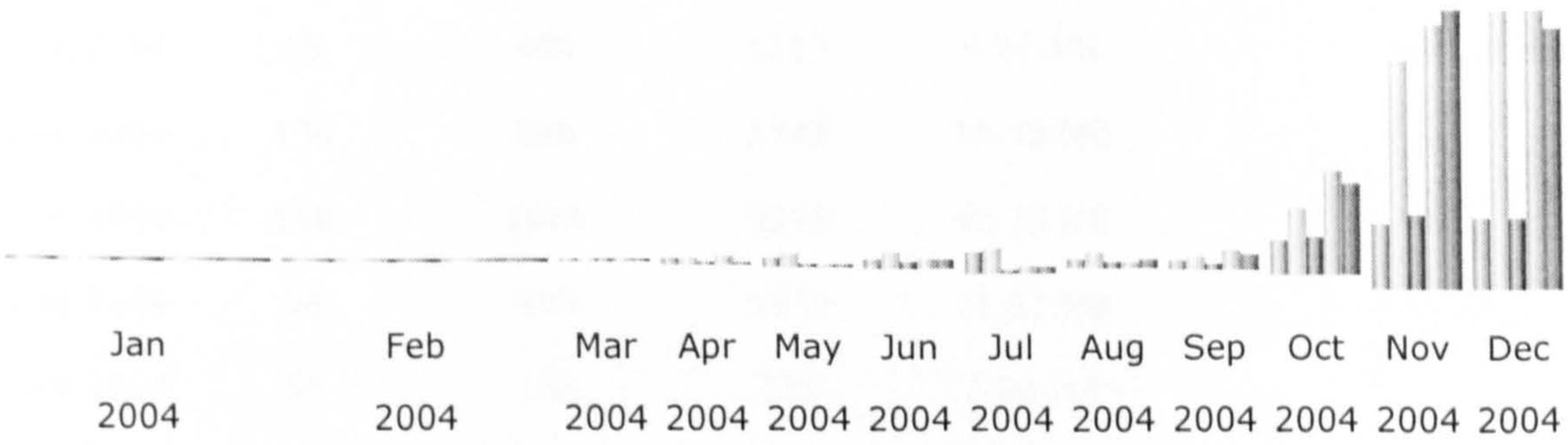
Summary

Reported period	Month Dec 2004
First visit	01 Dec 2004 - 00:00
Last visit	31 Dec 2004 - 23:36

	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Traffic viewed *	**645**	**2561** (3.97 visits/visitor)	**18795** (7.33 pages/visit)	**76345** (29.81 hits/visit)	**335.20 MB** (134.02 KB/visit)
Traffic not viewed *			**7172**	**8510**	**27.59 MB**

* Not viewed traffic includes traffic generated by robots, worms, or replies with special HTTP status codes.

Monthly history



Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2004	0	0	0	0	0
Feb 2004	5	5	8	23	6.84 KB
Mar 2004	12	23	125	679	809.02 KB
Apr 2004	45	56	279	1917	3.16 MB

May 2004	60	92	373	519	1.30 MB
Jun 2004	64	114	889	2173	9.89 MB
Jul 2004	171	222	601	1049	4.30 MB
Aug 2004	65	131	901	1463	9.35 MB
Sep 2004	69	99	1464	4515	18.47 MB
Oct 2004	293	578	10041	27433	114.33 MB
Nov 2004	575	2101	19613	72865	355.40 MB
Dec 2004	645	2561	18795	76345	335.20 MB
Total	2004	5982	53089	188981	852.21 MB

Days of month

Day	Number of visits	Pages	Hits	Bandwidth
01 Dec 2004	103	1011	4181	19.90 MB
02 Dec 2004	155	1173	3935	25.06 MB
03 Dec 2004	102	461	1555	10.95 MB
04 Dec 2004	63	213	508	5.00 MB
05 Dec 2004	78	259	877	3.71 MB
06 Dec 2004	40	213	783	4.69 MB
07 Dec 2004	85	409	1213	6.56 MB
08 Dec 2004	139	896	2348	16.33 MB
09 Dec 2004	150	1826	9218	32.73 MB
10 Dec 2004	98	585	1939	11.31 MB
11 Dec 2004	55	153	321	2.08 MB
12 Dec 2004	122	835	4050	12.91 MB
13 Dec 2004	47	265	1146	4.49 MB
14 Dec 2004	83	304	1425	6.07 MB
15 Dec 2004	105	953	5558	15.04 MB
16 Dec 2004	79	727	4130	17.06 MB
17 Dec 2004	49	473	1261	8.91 MB
18 Dec 2004	39	233	1176	3.53 MB

19 Dec 2004	53	419	1694	7.57 MB
20 Dec 2004	48	210	870	3.20 MB
21 Dec 2004	47	226	1353	3.40 MB
22 Dec 2004	88	502	1850	10.44 MB
23 Dec 2004	130	1105	6220	20.36 MB
24 Dec 2004	98	608	3024	7.98 MB
25 Dec 2004	39	148	620	3.13 MB
26 Dec 2004	66	541	2576	9.55 MB
27 Dec 2004	67	298	1162	6.15 MB
28 Dec 2004	60	177	565	3.14 MB
29 Dec 2004	51	488	2170	7.10 MB
30 Dec 2004	120	1141	3635	22.08 MB
31 Dec 2004	102	1943	4982	24.76 MB
Average	82.61	606.29	2462.74	10.81 MB
Total	2561	18795	76345	335.20 MB

Summary

Reported period	Month Jan 2005
First visit	01 Jan 2005 - 00:02
Last visit	31 Jan 2005 - 23:57

	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Traffic viewed *	**1085**	**3438** (3.16 visits/visitor)	**9824** (2.85 pages/visit)	**21678** (6.3 hits/visit)	**175.24 MB** (52.19 KB/visit)
Traffic not viewed *			**8182**	**8389**	**58.12 MB**

Not viewed traffic includes traffic generated by robots, worms, or replies with special HTTP status codes.

Monthly history

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2005	1085	3438	9824	21678	175.24 MB
Feb 2005	907	2567	6008	9608	80.76 MB
Mar 2005	69	117	214	331	2.36 MB
Apr 2005	927	3991	9202	13155	133.96 MB
May 2005	741	2884	5741	7445	57.37 MB
Jun 2005	579	2578	5586	6680	49.26 MB
Jul 2005	327	2040	3824	4697	23.22 MB
Aug 2005	432	2457	5453	6373	32.00 MB
Sep 2005	677	3270	6779	7708	42.13 MB
Oct 2005	825	3605	7623	8565	53.94 MB
Nov 2005	670	3324	9950	11017	75.22 MB
Dec 2005	660	3520	10761	12433	66.61 MB
Total	7899	33791	80965	109690	792.07 MB

Days of month

Day	Number of visits	Pages	Hits	Bandwidth
01 Jan 2005	45	132	359	2.25 MB
02 Jan 2005	106	276	1065	5.83 MB
03 Jan 2005	86	219	731	3.31 MB
04 Jan 2005	88	298	859	5.23 MB
05 Jan 2005	122	329	987	5.53 MB
06 Jan 2005	151	575	1600	12.43 MB
07 Jan 2005	192	788	1553	11.41 MB
08 Jan 2005	161	552	1286	11.89 MB
09 Jan 2005	102	230	460	4.86 MB
10 Jan 2005	154	420	1103	8.06 MB

11 Jan 2005	164	538	1285	9.67 MB
12 Jan 2005	122	366	957	7.42 MB
13 Jan 2005	68	216	582	3.52 MB
14 Jan 2005	88	195	287	3.00 MB
15 Jan 2005	104	276	653	5.23 MB
16 Jan 2005	77	252	499	5.09 MB
17 Jan 2005	144	260	349	2.51 MB
18 Jan 2005	146	315	419	3.80 MB
19 Jan 2005	119	372	932	5.30 MB
20 Jan 2005	135	437	605	5.28 MB
21 Jan 2005	127	315	510	6.81 MB
22 Jan 2005	106	229	343	4.25 MB
23 Jan 2005	110	386	761	6.69 MB
24 Jan 2005	124	397	574	5.86 MB
25 Jan 2005	132	359	466	6.18 MB
26 Jan 2005	57	108	234	3.70 MB
27 Jan 2005	82	170	248	2.56 MB
28 Jan 2005	72	192	523	3.78 MB
29 Jan 2005	60	139	238	2.48 MB
30 Jan 2005	69	204	762	4.56 MB
31 Jan 2005	125	279	448	6.77 MB
Average	110.90	316.90	699.29	5.65 MB
Total	3438	9824	21678	175.24 MB