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**ENGLISH FOR SPECIFIC PROGRAMS (ESP), WITH AND WITHOUT
COMPUTER-ASSISTED LANGUAGE LEARNING (CALL), FOR
TAIWANESE COLLEGE STUDENTS**

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

Lynn University

By

Chia-Hui Lin

2007

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**ENGLISH FOR SPECIFIC PROGRAMS (ESP), WITH AND WITHOUT
COMPUTER-ASSISTED LANGUAGE LEARNING (CALL), FOR
TAIWANESE COLLEGE STUDENTS**

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Lynn University, 2007

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Abstract

Computer-assisted Language Learning (CALL) has become a trend for languages learners studying in schools and home. CALL enables English language learners to learn in flexible time and places, to study using the technology in the digital environment.

English for Specific Purposes (ESP) learners, some ESP learners in Taiwan need to study particular English areas, so CALL can assist in improving ability. However, when ESP learners learn, CALL effectiveness can become a problem. The topic area was to explore the effectiveness of CALL approaches for different types of ESP programs, with applications in Taiwan in order to understand the effectiveness of CALL programs. In addition, other factors, such as learners' characteristics, socio-cultural and national individuality of primary language, instructor characteristics, instructional design uniqueness and environment for learning were also explored.

This research study used a quantitative, causal-comparative (exploratory) and correlational (explanatory) design. The correlational design tested hypotheses about the explanatory relationship among background demographic characteristics, attitudinal characteristics, instructional learning environment, and ESP course satisfaction for Taiwanese college students participating in ESP programs with CALL, and ESP programs without CALL. Three surveys of attitude/motivation test battery (AMTB), constructivist learning environment survey (CLES), course interaction, structure, and support (CISS) were used in the research. The accessible population was 236 participants, resulting in a response rate of 92.37%. The participants were college students in two colleges in Taiwan.

According to this study, students' relationship of student background demographic characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction in the ESP with and without CALL had significant difference. The study provided evidence that Taiwanese students still prefer learning English without CALL programs and a recommendation for future study.

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CHAPTER I

INTRODUCTION TO THE STUDY

Introduction and Background to the Problem

There are over one billion people learning English in the world for different reasons (Beare, 2006). English for Specific Purposes (ESP) is language instruction for learners who generally need immediate language competency to successfully perform in real-life tasks or jobs in the diversity in order to obtain specific or professional purposes. ESP learners usually have acquaintance with English, but need more concentration on language grammar and English structure. ESP integrates the subject areas into the real world for the learners (Fiorito, 2005).

However, the problem teachers face is that teaching ESP for language learners is a time-consuming task (Smoak, 2003). Recently, Computer-assisted Language Learning (CALL), which can relate to learners with special interest areas, has become prevalent in schools of all levels. Computers have been used in homes, schools, and organizations. Learners can learn English from the Word Wide Web, internet, and computer software, etc, in order to attain learners' purpose of English language learning. Language teachers are challenged to integrate CALL into the digital education environment (Lacina, 2004).

Telecommunication tools have become prevalent for English language learners to communicate with each other, and then to share and build their reactions on the Internet (Cifuentes & Shin, 2001). In Taiwan, due to joining the World Trade Organization, The Ministry of Education (MOE) spurred the improvement of citizens' English proficiency. Taiwan Ministry of Education wished to build a bridge across from Taiwan and to the world to boost the Taiwanese English proficiency (Taipei Times, 2003). However,

English language learners lack a real environment to speak English in Taiwan. Due to most people using Chinese to communicate in many situations, there is rarely an English-speaking environment for people to communicate in the real world in Taiwan. In particular, one-on-one time to practice English is limited.

More and more students desire to learn English language, but not sufficient teachers to teach English language in the classroom (Cifuentes & Shin, 2001). The Ministry of Education has planned to enhance English proficient in recent years, so there is a high demand in Taiwan for teachers of English as a second language. Unfortunately, there is a shortage of Taiwanese English teachers trained in Taiwan (Taipei times, 2003). The Ministry of Education plans to hire at least 1,000 teachers from English speaking countries each year. However, due to the Employment Services Act in Taiwan, foreign teachers' ages must under 45 and come from an English speaking country where English is the mother language. Foreign teachers must have college degree in linguistics-related fields and be fluent at in basic Mandarin Chinese, and have no bad record of drug abuse (Taipei Times, 2003). Some people have questioned who (foreigners) can qualify to be hired in Taiwan (Taipei Times, 2003). Not only foreigners need to qualify all of the immigration laws, but also their lifestyle will change (Simmons, 2005).

In Taiwan, even non-English major students need to take an ESP course in college (Huang, 1998). Computers have, therefore, become a tool for English language learners to utilize in ESP (Chang, Wu, & Ku, 2005). According to Stein (1996), the population of English language learners is increasing six to seven percent each year (as cited in Carrillo, 2004). English has been widely used and is a major communication language in the world.

English language learning is still increasing and becoming the dominant language in the world (Riemer, 2002).

Purpose

The primary purpose of this non-experimental, quantitative, causal-comparative (exploratory), and correlational (explanatory) survey research was to examine the relationship among ESP with CALL or without CALL, learning environment, student background demographic characteristics, attitudinal characteristic, and student satisfaction in Taiwan college students, where students satisfactions was an indicator of program effectiveness. There were four specific purposes of this study, including one descriptive, two exploratory, and one explanatory.

1. A descriptive purposes was to describe the student background demographic characteristics, attitudinal characteristic, learning environment and outcomes (student satisfaction) of second language learners participating in ESP programs (with and without CALL) for Taiwanese college students.
2. The first exploratory, comparative purpose was to describe the difference in student background demographic characteristics, attitudinal characteristic, learning environment and outcomes (student satisfaction) of second language learners participating in ESP programs (with and without CALL) for Taiwanese college students.
3. An explanatory purpose was to explain the relationships among student background demographic characteristics, attitudinal characteristics, learning environment, and student satisfaction for second language learners participating

in ESP programs with CALL and ESP programs without CALL for Taiwanese college students.

4. The second explanatory, comparative purposes was to determine if ESP programs with CALL provide a greater explanation of the relationship between for Taiwanese college students background, attitudinal characteristics, perception of instructional learning environment, and ESP satisfaction for second language learners than ESP programs without CALL.

Definition of Terms

In this study, variables analyzed as causal (attribute or independent) or dependent variables, depending upon the research purpose. For the comparative purposes of this study, the independent variables were ESP programs with or without CALL where all other variables were dependent. For the explanatory purpose of this study, student satisfaction was analyzed in explanatory models as a dependent variable.

Foreign Language Learners

Theoretical Definition

Foreign language learners are people studying languages in addition to their native tongues (Schutz, 2005). People learn foreign language after their first mother language (Loomis, 2007).

Operational Definition

In this study, second language learners referred to college students in two colleges in Taiwan: National Chin-Yi Institute of Technology and Central Taiwan University of Science and Technology. The colleges students' age were at least 18 years old.

ESP programs

Theoretical Definition

English for Specific Purposes (ESP) are programs designed to “meet specific needs of the learners” (Wei, 2004, p. 2). There are four skills to be developed in the ESP learner: speaking, listening, writing, and reading (Thirumalai, 2006). There are three types of ESP programs: (a) English as restricted language; (b) English for academic and occupational purposes; and (c) English with specific topics (Carver, 1983).

Operational Definition

All the participants were ESP programs students in the two colleges who took the survey in the Study (see Appendix E).

CALL Participants

Theoretical Definition

Computer-assisted Language Learning (CALL) is “the field concerned with the use of the computer tools in the second language acquisition” (Hacken, 2003, p. 23)

Operational Definition

Measured by a yes or no question: “In your present English language learning classroom, please indicate if you used computer-assisted language learning” (Appendix B).

Taiwanese Students Background Characteristics

Theoretical Definition

Background characteristics include: age, gender, marital status, region of residence, level of education, religion and ethnicity (Zimbler, 2001).

Operational Definition

Students background characteristics included: code number, gender, age, parents highest level of education, house income by family, hours of enrollment in language programs, hours of used the computer each week in the English language programs classroom (Appendix B).

Attitudinal Characteristics

Theoretical Definition

Attitudes toward the learning situation refer to “affective reactions to any aspect of the class and could be assessed in terms of class ‘atmosphere’, the quality of the materials, availability of materials, the curriculum, the teacher, etc” (Gardener, 1985, p. 10).

Operational Definition

In this study, *attitudinal characteristics* were measured by the 20 items of the 130 items. Attitude/Motivation Test Battery (AMTB), developed by Gardner (1985) as shown in the Initial Survey, Part 2. The scale was modified in Mandarin from its original version in French. The subscales include integrativeness, attitudes toward the learning situation, motivation, attitude/ motivation. The researcher used the subscale: attitude/motivation. (Appendix C, Part 2).

Learning Environment

Theoretical Definition

According to Piccoli, Ahmad, and Ives (2001), learning environments are described “in terms of time, place, and space” (p. 406), and the learning environment includes three dimensions: interaction, control, and technology. The learning

environment refers to the type of learning task, classroom psychosocial environment, and virtual spaces found in computer applications and on the Internet (Walker, 2003).

Operational Definition

In this study, *learning environment* measured by Constructivist Learning Environment Survey (CLES) developed by Taylor and Fraser (1991). *Learning environment* would be measured by the 14 items of the 35 items. The instrument translated into Mandarin. The subscales include personal relevance, student negotiation, shared control, critical voice, and uncertainty with items rated on 5-point frequency rating scale. The researcher used the subscale: share control (7 items) and critical voice (7 items). The researcher used 14 items which are shown in Appendix C Part 3.

Program Effectiveness: Satisfaction

Theoretical Definition

“Satisfaction is the state felt by a person who has experienced a performance (or outcome) that has fulfilled his or her expectations. Satisfaction is thus a function of relative levels of expectation and perceived performance” (Hom, 2002, ¶ 6). Satisfaction “relates to perceptions of being able to achieve success and feeling about the achieved outcomes” (Johnson, Aragon, Shaik, & Palma-Rivas, 2000, p. 32).

Operational Definition

In this study, *satisfaction* was in Part-3 Survey by CISS (Course Interaction, Structure, and Support) scale which developed by Johnson, Aragon, Shaik, and Palma-Rivas (2000). *Satisfaction* was measured by the 11 items of the 31 items. The instrument translated into Mandarin. The subscales include interaction; structure; and support. The researcher used the subscale interaction, 11 items and is shown in Appendix C, Part 4.

Justification

The topic of ESP programs with or without CALL approaches with applications in Taiwanese is of global interest (Blok, Oosdam, Otter & Overmaat, 2002; Piccoli, Ahmad, & Ives, 2001; Kim 2004; Pray, 2005; Carter, Ferzli & Wiebe, 2004; Kolb, 1984; Dunn & Dunn, 1993; Savignon & Wang, 2003). In the study, there were some problems discussing about (a) ESP students learn with computer-assisted language learning (CALL) or without CALL (b) learning environment may affect the ESP students' learning, (c) ESP students attitudes to learn the second language, and (d) students 'satisfaction learning the second language with computer and without computer for Taiwanese college students. The literature gaps were that there were no literatures found ESP programs with or without CALL in Taiwan. There were no empirical study explore the relationship among ESP, CALL, learning environment, attitudinal characteristics, satisfaction and learning gains for Taiwanese students.

The dissertation is worth studying because the population learning English is still growing. Due to the globalization, people of different nationalities in different countries need to communicate with each other. Learning the English language has become a trend in order to keep up with other people in such a competitive society. The study was researchable because the study contained several research questions and hypotheses and all variables were measured. The study was feasible because it could be implemented in a reasonable amount of time, subjects were available, and concepts in the theoretical framework were measured. All variables could be analyzed by statistical analyses to answer research questions and hypotheses in this study.

Delimitation and Scope

1. College students attended two universities in Taiwan (National Chin-Yi Institute of Technology, and Central Taiwan University of Science and Technology);
2. College students were enrolled in the ESP programs; and
3. College students who were at least 18 years of age.

Organization of the Study

Chapter I reported an introduction to the study, including background to the problem, the purpose of the study, the definition of terms, justification, and the delimitations and scope.

Chapter II offered in depth review of English language learning, English for specific purposes (ESP), computer-assisted language learning (CALL), indicators of the CALL program effectiveness, effectiveness of CALL programs, effectiveness of CALL programs according to different types of English for specific purposes programs, influence of learner, socio-cultural, and industrial characteristics on the effectiveness of CALL programs, theoretical framework, research questions and hypotheses.

Chapter III presented research methodology, including the research design, population and sampling plan, the instruments, procedures and ethical aspects, methods of data analysis, and evaluation of research methods.

Chapter IV reported the results of research questions and research hypotheses, and background demographic characteristics. Chapter V offered discussion, interpretations, practical implications, conclusions, limitation, and recommendations for future study.

CHAPTER II

LITERATURE REVIEW, THEORETICAL FRAMEWORK, RESEARCH QUESTIONS, AND HYPOTHESES

Review of the Literature

English Language Learning

Overview

The English language has been used widely in the world, and English has become the most prevalent language in many countries (Riemer, 2002). English is the dominant language in some countries due to immigration and settlement. Additionally, many university level courses have increased English online programs in Western countries (Riemer, 2002).

ESP meets diverse needs of English language learners and may improve English language training in globalization education (Riemer, 2002). “ESP focuses the learner’s attention on the language and communication requirement in a particular professional field” (Riemer, 2002, p. 93), ESP teachers should select suitable materials from reliable and valid sources for language learners to use in order to achieve specific needs (Riemer, 2002). According to European students’ recently surveyed, the English language is a needed skill for an international career, which means English still has strong relevance now and in the future. English language skills play an important role in facilitating people being able to communicate with each other (Riemer, 2002).

In 2001, educational reform policies on “nine-year integrated curricula” were formalized in Taiwan. The policy focuses on integrating information technology into all

subjects so that students will have more motivation to improve learning of various subject matters and acquire more computer skills (Chang, Wu, & Ku, 2005). Taiwan authority's claims that local English teachers have to be recruited and trained, and native English speaker teachers also must be employed. Most of the teaching materials must be re-edited and re-written in order to face globalization (Yung, 2002).

Students learning English have three main objectives: (a) interest in learning English; (b) basic acquisition of communication skills; and (c) understanding the native culture and target culture language (Yen, 2005). Communicative language teaching (CLT) has been selected by the MOE for instructors to teach English in Taiwan (Yen, 2005). The theory of CLT is communicative competence (Huang & Liu, 2000). Students not only just learn grammar and linguistic structure; they also need to know how to use the language properly in daily life. CLT emphasizes communicative activities for students (Huang & Liu, 2000). Furthermore, people teaching and learning the English language can utilize CALL programs, such as multimedia programs for second language learners, web-based programs, CALL authoring programs, pronunciation programs, word processing, grammar checkers, and CD versions of encyclopedia and dictionaries (Daview, 2002). However, Taiwan is an isolated island in Asia and the official language is Mandarin Chinese. Taiwanese learners studying English do not have many opportunities to communicate with native English speakers. Additionally, Taiwanese learners studying English are limited due to the shortage of English teachers in Taiwan. So, one-on-one practice of English is difficult to accomplish in Taiwan.

Factors Influencing English Language Learning Proficiency

Many factors could influence English language learners acquisition, such as personality, cognitive style, learners' educational background, learning style, first language, English literacy level, and motivation (An International Education Association, 1996). Some factors also that may impact English language learning proficiency "qualify of previous education, prior English learning experiences, and literacy of the family, socioeconomic status, mobility, family displacement, cultural isolation, and exposure to social unrest or war" (An International Education Association, 1996, p. 2).

Park (2002) conducted a study of the different cultures of secondary school English learners and their learning styles. Park designed a non-experimental, causal comparative, quantitative study with a population of 857 American, Hmong, Korean, and Vietnamese students in California schools, to examine learning styles preferences in diverse students, gender roles, achievement levels, and the length of residence in the United States. Parks' literature review was thorough. Empirical studies of English learners' learning style performances were examined, leading to the major gap of ESL students strongly preferred tactile and kinesthetic learning as educational strategies. Park's study tested the proposition of input and interaction processes developed in the 1980s through post-Chomsky studies (Park, 2002).

A non-probability, purposive sampling plan resulted in a final data-producing sample of 812 cases, a response rate of 87.6%. Reid's (1987) five-Point Likert-type scale was used to measure six learning style preferences, and students' self reports of grade point averages measured achievement. Reliability estimates were not reported for Reid's scale. Validity was reported for the "self-report of grade point average". Data collection

procedures were clearly described, and the study was not approved by IRB. MANOVA with post hoc Scheffe comparisons supported the hypothesis of learning style preferences for students with diverse ethnic and cultural backgrounds, different learning styles preferences to students' achievement levels, and the length of residence in the United States, but did not support the hypothesis of gender factor.

Park's (2002) interpretation of these findings was that learning style preference effected students' performance level. This led to the conclusion was that there was significance in the learning style of secondary English learners needing a variety of instructional strategies. The implication for teachers was to use more effective visual materials for English learners and to teach students with different learning strategies, so that students can meet their different needs and improve performances. A limitation reported by Park was that there was no random sample selected. Park's recommendation was that "further research would be necessary to identify other learning style preferences of these groups in addition to these basic learning styles examined in the study" (Park, 2002, p. 225).

Park's (2002) findings were consistent with the second language acquisition (SLA) theory. Internal validity strengths of this study were in hypothesis testing of propositions in SLA theory. There were no reliability and validity estimates of Reid's instrument, which was a weakness in the study's internal validity. With results in a high level of data quality, MANOVA data analysis contributed to internal validity, as did clearly defined procedures allowing replication. The external validity strengths were weak due to non-probability sampling. However, several different cultures group were compared. A limitation in the study was focusing only on young secondary English learners. Future

studies should include reliable and valid instruments (and include the discussion of these psychometric qualities of instruments in studies), use a probability sampling plan, and focus on different age groups of people and ethnic backgrounds of English language learners.

English for Specific Purposes

Following the Second World War, the United States had the greatest economic, technical and scientific power, so the international language became English (Nodoushan, Birjandi, & Alavi, 2002). In 1970, the money and knowledge went to oil-rich countries and Western countries, continuing to support English as the primary language (Nodoushan et al., 2002). In addition, due to the linguistics revolution, in 1987, Hutcginson and Waters discussed the difference between written and spoken English, which means for learners, there were specific contexts of language (Nodoushan et al., 2002). Learners can focus on their different needs to study ESP, and this led to the emergence of ESP (Nodoushan et al., 2002).

Dudley-Evans defined ESP (2000):

1. ESP is defined to meet specific needs of the learners;
2. ESP makes use of underlying methodology and activities of the discipline it serve; and
3. ESP is centered on the language appropriate to these activities in terms of grammar, lexis, register, study skills, discourse and genre teachers can teach students different learning strategies, so that students can meet their different needs and then improve their performances (p. 2).

ESP has a variety of characteristics, such as the ability to be designed for specific disciplines, and the ability to be used for specific teaching from general English. ESP is likely to be designed for professional workers, adult learners, and advanced students. In 1983, Carvers identified three types of ESP: “English as a restricted language, English for academic and occupational purposes (EAOP), and English for specific topics” (Nodoushan et al., 2002 p. 6). English as a restricted language means those learners can learn some limited and specific English to be applied in various specific areas. Carvers recommended that English for academic and occupational purposes should become the heart of ESP (Nodoushan et al., 2002).

In this context, there are three branches in ESP: “English for science and technology (EST), English for business and economics (EBE), and English for social studies (ESS)” (Nodoushan et al., 2002, p. 7). Each of the branches is further divided into two areas: English for academic purposes (EAP) and English for occupational purposes (EOP). In 1987, Hutchinson and Waters claimed that the distinction between EAP and EOP is not clear, due to the fact that some people may work and study at the same time or learners can study first and then go back to their jobs. The purpose of EAP and EOP is the same: employment. This model also can be applied to other languages.

“English for specific purposes (ESP) is founded on the linguistic theories of John Swales developed in 1986 and 1990” (Carter, Ferzli, & Wiebe, 2004, p. 399). In 1987, Hutchinson and Waters theorized ESP to be “an approach language teaching in which all decisions as to content and method are based on the learner’s reason for learning” (Nodoushan et al., 2002, p. 5). ESP is based on the specific need of the learners (Ayala, 1997). In 1998, Dudley-Evans and St. John identify five key roles for the ESP

practitioner: (a) collaborator; (b) researcher; (c) course designer; (d) material provider; and (e) teacher and evaluator (Gatehouse, 2001).

There are five major concepts underlying ESP theory: (a) authenticity: in 1984, Coffey claims that the main ESP consideration is authenticity that includes authentic task and texts. The concept of authenticity was a central approach to acquiring reading skills; (b) the second ESP concept is research-base: in 1990, Swales explained that the ESP research-base is reviewing the literature of ESP that rely on a number of data bases (textual); (c) the third ESP concept is language/text: ESP includes various kinds of grammar, vocabulary, and language for learners to acquire for specific purposes; (d) the fourth ESP concept is need: ESP is driven by language learners' specific learning needs; and (e) the fifth ESP concepts is learning/methodology: ESP itself is not methodology. ESP uses materials to make the language learning process more interesting to learn the language (Nodoushan et al., 2002). Those concepts integrate to become the Swales Creating a Research Space Model (CARS) model.

There are three areas of ESP theory which influence ESP development: (a) corpus analysis; (b) systemic functional linguistic; and (c) genre analysis (Hewings, 2005). In 1998, Dudley-Evans and St. John noted that ESP theory was based on the two basic needs of ESP students: "(1) to satisfy the needs-related nature of the teaching and (2) to disentangle the specific nature of the texts that learners require knowledge of" (Duley-Evans, 2000, p. 143). The major proposition this theory identified is the explanatory proposition that ESP interacts with five concepts that have been described above. This theory has been adapted to psycho-technical language pedagogy and sociolinguistics

(Wiwczarowski & Magdolna, 2001). In 1990, CARS was among concepts described by Dudley-Evans which continue to be examined nowadays (Dudley-Evans, 2000).

The ESP theory is socially significant; addressing the important issues about language needs in the field of ESP, and is useful in explaining, and predicting among those disciplines. Furthermore, ESP theory also represents a high-quality balance between simplicity and complexity, contributing to its usefulness. This is a predominant theory used to examine whether students use learning methodology and text to achieve ESP learning. The theory has a well-developed proposition. The strength of the ESP theory is that it can be adaptable to second language learners with different purposes to learn English. ESP also can be used to acquire specific skills that can be practiced in many areas.

Computer Assisted Language Learning (CALL)

CALL has developed into three phases: (a) behaviorist CALL; (b) communicative CALL; and (c) integrative CALL (Jacko & Sears, 2002). The theory is organized by the three major constructs: (a) the computer as tutor; (b) the computer as stimulus; and c) the computer as a tool. CALL is defined as “the field concerned with the use of computer tools in second language acquisition” (Hacken, 2003, p. 23).

The first phase of CALL development occurred during the decades of the 1960s and 1970s, i.e., behaviorist CALL. This stage is based on the “dominant behaviorist theories of learning”, and during the 1970s, CALLS programs focused on “drill and practice”. Taylor described the courseware in 1980 as based on the CALL model of “*computer as tutor*,” where students received instructional material from the computer, and only needed to find the correct answers. CALL drills are still being used today with

the same materials and learning strategies. A computer is still providing the same drills and non-judgmental feedback, so students can study at their own pace and at flexible times. A famous computer tutor system is the PLATO system, which includes translations tests, vocabulary and grammar explanation drills (Warschauer, 1996).

A second phase of CALL development is Communicative CALL and occurred in the 1970s and 1980s. Many programs were developed and utilized with the computer. In 1984, Underwood advocated new approaches in communicative CALL: (a) not repeating what books presented to students; (b) not judging or evaluating students; (c) teaching grammar indirectly rather than explicitly; and (d) encouraging students to use their own original utterance language rather than prefabricated language (Warschauer, 1996). Taylor and Perez (1989) described the CALL model as communicative CALL connected with the “*computer as stimulus*”. The purpose of these computer programs includes stimulating critical thinking, writing, and discussion of ideas among students (Warschauer, 1996). During the second phase of CALL development, Briereley and Kemble (1991) identified the third CALL model in communicative CALL, “*the computer as tool*”. Several computer programs help language learners understand or utilize language, such as spelling and grammar “checkers” in word processing software. However, critiques of CALL noted that communicative CALL did not satisfy multimedia society (Warschauer, 1996).

The third phase of CALL development is Integrative CALL, in which the Internet is used with the computer, occurring in the 1990s to the present. In this phase, people can use email and communicate with each other directly at the same time worldwide. In addition, Integrative CALL has become very convenient and inexpensive, and also

includes audio-visual chatting or net phones. Integrative CALL has been also used by EFL students as technological tools. International learners could discuss or share their knowledge together (Warschauer, 1996).

Patrick Suppes (1960) developed computer-assisted instruction (CAI). The CALL was conceived in 1950 and practiced in 1960 by Don Bitzer while starting PLATO-Programmed Logic for Automatic Teaching Orientation (Anthony, Li, & Woodson, 1997). CALL is a theory of language acquisition (Egbert, Chao, & Smith, 1999).

Levy reiterates that theory must come from four different types of knowledge: (a) a theory of language learning; (b) a theory of instructional design; (c) a theory of applicability of technology; and (d) a theory of language teaching (Hacken, 2003). The CALL model includes input-process-output: (a) input of the concept being the goal of instruction; (b) process being the concept of instruction development; and (c) output is being the concept goal of the program. Input and process are dependent on the output.

There are two strands to the theoretical framework about CALL: “one strand is guided by developers who rely on intuition rather than on research on learning. The other strand is guided by cognitive psychology and second language acquisition theories” (Villada, 2001, para. 5). There are three elements in the learning theory: (a) communication principles which involve real communication and promote learning; (b) task principles which include language carrying out meaningful tasks; and (c) meaningful principles involve language that is meaningful to the learner (Hammerl, 2003). Language theory’s central aspect is communicative competences which are “1. grammatical competence, 2. sociolinguistic competence, 3. discourse competence, and 4. strategy competence” (Hammerl, 2003, p. 10). In addition, a theory of language teaching starts

from a communicative model of language and language use. Those theories of language learning interact with each other; teachers can include these theories in the classroom methods (Hammerl, 2003).

The major proposition in this theory identified CALL interacting with second language acquisition. This theory has been revised and adapted by Natural Language Processing (NLP) techniques and Technology Enhanced Language Learning (TELL) (Yang, & Akahori, 1997). The field of CALL approaches is based on information theory and second language acquisition theory. In 1990, Papert developed a pedagogical model and Hacken and Smith who mentioned a CALL theory that was based on a pedagogical model which continues to be examined today.

There are three pedagogical frameworks: (a) participatory: “at the broadest level are participatory learning environment, with the central defining feature being that students are actively involved in their learning process” (Barab, Hay, Barnett & Keating, 2000, p. 722); (b) project-based: “we have found project-based learning environments, with their emphasis on a defining tasks or project that provide the motivational and conceptual anchor, to be particularly useful for engaging students” (Barab, et al., 2000, p. 722); (c) constructionist: focus on students build collaborative artifacts (Barab, et al., 2000). In these environments, teachers facilitate or guide students learning instead of directly giving them the answers. This model is socially significant, addressing the important issues about CALL in the discipline of language learning, and is useful in explaining, and predicting among those with computer-assisted language learning. The model represented a high-quality balance between simplicity and complexity, contributing to its usefulness.

The CALL theory has been adapted to second language acquisition and learning. The CALL theoretical framework is adequately described, but this theory has many propositions. The major gap for the theoretical literature is that there is not a reliable conceptual framework to develop CALL, and there is poor linguistic modeling and a lack of learners' perspective for CALL (Villada, 2001). According to a meta-analysis of research conducted on CALL programs from 1990-2000 (Liu, Moore, Graham & Lee, 2002), the following issues need to be addressed:

1. research requires a solid theoretical foundation;
2. software must be based on pertinent design principles;
3. future studies need to use valid and reliable instruments; and
4. more research is needed in the skills areas of speaking, listening, and culture.

Future studies should be aware of CALL development and advances in the direction of language learning, taking into consideration the strategies of CALL facilitated learning, as well as learners' variables and discussions of CALL conceptualization. (Vallida, 2001)

Indicators of CALL Program Effectiveness

Measurement of English Language Learning Gains

Learner gains can be directly measured through tests, homework, papers, etc., and indirectly by course evaluation and learners' grades (Xiangping, 2003). Teachers usually find the most useful way to assess students' achievement through testing. Tests are viewed for language learners' progress and feedback (Hancock, 1994). Many times decisions are based on learners' test performance. For English language learners, the purpose of a test is to measure the students' language ability and achievement (Abedi & Dietel, 2004).

There are some instruments that can measure English language learning gains, such as the *Computer-Assisted Language Test (CALT)*, which integrates the performance of language learners. Bennett & Rock (1995) and McBride & Martin (1983) studied the reliability and validity of CALTs. Such studies of CALT will conduct and develop the instrument's reliability and validity in the future.

The *Test of Phonological Awareness (TOPA)* is a group-administered test of phonological awareness of the learner. TOPA has internal consistency reliability, test and retest reliability, and the predictive validity of TOPA.

The *Woodcock Reading Mastery Test-Revised (WRWT-R)* is a test designed to decode skills assessment, and the words are arranged from monosyllable, short-vowel patterns to multisyllabic words in different vowel patterns. There are split-half reliability coefficients and concurrent validity of WRWT-R.

The *Gates-MacGinire Reading Test (GMRT)* is a test used to measure learners' reading and vocabulary comprehension. There are reliability and validity coefficients in the GMRT; in addition, there is adequate reliability and validity present to use the GMRT to evaluate reading tests (Joshi et al., 2002).

Language for Specific Purposes (LSP) tests are designed to test a special communicative language testing. LSP tests are often used rather than general tests, especially for learners with a non-linguistic background (Douglas, 2000). The validity in the LSP facilitates researchers to understand what the test is actually doing by using many instruments for measurement (Douglas, 2000).

The *Test of English for International Communication (TOEIC)* is a new English test to evaluate low level learners. TOEIC provides a reliable and validity indication of

English learner's ability during their first 250 hours of studying English as a second language. There are 100 multiple choice questions for the TOEIC, and the test takes 1 hour and 30 minutes (ETS, 2005). Due to the standard error of measurement (SEM), the TOEIC is not suitable for learners to measure their gains if there is only a little change in each learner's English ability. If language learners only spend a few hours learning, then their scores will not be different from other learners who study English for similar amounts of time (Lewis, 2002).

In Taiwan, due to the lack of success on the *English Test of the Joint Entrance Examination* for colleges to accurately assess student language mastery, results indicate that most students can only read and write English, without communication skills. Savignon and Wang (2003) found that learners in Taiwan have negative attitudes and beliefs toward classroom practices and English language learning generally. This led to the conclusion that teaching communicative competence is appropriate for English pedagogy in Taiwan. An implication for language learners is to establish preferences and beliefs to strongly favor communicative language teaching.

Many English language learners take the *General English Proficiency Test (GEPT)* to measure their English language gains (Taipei Times, 2002). GEPT is an instrument to test students listening, reading, writing, and speaking components which includes five levels: elementary, intermediate, high-intermediate, advanced, and superior (General English Proficiency Test, 2005). There is reliability and validity for each level of GEPT in order to encourage to Taiwanese to learn English (Chen, 2005).

Tests are not the only way to measure language learners' gains. Since not every student performs well on tests, there are flexible and effective opportunities to measure

language learning gains (Hancock, 1994). Teachers can use alternative assessments, which are more accommodating and efficient, enabling language learners to individually reflect on their activities (Hancock, 1994). An authentic assessment, like self-assessment, allows language learners to monitor their own language learning and identify their own problems during the course. Authentic assessment validity and reliability will evolve with the technology in the language assessment (Ekbatani & Pierson, 2000). Portfolio assessment is an ongoing activity in the language field, especially for writing skills. Language learners can become more independent thinkers by assembling portfolios, such as assignments, audiotapes of oral work, creative work, and written feedback from classmates. Portfolio assessment includes English language learners which makes meeting reliability standards difficult in many school systems. "Achieving a certain degree of reliability among raters or test evaluators is important" (Gomez, 2000, ¶ 11).

Measurement Student Satisfaction

Tests or alternative assessments (authentic assessment, self assessment, or portfolios assessment) can measure English language learners' gains. However, students' satisfaction also can present the effectiveness of CALL approaches. Student satisfaction is related to development (Beltyukova & Fox, 2002). Some measurement instruments can be used such as satisfaction feedback surveys, paper and pencil tests, web-based surveys and other electronic survey formats (Tomsic, Hendel, & Matross, 2000). Student learning outcomes can be measured by asking questions, through a satisfaction survey using a Likert scale, and by open-ended questions (Clarion University of Pennsylvania, 2006). Betz, Klingensmith, and Menne (1970) adapted the "*College Student Satisfaction Questionnaire (CSSQ)*", an instrument which has five subscales of student satisfaction:

social life, working conditions, quality of education and compensation recognition. The *College Student Satisfaction Questionnaire* demonstrates a very high reliability, and also there is an evidence to support the validity (Noel-Levitz, 2001).

Another adapted instrument is the USA Group Noel-Levitz administrated *Student Satisfaction Inventory* (SSI). This instrument covers over 70 items and also includes rating scale from 1 to 7, to rate different levels of each statement of students satisfaction. There are five scales in the SSI: academic advising effectiveness and academic advising counseling effectiveness, academic services, campus climate, campus life and instructional effectiveness (USA Group Noel-Levitz, 2000). The SSI demonstrates a very high reliability, and also there is an evidence to support the validity (Noel-Levitz, 2001) The SSI asks students questions about student characteristics, and satisfaction about the classroom and classroom effectiveness.

College Student Survey (CSS) explores factors such as relationship with faculty, individual support services, and curriculum and instruction (Beltyukova & Fox, 2002). “*College Student Survey* (CSS) from the Higher Education Research Institute (HERI) was utilized for collecting data because of its already–established validity and reliability” (Midair fall conference preliminary program, 2002, p. 2). The *Adult Learner Inventory* (ALI) also identifies how satisfied students are with their learning (Noel-Levitz & CAEL, 2003). The scales are: outreach, life and career planning, financing, assessment of learning outcome, teaching-learning process, student support systems, and technology. These scales were chosen in order to develop and improve adult educational learning (Noel-Levitz & CAEL, 2003).

Measurement Instructional Effectiveness

Instructional effectiveness is measured by evaluating the degree to which instructional objectives were accomplished (Dinero & Dinero, 2003.). It is not appropriate to estimate instructional effectiveness based upon test scores alone. Instructional effectiveness should be measured individually for each student (Hafnre, Somers, Mojica, & Burns, 2002). When learners use technology to assist their learning, it does not mean that they know how to use the technology well (The Secretary's Conference on Educational Technology, 1999). Some instruments such as observations, student reports, teacher reports, on-site observations, parent reports, telephone interview, file server records or self report data can measure instructional effectiveness. Sometimes surveys can be used to measure instructional effectiveness. For example, paper and pencil surveys, telephone, face to face meetings, e-mail, and website inquire (The Secretary's Conference on Educational Technology, 1999).

Curriculum-Based Measurement (CBM) is an alternative to traditional measures of instructional effectiveness in academic skills (Allinder, 1996). CBM can be use to identify the learners' process, program evaluation, and monitor students progress in order to modify teachers' instructional planning. The procedure of CBM is to collect student data about their basic skills in spelling, reading, and written expression. CBM is a reading measure (R-CBM) during which students read text aloud for one minute and correctly read will count to the primary datum (Graney & Shinn, 2005).

The traditional method to evaluate university classes depend on students' feedback "Cafeteria-style" rating scale. There are some characteristics for this evaluation system, open- and ended questions about the course teaching effectiveness; one item

describes the overall effectiveness; written comment about the teaching effectiveness; response to the absence instructor in the end of the term; scale and item response about the instructors to the department of college about the teaching effectiveness (Algozzine, Beattle, Bray & Flowers, 2004).

Measurement of Cost-Effectiveness

When language and computer are integrated, the cost-effectiveness of CALL can be considered (Yuan, Tsai & Chien, 2004). Three types of cost-effectiveness strategies are: (a) less effective and less costly; (b) more costly and more effective that is worth to pay the additional price, (c) and less costly and at least as effective which means the additional price is too high for extra benefit (Hjeltnes, 2004). Rumble (1997) noted that if the cost is ten times that of the programs, even if the teaching is effective, the program is not effective.

Jones (1989) suggested that any educational system should make meaningful measurement cost-effectiveness measurement:

1. Describing the nature of the business in an objective way and establishing a clear definition of the product;
2. Determining the extent to which one is able to achieve the product aim, i.e. quantify the output of the production process, and
3. Establishing the cost of the operation so that one can make some sort of measurement of the cost-effectiveness of the process by relating the extent of product success to the cost of achieving it. (p. 11).

Effectiveness of CALL Programs

In the early 1960's, many researchers found that using computers as a tool to teach or learn languages was advantageous for language learners (Mendez, 2004). In 1980, the uses of CALL became prevalent in language classrooms. Televisions, videotapes, radio film, and computers were used. In recent years, computer technology has become far more developed and integrates many kinds of media with computer systems. Internet and multimedia use are widespread in most individual schools. Computers become a tool to help people to learn language (Liu, Moore, Graham & Lee, 2002). Some people believe the Internet offers new opportunities for people to learn and discover a new relationship in the technological innovations (Daley, Irvin & Rivera, 2004).

Blok, Oosdam, Otter and Overmaat (2002) conducted a meta-analysis on learning language with computers. The purpose was to review how computer-assisted instructions support the beginning reading instruction. The aim of this study was to offer a comprehensive review of initial reading instruction related to computers and to integrate the literature in order to improve language learners' information and knowledge about computer-assisted instruction. The study focused on pre-reading as vocabulary as the key component of growth in the childhood years. The study also explored phonemic awareness; learning to decode of which there are two aspects: "(1) the visual identification of letters, and (2) the speech sounds of letters" (Blok et al., 2002, p. 108). Finally, acquiring fluency in reading was investigated.

The library research plan included electronic bibliographies, ERIC, PsycLit, and Dissertation Abstracts International of the years between 1981 and 2000. A limitation of

this review is the focus on students who are likely to be represented in the regular classroom or the population model, and initial reading; the analysis was based on empirical studies (quantitative, qualitative, and methodological). Sources of information were journal articles. The result of the meta-analysis should be first focused on the distribution of characteristics in the database.

The conclusion of this meta-analysis was that computer assisted instruction (CAI) programs tend to be effective in initial reading instruction. Limitations were that the U.S. National Reading Panel (NRP) did not include many studies; and many effect sizes lacked a control group. Only 42 studies, which is a small number of studies in the meta-analysis, were reviewed. Weaknesses in the studies included: (a) inappropriate assignment of students to treatments; (b) there were large differences on the pre-tests; (c) the described treatments were very poor; (d) interventions were very brief; (e) only experimenter-developed tests were administered; and (f) there were post-test ceiling effects. Implications were that teachers should accept changing to computer-assisted reading instruction and provide easy to understand computer programs for language learners to use in their initial reading instruction. The areas of future study include computer with literacy instruction needing to be explored in depth.

There were poor quality studies in the meta-analysis review, as well as inadequate studies of the type of CAI intervention. There are many research literatures that include effect studies, but this meta-analysis lacked a comprehensive and detached synthesis. Finally, there was no statistical report of the studies.

Piccoli, Ahmad, and Ives (2001) conducted a study on the preliminary assessment of the effectiveness of web-based virtual learning environment in basic IT skills. Piccoli

et al. (2001) used an empirical (qualitative and quantitative) study to identify antecedents of effectiveness in the virtual learning environment (VLE). The researchers hypothesized the visual learning environments would result in higher test scores, higher levels of computer self-efficacy, and greater satisfaction than found in traditional learning environment. Piccoli et al. (2001) used an experimental, control and compare group design of 146 undergraduate business students, with the same students participating in the VLE and traditional environment. The researchers' literature review was thorough. Empirical studies of virtual learning environments, and traditional learning environments were examined leading to a major gap in the literature in that there was no conclusive evidence on the drop rate of learning effectiveness in virtual learning environments.

A non-probability, accidental sampling plan, experimental, control and compare group design resulted in the data producing sample of 146 undergraduate business students who were all required to participate the VLE, and a response rate of 76%. Reliability and validity estimate were not reported. *t*-test was used to measure the students' effectiveness of VLE and traditional learning environment, and a Likert scale was used to measure students' comments about their satisfaction. Reliability and validity were reported for the Likert scale. Grades for the midterm and final examinations also measured student achievement, while self-efficacy and satisfaction were measured by validated scales, and the drop rate was a measure of learning effectiveness. Data collection procedures were clearly described (control and compare group), but the study did not report IRB approval.

The findings supported the psychometric measurement characteristics of the scales construct validity, but did not support some of the hypothesis of greater

effectiveness of students in the visual learning environment than the traditional learning environment. Self-efficacy and satisfaction were used to measure the effectiveness. However, the study did not support the hypothesis that students achieved higher test scores in the virtual learning environment than the traditional learning environment. The second and third hypotheses were supported by higher levels of computer self efficacy and satisfaction in the virtual learning environment than traditional learning environment.

Piccoli's et al. (2001) interpretation of these findings is in a visual learning environment, students did not perform better than in the traditional classroom. This led to the conclusion that it was not detrimental from a performance point of view, in the learning virtual environment and on campus, for students to have a blend of visual learning environments and traditional learning environments.

Further, implications are for more select visual learning environment courses for students appropriate to skills in order to satisfy learners' preferences. Limitations were reported by Piccloi et al. (2001) that only detect a small group of learners and were limited to the basic computer skills. The researchers generated the following areas of future study: investigation of all learners' interaction for the electronic communication media.

Piccoli's et al. (2001) findings are consistent with objectivist and constructivist model. The strengths of this study include (a) an experimental design of control and compare group for the same students in the two different environments - VLE and traditional environment; (b) hypothesis testing of visual learning and technology-mediated learning theory; and (c) there is reliable and validity for the Likert scale measures of variables resulting in a high level of data quality, data analysis. The

weakness of the study in external validity due to convenience sampling, and limitation to one or two groups of students. Limitations of the study are in the fact that students only had basic computer skills, and this research was limited to only business students. Future studies should focus on large groups of diverse people who have different levels of computer skills.

Kim (2004) conducted a qualitative (post-session interview) and quantitative (ANOVA) study about how students react to teacher responses in voice and in written modalities for teaching writing online. Kim (2004) conducted an empirical study and hypothesized the relationship between the students' reactions to voice and written modality, and students' rate to teacher response in voice and written modalities. Kim used an experimental, factorial design $2 \times 2 \times 4$ using 39, first year undergraduate student in a composition course. Kim's (2004) literature review was thorough. Empirical studies of teacher voice modality and written modality in providing feedback to students were examined, leading to a major gap and conflict in the literature of no empirical evidence that shows how computer-supported communication modalities compare to handwriting and face to face spoken modes.

A non-probability sampling plan resulted in the self-selected data-producing sample of 39 first-year undergraduate students. Students were enrolled in a composition course at a private research university. There was a response rate of 48%. Two-way ANOVA was used to measure modality of voice or written responses and teacher responses. Likert scale was used to measure how students rate the comments of the teachers. Data collection procedures were clearly described (experimental, factorial design $2 \times 2 \times 4$), and IRB approval was not reported.

Findings did not support Hypothesis 1 that students prefer voice modality. Hypothesis 2 was not supported: students would rate teacher comments produced in voice modality higher than written mode. Hypothesis 3 was not supported: students prefer voice modality for high level problems and low-level problems of written modality. Hypothesis 4 was not supported: students rate teachers more favorably in voice than in written condition.

Kim's (2004) interpretation of these hypotheses not being supported was due to voice modality being very complicated to the students and teachers to use. This interpretation lead to the following conclusion: it is still important for teachers to use media modality to develop individual lessons.

Implications of this study are that media modality is more complicated than people predicted. Students did not exhibit a strong preference for voice or written modality when students received teachers' comments. The strength of the study reported by Kim is that online voice and writing interactivity courses have become more flexible for students to learn. Limitations were reported by Kim (2004) that effective pedagogies and students' choices to use voice or written modalities are limited, and voice modality cannot interact with students and teachers at the same time. Voice modality is like monologue, and voice modality is not selected for all students to use as some students use written modality. Therefore, reading is restricted to one particular modality for learners to use. Kim (2004) generated the following areas of future study to include: (a) the development of the interactivity of computer-supported modalities; and (b) the training of people in more social, cognitive, and effective skills which influences teacher response in the future.

The strength of this study is to design the voice and written modalities, text, and teachers' response. The weakness of external validity is limited as only 39 first-year undergraduate college students enrolled in the composition course were used in the sample. Future studies should focus on larger groups of different kinds of people in various vocational settings.

Pray (2005) conducted a methodology study to test the validity of language instruments used to measure English oral-language proficiency. Pray (2005) used an experimental, pretest and posttest, comparison group design, with 40 participants in an elementary school of an urban city in a southwestern district in the United States. Empirical studies of the Language Assessment Scales-Oral (LAS-O), the Woodcock-Munoz Language Survey (WMLS), and the IDEA Proficiency Test (IPT) were examined to assess students who are English language learners (ELLs), native language speakers or second language speakers in their English oral-language proficiency. The major gap in the literature is that language assessments usually had low validity and reliability and teachers use inappropriate oral-language proficiency measures to assess students' academic performance.

A non-probability, purposive sampling plan resulted in producing a sample of 40 participants in public elementary school in a large urban city in the southwestern United States. The students were non-Hispanic, White or Hispanic in origin, currently enrolled in general education. All subjects were in fourth or fifth grades, none of the students were enrolled in a gifted program. The 40 students came from diverse socioeconomic (SES) status: low-SES, middle and high SES.

Frequency analyses were used to measure LAS-O, WMLS, and IPT. According to LAS-O test scores, 100% of the students were fluent at speaking English, IPT test scores founded that 85% of the students were classified as fluent English speaking, and WMLS test scores showed that no child's score was in the "fluent speaking ability" or "advanced English speaking ability". A sample *t*-test was used to measure the mean assessment scores for non-Hispanic White and Hispanic students in all diverse socioeconomic statuses on the IPT and WMLS. The LAS-O was excluded, because the LAS-O test founded 100% of the students were fluent in speaking English. There was no statistically significant difference in the test scores for non-Hispanic White and Hispanic students in all diverse socioeconomic statuses between the IPT and WMLS. These tests result lacked validity and reliability because the tests assess English language proficiency quite differently. Data collection (ANOVA) was clearly described, but the study did not report IRB approval.

Pray's (2005) interpretation of these findings is the monolingual native speakers of English cannot achieve the score range of "fluent English-speaking" or "advanced English speaking ability." This led to the conclusion that the assessment does not correctly measure the construct of oral-language ability. Implications are that multiple sources of evaluation must be conducted to assess a child's oral-language ability.

The strength of the study reported by Pray (2005) is that language assessment research can inform educators where to place students in language programs according to their different level of English-language proficiency. Limitations reported by Pray (2005) are that there is a deficit view for students who are classified as English as a second language, and some states forbid teachers to teach the academic content areas in the

English language learners' native language. Pray (2005) generated the following areas of the future study: an assessment of the measure of oral language in developing literacy and student achievement.

An internal validity weakness of this study is that there is very low reliability and validity instrument test result to measure the English oral-language proficiency. The strength of this study is that the data analysis (ANOVA) is clearly defined. The limitations of the study are that the number of the participants is small and the research only focused on elementary school students. Future studies should include more language instruments in order to measure English oral-language proficiency, and include different occupations, ages, and expanding the sample size.

*Effectiveness of CALL Programs According to Different Types of
English for Special Purpose Programs*

In Taiwan, "English for specific purposes (ESP) is becoming more and more popular because the various simulations it provides are useful and practical in real life" (Taipei Times, 2002, p. 7). In addition, computer-skills training allow English learners to improve their oral English presentation skills in specific areas (Taipei Times, 2002).

Carter, Ferzli, and Wiebe (2004) conducted a quantitative study on the effectiveness of the teaching genre LabWrite study for English first or second language students in science. The researchers used a quasi-experimental, posttest-only control group design, with a sample size of 80. LabWrite is an Instructional Method for Teaching the Lab Report. Carter et al.'s (2004) literature review was thorough and current. Empirical studies of effectiveness of teaching genre of science LabWrite was examined,

leading to the major gap and conflict in the literature is that there is debate for genre can be effectively used or not.

The study was an experimental, posttest-only control group design. The majority in the treatment group was freshmen and the majority in the control group was sophomores. A random sample of control and treatment group was selected and the score was reported from each group. The treatment group of students was not available to take the course Biology 183, so treatment students did not have this kind of knowledge. The control group of students had taken more science courses. A random probability design resulted in a sample of 80 science students from a North Carolina State University. A Likert-type scale was used to measure the students' attitude toward science, a survey was used to measure overall attitudes toward laboratory reports, and a primary-trait scoring was used to measure the writer's ability to achieve their purpose of science writing tasks. Reliability for the result for overall reliability was 0.93 for internal consistency, and construct and criterion related validity was established. Data collections procedures were clearly described by the one-way analysis of variance (ANOVA) to compare the two group-treatments (freshmen) and control group (sophomore) difference. The study did not report IRB or other approval.

Findings supported the hypotheses that students who use the LabWrite (online writing learning) to learn science have much higher effectiveness than students who learn in normal instructional materials (p. 3). The effectiveness was graded by the report which uses a scale of 1-5 about writers' concepts of science of the labs. There was a more significant effect in the treatment group (p. 1), having a more positive attitude than in the control group (p. 1).

Carter et al.'s (2004) interpretation of this finding is that students who used the online instructional materials of LabWrite had significantly different attitudes than the students who learned using traditional instructional materials. This led to the conclusion that teaching genre is important for learners to study and teaching genre can be effective in teaching writing and more empirical research.

Limitations in the study are that there were only 80 students in the sample, the control group students were all sophomores, and the treatment students were all freshmen. Implication of the results can rule out the effectiveness of teaching genre in more traditional ways and venues. The authors generated the following area of future study: the transfer to other sites of writing in genre instruction is an important goal.

The strengths of this study are in the use of a reliable and validity instrument to measure effectiveness of teaching genre in LabWrite, and clearly defined procedures allowing replication and resulting in a high level of data quality and internal validity. Future studies should focus on more second language learners.

***Influence of Learner, Socio-Cultural, and Instructional Characteristics on the
Effectiveness of CALL Programs***

Learner Characteristics

In order to create effective CALL Programs, learner characteristics must be addressed by the instructor. These characteristics include: (a) learning style; (b) demographics; (c) motivation; and (d) cognitive capabilities.

Kolb (1984) noted that "Learning style is defined as the way people learn and how they solve problems and deal with new situations and information" (p. 2) Kolb described the different learning styles: (a) activities; (b) reflections; (c) pragmatists; and

(d) theorists. There are four areas learning style mode: (a) reflective observation; (b) abstract conceptualization; (c) concrete experience; and (d) active experimentation (Kelly, 1997). There are two benefits of comprehending learning styles for English as a second language (ESL): (a) language learners understand their own learning style; and (b) learning style allows teachers using materials to teach in a diverse classroom (Kelly, 1997). Addressing learning styles can result in more effective multimedia and computer learning (Montgomery, 1995).

Dunn and Dunn (1993) claimed that learning style was the method that students use to concentrate, internalize, process, and remember information. According to Dunn and Dunn's *Learning Style Model* (1993), there are 21 elements that affect learners' ability to learn new information. These 21 elements are organized into five stimuli "(a) environmental, (b) emotional, (c) sociological, (d) physiological, and (e) psychological" (p.5). Learning style often leads to the choice of the second language learners learning strategies (Oxford, 1994). Previous research by Bostrom, Olfman, and Sein (1990) indicated that addressing individual learning styles could increase the effectiveness of the instructional programs.

Demographic variables of language learners must also be addressed. For decades, many researchers argued that gender differences affect language learning (Ready, Logerfo, Burkam, & Lee, 2005). Overall, females use more strategies to learn language (Oxford, 1994). Students at different ages also use different strategies to learn a language (Oxford, 1994). Socio-economic status may also influence the learning performance. Low socio-economic status often means there is a poor learning environment for students to study and performance in school (Hartwell, 2002).

Motivation is one of the key factors to influence language learning (Salmond, 2004). Motivation helps individual to achieve their outcomes. “Motivation can be defined as the internal drive directing behavior towards some end” (Frith, 1997, ¶ 2). Motivated students use more strategies to apply to language learning, and especially focus on the specific reasons to learn language and will use even more strategies with more motivation (Oxford, 1994).

“Cognitive capabilities are at the heart of all that we do that involves anything above the most primitive reactions” (Tribus, 1997). Therefore, teachers should challenge cognitive capabilities to increase students’ thinking power.

Historical Development of CALL Programs

CALL program was developed in the late 1950s. In the 1960s, Don Bitzer started Programmed Logic for Automatic Teaching Orientation (PLATO). This was designed for a large number of students in the University of Illinois. One teacher used PLATO to teach language and translate Russian into English. In addition, foreign language materials were also developed by PLATO and included reading, writing and listening. This was the first project to develop CALL materials, and PLATO has been involved with technology which is still used today (Anthony, Li, & Woodson, 1997).

In 2003, the Taiwan Ministry of Education changed the English language learning curriculum to add more communication approaches. Many studies focus on teachers’ perspectives about the communicative English language learning, but seldom draw attention to the learner’s attitudes and perspectives (Savignon & Wang, 2003). In 2003, Savignon and Wang conducted a study about Taiwan learners’ attitude and perceptions in communicative language teaching in English.

Savignon and Wang (2003) used a non-experimental, casual-comparative design with Taipei University students. Savignon and Wang's literature review was thorough, current and consistent with language learning theory. Empirical studies were reviewed for learners' perception of the classroom practices experienced, learners' attitude toward classroom practices, and learners' beliefs about English language learning generally. This review led to a major gap of the need for studies about the attitudes and perceptions of learners of communication-based language teaching practices.

A non-probability (purposive) sampling plan consisted of surveying of 200 freshman students from two Taipei universities, with background from different elementary and secondary schools. One hundred seventy-four freshman students from two Taipei universities, 105 female students and 69 male students responded to a questionnaire designed to reflect their attitude and beliefs about English language learning. The final data producing a sample of 174 resulted in a response rate of 88%.

Scales were "1 to 7 on a scale in the Likert format and the scores then converted to a scale from -3 to +3 for ease in interpretation." (Savignon & Wang, 2003, p. 227). There were adequate reliability reports (Coefficient Alphas), but there were no reports of validity of the scales. Various statistical methods were used to evaluate the findings: (a) a *t*-test was used to measure the respondents' perception of classroom practices; (b) one-way MANOVA was used to measure the effect on beliefs about the importance of English, pronunciation and the relationship of good learners; (c) two-way MANOVA was used to measure form-based practices or communication-based practices; and (d) two-way ANOVA was used to measure the effect of learner attitude and perceptions. Reliability estimates ranged from a low of 0.50 to a high of 0.93 for internal consistency.

Data collection procedures were not clearly described and the study did not report IRB or other ethical approval.

The results of the study are: there were not positive attitudes toward the learners' perceptions of the classroom practices experienced; learners have negative attitudes and beliefs toward classroom practices and English language learning generally. Findings did not support the learner attitude and perceptions for communicative language teaching (p. 5). Savignon and Wang's (2003) interpretation of the findings are consistent with the findings of descriptive studies of English language teaching in Taiwan, and reports on students and teacher of English in Taiwan. This led to the conclusion that teaching communicative competence is appropriate for English pedagogy in Taiwan. An implication for language learners is to establish preferences and beliefs to strongly favor communicative language teaching. The findings are nonetheless encouraging in support for ongoing Ministry of Education revisions of English education policy.

Limitations reported by Savignon and Wang were that the sample only focuses on freshman from two Taipei universities. These secondary school English foreign language classroom experiences cannot represent all the language learners in Taiwan, and only a few studies have investigated the learners' view. These researchers generated the following areas of future study: (a) classroom language teaching practice Likert-type scale should reflect learners' attitudes accurately; (b) additional research is needed on the experience and preference of learners who do not continue English language study beyond secondary school; and (c) reports of learners' perceptions of classroom language learning experiences should accurately reflect actual classroom practices.

Savignon and Wang's (2003) findings were consistent with the findings of descriptive studies of English teaching in Taiwan (Du-Babcock & Du-Babcock 1987; Huang 1998). The reliability of scales was adequate and data analysis sufficient. However, there were no propositions clearly tested, no report of validity of the scales reported, and data collection procedure were not clearly defined to permit replication. Therefore, the level of data quality is questionable and threatens the study's internal validity. A limitation of the study is the use of only two Taipei universities of freshmen students and non-probability sampling, which threatens external validity. Results cannot be generalized beyond the students at the two universities, nor to represent the whole population of Taiwanese language learners. Future studies should focus on more accurate instruments to measure and report the reflections of learners' attitudes and perceptions toward classroom practices and English language learning generally.

Socio-Cultural and National Characteristics of Primary Language

CALL developed in the late 1950s in the United States (Anthony, Li, & Woodson, 1997). However, only recently has the Taiwan Ministry of Education changed the English language learning curriculum and increased focus on more CALL in schools (Savignon & Wang, 2003). Taiwan is an isolated island and the official language is Mandarin Chinese (Cifuentes & Shinn, 2001). Socio-cultural is the idea that "the human mind is mediated" and "the theory holds that in participating in socially meaningful activities, the higher order functions of the mind can develop through interactions with other human beings and with socially and culturally constructed artifacts such as tools and signs" (Butler, 2005, p. 425). Due to Taiwan's particular socio- and cultural history, multiple cultural educational reform policies have been implemented beginning in early childhood.

Taiwan's contemporary socio-cultural saying for childhood education is "My child, I will not let you lose the race at the starting point" (Lee, 2003, p. 9).

Scholars hold the highest status in Taiwan's society, so parents believe that if children receive a superior education, they will have success in the future (Wang, 2004). Politicians have noted that English will become the "semi-official" language in Taiwan in the next six years (Taipei Times, 2002). MOE implemented a plan "Challenge 2008" to intensify English language education (Chang, Wu & Ku, 2005). The Taiwanese believe Taiwan's economic development and political stability is affected by international competitiveness. Therefore, English becomes the communication tool to reach the economic, business, technological, and political communities. In addition, bilingual ability will lead Taiwanese to obtain more knowledge and wealth (Taipei Times, 2002).

Instructor Characteristics

"Teacher knowledge is an important teacher characteristic" (Huitt, 1999, ¶ 2). Performance skills, management, planning, and instructional skills are also considered to be teacher characteristics (Huitt, 1999). Teacher characteristics may effect students' achievement. There are four teacher characteristics which are associated with students' motivation and achievement and include "teachers' pedagogical knowledge about English, teachers' pedagogical knowledge about student motivation, teachers' intrinsic motivation toward teaching, and teachers' self-efficacy toward teaching" (Knowles, 1999, ¶ 1). The teacher characteristic of effectiveness aims to help students learn to succeed, and is a characteristic that can be learned (Vaughn, 2001).

There are three important characteristics for teachers: (a) clarity: present information to students clearly, such as using computer-generated graphics, projected

Websites, chalkboard, and overhead projections to help students understand the text; (b) variability: teaching methods and techniques change instead of using one or two teaching methods; (c) enthusiasm: showing excitement about the topic, such as facial expressions, and not speaking in a monotone (Vaughn, 2001).

Instructional Design Characteristics: Blended and Cooperative learning

“Instructional design refers to the ways in which a curriculum is delivered to an intended recipient” (Experience Designer Network, 2005, ¶ 1). “Instructional design is a servant of the curriculum; instructional design is a technology that retrieves and propagates the underlying structure of the curriculum” (Experience Designer Network, 2005, ¶ 1). Instructional design is determined by teacher curriculum and is a systematic method that can develop knowledge, attitude, and skills in students.

There are two examples of instructional design strategies: blended and cooperative learning. Blended learning is referred to as “a different time as hybrid, or distributed learning, is a combination of the use of electronic learning tools and traditional face-to-face classroom teaching strategies/techniques to ensure maximum effectiveness” (Duhaney, 2004, p. 35). There are four different concepts of blended learning (Oliver & Trigwell, 2005):

1. Combining or mixing web-based technology to accomplish an educational goal;
2. Combining pedagogical approaches to produce an optimal learning outcome with or without instructional technology;
3. Combining any form of instructional technology with face-to face instructor-led training, and

4. Combining instructional technology with actual job tasks. (p. 18)

CALL incorporates the blended learning philosophy for learners in order to create a stimulating effective language course (Language Travel Magazine, 2003). Teachers could assign homework to students in school CALL laboratories and then have students use email or other websites to do the research in “computer-based” or “classroom based” teaching (Hinkelman, 2004).

Cooperative learning is “an organizational structure in which a group of students pursue academic goals through collaborative efforts” (Clemen & Hampton, 1994, p. 2). In cooperative learning, students form small groups in order to work together to achieve their tasks, and during the typical task, students can share knowledge with the small group members. Cooperative learning can enhance students’ achievement (Clemen & Hampton, 1994). There are some characteristics to cooperative learning: (a) positive interdependence; (b) collaborative skills; (c) individual accountability, and (d) classroom management (Jacobs, Ward, & Gallo, 1997). There are positive aspects that cooperative learning brings to students in computer-assisted instruction: “higher achievement and greater productivity; groups provide an academic and personal system; social and communication skills are developed; and positive attitude toward the subjects areas studied” (Scheepers, 2000, ¶ 5). In CALL, students can use cooperative learning for writing exercises, problem-solving, and conversations in the English language and teachers can observe students’ individual performance (Higgins, 1993).

Environment for Learning

CALL programs help learners become more independent and aware of the importance of self-evaluation (Zhu & Zhang, 2004). According to Piccoli et al. (2001), “environment is the key factor in learning a second language. Learning environments refers to “in terms of time, place, and space”, and the learning environment includes three dimensions: interaction, technology, and control (p. 406). Peter Skehan found that “computers can be instrumental in providing a suitable environment where learners can learn and communicate” (Anthony, Li, & Woodson, 1997, ¶ 18).

In order to develop the perfect language environment, exploring the relationship between fluency, complexity, and accuracy is needed (Anthony, Li, & Woodson, 1997). CALL can provide a home-study environment for distance education, and deal with the traditional time-consuming problems (Abrioux, 1989). CALL provides an authentic environment for learners to read and write, so language learners do not need to be face-to-face to learn the English language, and study time becomes more flexible (Dalhousie University, 2005). However, the need for teaching communicative skills online to develop English fluency has yet to be satisfactorily addressed by CALL programs (Savignon & Wang, 2003).

CALL Programs for Graduate Level Academic Literacy

Reading and learning second language from the computer screen becomes more and more common in people’s daily life (Sawaki, 2001). The World Wide Web becomes the dominant mass communication in the United States. This form of learning is a new phenomenon for web-based education (Thirunarayanan & Perez-Prado, 2001). English for speakers of other languages (ESOL) also provides students the ability to enroll in

online courses; for example, the software program WebCT (1995-2001) supplies students online the same projects, quizzes, and reading assignments that are taught in the traditional classroom. The online section includes discussion forums, chat sessions, videos, and relevant Web pages for students to learn English language (Thirunarayanan & Perez-Prado, 2001).

In the Chinese University of Hong Kong, teachers use LANs software program to teach students foreign language writing, so students can feel free to interact with classmates, share their opinions, and receive the feedback immediately (Braine, 2004). Thirunarayanan and Perez-Prado (2001) used an empirical, quantitative study to identify the comparing of web-based and classroom-based learning. Thirunarayanan and Perez-Prado (2001) used a comparison group design of 29 students who enrolled in an online section and 31 students who participated in a classroom section of the same course. Students' ages are from 21 years to 47 years. The offline section students met once a week for a semester and the online students met with the instructor three times online during the semester. Both of the groups had the same readings, quizzes, examinations, and projects. Both of the groups formed small cooperatives to study. Students were randomly assigned to the online or classroom based sections. However, the subjects had no idea into which section they had registered before taking the course.

A non-probability, compare group design to analyze the data produced a sample of 29 online students and 31 offline students. *t*-test was used to measure the pre- and posttests of both groups determining is there a statistically significant difference between the two groups. Reliability and validity estimate were not reported data collection

procedures were clearly described (compare group), but the study did not report IRB approval.

Thirunarayanan and Perez-Prado's (2001) interpretation of the finding is that online group students achieved numerically, but there is no statistically significant difference achievement between the two groups (web-based and classroom-based) for foreign language reading, taking quizzes and examinations, and creating projects. This led to the conclusion that online students did not perform significantly better than the classroom-based section of the course. Therefore, the online students were able to master foreign language skills at a similar level of proficiency as the classroom-based study participants.

Future studies should focus on more Web technologies to increase providing student learning experiences. Web-based course is necessary for researchers to do the research. The limitation was reported by Thirunarayanan and Perez-Prado (2001) that only a small number of students participate in the two groups. The weaknesses of the study were that number of the female students is much larger than the male students. The hypothesis, validity and reliability did not present in the study. The strengths of the study are that data collection procedure is clearly described and the age range is broad from 21 years to 47 years old. The comparison group design can provide evidence to show the different achievement between the two groups - web-based course and classroom-based. The researchers generated the following areas of future study: the research should continue to test the effectiveness of evolving online course delivery technologies.

Some educators believe that computer-based instruction can remove students from the "real life" situations. Students can learn English from computers without

participating in the “real world” of academics (Warchauer, 2004). However, international students studying English have fewer opportunities to practice English academic writing in their own countries (Curry, 2001). Students must have specific English academic writing, reading, and speaking skills to enter college level schools. Students who do not have adequate English academic literacy may lack the ability “to make their voices heard as they move through the academic and into a complex world” (Curry, 2004, p. 51).

For instance, according to a City University of New York survey, English Language Learners (ELL) often feel underprepared and under challenged to write research papers (Curry, 2004). Curry (2004) conducted a study at the UCLA community college about academic literacy for English language learners. Curry (2004) used a qualitative study about academic literacy for English language learners on 16 students in the class that come from different countries, Dominican, Laotian, Palestinians, Russia, Turkey, Taiwan, Hong Kong, Korea, Japan that participates’ experiences in basic writing course at a Midwestern community college. Some students wanted to practice English, to obtain vocational training or to study more knowledge and information in colleges. The major gap of the literature was that community colleges had low expectations for English language learners (ELLs) and did not sufficient support learners to link to the ESOL writing courses. The study provided a thick description about English language learners’ academic literacy.

Curry (2004) interpreted that the study presented the complexities to help ELLs to obtain academic literacy. The complexity made learning academic literacy and teaching more challenges. This led to the conclusion that linking instruction in writing and language with support of faculty and administrators can help students to achieve higher

expectations. The weakness of the study is that collaboration and communication is difficult to achieve for part-time faculty in a community college. Part-time faculty may lack knowledge about students' backgrounds and, therefore, be deficient in the ability to support students at the community college level. The strengths of the study is that some strategies can help students learn English as a second language or teach students academic, such as communicating; cooperative learning; creating learning communities; teaching contrastive awareness between cultures and language; and between disciplinary discourse conventions. Students' ages are very broad, and the diversity of backgrounds of students educational levels were different that can help those students to achieve to their various aims.

The researcher generated the following areas of future study: the instructor will need stronger links about basic writing curriculum, academic curriculum and students' aspiration to support ELL in learning academic literacy. In addition, international students need to learn in ESOL and writing courses about U.S. cultural, linguistic, and educational background in order to achieve their future academic goals. Students' background can affect their ability to study in a graduate level college environment.

Learners' attainment of English academic literacy plays an important role for students to pass the examination to study in U.S. universities (Curry, 2004). Even the assessments of language utilize the computerized testing instead of paper-and-pencil tests. TOEFL provides people taking English as their second language testing through computer examinations. Thirunarayanan and Perez-Prado (2001) conducted a study about the evidence that international students can learn English from the computer, and also take tests from the computers. For some Spanish speakers, learning English as their

second language from the computer screen was an effective method to learn the English language (Sawaki, 2001).

However, there have been negative reactions from Japanese students seeking to learn English from the computer screen (Sawaki, 2001). Sawaki (2001) conducted a meta-analysis on conventional and computerized teaching of a second language. The purpose of the study was to explore what would be affected by selection decisions on conventional or computerized forms. The aim of the study was to view the effect on comparability of conventional and computerized mastery of a second language. The study focused on second language reading tests of the computerized and conventional teaching methods. The study explored language assessment of computerized testing (computer-adaptive tests= CATs) and paper-and pencil (P&P) tests. Finally, future directions about the effect of mode of present study review of two distinct areas of previous literatures “(a) studies that address general construct validity ability as well as language assessment; and (b) studies that shed light on the effects of mode of presentation ergonomics, education, psychology, and L1 reading research” was investigated (Sawaki, 2001, p. 1). Empirical studies reviewed in the meta-analysis were from the years between 1986 and 2000. Sources of information were texts.

The result of the meta-analysis is that there is no significant difference between the P&P and computerized testing groups. The conclusion was that second language presentation researchers found drawing a conclusion difficult due to the studies’ assessments. Limitations of the scope of the survey literature were that (a) the literature review did not require paging or scrolling in the texts. Discrete pieces of information in a longer text can help reader comprehension in a paper-based test in order to advance to

second language reading tests; and (b) some empirical studies did not cover figures, schematics, and graphics in the reading passage to incorporate into a computerized test.

The following areas of future study are that (a) future second language reading tests should be equal of P&P and computer-based; (b) large sample size would be of benefit for study; (c) data should collect operational testing in order to compare reading comprehension in conventional and computerized tests; and (d) future assessment should also continue in order to close the gap of the limitation of empirical data on the effect performance.

In addition, many Asian learners can achieve high TOEFL scores, which mean these international students have almost the same level of English conversational skills as native U.S speakers to study undergraduate college material. In contrast, many Asian graduate students have difficulty expressing themselves, due to a lack of confidence with higher level academic literacy. This concern may be due to a lack of the same historical background knowledge when compared with American students. Asian students require America experiences, data, and even geographical information to perform successfully on a graduate level. In addition, these students seldom experienced graduate level English writing and reading from the CALL Programs in their own countries. Many students have little confidence in developing writing strategies, and may have no visual image about how to read and write English on a scholarly level (Spack, 2004).

Asian students may have strong first or second language conversational literacy, but there is a gap in their educational backgrounds. These students experience challenges in building college-level literacy in the English language. An interesting side effect of international learners studying in American universities is that sometimes American

students gain multicultural knowledge, especially about Asia, during coursework together, which makes learning easier for all students (Spack, 2004). It is important to facilitate international graduate students obtaining English academic literacy in order to achieve their goals in masters' and doctoral level studies.

Summary of the Literature Review

There was no literature found about ESP programs with or without CALL in Taiwan. In addition, there were no empirical studies that explored the relationship among ESP, CALL, learning environment, attitudinal characteristics and satisfaction for Taiwan college students.

From the literature review, there was only one study, Carter et al. (2004), on the effectiveness of the teaching genre LabWrite study for English first or second language students in science. The findings supported the hypotheses that students who used online instructional materials of LabWrite had significantly different attitudes than the students who learned using traditional instructional materials. However, the study only supported computer learning with science, not the computer learning with English. Other studies did not support the hypotheses with CALL.

Nonetheless, it is significant to conduct the research about ESP with CALL in Taiwan. Students and teachers are still preferred utilizing traditional methods to learn English rather than CALL. There is value for people to do the research about the CALL in Taiwan in order to improve students' learning abilities.

Theoretical Framework

The theoretical framework that will guide this study about English for Specific Purposes (ESP) programs with and without computer-assisted language learning (CALL), learning environment, attitudes, satisfaction, and learning gains for Taiwanese graduate students. Second language acquisition (SLA) is the process by which people learn languages in addition to their native tongues. The term second language is used to describe any language whose acquisition starts after early childhood (including what may be the third or subsequent language learned). The term "language acquisition" became commonly used after Stephen Krashen contrasted it with formal and non-constructive "learning." However, "second language acquisition" or "SLA" has become established as the preferred term for this academic discipline (Schutz, 2005). SLA refers to "the study of how people learn to communicate in a language other than their native language-examines a broad range of questions from a wide variety of perspectives" (Tsai, 2005, p. 13). The theory of second language acquisition (SLA) was developed by Krashen (1985) and consisted of five main hypotheses: "the acquisition-learning hypothesis; the monitor hypothesis, the natural order hypothesis, the input hypothesis, and the affective filter hypothesis" (Krashen, 1981). SLA is "the principles and parameter setting model which is the most promising advancement in L2 acquisition research" (Waber, Czendlik, 2003, ¶ 1). There are five main hypotheses of second language acquisition; (a) the acquisition-learning hypotheses is the most widely known in the linguists. There are two independent ways in developing second language: acquisition and learning.; (b) the monitor hypothesis explains the relationship between learning and acquisition, and the monitor function is the result of the learned grammar; (c) the nature order hypothesis is the

acquisition of grammar structure follows a nature order; (d) the input hypothesis is to explain learners acquire a second language. The input hypothesis only focus on the acquisition, not the learning; (e) the affective filter hypothesis includes anxiety, motivation, and self-confidence. Krashen mentions learners with low anxiety, high motivation, and self-confidence can succeed in second language acquisition (Krashen, 1981). Krashen's Monitor Model contains assumptions about language learning and acquisitions (Krashen, 1981). Gas (1997) depicted the model of input (languages are used in different environments), interaction (conversation interaction) and output (second language learner) (Finney, 1997). "Language acquisition is a subconscious process not unlike the way a child learns language" (Krashen, 1981, ¶ 3). Language learning refers to the "conscious knowledge of a second language, knowing the rules, being aware of them, and being able to talk about them." (Krashen, 1981, ¶ 3). Both course satisfaction and language learning gains are indicators of program effectiveness. These are the two independent systems of second language performance ('the acquired system' and 'the learned system').

English for Specific Purposes (ESP) are programs designed to "meet specific needs of the learners" (Wei, 2004, p. 2). There are four skills to be developed in the ESP learner: speaking, listening, writing, and reading (Thirumalai, 2006). There are three types of ESP programs: (a) English as restricted language; (b) English for academic and occupational purposes; and (c) English with specific topics (Carver, 1983). ESP is based on the specific need of the learners (Ayala, 1997). "English for specific purposes (ESP) is founded on the linguistic theories of John Swales developed in (1986, and 1990)" (Carter, Ferzli, & Wiebe, 2004, p. 399). There are five major concepts underlying ESP theory: (a)

authenticity, (b) the second ESP concept is research-base, (c) the third ESP concept is language/text, (d) the fourth ESP concept is need, (e) the fifth ESP concepts is learning methodology (Nodoushan, Birjandi, & Alavi, 2002). The major proposition this theory identified is the explanatory proposition that ESP interacts with five concepts. There are three areas of ESP theory which influences ESP development: (a) corpus analysis; (b) systemic functional linguistic and (c) genre analysis (Hewings, 2005). English Language plays an important in the ESP and linguistic also influence the ESP development. This study is based on graduate students who participate in different types of ESP programs. The systemic fictional linguistic of grammar in ESP is being applied and link to the Krashen's nature order hypothesis, the acquisition of grammatical structure follow the nature order.

The learning environment refers to type of learning task, classroom psychosocial environment, and virtual spaces found in computer applications and on the Internet (Walker, 2003). According to Piccoli, et al. (2001) "environment is the key factor in learning a second language (p. 406)". Learning environments are described in terms of time, place, and space, and the learning environment includes three dimensions: interaction, technology, and control The learning environment also may influence the SLA and the learning environment links to the Krashen's input hypothesis, how the second language acquisition take place.

CALL is a field concerned "with the use of computer tools in second language acquisition" (Hacken, 2003, p. 23). CALL is a theory of language acquisition (Egbert, Chao, & Smith, 1999). The theory is organized by the three major constructs (a) the computer as tutor; (b) the computer as stimulus; and (c) the computer as a tool (Jacko &

Sears, 2002). The major proposition in this theory identified CALL interacting with second language acquisition. CALL links to Krashen's input hypothesis of how learners learn a second language.

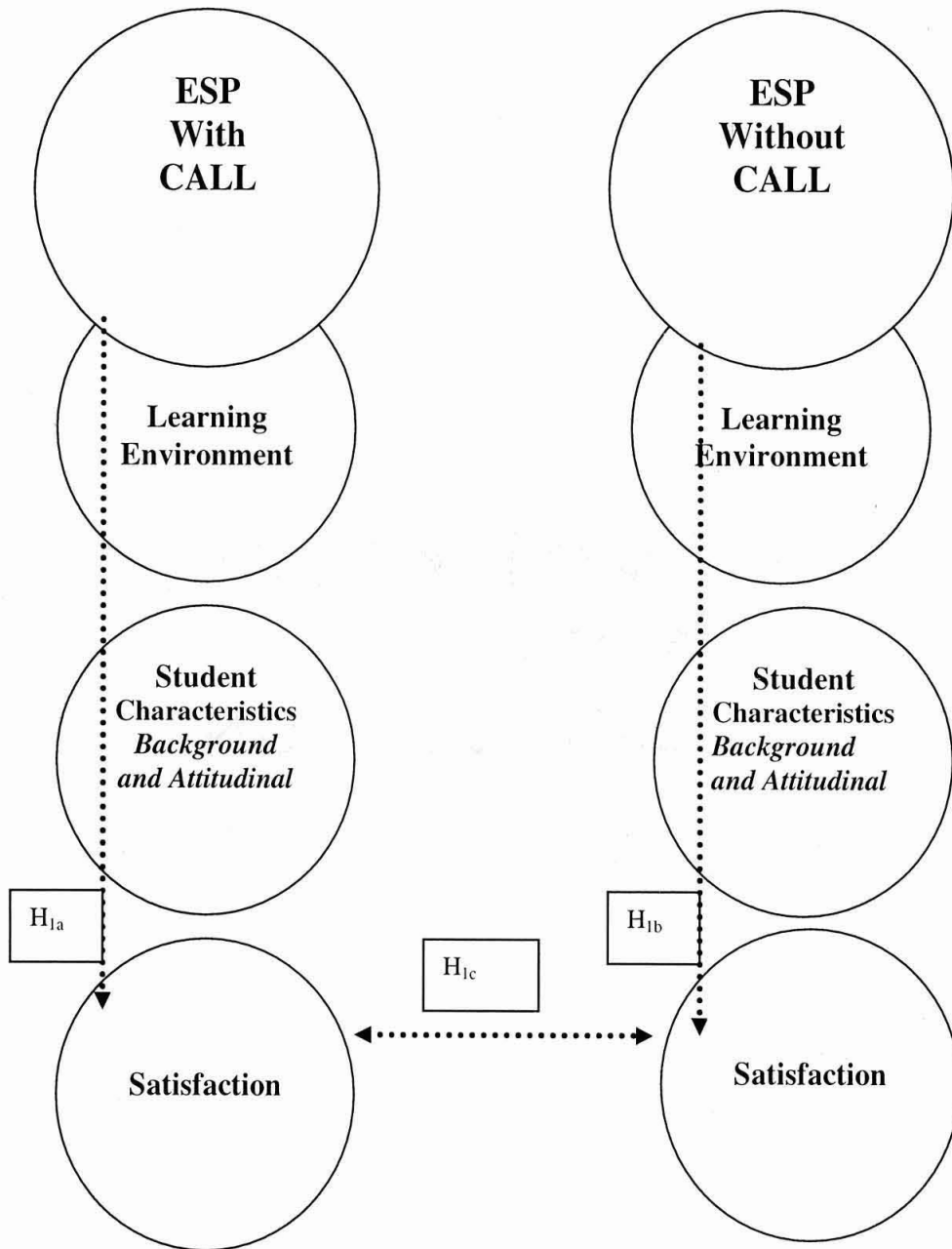
Some student factors that affect second language learning are—attitudes, demographics, and course or program satisfaction. Attitude is "the sum total of a man's inclinations and feelings, prejudice and bias, preconceived notions, ideas, fears, threats, and convictions about any specified topic" (Farris, 2002, ¶ 1). Attitudes toward the learning situation refer to "affective reactions to any aspect of the class and could be assessed in terms of class "atmosphere, the quality of the materials, availability of materials, the curriculum, the teacher, etc." (Gardner, 1985, p. 10). Gardner developed a model of attitude and motivation in second language learning called the socio-educational model. The model various individual differences in second language learning (Gardner, 1985). "Socio-educational model is attitude toward the educational situation" (Yen, 2005, p. 9). Thus, attitude may relate to the acquisition of the second language. Attitude also links to Krashen's filter hypothesis, such as the motivation, self-confidence and anxiety.

Demographic variables of language learners must also be addressed. For decades, many researchers argued that gender differences affect language learning (Ready, Logerfo, Burkam, & Lee, 2005). Demographic variables links to Krashen's natural order hypothesis about learners' age, background, and condition exposure, etc. Students at different ages also use different strategies to learn a language (Oxford, 1994). Socio-economic status may also influence the learning performance.

Satisfaction is defined as "Satisfaction is the state felt by a person who has experienced a performance (or outcome) that has fulfilled his or her expectations.

Satisfaction is thus a function of relative levels of expectation and perceived performance” (Hom, 2002, ¶6). Satisfaction “relates to perceptions of being able to achieve success and feeling about the achieved outcomes” (Johnson, Aragon, Shaik, & Palma-Rivas, 2000, p. 32). Students’ satisfaction can present the outcome of language learning (Belyukova & Fox, 2002). Satisfaction links to Krashen’s monitor and affective hypotheses. Program effectiveness is indicators of course satisfaction and learning gains in the study.

CALL may enhance the environment for learning ESP, and CALL may effective for to be used in the ESP (Dayd, 1994). The theory of second language acquisition (SLA) developed by Krashen (1985) is used as a guide for to organize the constructs in this study. ESP links to the Krashen’s nature order hypothesis, the acquisition of grammatical structure follow the nature order. The learning environment also may influence the SLA and the learning environment links to the Krashen’s input hypothesis, how the second language acquisition take place. CALL links to Krashen’s input hypothesis of how learners learn a second language. Attitude also links to Krashen’s filter hypothesis, such as the motivation, self-confidence and anxiety. Socio-economic status may also influence the learning performance. Satisfaction links to Krashen’s monitor and affective hypotheses.



..... New hypothesized relationships being tested

Figure 1. Hypothesized model about ESP with and without CALL, learning environment, attitudes, and satisfaction.

The hypothesized model (see Figure 1) depicted the explanatory relationships between student background demographic characteristics, attitudinal characteristics, and perception of the learning environment in explaining student satisfaction for second language learners participating in ESP programs with CALL (H_{1a}), ESP programs without CALL (H_{1b}), and a comparison of the explanatory power between ESP with and without CALL in explaining satisfaction (H_{1c}).

Research Questions

1. What are the background demographic characteristics, attitudinal characteristic, perception of instructional learning environment, and outcomes (student satisfaction as indicators of program effectiveness) of second language learners participating in ESP programs (with and without CALL) for Taiwanese college students?
2. Are there differences in student background demographic characteristics, attitudinal characteristics, perception of instructional learning environment, and outcomes (student satisfaction as indicators of program effectiveness) according to second language learners participating in ESP programs with and without CALL for Taiwanese college students?

Research Hypotheses

H: Student background demographic characteristics, attitudinal characteristics, and perception of instructional learning environment are significant explanatory variables of ESP satisfaction for second language learners participating in ESP programs with and without CALL for Taiwanese college students.

H_{1a}: Student background demographic characteristics, attitudinal characteristics, and perception of instructional learning environment are significant explanatory variables of ESP satisfaction for second language learners participating in ESP programs with CALL for Taiwanese college students.

H_{1b}: Student background demographic characteristics, attitudinal characteristics, and perception of instructional learning environment are significant explanatory variables of ESP satisfaction for second language learners participating in ESP programs without CALL for Taiwanese college students.

H_{1c}: ESP programs with CALL have a greater explanation of the relationship of student background demographic characteristics, attitudinal characteristics, perception of instructional learning environment and ESP satisfaction for second language learners than ESP programs without CALL (Compare adjusted R-Squares in H_{1a} versus H_{1b}) for Taiwanese college students.

In conclusion, this literature review provided evidence that there was a gap between CALL programs and Taiwanese college students in the research concerning CALL programs to serve college students. There was no literature found ESP programs with or without CALL in Taiwan. The needs of college level students to successfully read and write academic material were inadequately addressed at this time. In addition, there was no empirical study explore the relationship among ESP, CALL, learning environment, attitudinal characteristics, and satisfaction for Taiwanese college students. Therefore, this research study discussed the relationship among ESP with CALL or

without CALL in learning environment, background demographic characteristics, attitudinal characteristics, and satisfaction for college students in Taiwan.

Chapter II provided English language learning, ESP, CALL, indicators of the CALL program effectiveness, effectiveness of CALL programs, effectiveness of CALL programs according to different types of English for specific purposes programs, influence of learner, socio-cultural, and industrial characteristics on the effectiveness of CALL programs, and CALL programs for graduate level academic literacy, theoretical framework, research questions and hypotheses. Chapter III presented the research method to answer the questions and a hypothesis with three sub hypotheses in the study.

CHAPTER III

RESEARCH METHODOLOGY

A quantitative methodology was used to study the impact of ESP programs with and without CALL on ESP course satisfaction and English language learning gains as indicators of program effectiveness. Chapter 3 begins with a discussion of the research design. The population, sampling plan and setting, instruments, procedures and methods of data analyses were presented. The chapter concludes with an evaluation of the research methods. Two research questions and the research hypotheses with related sub hypotheses, with exploratory and explanatory purposes were examined in this study. The design focused on quantitative methods with close-ended questions on the survey.

Research Design

A quantitative, causal-comparative (exploratory) and correlational (explanatory) research design was used. The correlational design was established to test hypotheses about the explanatory relationship among background demographic characteristics, attitudinal characteristics, instructional learning environment, and ESP course satisfaction for Taiwanese college students participating in ESP programs with CALL (H_{1a}) and ESP programs without CALL (H_{1b}). The course satisfaction was an indicator of program effectiveness.

The comparative design was established to examine the differences between ESP programs with and without CALL using two different comparative analysis methods. In Research Question 2, differences of the dependent variables of (a) background demographic characteristics; (b) attitudinal characteristics; (c) instructional learning environment; and (d) ESP course satisfaction for Taiwanese college students were

compared according to whether students participated in ESP with CALL or without CALL (independent variable). In addition, a comparative analysis was made between the percentages of explained variance (adjusted R²) for students who participated in ESP with CALL versus ESP without CALL for respective dependent variable of ESP course satisfaction (H_{1c}) indicators of program effectiveness. The independent and dependent variables changed with the research questions and hypotheses.

Data collection occurred in the course for two weeks. Several known instruments were used to measure the variables; (a) *Background characteristics* developed by the researcher measures demographic characteristics of gender, age, level of education, level of education by parents, income by family, hours of enrollment in language programs, and hours of using of computers weekly in the English language programs classroom; (b) *Attitudinal Characteristics* measured by items from the Attitude/Motivation Test Battery (AMTB) by Gardner, 1985 (all research questions and all hypotheses); (c) *Instructional Learning Environment* measured by items from Constructivist Learning Environment Survey (CLES) by Taylor and Fraser (1991); and (d) *Student Satisfaction*, an indicators of program effectiveness, was measured by items from CISS (Course Interaction, Structure, and Support) developed Johnson, Aragon, Shaik, and Palma-Rivas (2000).

Descriptive statistics including the frequency distributions, measure of central tendency, and variability for all variables in the study utilized to answer Research Question 1: background demographic characteristics, attitudinal characteristics, instructional learning environment, and outcomes (satisfaction) with CALL and without CALL.

Independent *t*-tests (comparative research design) were used to answer the Research Question 2 of difference in background characteristics, attitudinal characteristics, instructional learning environment, and indicators of program effectiveness (satisfaction) according to ESP with CALL and without CALL.

Multiple regression analyses were used to examine the explanatory relationships of student background characteristics, attitudinal characteristics, instructional learning environment, and ESP satisfaction with CALL (Hypotheses 1a) and without CALL (Hypotheses 1b). Finally, *R*-Square was utilized to compare the two groups of students in the ESP with CALL and without CALL (Hypotheses 1c).

Population and Sampling Plan

Target Population

Target populations were ESP undergraduate and graduate students attending colleges in Taiwan. There are 63 colleges in Taiwan, 27 schools are universities, and 36 schools are four year colleges. There were 96 students for 2 ESP classes in National Chin-Yi Institute of Technology and 140 ESP students for 3 classes in Central Taiwan University of science and Technology. The total participants were 236 ESP students.

Accessible Population

The convenience sample included students enrolled in two Universities in Taiwan, (a) National Chin-Yi Institute of Technology; and (b) Central Taiwan University of Science and Technology. National Chin-Yi Institute of Technology located in Taiwan, in the city of Taichung. There were 10,394 undergraduate students and 212 graduate students enrolled. Of these students, 96 students were enrolled in two ESP classes during 2006-2007. The college's focus is on the English as a restricted language; academic and

occupational purposes in ESP. The ESP goal is to encourage students to speak conversational English fluently for all kinds of activities and utilize English in business areas.

Central Taiwan University of Science and Technology is located in the city of Taichung. There were over 10000 students. Of these, there were 140 students enrolled in three ESP classes during 2006-2007. ESP programs focused on the academic and occupational purposes with CALL, so students had more business and academic knowledge in English. Teachers speak English when teaching students in the ESP courses and focused on students' listening, speaking, reading, and writing in English. The school also provides five foreign English teachers for ESP students to practice the English language.

The target population was college students enrolled in ESP courses in Taiwan. The convenience sample was 236 undergraduate and graduate students, enrolled in 5 ESP classes, in two colleges in Taiwan. Some of the ESP courses provided CALL programs already in both of the two colleges in Taiwan. The entire accessible population was invited to participate in the study. Using the accessible population contributed to strengthening the external validity of this study.

Sampling Plan

The entire accessible population was invited to participate in the study. There was no probability or non-probability sampling plan designed. However, the final data producing sample was self-selected depending on those agreeing to participate in the study.

Eligibility Criteria and Exclusion Criteria

1. College students attending two universities in Taiwan (National Chin-Yi Institute of Technology and central Taiwan University of science and Technology);
2. College students enrolled in the ESP programs; and
3. College students who are at least 18 years of age.

Exclusion Criteria

1. College students not attending two universities in Taiwan (National Chin-Yi Institute of Technology and Central Taiwan University of Science and Technology);
2. College students not enrolled in the ESP programs; and
3. College students younger than 18 years of age.

Setting

At the two universities ESP programs in Taiwan, there were two ESP classes in National Chin-Yi Institute of Technology, and three ESP classes in Central Taiwan University of Science and Technology.

Instrumentation

There were four parts to the instrumentation utilized in this study:

1. Part 1: Background demographic Characteristics
2. Part 2: Attitudinal Characteristics
3. Part 3: Learning Environment
4. Part 4: Course Satisfaction

The data collection: Part 1, Background Demographic Characteristics had eight questions, and Part 2, Attitudinal Characteristics had 20 questions, Part 3 was the Instructional Learning Environment had seven questions, and Part 4, Course satisfaction had 11 questions. The Surveys were estimated to take 20 minutes to complete and the surveys were originally written in English and were translated into Chinese after IRB approval.

For the Survey, Part 1, *Background Demographic characteristics* was developed by the researcher. Part 2, *Attitudinal Characteristics* was measured by items from the *Attitude/Motivation Test Battery (AMTB)* by Gardner (1985). Part 3, *Instructional Learning Environment* measured items from *Constructivist Learning Environment Survey (CLES)* developed by Taylor and Fraser (1991). Part 4, *Student Satisfaction*, an indicator of program effectiveness, was measured by items from *Course Interaction, Structure, and Support (CISS)* developed Johnson, Aragon, Shaik, and Palma-Rivas (2000).

Part 1: Background Demographic Characteristics

Background Demographic Characteristics, developed by the researcher, included eight close-ended, multiple choice questions that gave each student a code number, as well as ask gender, age, level of education by parents, household income by family, measure hours of enrollment in language programs, hours of using of computers weekly in the English language programs classroom, and CALL participants. The purpose of the background characteristics was to identify the respondents' personal characteristics.

Part 2: Attitudinal Characteristics:

Description

The *Attitude/Motivation Test Battery (AMTB)* was developed by Gardner (1985). *Attitude/Motivation Test Battery (AMTB)* had 130 items. The *AMTB* consisted of four subscales (integrativeness, attitudes toward the learning situation, motivation, attitude/motivation index (*AMI*)). The *AMI* had 20 items and was utilized in this study. Each item was related on a seven-point Likert rating scale where 1= Strongly disagree, 2=Moderately disagree, 3= Slightly disagree, 4= Neutral, 5= Slightly agree, 6= Moderately agree, 7= Strongly agree. THE *AMI* was the *AMTB* subscale chosen for this study to investigate attitude and motivation, and was adapted by being translated into Chinese.

Reliability

A study by Gardner (2005) of 12-13, and 15-16 years old on second language acquisition in Croatia, Poland, Romania, and Spain used the *AMTB* in “basic English version” and translated versions. Gardner (2005) reported Cronbach’s Alphas (as estimates of internal consistency reliability) for attitude/motivation (*AMI*) as ranging from 0.79 to 0.88. The median was 0.80 for younger students in Croatia; 0.81 for older students in Croatia; 0.83 for younger students in Poland; 0.84 for older students in Poland; 0.82 for younger students in Romania; 0.79 for older students in Romania; 0.81 for younger students in Spain; and 0.88 for older students in Spain.

The study focused on the 92 students of university Javel French. Students were enrolled in two French courses (Gardener & MacIntyre, 1993). Gardner and MacIntyre

(1993) reported Cronbach's Alphas, as a measure of internal consistency reliability, at 0.70 for attitude/motivation.

The study used quantitative and qualitative methods and focused on 56 Japanese undergraduate and graduate attending ESL classrooms at the University of Hawaii at Manoa (UHM). All participants spoke English as their second language, and Japanese as their first language (Hashimoto, 2000). Macintyre and Charos (1996) reported Cronbach's Alphas = 0.83 for attitude-motivation (Hashimoto, 2000).

Validity

Concurrent validity had been established for *Attitude/Motivation Test Battery (AMTB)* on students from age 12-13, and 15-16 years old on second language acquisition in Croatia, Poland, Romania, and Spain. The "basic English version" *AMTB*, and then the survey was translated into different language forms of *AMTB* (Gardner, 2005). Construct validity, 0.88 for attitude/motivation (*AMI*). Exploratory factor analysis was performed on the *AMI* to further construct validity.

AMI validity was established by construct validity on a study that used quantitative and qualitative methods and focused on 56 Japanese undergraduate and graduate students attending ESL classrooms at the University of Hawaii at Manoa (UHM) (Hashimoto, 2000). The values ranged from the average of 0.59 to 0.76 in factor loading. The factors included integrativeness, motivation, attitudes toward the learning situation and attitude/motivation index (*AMI*). Exploratory factor analysis was performed on attitude/motivation to further construct validity.

Part 3: Learning Environment

Description

To measure the learning environment, *Constructivist Learning Environment Survey (CLES)* developed by Taylor and Fraser (1991), was used. The *CLES* had 35 items and was measured using a frequency rating scale for each item where, 1= almost always, 2= often, 3= sometimes, 4= seldom, and 5= almost never. *CLES* had five subscales: (a) Personal relevance (seven items) were listed as: 1, 7, 13, 19, 25, 30, 37; (b) Student negotiation (seven items) were listed as: 5, 11, 17, 23, 29, 34, 41; (c) Shared control (seven items) were listed as: 4, 10, 16, 22, 28, 33, 40; (d) Critical voice (seven items) were listed as: 3, 9, 15, 21, 27, 32, 39; and (e) Uncertainty (seven items) were listed as: 2, 8, 14, 20, 26, 31, 38. A total score ranged between 35-175.

There were four items worded negatively in the *CLES*: (a) one item was from of student negotiation; (b) one item was from critical voice; and (c) two items were from uncertainty and reverse scored. The *CLES* took 30 minutes to complete. Also the researcher used the subscale: critical voice (seven items), the score range between: 7-35. The critical voice and shared control were chosen for this study to investigate, and were adapted by being translated into Chinese.

Reliability

The study combined quantitative and qualitative approaches on 500 sample student in mathematics and sciences in Australia. Taylor and Fraser (1994) reported Cronbach's Alphas as estimates of internal consistency reliability reported in the study for the subscales of 0.85 for student control and 0.79 for critical voice.

Chen's (2000) study used quantitative and qualitative methods and 1,081 science students from 50 classes in 25 schools in Western Australia and 1879 students from 50 classes in 25 schools in Taiwan. The survey instrument was translated from English into Chinese for Taiwanese students (Chen, 2000). Chen (2000) reported Australia Cronbach's Alphas as estimates of internal consistency reliability in the study for the subscales of 0.85 for critical voice; 0.91 for shared control. Taiwan Cronbach's Alphas for subscale: 0.73 for critical voice; 0.92 for shared control. The estimate of reliability (internal consistency) using Cronbach's Alphas for the total Australia students was 0.91, and 0.92 for Taiwanese students.

Validity:

Constructivist Learning Environment Survey (CLES) had been established by concurrent validity by the study combines quantitative and qualitative approaches on 500 sample student in mathematics and sciences in Australia by Taylor and Fraser (1994). Concurrent validity: 0.85 for the critical voice, and 0.91 for the shared control. Exploratory factor analysis was performed on the critical voice and shared control to further concurrent validity.

Constructivist Learning Environment Survey (CLES) had been established by discriminant validity on the quantitative method study, 1,081 science students from 50 classes in 25 schools in Western Australia and 1879 students from 50 classes in 25 schools in Taiwan. The survey instrument had been translated from English into Chinese for Taiwanese students (Chen, 2000). According to Chen (2000), Australian discriminant validity was: 0.43 for critical voice; 0.31 for shared control. Taiwan discriminant validity

was: 0.39 for critical voice; 0.39 for shared control. Exploratory factor analysis was performed on the critical voice and shared control to further discriminant validity.

Survey Part 4: Student Satisfaction

Description

The Course Interaction, Structure, and Support scale (*CISS*) was developed by Johnson, Aragon, Shaik, and Palma-Rivas (2000). *CISS* was a 31 item, four-point Likert scale where 1= strongly agree; 2= agree; 3= disagree; 4= strongly disagree. *CISS* had 3 subscales: (a) interaction; (b) structure; and (c) support. The total score range was between 31-124. Lower scores were associated with lower level of satisfaction. There were four items worded negatively. The *CISS* took about complete about 20 minutes. The interaction subscale was used in this study. Eleven items were used from 31 questions. The interaction subscale was chosen for this study to investigate, and adapted by being translated into Chinese.

Reliability

A quasi-experimental study on undergraduate students (43 students) and graduate students (25 students) who participated in an online course and traditional face-to-face class compared outcome measures. However, the *CISS* was still in early development, so this *CISS* instrument still needs to be tested for reliability (Johnson et al., 2000).

Bailey's (2002) study used qualitative and quantitative, exploratory methods. There was a course with 43 undergraduate engineering students, and two courses with 25 graduate students in Pennsylvania State University taking online courses (Bailey, 2002). Bailey (2002) reported *CISS* Cronbach's Alphas (as estimates of internal consistency

reliability) in the study for the subscales of interaction as: 0.75 for student-to-student interaction; 0.80 for student-to-teacher interaction; and 0.84 for student satisfaction.

Validity

Johnson et al. (2000) conducted a quasi-experimental study on undergraduate students (43 students) and graduate students (25 students) for an online course and compared the outcome measures with a traditional face-to-face class. *CISS* had been established by construct validity in the study (Johnson et al., 2000). Exploratory factor analysis was performed on the interaction subscale to further construct validity.

Benson, Johnson, Taylor, Treat, Shinkareva, and Duncan (2004) utilized quasi-experimental studies and qualitative case studies to compare online (81 students) and on-campus study (112 students). “Exploratory and confirmatory factor analysis procedures were used to establish the construct validity, the reliability, and the factor structure of *CISS*” (Benson et al., 2004, p.11). The factors were (a) interaction; (b) structure; and (c) support. Exploratory factor analysis was performed on the interaction subscale to further construct validity.

Procedures: Ethical Considerations and Data Collection Methods

- 1) Obtained authors’ permission to use AMTB, CLES, and *CISS* scales in this survey (See Appendix A).
- 2) Permission was obtained from National Chin-Yi Institute of Technology, and Central Taiwan University of Science and Technology in Taiwan to conduct the survey instruments (See Appendix E).
- 3) An application for IRB was submitted.
- 4) Before IRB tentative approval, instruments and consent letters were translated into

Mandarin and certified.

- 5) The study was approved by Lynn University's Institutional Review Board (IRB) before conducting the study.
- 6) Data collection was at National Chin-Yi Institute of Technology, and Central Taiwan University of Science and Technology in Taiwan. The researcher provided consent forms to the participants. The data collection process took two weeks from March 18 to March 31 in 2007.
- 7) Before receiving approval from IRB, translation of the survey was officially certified.
- 8) The researcher entered the classroom with the professors or instructors and explained the dissertation research and consent form to the participants. Certification of translation of consent form and survey are found in the Appendices F.
- 9) The participants were informed of the need to complete a written consent form page to agree participate in this survey. Participants were informed that data will be anonymous.
- 10) The participants' anonymity was maintained by coding data.
- 11) Before the research survey was taken, the teacher assigned a code number then the students placed the code on the survey.
- 12) The survey took approximately 20 minutes to complete in the ESP classroom. There were no subjects' identifiers on the survey form.
- 13) The participants completed the survey in the classroom. Before the researcher distributed the survey to the participants in the ESP classroom, the dissertation research and participants' rights were explained, with the assurance that every participant would be anonymous. After the surveys were distributed, the researcher

left the classroom for data collection.

- 14) In the ESP classroom, the teacher assigned a code number to each of the students. After the participants finished the survey, the subjects put the survey and tests into an envelope, sealed it, and placed the documents in a box that the researcher left in the room. After all participants left the room, the researcher returned to collect the surveys.
- 15) The results of all responses were reported as a group. The code numbers were protected for all of the participants and anonymous to the researcher.
- 16) The researcher created a password-protected database. Data was entered into SPSS and the original surveys will be kept in a locked filing cabinet or locked desk drawer at the researcher's office.
- 17) The data were kept as anonymous information.
- 18) The data collection time was two weeks.
- 19) The data will be destroyed after five years.

Methods of Data Analysis

When the surveys were completed, the researcher entered the data into SPSS programs for statistical analysis. Reliability estimates of internal consistency using Cronbach's (*a*) and factor analysis were used to establish construct validity for: (a) attitudinal characteristics; (b) learning environment; and (c) course satisfaction. Descriptive statistics including the frequency distributions, measures of central tendency (mean and median) and variability (range and standard deviation) for all variables in the study utilized to answer Research Question 1: (a) background demographic

characteristics; (b) attitudinal characteristics; (c) instructional learning environment; and (d) outcomes (satisfaction) with CALL and without CALL.

For the exploratory (comparative) research design, independent *t*-tests and Chi-Square were used to answer the Research Question 2 of the differences in (a) background demographic characteristics; (b) attitudinal characteristics; (c) instructional learning environment; and (d) indicators of program effectiveness (satisfaction) according to ESP with CALL and without CALL.

For the exploratory (correlational) research design, multiple regression analyses were used. To test hypothesis 1, multiple regression analyses were used to examine the explanatory relationships of: (a) student background demographic characteristics; (b) attitudinal characteristics; (c) instructional learning environment; and (d) ESP satisfaction with CALL (Hypotheses 1a) and without CALL (Hypotheses 1b). The adjusted *R*-Squares for two groups of students in the ESP with CALL (Hypotheses 1a) and ESP without CALL (Hypotheses 1b) were compared in Hypothesis 1c to determine if ESP with CALL had the greater exploratory power of ESP satisfaction.

Evaluation of Research Methods

Internal Validity

1. The strength of the internal validity of the study used a non-experimental, quantitative, causal-comparative (exploratory) and correlational (explanatory) research design.
2. A strength of the study was the use of multiple regression analysis to examine the relationship among student background demographic characteristics,

attitudinal characteristics, instructional learning environment, and ESP satisfaction with CALL and without CALL in college students in Taiwan.

3. The strength of the internal validity of the study was that the instruments had established reliability and validity in other similar studies.
4. The internal validity of the study was that there were many extraneous variables in a natural environment.
5. For data analysis, descriptive and inferential statistical procedures were considered appropriate to measure the student background demographic characteristics profile and to answer the research questions and hypotheses.
6. For data collection, the researcher left the classroom while participants completed the surveys and tests on their own to avoid research bias from contact with the researcher.
7. The weakness of the internal validity of the study was that the instruments were modified, which could decrease the original validity.
8. The weakness of the study was that the situational contaminants may affect students' response and threaten the internal validity of the study.

External Validity

1. The strength of the study was that accessible population examined all of the ESP students in the two colleges and had a very high return rate.
2. The strength of the study was that the setting took place in a natural environment.
3. The weakness of the study was no other setting beyond Taichung city and Taichung County in Taiwan (ecological validity). The settings were

weaknesses in external validity of the study because of the limitation in generalizability to the accessible population.

Chapter III presented the research methodology, including the research design, population and sampling plan, instrumentation, data collection methods and ethical considerations, methods of data analysis, and evaluation of research methods. Chapter IV presents the results of this study.

CHAPTER IV

RESULTS

This chapter presented the research questions, research hypotheses, and findings. This study utilized a quantitative, causal-comparative (exploratory) and correlational (explanatory) research design. Descriptive statistics including the frequency distributions, measured of central tendency, and variability for all variables in the study answered Research Questions 1. Independent *t*-test (comparative research design) answered the Research Question 2. Multiple regression analyses examined the hypotheses in the study. The statistical techniques analyzed the results for statistical significance. The study participants were 236 in ESP programs students in Taiwan colleges. The response rate is 92.37% of the study. These research questions and research hypotheses are presented as follows:

Reliability

Table 1 indicates the Cronbach's Alphas for internal consistency on attitudinal characteristics. $\alpha=0.775$ was the acceptance value of reliability (Hair, Anderson, Tatham, & Black, 1998). The Cronbach's Alphas values ranged from 0.746 to 0.819. All of them were more than 0.70; therefore, internal consistency was satisfactory.

Table 1

Reliability Statistics Attitudinal Characteristics Survey

Cronbach's Alphas	N of Items
.775	20

Table 2 indicates the Cronbach's Alphas for internal consistency on instructional learning environment. $\alpha=0.666$ internal consistency was not high. The Cronbach's Alphas values ranged from 0.604 to 0.703. However, Table 2 removed item 7, then Cronbach's Alphas for internal consistency was satisfactory. The Cronbach's Alphas values ranged from 0.648 to 0.681. Internal consistency was $\alpha= 0.703$.

Table 2

Reliability Statistics Instructional Learning Environment Survey

<i>N</i> of Items	Corrected Item-Total Correlation	Alpha if Item Deleted
7	.666	0.703

Table 3 indicates the Cronbach's Alphas for internal consistency on student satisfaction. $\alpha=0.737$ was the acceptance value of reliability (Hair, Anderson, Tatham, & Black, 1998). The Cronbach's Alphas values ranged from 0.681 to 0.792. Therefore, internal consistency was satisfactory.

Table 3

Reliability Statistics Student Satisfaction Survey

Cronbach's Alphas	<i>N</i> of Items
.737	11

Factor Analysis for Construct Validity

In order to establish construct validity on attitudinal characteristics, the 20 items of attitudinal characteristics were subject to this analysis and it was performed with varimax rotation. To validate appropriateness of the analysis, Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity measures were calculated. Table 4 shows the results of KMO and Bartlett's test of sphericity. The value of KMO was 0.890.

Table 4

KMO and Bartlett's Test Results on Attitudinal Characteristics

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.890
Bartlett's Test of Sphericity	Approx. Chi-Square	2023.635
	<i>df</i>	190
	Sig.	.000

Table 5 and Figure 2 show the attitudinal characteristics results of factor analysis. Table 5 indicates that five factors values were larger than 1 after varimax rotation is extracted which accounted for almost 65% of the total variance.

Table 5

Extraction Sums of Squared Loading on Attitudinal Characteristics

Components	Total	% of Variance	Cumulative %
1	7.315	36.574	36.574
2	2.052	10.260	46.834
3	1.374	6.869	53.703
4	1.212	6.062	59.765
5	1.030	5.151	64.916

Figure 2 indicates the Scree Plot for factor analysis. This function of the scree plot was to select how many factors to rotate to a final solution, and the SPSS default was to select and rotate any factor with an eigenvalue greater than 1.0 (George & Mallery, 2003). Therefore, there were five factors greater than 1.0 and these factors needed to rotate to a final solution.

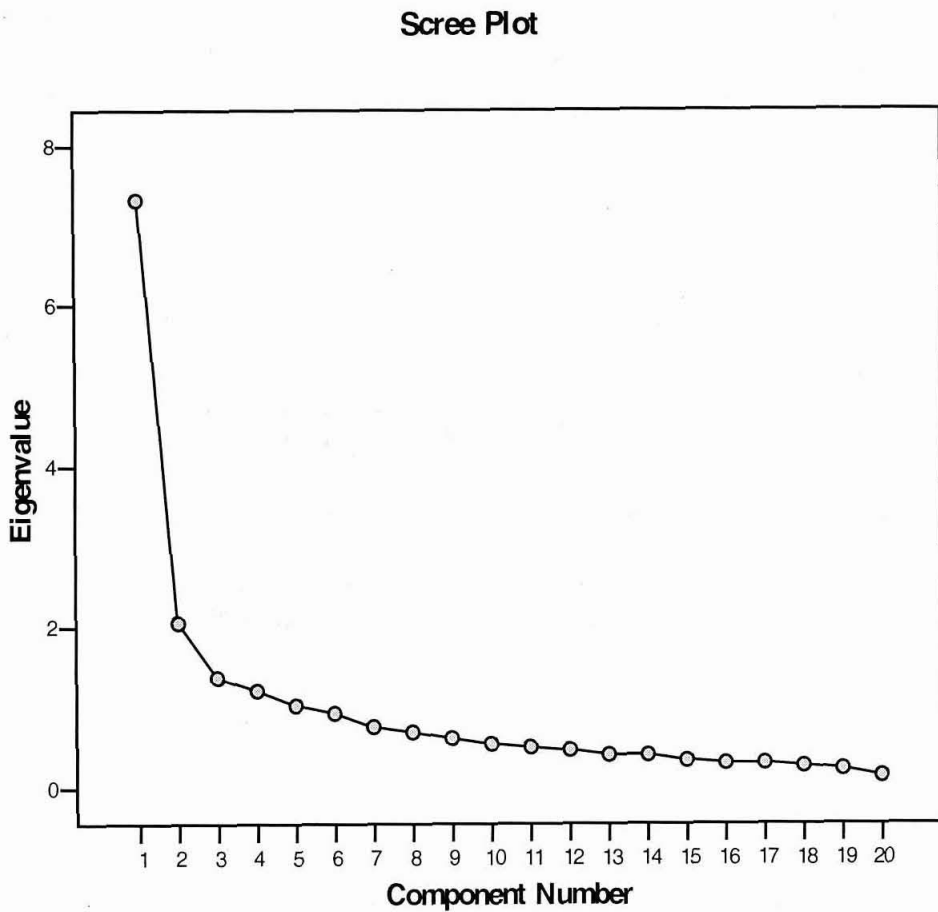


Figure 2. Scree plot for factor analysis on attitudinal characteristics.

To test construct validity on instructional learning environment, the 7 items were subject to this analysis and it was performed with varimax rotation. Table 6 shows the results of KMO and Bartlett's test of sphericity. The value of KMO was 0.621.

Table 6

KMO and Bartlett's Test Results on Instructional Learning Environment

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.621
Bartlett's Test of Sphericity	Approx. Chi-Square	278.075
	<i>df</i>	21
	Sig.	.000

Table 7 and Figure 3 show the instructional learning environment results of factor analysis. Table 7 indicated that three factors values were larger than 1 after varimax rotation was extracted which accounted for almost 66% of the total variance.

Table 7

Extraction Sums of Squared Loading on Instructional Learning Environment

Components	Total	% of Variance	Cumulative %
1	2.462	35.170	35.170
2	1.174	16.776	51.946
3	1.014	14.491	66.437

Figure 3 indicates the Scree Plot for factor analysis. There were three factors greater than 1.0 and these factors needed to rotate to a final solution.

Scree Plot

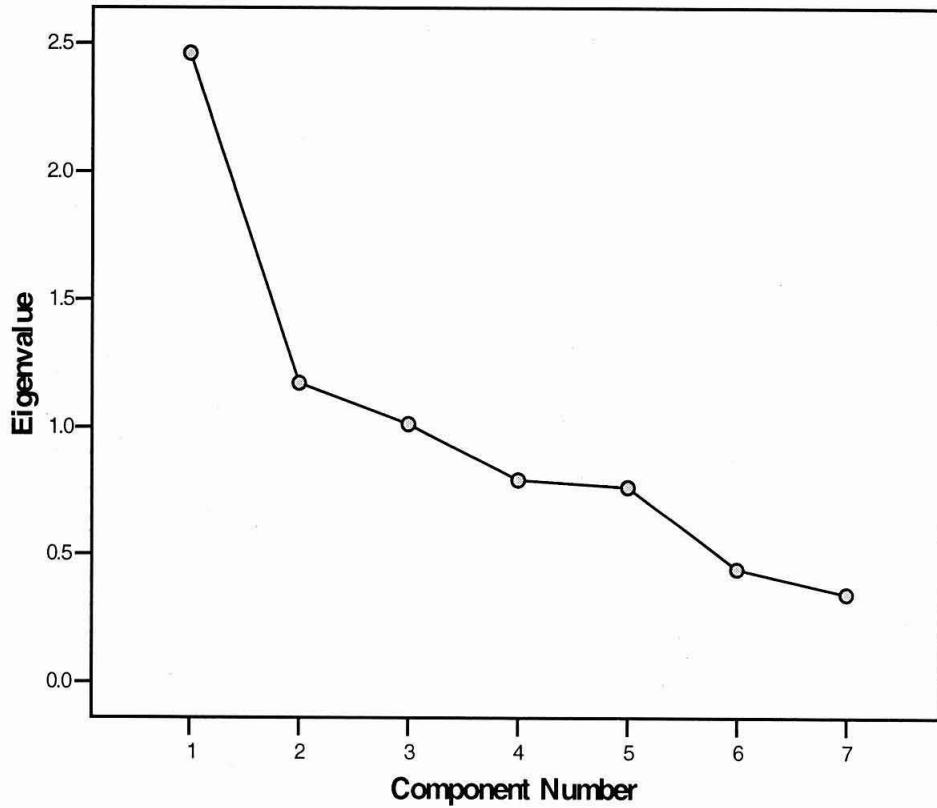


Figure 3. Scree plot for factor analysis on instructional learning environment.

To test construct validity on student satisfaction, the 11 items were subject to this analysis and it was performed with varimax rotation. Table 8 shows the results of KMO and Bartlett's test of sphericity. The value of KMO was 0.838.

Table 8

KMO and Bartlett's Test Results on Student Satisfaction

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.838
Bartlett's Test of Sphericity	Approx. Chi-Square	748.062
	<i>df</i>	55
	Sig.	.000

Table 9 and figure 4 show the student satisfaction results of factor analysis. Table 9 indicates that three factors values were larger than 1 after varimax rotation was extracted which accounted for almost 61% of the total variance.

Table 9

Extraction Sums of Squared Loading on Student Satisfaction

Components	Total	% of Variance	Cumulative %
1	4.224	38.398	38.398
2	1.472	13.379	51.778
3	1.037	9.430	61.208

Figure 4 indicates the Scree Plot for factor analysis. There were three factors greater than 1.0 and these factors needed to rotate to a final solution.

Scree Plot

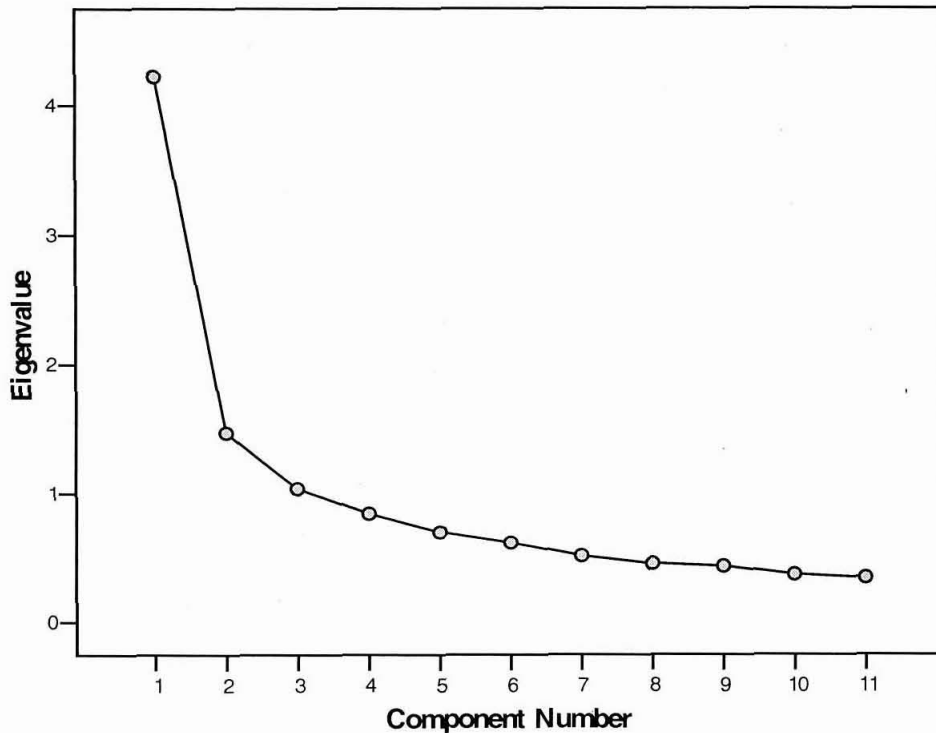


Figure 4. Scree plot for factor analysis on student satisfaction.

Research Question 1

What are the background demographic characteristics, attitudinal characteristic, perception of instructional learning environment, and outcomes (student satisfaction as indicators of program effectiveness) of second language learners participating in ESP programs (with and without CALL) for Taiwanese college students?

The descriptive statistics including the frequency distributions, measured of central tendency (mean, median, mode, standard deviation, minimum, and maximum) of all variables (attitude, environment, satisfaction, gender, age, father education, mother

education, family income, learning hours, computer learning, and weekly hours) are presented in Table 10.1 and 10.2 in this study.

Table 10.1.

Descriptive Statistics of the Variables

		Attitude Average	Environment Average	Satisfaction Average	Gender	Age	Father Education
N	Valid	218	218	218	218	218	218
	Missing	0	0	0	0	0	0
Mean		3= Neutral	3= Sometimes	3= Neutral	Female	18-20	High School
Median		3= Neutral	3= Sometimes	3= Neutral	Female	18-20	High School
Mode		3= Neutral	3= Sometimes	3= Neutral	Female	18-20	High School
Std. Deviation		.524	.592	.554	.424	.699	.715
Minimum		2= Disagree	1= Almost Never	1= Strongly Disagree	Male	18-20	Middle School
Maximum		4= Agree	5= Almost Always	5= Strongly Agree	Female	24-26	Graduate

Table 10.2. (continued)

		Mother Education	Income(NT)	Learning Hours	Computer Learning	Weekly Hours
N	Valid	218	218	218	218	218
	Missing	0	0	0	0	0
Mean		High School	50000- 69999	21-40	Yes	4-6
Median		High School	50000- 69999	1-20	Yes	0-3
Mode		High School	30000- 49999	1-20	Yes	0-3
Std. Deviation		.681	1.378	1.193	.483	.912
Minimum		Middle School	<30000	1-20	Yes	0-3
Maximum		Graduate	>90000	>60	No	>10

Table 11 and Figure 5 show the results of respondents' attitudinal characteristics.

Table 11 indicates that 1.4% disagreed, 53.7% were neutral, 45% strongly agreed.

Table 11

Frequency Table for Attitudinal Characteristics

Attitudinal Characteristics	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	3	1.4	1.4	1.4
Neutral	117	53.7	53.7	55.0
Strongly Agree	98	45.0	45.0	100.0
Total	218	100.0	100.0	

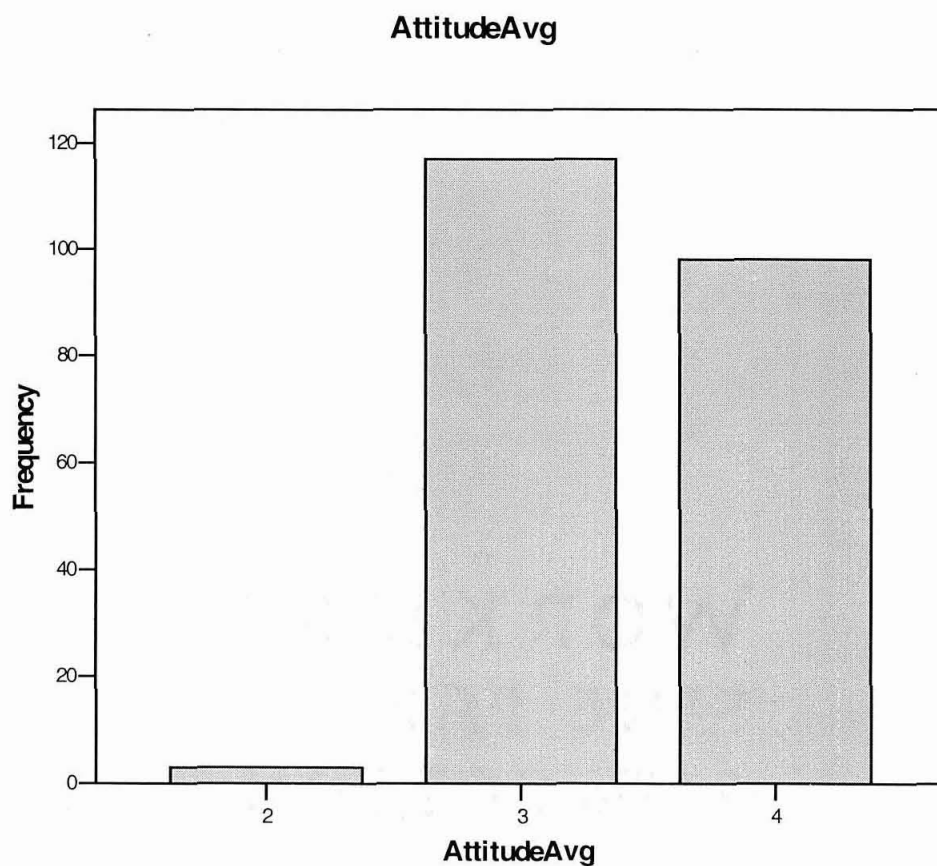


Figure 5. Bar chart for attitudinal characteristics.

Table 12 and Figure 6 show the results of respondents' instructional learning environment. Table 12 indicates that 0.5% of the respondents were almost never, 6% of the respondents were seldom, 65.6% of the respondents were sometimes, 26.6% of the respondents were often, and 1.4% of the respondents were almost always.

Table 12

Frequency Table for Instructional Learning Environment

Instructional Learning Environment	Frequency	Percent	Valid Percent	Cumulative Percent
Almost Never	1	.5	.5	.5
Seldom	13	6.0	6.0	6.4
Sometimes	143	65.6	65.6	72.0
Often	58	26.6	26.6	98.6
Almost Always	3	1.4	1.4	100.0
Total	218	100.0	100.0	

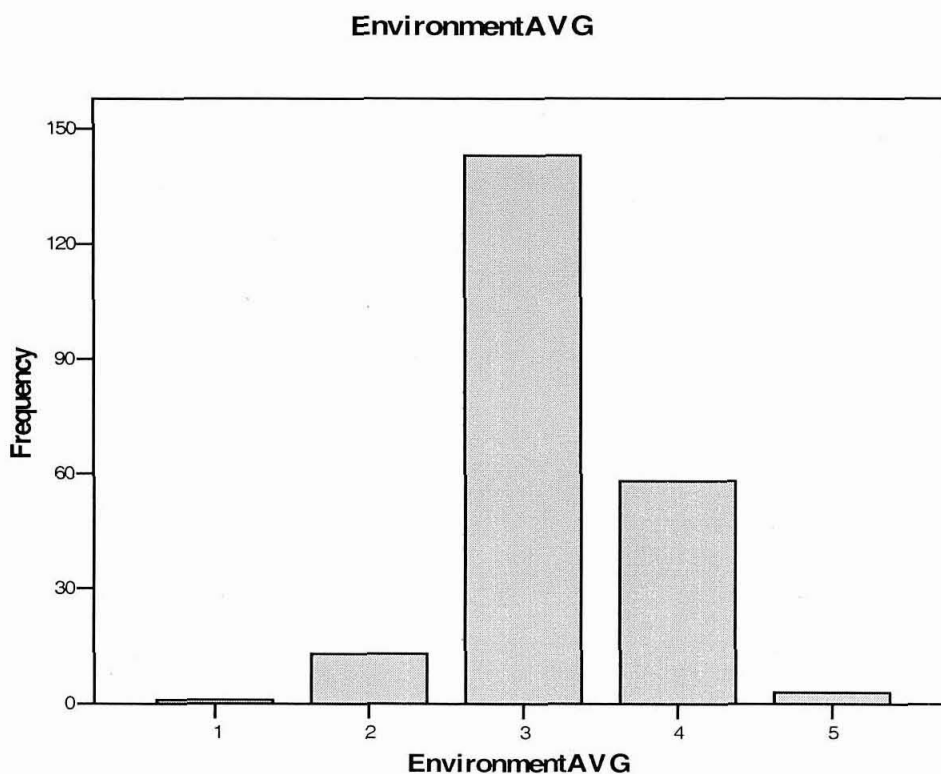


Figure 6. Bar chart for instructional learning environment.

Table 13 and Figure 7 show the results of respondents' student satisfaction. Table 13 indicates that 3.2% of the respondents disagreed, 57.3% of the respondents were neutral, 39% of the respondents agreed, 0.5% of the respondents strongly agreed.

Table 13

Frequency Table for Student Satisfaction

Student Satisfaction	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	7	3.2	3.2	3.2
Neutral	125	57.3	57.3	60.6
Agree	85	39.0	39.0	99.5
Strongly Agree	1	.5	.5	100.0
Total	218	100.0	100.0	

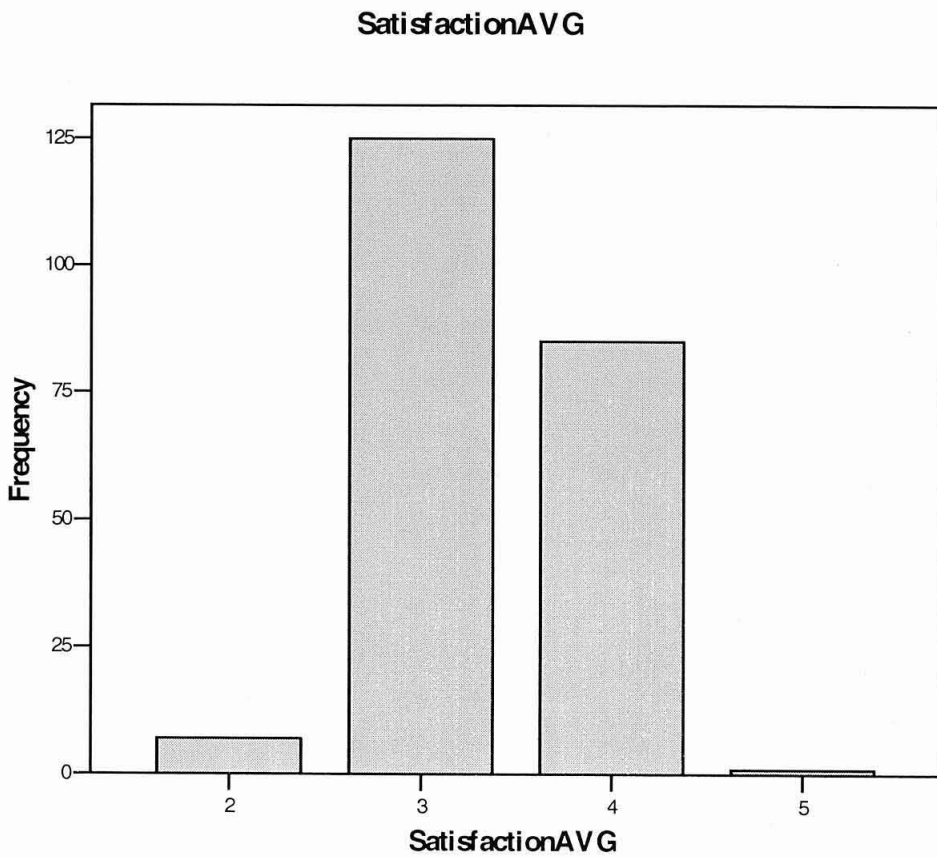


Figure 7. Bar chart for student satisfaction.

Table 14 and Figure 8 show the result of respondents' gender. Table 14 indicates that 23.4% of the respondents were male and 76.6% of the respondents were female.

Table 14

Frequency Table for Gender

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	51	23.4	23.4	23.4
Female	167	76.6	76.6	100.0
Total	218	100.0	100.0	

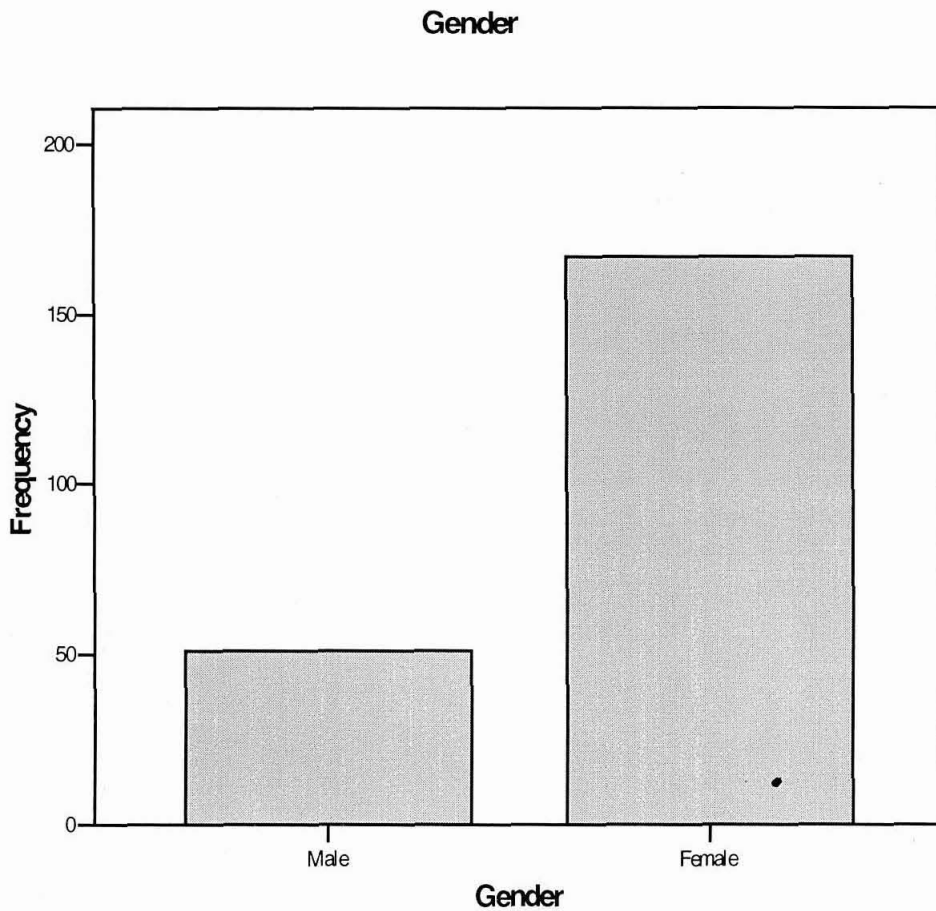


Figure 8. Bar chart for gender.

Table 15 and Figure 9 show the result of respondents' ages. Table 15 indicates that 66.1% were among 18 and 20 years old, 22% were among 21 and 23 years old, 11.9% were among 24 and 26 years old.

Table 15

Frequency Table for Age

Age	Frequency	Percent	Valid Percent	Cumulative Percent
18-20	144	66.1	66.1	66.1
21-23	48	22.0	22.0	88.1
24-26	26	11.9	11.9	100.0
Total	218	100.0	100.0	

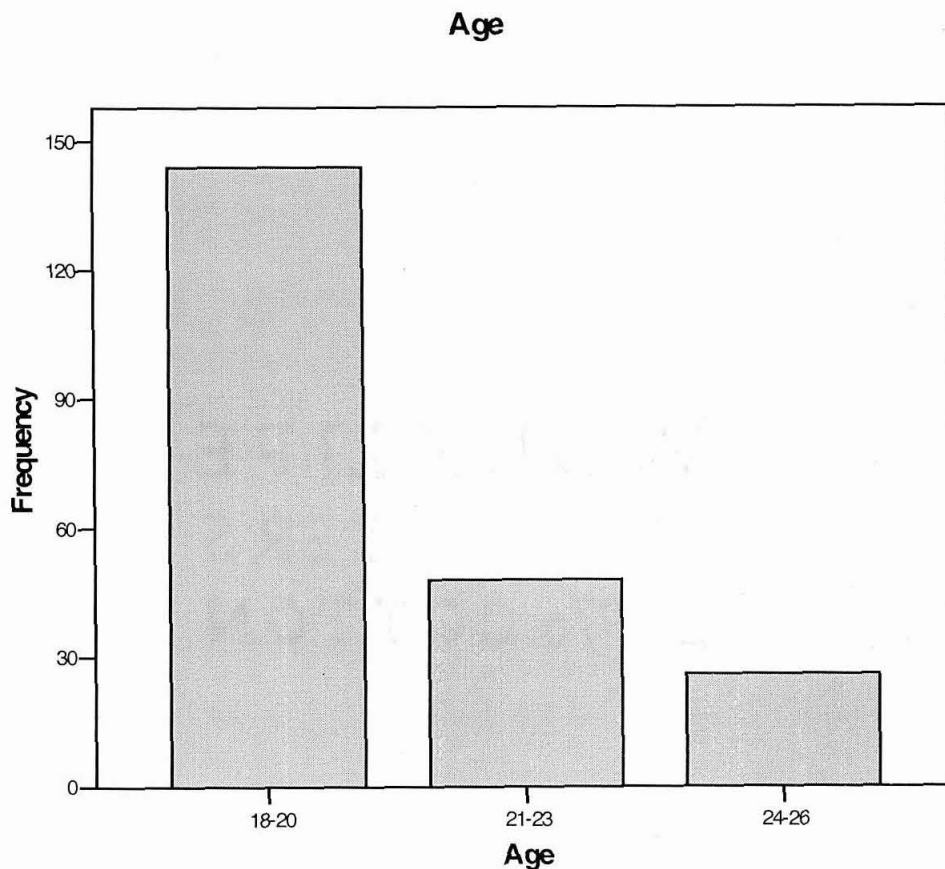


Figure 9. Bar chart for ages.

Table 16 and Figure 10 show the result of respondents' father educational level. Table 16 indicates that 36.2% of the respondents were at middle school level, 51.4% of the respondents were at the high school level, 10.1% of the respondents were at college school level, and 2.3% of the respondents were at graduate school level.

Table 16

Frequency Table for Father Education

Education of Father	Frequency	Percent	Valid Percent	Cumulative Percent
Middle School	79	36.2	36.2	36.2
High School	112	51.4	51.4	87.6
College	22	10.1	10.1	97.7
Graduate	5	2.3	2.3	100.0
Total	218	100.0	100.0	

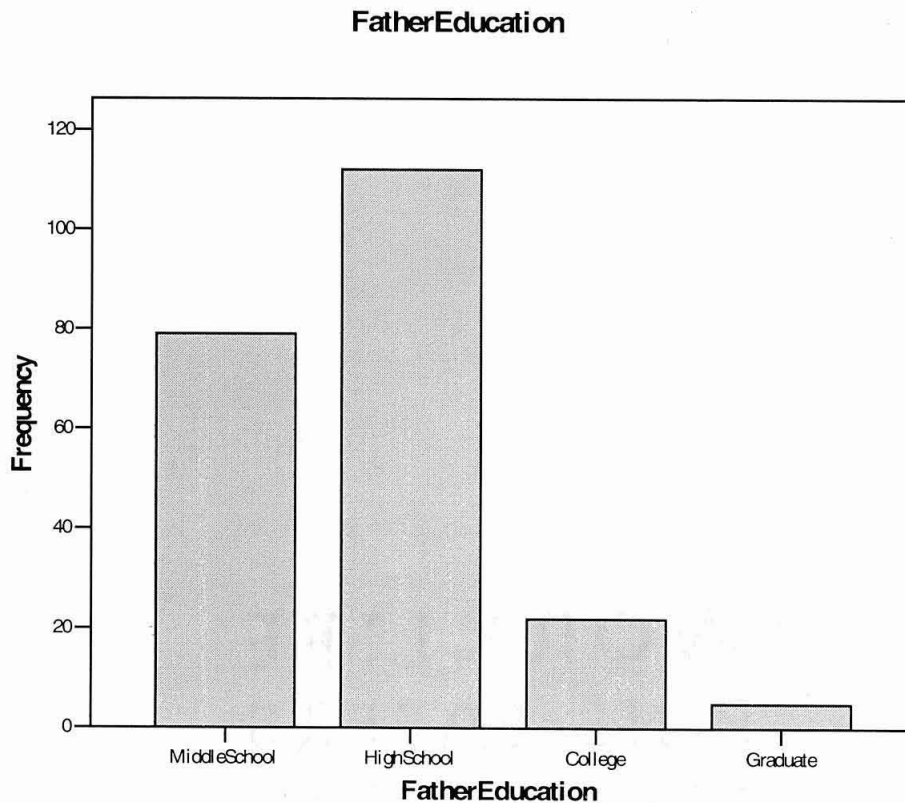


Figure 10. Bar chart for education of father.

Table 17 and Figure 11 show the results of respondents' mother education level. Table 17 indicates that 44% of the respondents were at the middle school level, 46.8% of the respondents were at high school level, 7.8% of the respondents were at college level, and 1.4% of the respondents were at graduate school level.

Table 17

Frequency Table for Mother Education

Education of Mother	Frequency	Percent	Valid Percent	Cumulative Percent
Middle School	96	44.0	44.0	44.0
High School	102	46.8	46.8	90.8
College	17	7.8	7.8	98.6
Graduate	3	1.4	1.4	100.0
Total	218	100.0	100.0	

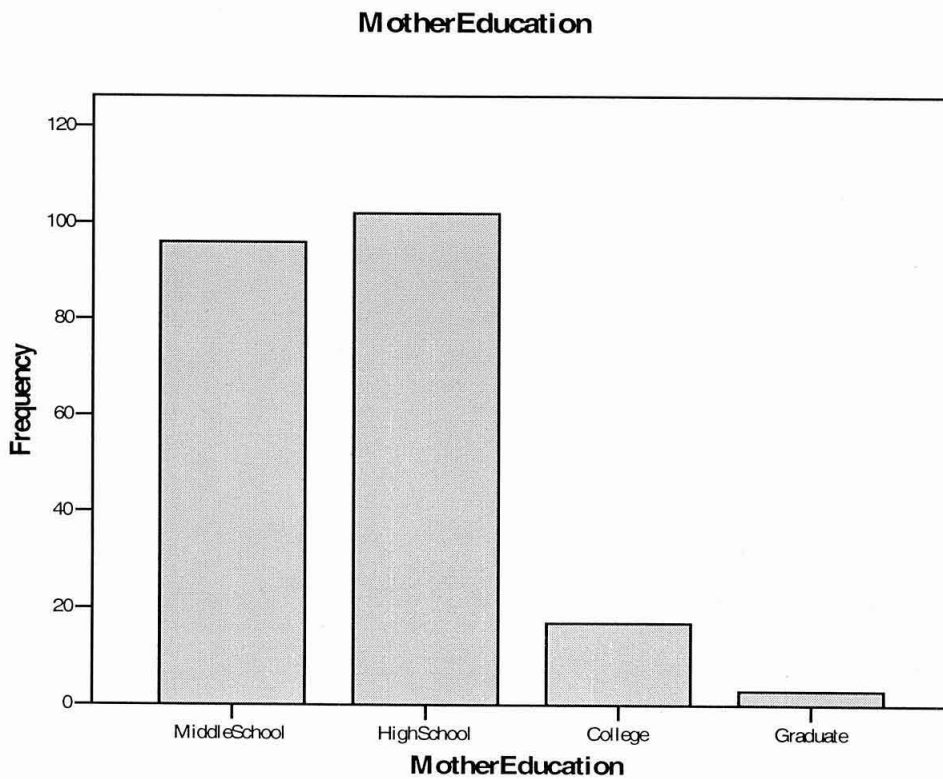


Figure 11. Bar chart for education of mother.

Table 18 and Figure 12 show the results of respondents' family income category. Table 18 indicates that 19.7% of the respondents' family income were below \$30000 NT dollars, 30.3% of the respondents' family income were between \$30000 to \$49999 NT dollars, 21.6% of the respondents' family income were between \$50000 to \$69999 NT dollars, 9.6% of the respondents' family income were between \$70000 to \$89999 NT dollars, and 18.8% of the respondents' family income were above \$ 90000 NT dollars.

Table 18

Frequency Table for Family Income

Family Income (NT)	Frequency	Percent	Valid Percent	Cumulative Percent
<30000	43	19.7	19.7	19.7
30000-49999	66	30.3	30.3	50.0
50000-69999	47	21.6	21.6	71.6
70000-89999	21	9.6	9.6	81.2
>90000	41	18.8	18.8	100.0
Total	218	100.0	100.0	

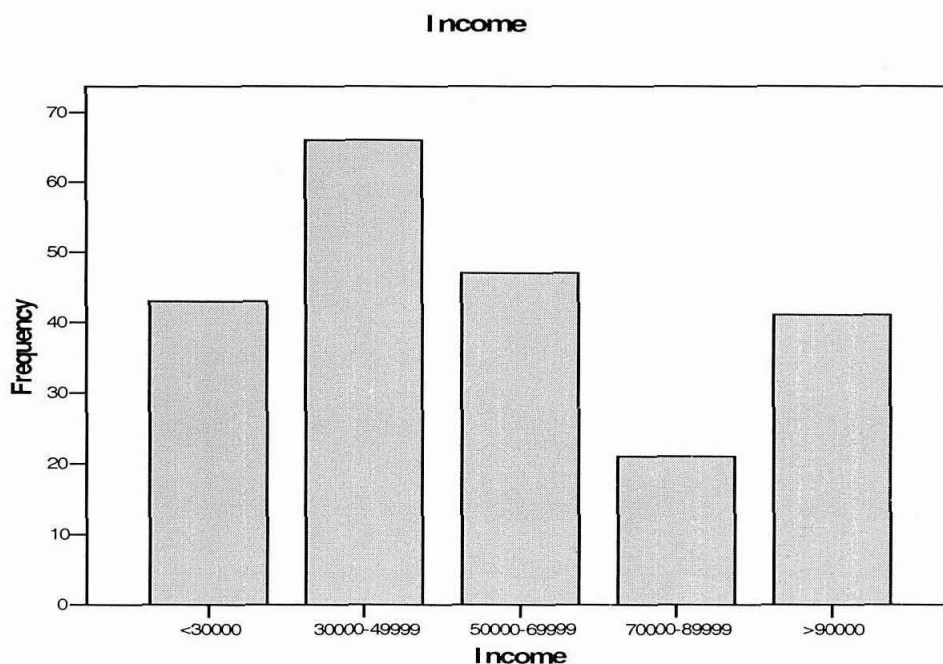


Figure 12. Bar chart for family income.

Table 19 and Figure 13 show the results of respondents' hours of enrollment in language programs. Table 19 indicates that 51.4% of the respondents were in language programs 1 to 20 hours, 20.2% of the respondents were in language programs 21 to 40 hours, 7.8% of the respondents were in language programs 41 to 60 hours, and 20.6% of the respondents were in language programs above 60 hours.

Table 19

Frequency Table for Hours of Enrollment in Language Programs

Hours of Enrollment in Language Programs	Frequency	Percent	Valid Percent	Cumulative Percent
1-20	112	51.4	51.4	51.4
21-40	44	20.2	20.2	71.6
41-60	17	7.8	7.8	79.4
>60	45	20.6	20.6	100.0
Total	218	100.0	100.0	

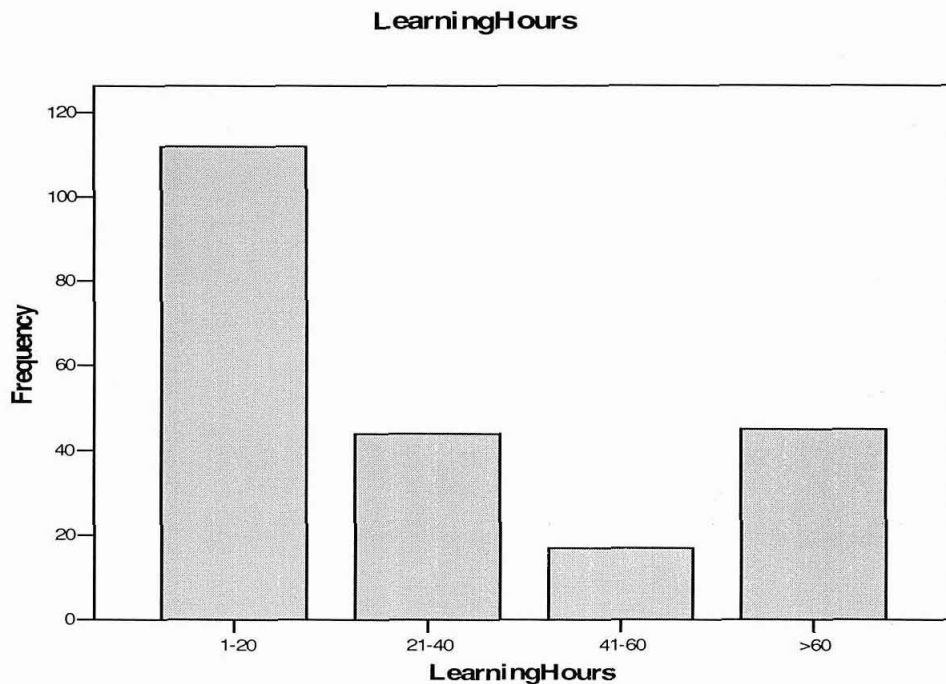


Figure 13. Bar chart for hours of enrollment in language programs.

Table 20 and Figure 14 show the results of respondents' computer assisted language learning. Table 20 indicates that 63.3% of the respondents' were using computer assisted language learning, and 36.7% of the respondents' were not using computer assisted language learning.

Table 20

Frequency Table for Computer-Assisted Language Learning

Computer Assisted Language Learning	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	138	63.3	63.3	63.3
No	80	36.7	36.7	100.0
Total	218	100.0	100.0	

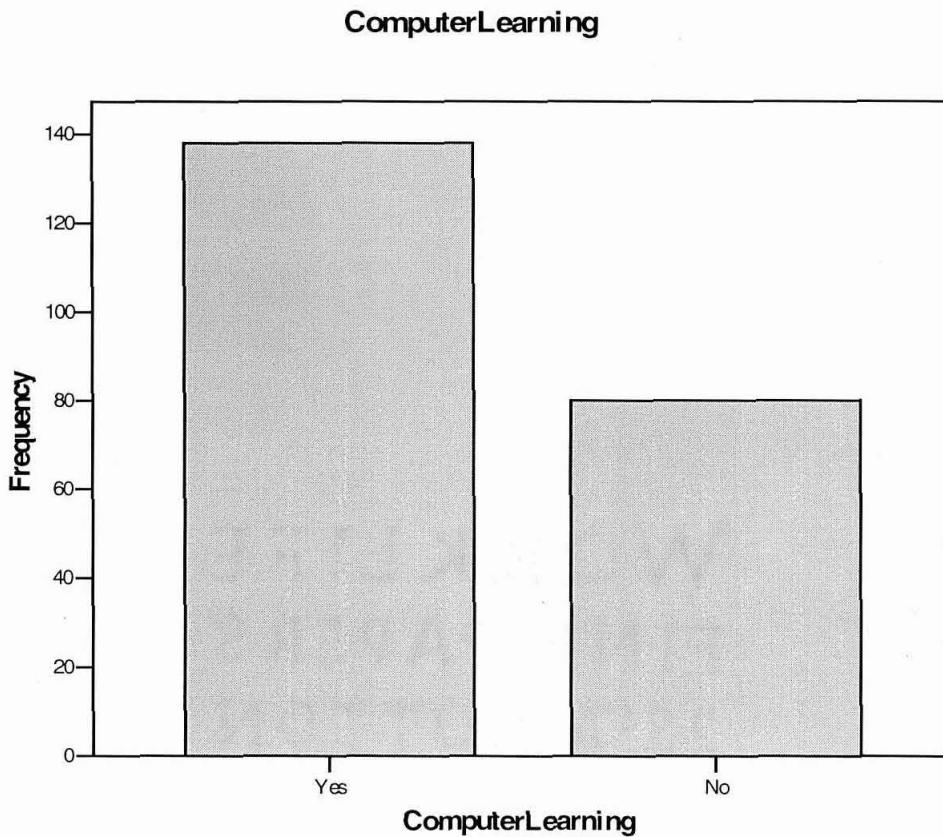


Figure 14. Bar chart for computer-assisted language learning.

Table 21 and Figure 15 show the results of respondents' hours of computer use each week in the English program. Table 21 indicates that 71.1% of the respondents' hours of computer used each week in the English program were 0 to 3 hours, 15.6% of the respondents' were 4 to 6 hours to use computer learning English each week, 5.5% of the respondents were 7 to 9 hours to use computer learning English each week, and 7.8% of the respondents were above 10 hours to use the computer to learn English.

Table 21

Frequency Table for Hours of Computer Use Each Week in the English Program

Hours of Computer use Each Week in the English Program	Frequency	Percent	Valid Percent	Cumulative Percent
0-3	155	71.1	71.1	71.1
4-6	34	15.6	15.6	86.7
7-9	12	5.5	5.5	92.2
>10	17	7.8	7.8	100.0
Total	218	100.0	100.0	

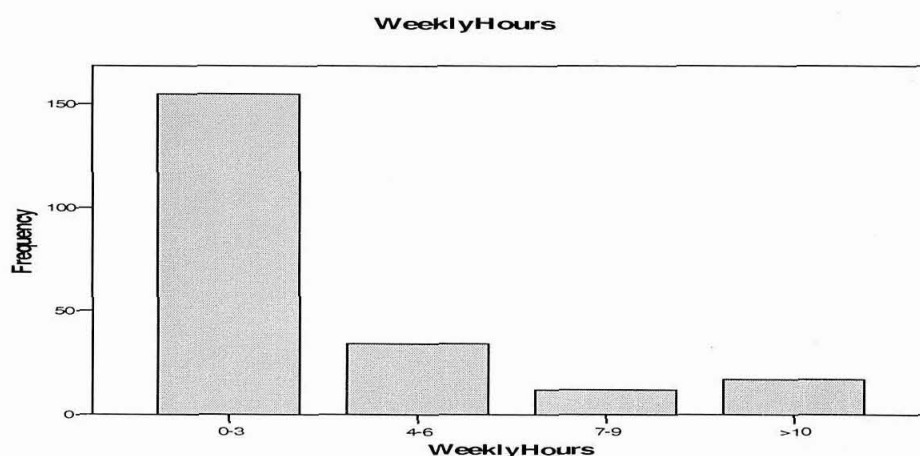


Figure 15. Bar chart for hours of computer use each week in the English program.

From the results of the Research Question 1, 53% of students' attitudinal characteristics were neutral. 65% of respondents' instructional learning environment was sometimes. 57% of the respondents' student satisfaction was neutral. 76% of the respondents' gender was female. 66% of respondents' ages were between 18 and 20. 51% of the respondents' father educational level had achieved high school level. 46% of the respondents' mother education level had achieved high school level. 30% of the respondents' family income was between \$ 30000 to \$ 49999 NT dollars. 51% of the respondents' hours of enrollment in language programs were 1 to 20 hours. 63% of the respondents' were using computer assisted language learning. 71% of the respondents used the computer each week in the English program for 0 to 3 hours.

Research Question 2

Are there differences in student background demographic characteristics, attitudinal characteristics, perception of instructional learning environment, and outcomes (student satisfaction as indicators of program effectiveness) according to second language learners participating in ESP programs with and without CALL for Taiwanese college students?

The independent-samples *t*-test in Table 22 shows that there were 138 respondents with computer assisted language learning (CALL), and 80 respondents without computer assisted language learning (CALL) in the study. Attitudinal characteristics had a mean with CALL of 3.45 total points and without CALL, 3.41 total points. Instructional learning environment had a mean with CALL of 3.21 total points and without CALL, 3.25 total points. Student satisfaction had a mean with CALL of 3.39 total points and without CALL, 3.33 total points. Gender had a mean with CALL of 1.74

total points and without CALL, 1.81 total points. Age had a mean with CALL of 1.50 total points and without CALL, 1.39 total points. Father education had a mean with CALL of 1.75 total points and without CALL, 1.85 total points. Mother education had a mean with CALL of 1.68 total points and without CALL, 1.64 total points. Family income had a mean with CALL of 2.63 total points and without CALL, 3.03 total points. Hours of enrollment in language programs had a mean with CALL of 1.94 total points and without CALL, 2.04 total points. Hours of used computer each week in the English program had a mean with CALL of 1.67 total points and without CALL, 1.20 total points.

Students who learned CALL and without CALL on family income and hours of used computer each week in the English program's means differed significantly at the $p < 0.05$ level (note: $p = 0.041$, $p = 0.000$). Attitudinal characteristics, instructional learning environment, student satisfaction, gender, age, father education, mother education, and hours of enrollment in language programs' means did not differ significantly at the $p < 0.05$ level (note: $p = 0.619$, $p = 0.633$, $p = 0.396$, $p = 0.219$, $p = 0.253$, $p = 0.303$, $p = 0.649$, $p = 0.570$).

Table 22

Group Statistics for All Variables

	Computer Learning	N	Mean	Std. Deviation	Std. Error Mean
Attitude	Yes	138	3.45	.528	.045
Average	No	80	3.41	.520	.058
Environment	Yes	138	3.21	.610	.052
Average	No	80	3.25	.563	.063
Satisfaction	Yes	138	3.39	.546	.046
Average	No	80	3.33	.569	.064
Gender	Yes	138	1.74	.441	.038
	No	80	1.81	.393	.044
Age	Yes	138	1.50	.707	.060
	No	80	1.39	.684	.077
Father Education	Yes	138	1.75	.673	.057
	No	80	1.85	.781	.087
Mother Education	Yes	138	1.68	.639	.054
	No	80	1.64	.750	.084
Income	Yes	138	2.63	1.302	.111
	No	80	3.03	1.475	.165
Learning Hours	Yes	138	1.94	1.170	.100
	No	80	2.04	1.237	.138
Weekly Hours	Yes	138	1.67	.990	.084
	No	80	1.20	.664	.074

Levene's test for Equality of Variances in Table 23 indicates that variances of students who learned with CALL and without CALL for gender ($p=0.011$) and hours of used computer each week in the English program ($p=0.000$) differed significantly with CALL and without CALL. Other variables did not differ significantly with CALL and without CALL.

Family income significance (2-tailed) on the equal variances assumed section was 0.41 and equal variances not assumed section was 0.49. Hours of used computer each week in the English program (2-tailed) on the equal variances assumed section was 0.00 and equal variances not assumed section was 0.00. Other variables on the equal variances

assumed section and equal variances not assumed section were not at the $p < 0.05$ level. Therefore, there was statistically significant difference between students learning with CALL and without CALL for family income and hours of used computer each week in the English program because p values were less than 0.05.

Table 23

Independent Sample t-test for all Variables with and without CALL

Variable		Levene's test for equality of variances		<i>t</i> -test for equality of means	
		<i>F</i>	Sig. (<i>p</i>)	<i>t</i>	Sig. (<i>p</i>)
Attitude Average	Equal variances assumed	.401	.527	.498	.619
	Equal variances not assumed			.500	.617
Environment Average	Equal variances assumed	.064	.801	-.478	.633
	Equal variances not assumed			-.489	.626
Satisfaction Average	Equal variances assumed	.209	.648	.851	.396
	Equal variances not assumed			.842	.401
Gender	Equal variances assumed	6.567	.011	-1.089 ^a	.277
	Equal variances not assumed			-1.131	.259
Age	Equal variances assumed	1.544	.215	1.146	.253
	Equal variances not assumed			1.156	.249
Father Education	Equal variances assumed	.353	.553	-.937	.350
	Equal variances not assumed			-.911	.364
Mother Education	Equal variances assumed	2.227	.137	.517	.606
	Equal variances not assumed			.502	.617
Income	Equal variances assumed	3.603	.059	-2.053	.041
	Equal variances not assumed			-1.986	.049
Learning Hours	Equal variances assumed	.611	.435	-.569	.570
	Equal variances not assumed			-.560	.576
Weekly Hours	Equal variances assumed	32.635	.000	3.811 ^a	.000
	Equal variances not assumed			4.220	.000

^a Adjusted *t*-test formula for unequal variances.

From the results of the Research Question 2, there was a statistically significant difference between students learning with CALL and without CALL for family income and hours of used computer each week in the English program. Family income had a mean with CALL of 2.63 total points and without CALL, 3.03 total points. Hours of computer use each week in the English program had a mean with CALL of 1.67 total points and without CALL, 1.20 total points. Family income significance on the equal variances assumed section was 0.41 and equal variances not assumed section was 0.49. Hours of computer use each week in the English program on the equal variances assumed section was 0.00 and equal variances not assumed section was 0.00.

Hypothesis 1a

Student background demographic characteristics, attitudinal characteristics, and perception of instructional learning environment are significant explanatory variables of ESP satisfaction for second language learners participating in ESP programs with CALL for Taiwanese college students.

In this study, multiple regression analysis technique were used to use to measure whether the relationship among background demographic characteristics; attitudinal characteristics, instructional learning environment, and student satisfaction are significant with CALL in the ESP programs.

Table 24 indicates the F value represented a probability (p) and associates with R to reveal the significance of the relationship among these independent variables and this dependent variable (George & Mallery, 2003). The F value of 3.064 ($p < 0.05$) indicated that there was significant relationship among these independent variables and this dependent variable. The value of significance (0.002) indicates there was statistical

significance. Therefore, Research Hypothesis 1a was supported.

Table 24

ANOVA for Multiple Regression Analyses of Course Satisfaction with CALL

Model		Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
1	Regression	7.245	9	.805	3.064	.002(a)
	Residual	33.624	128	.263		
	Total	40.870	137			

Note. Predictors: (Constant), Attitude, Weekly Hours, Gender, Income, Father Education, Learning Hours, Environment, Age, Mother Education

Dependent Variable: Course Satisfaction Average

Table 25 indicates the *B* coefficients for the regression equation, which measured and predicted values of the dependent variable (George & Mallery, 2003). In other words, Table 25 tells the actual effect of these independent variables on student satisfaction. The fitted equation for this model was as follows:

$$Y = (-0.019) (\text{Hours of used Computer each week in the English Program}) + (0.008) (\text{Hours of Enrollment in Language Programs}) + (0.054) (\text{Family Income}) + (0.009) (\text{Mother Education}) + (-0.090) (\text{Father Education}) + (0.025) (\text{Age}) + (-0.253) (\text{Gender}) + (0.099) + (\text{Instructional Learning Environment}) + (0.273) + (\text{Attitudinal Characteristics})$$

This equation indicates that if the variable of hours of used computer each week in the English program was 1 unit change; student satisfaction would have a (-0.019) unit change. If the variable of attitudinal characteristics was 1 unit change; student satisfaction would have a 0.273 unit change.

Table 25

Results of Multiple Regressions Analyses of Course Satisfaction with CALL

Model	Unstandardized Coefficients	Std. Error	Standardized Coefficients Beta	<i>t</i>	Sig.
1 (Constant)	2.549	.542		4.703	.000
Weekly Hours	-.019	.045	-.035	-.433	.666
Learning Hours	.008	.041	.017	.194	.847
Income	.054	.037	.128	1.447	.150
Mother Education	.009	.088	.011	.108	.914
Father Education	-.090	.084	-.110	-1.061	.291
Age	.025	.074	.033	.339	.735
Gender	-.253	.114	-.204	-2.226	.028
Environment Average	.099	.079	.111	1.254	.212
Attitude Average	.273	.085	.264	3.211	.002

Table 25 also indicated that the hours of computer use each week in the English program ($p=0.666$) showed significance for gender ($p=0.028$) and attitudinal characteristics ($p=0.002$) with CALL. In conclusion, Research Hypothesis 1a was supported.

Hypothesis 1b

Student background demographic characteristics, attitudinal characteristics, and perception of instructional learning environment are significant explanatory variables of ESP satisfaction for second language learners participating in ESP programs without CALL for Taiwanese college students.

Multiple regression analysis technique were used to measure whether the relationship among background demographic characteristics; attitudinal characteristics, instructional learning environment, and student satisfaction are significant without CALL in the ESP programs.

Table 26 indicates the F value of 4.284 ($p < 0.05$) indicated that there was a significant relationship among these independent variables and this dependent variable. The value of significance (0.000) indicated there was statistical significance. Therefore, Research Hypothesis 2 was supported.

Table 26

ANOVA for Multiple Regression Analyses of Course Satisfaction without CALL

Model	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
1 Regression	9.075	9	1.008	4.284	.000(a)
Residual	16.475	70	.235		
Total	25.550	79			

Note. Predictors: (Constant), Attitude Average, Learning Hours, Income, Mother Education, Weekly Hours, Age, Environment Average, Gender, Father Education

Dependent Variable: Course Satisfaction Average

Table 27 also indicates that the hours computer use each week in the English program ($p = 0.587$) showed significance for Education of students' Mother ($p = 0.037$), instructional learning environment ($p = 0.011$), and attitudinal characteristics ($p = 0.000$). In conclusion, Research Hypothesis 1b was supported.

Table 27

Results of Multiple Regressions Analyses of Course Satisfaction without CALL

Model	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Sig.
	B	Std. Error	Beta		
WeeklyHours	.048	.087	.056	.546	.587
LearningHours	-.053	.048	-.114	-1.099	.275
Income	-.029	.039	-.076	-.754	.454
MotherEducation	.196	.092	.259	2.125	.037
FatherEducation	-.070	.093	-.096	-.757	.452
Age	-.023	.089	-.028	-.262	.794
Gender	-.127	.158	-.088	-.806	.423
Environment Avg	.272	.104	.269	2.607	.011
AttitudeAvg	.461	.112	.422	4.113	.000

Hypothesis 1c

ESP programs with CALL have a greater explanation of the relationship of student background demographic characteristics, attitudinal characteristics, perception of instructional learning environment and ESP satisfaction for second language learners than ESP programs without CALL (Compare adjusted *R*-Squares in H_{1a} versus H_{1b}) for Taiwanese college students.

Multiple regression analysis technique, *R*-Squares, was used to measure the relationship among background demographic characteristics; attitudinal characteristics, instructional learning environment, and student satisfaction with CALL and without CALL in the ESP programs.

Table 28 indicates that the range of *R* Square was from 0.0 to 1.0. According to George and Mallery (2003), the larger the value, the greater explanation of the relationship. Table 29 shows the *R* Square value of the model accounted for 17.7% of the variation in student satisfaction with CALL. Table 28 also shows the *R* Square value of the model accounted for 35.5% of the variation in student satisfaction without CALL.

Therefore, ESP programs without CALL had a greater explanation of the relationship of student background demographic characteristics, attitudinal characteristics, instructional learning environment and ESP satisfaction than ESP programs with CALL. Further, both programs were statistically significant, but without CALL had higher explanatory power (35.5%) than with CALL (17.7%). In conclusion, Research Hypothesis 1c was supported.

Table 28

Multiple Regression R Square Analyses of Course Satisfaction with and without CALL

	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
CALL	1	.421(a)	.177	.119	.513
Without CALL	2	.596(a)	.355	.272	.485

Note. Predictors: (Constant), Attitude Average, Weekly Hours, Gender, Income, Father Education, Learning Hours, Environment Average, Age, Mother Education

Summary of Study Quantitative Results

In summary, this study began with two research questions and one hypothesis with three sub hypotheses. The response to Research Question 1 produced a population that was 76% female, 66% were between 18 and 20, 30% had a family income between \$30000 to \$49999 NT dollars, 63% were using CALL, and 71% used the computer for 0 to 3 hours each week to study English. The results of Research Question 2 provided evidence of statistically significant differences between students learning with CALL and without CALL for family income and hours of computer use each week in the English program.

Multiple regression analysis technique was used to use to measure whether the relationship among background demographic characteristics attitudinal characteristics, instructional learning environment, and student satisfaction are significant with CALL in the ESP programs. Hypothesis 1a was supported.

Multiple regression analysis technique was used to measure whether the relationship among background demographic characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction were significant without CALL in the ESP programs. The *F* value results indicated that there was a significant relationship among the independent variables and the dependent variable. The value of significance (0.000) indicated there was statistical significance. Therefore, Research Hypothesis 1b was supported.

Multiple regression analysis technique, *R*-Square, was used to measure the relationship among background demographic characteristics; attitudinal characteristics, instructional learning environment, and student satisfaction with CALL and without CALL in the ESP programs. Hypothesis 1c was supported.

Chapter IV presented descriptive statistic for Research Question1, and comparative independent *t*-test to test the Research Question 2. Multiple regressions analyses tested the three sub hypotheses. Reliability and validity also were reported in the study. Chapter V provided a discussion of the findings, interpretations, practical implications, conclusions, and recommendations for future study.

CHAPTER V

DISCUSSION

Summary

Chapter V discusses the interpretations, practical implications, conclusions, limitations, and recommendations for future study on the topic of English for specific purposes (ESP) programs with and without computer-assisted language learning (CALL), learning environment, attitudes, and satisfaction for Taiwanese college students. Three surveys of attitude/motivation test battery (AMTB), constructivist learning environment survey (CLES), course interaction, structure, and support (CISS) were used in the research. The accessible population was 236 participants, resulting in a response rate of 92.37%. The participants are college students in two colleges in Taiwan.

Descriptive statistics including frequency distributions, measure of central tendency, and variability for all variables in the study was used to utilize. Independent *t*-test was used to measure the difference in background characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction according to ESP with CALL and without CALL. Multiple regression analyses were used to examine the relationship of student background characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction with CALL and without CALL. Finally, *R*-Square was used to compare the two groups of students in the ESP with CALL and without CALL.

The results found students learn CALL and without CALL on family income and hours of computer use each week in the English program differed significantly at the $p < 0.05$ level ($p = 0.041$, $p = 0.000$). These findings indicated that the higher the family

income in Taiwan, the greater opportunity for a student having made use of CALL to study English. In addition, these findings also suggested that more hours were spent on the computer when using CALL to learn English.

Attitudinal characteristics, instructional learning environment, student satisfaction, gender, age, father education, mother education, and hours of enrollment in language programs did not differ significantly. Findings supported the hypothesis 2: "Student background demographic characteristics, attitudinal characteristics, and perception of instructional learning environment are significant explanatory variables of ESP satisfaction for second language learners participating in ESP programs without CALL for Taiwanese college students". Findings did not support the hypothesis 1 and 3: "Student background demographic characteristics, attitudinal characteristics, and perception of instructional learning environment are significant explanatory variables of ESP satisfaction for second language learners participating in ESP programs with CALL for Taiwanese college students". "ESP programs with CALL have a greater explanation of the relationship of student background demographic characteristics, attitudinal characteristics, perception of instructional learning environment and ESP satisfaction for second language learners than ESP programs without CALL (Compare adjusted R-Squares in H_{1a} versus H_{1b}) for Taiwanese college students"

Interpretations

Research Question 1 (Background Demographic Characteristics)

The purpose of Research Question 1 was to present descriptive statistics including the frequency distributions, measure of central tendency, and variability for all variables in the study.

According to background demographic characteristics, 23.4% of the participants in the study were male and 76.6% were female. 66.1% of the participants' age in the study was between 18 to 20 years old. 51.4% of the participants' father education was high school level. 46.8% of the participants' mother education was high school level. 30.3% of the participants' family income was between \$30000 to \$49999 NT dollars. 51.4% of the participants in the study were learning 1 to 20 hours of enrollment in language programs. 63.3% of the participants in the study learn computer-assisted language learning (CALL) and 36.7% of the participants in the study did not learn CALL. 71.1% of the participants in the study learn 0 to 3 hours of used computer each week in the English program.

Research Question 2

The purpose of Research Question 2 was to explore the difference in background characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction with CALL and without CALL. The result found that students learn CALL and without CALL on family income and hours of used computer each week in the English program's means had significant differences. Attitudinal characteristics, instructional learning environment, student satisfaction, gender, age, education of father, education of mother, and hours of enrollment in language programs' means did not differ significantly.

These findings were in contrast to those of Park (2002) who examined learning styles preferences in diverse students, gender roles, achievement levels, and the length of residence in the United States. Park's (2002) hypothesis was supported of learning preferences for students with diverse ethnic and cultural background, different learning

styles preferences to students' achievement levels, and the length of residence in the United States, but did not support the hypothesis of gender factor. Park's (2002) interpretation of these findings was that learning style preference effected students' performance level.

The results of this research study suggest that Taiwanese family income may impact children learning English with CALL or without CALL. With family financial support, children can attend schools or other organizations to learn more specific aspects of the English language. In Taiwan, learning English costs family large amounts of money. Usually, if the family income is not above middle class, students have difficulty learning English. So family income definitely can affect students being able to learn English by using CALL.

In addition, hours of computer use each week in the English programs also influences students to learn English with CALL or without CALL. Usually Taiwanese students have more desire to learn different facets of the English language in order to improve their second language ability.

Research Hypothesis 1a

The purpose of Research Hypothesis 1a was to explore the relationship of students' background characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction with CALL. The relationship was found to be positive ($r=0.177$, $p=0.002$) and statistically significant. Therefore, Research Hypothesis 1a supported.

The study's findings support Blok, Oosdam, and Overmaat (2002) hypothesis that computer-assisted instruction (CAI) programs tend to be effective in initial reading

instruction. The aims of this study were to offer a comprehensive review of initial reading instruction related to computer and to integrate the literature in order to improve language learners' information and knowledge about computer-assisted instruction.

The study's findings also confirmed Pray's (2005) results. Pray's (2005) study was to test the validity of language instruments used to measure English oral-language proficiency. The result of the assessment did not correctly measure the construct of oral-language ability, due to the instruments having very low reliability and validity instrument test result to measure the English oral-language proficiency., more language learners are eager to learn English with technology.

This research study indicated that families with incomes are more likely to support their children use of CALL. The study results also indicated that utilization of CALL promotes more computer usage. A small number of teachers in Taiwan use CALL to teach college students. CALL programs have become another method for students to learn English, but not for the majority of learners.

Research Hypothesis 1b

The purpose of Research Hypothesis 1b was to explore the relationship of students' background characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction without CALL. The relationship was found to be positive ($r=0.355$, $p=0.000$) and statistically significant. Therefore, Research Hypothesis 1b was supported.

The study confirms Savignon and Wang's (2003) finding on there was no positive attitudes toward the learners' perceptions of the classroom practices experiences; learners have negative attitude and beliefs toward classroom practice and English language

learning generally. Findings did not support the learner attitude and perceptions for communicative language teaching (p. 5). The findings were consistent with the findings of descriptive studies of English language teaching in Taiwan and reported on students and teacher of English in Taiwan (Du-Babcock & Du-Babcock, 1987; Huang, 1998).

Unfortunately, not every ESP student has their own computer to learn and practice English at home. Even in school, ESP students may need to go to only specific CALL classrooms, which make learning languages inconvenient. Some students prefer to stay in traditional classrooms in order to learn English. In general, college students in Taiwan have not grasped the quality of the CALL programs. Finally, students still prefer to learn in traditional ways. So the research results of this study found a positive relationship without CALL for students' background characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction.

Research Hypothesis 1c

The purpose of Research Hypothesis 1c was to compare the two grounds of students' relationship of student background demographic characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction in the ESP with CALL and without CALL. The relationship was found to be positive (R Square=0.177 < R Square=0.355). Therefore, Research Hypothesis 1c was supported.

The study confirms Piccoliet al.'s (2001) study conducted on the preliminary assessment of the effectiveness of web-based virtual learning environment in basic skills. The findings did support the hypothesis of greater effectiveness of students in the visual learning environment than the traditional learning environment. Only students with high level of computer self-efficacy and satisfaction can effect in the virtual environment than

traditional learning environment. So this finding in a visual learning environment, students did not perform better than in the traditional classroom.

This study's finding confirms Carter et al.'s (2004) finding that the effectiveness of the teaching genre LabWrite study for English first or second language students in science. The findings supported the hypotheses that students who use the LabWrite (online writing learning) to learn science have much higher effectiveness than students who learn in normal instructional materials.

The study's finding confirms Sawaki (2001) study on conventional and computerized teaching a second language. The results showed that there was no significant difference between the paper and pencil (P &P) and computerized testing groups. There have been negative reactions from Japanese students seeking to learn English from the computer screen (Sawaki, 2001).

These research results provide evidence that Taiwanese students are reluctant to change the traditional method in which they learn English and adopt the CALL programs (R Square =.355). These results also showed that those students using CALL were satisfied with the program (R Square =.177) Therefore, without CALL had a higher explanatory power for the facts that were being examined in this study. Unfortunately, CALL is still not very common in all Taiwan colleges, as the schools do not have enough financial means to support CALL.

Practical Implications

These results show that Taiwanese college students did not prefer using CALL in the classroom. That does not mean the CALL programs do not have high quality. Although the CALL programs are being used for numerous colleges in Taiwan, many

colleges still utilize traditional teaching styles. CALL only plays a very small part of their ESP programs.

However, Taiwan is an island that does not have other languages easily entering the country. CALL may be one of the best methods for language learners to obtain the language. CALL programs can help learners to study in flexible time, and solve the time-consuming problem of flying to English-speaking countries to learn this language. In addition, CALL programs also can bring more opportunities for Taiwanese to communicate with foreigners. Taiwanese government tries to find ways to improve the Taiwanese English ability in order to face competition in the world. CALL programs can enhance Taiwanese competition.

The findings of the study are important to educational organizations, Taiwanese government, English language learners, and other researchers in Taiwan. Taiwanese language learners may benefit by knowing the results of this study and may try to change their perspectives to view learning English with CALL or without CALL. In addition, language learners may influence educational organizational or government's decisions and strategies. Other researchers may benefit by duplicating or modifying this study.

The findings of this study show that there was a positive relationship with CALL and students' background characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction. There was also a positive relationship with students' background characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction without CALL. Further, there was a positive relationship with students' family income and hours of computer use to study English with CALL. Therefore, background characteristics, attitudinal characteristics,

instructional learning environment were important factors in student satisfaction in Taiwanese ESP Programs.

For Taiwan government, Taiwan Educational Department should support more funding to all Taiwanese colleges in order to improve the quality and learning environment through CALL. Students will have more opportunities to learn about CALL and discover the benefits of learning more about English and faster than with traditional methods.. Otherwise, CALL in colleges will disappear due to these research findings. Colleges should encourage not only students, but also train teachers, to learn more technology with CALL. In addition, educate parents to understand the importance of CALL, then parents will be eager to support their children to learn CALL in the ESP programs. Then students can have more confidence and more communication skills to work with in the globalization environment.

According to this study, students' relationship of student background demographic characteristics, attitudinal characteristics, instructional learning environment, and student satisfaction in the ESP without CALL have greater explanation than with CALL. The study provides evidence that Taiwanese students still prefer learning English without CALL programs, which mean more educators and government need to be concerned with this situation. Otherwise, CALL programs will become a part of the decoration in the classroom, and educators need to pay more attention to this problem.

Conclusions

1. Independent *t*-tests showed that students learn CALL and without CALL on family income and hours of compute used each week in the English program

- differed significantly. Attitudinal characteristics, instructional learning environment, student satisfaction, gender, age, father education, mother education, and hours of enrollment in language programs' means did not differ significantly.
2. Multiple regression analysis technique showed there was significance among background demographic characteristics; attitudinal characteristics, instructional learning environment, and student satisfaction were significant with and without CALL in the ESP programs.
 3. R-Square compared two groups of ESP programs without CALL had a greater explanation of the relationship of background demographic characteristics; attitudinal characteristics, instructional learning environment, and student satisfaction than ESP programs with CALL. All of these factors were useful in understanding ESP programs with and without CALL.
 4. The theoretical framework supported this study improving the understanding of ESP programs with and without CALL, learning environment, attitudes, and satisfaction for Taiwanese college students.
 5. The outcomes of this study can notice educational organizations, educators, and Taiwan government to improve the ESP programs with CALL in Taiwan.

Limitations

1. The sampling method of the study was limited to the accessible population, and the research design of the study was limited to non-experimental. This may threaten internal validity.
2. The colleges in this study were limited to two colleges in Taiwan. There were only 236 college students in the accessible population.

3. The study was conducted in Taichung City and Country, Taiwan.
4. All of the participants were Taiwanese.
5. The study was limited to participants who took the ESP programs.
6. The research findings may not be generalized to other countries.

Recommendations for Future Study

1. Future studies might adopt a qualitative research design by interviewing participants and eliciting participants' opinions about ESP programs with CALL and without CALL on learning environment, attitude, and satisfaction.
2. Future studies should explore other factors such as learning styles, learning gains, language proficiency, and motivation.
3. Future studies should enlarge the accessible population in order to strengthen the generalizability of the study.
4. Future studies might include different language learners' occupations and age levels; for example, employees who work in the companies that also learn ESP programs with CALL and without CALL.
5. Future studies should include other cultures or counties to explore the difference among ESP programs with CALL and without CALL, learning environment, attitudes, and satisfaction.
6. Future studies can apply and replicate this study's findings to different language learners in Taiwan.

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Appendix A

**E-Mail Permission Letters for Attitude/Motivation Test Battery (AMTB),
Constructivist Learning Environment Survey (CLES), CISS (Course Interaction,
Structure and Support)**

E-Mail Permission Letter for Attitude/Motivation Test Battery (AMTB)

Sender: R.C. Gardner [REDACTED] Date: 2006/9/14
[Thursday] PM 03:57

Receiver: Chia-Hui Lin

Cc:

Subject: Re: Can I get your permission to use the AMTB survey instrument?

Attachment:

Dear Chia-Hui Lin

If you are asking permission to use the AMTB contained in the Manual on my webpage, yes you may have my permission. I recommend to researchers that if they do use the items, they use all the items for any one scale, adapting them as necessary for their setting. I recommend too that they compute Cronbach reliabilities on their data once it has been collected to make sure that the scales have acceptable internal consistency. Also, please note that the items for most of the scales as used with university students were included in an article in the Modern Language Journal , volume 81, 1997, pages 359-362. You might also want to consider those items, and you have my permission to adapt them as required.

Sincerely, R. C. Gardner

Chia-Hui Lin wrote:

>Hi professor Gardner:

>

>My name is Chia-Hui Lin, I am the PHD student in Lynn University in Florida.

>

>I am very interested in your survey instrument.

>

>Could I obtain your permission to use your survey instrument?

>

>Those subscales and items are very useful for me.

>

>Thank you so much for your help.

>

>Best regard.

>

>Chia-Hui Lin.

R. C. Gardner, Ph.D.

Professor Emeritus

Department of Psychology

University of Western Ontario

London, Ontario N6A 5C2

Office Phone: [REDACTED]; Fax: [REDACTED]

E- [REDACTED]

Webpage <http://publish.uwo.ca/~gardner/>

E-Mail Permission Letter for Constructivist Learning Environment Survey (CLES)

Sender: Barry Fraser [redacted] Date: 2007/7/26
[Thursday] PM 7:42

Receiver: Chia-Hui Lin

Cc:

Subject: RE: May I have your permission to adapt your CLES survey instrument?

Attachment:

Chia-Hui

Yes, you have my permission to adapt the CLES.

Barry Fraser

From: Chia-Hui Lin [mailto:[redacted]]
Sent: Fri 27/07/2007 4:24 AM
To: Barry Fraser
Cc: [redacted]
Subject: May I have your permission to adapt your CLES survey instrument?

Hi Professor Fraser:

My name is Chia-Hui Lin, I am PHD student in Lynn University In Florida United States.

In 2006, I got your permission to use your survey instrument.

However, I adapt your CLES survey instrument (questionnaires).

So again, May I have your permission to adapt your CLES survey instrument?

I adapt your 7 items and translate your survey into Chinese.

My dissertation is title is: "ENGLISH FOR SPECIFIC PURPOSES (ESP) PROGRAMS,
WITH AND WITHOUT COMPUTER-ASSISTED LANGUAGE LEARNING (CALL),
FOR TAIWANESE COLLEGE STUDENTS"

I am very interested in your survey instrument.

Some are very useful for me to do my research.

Thank you so much for your help.

Best Regard,

Tina.

From: Barry Fraser [mailto: [REDACTED]]
Sent: 2006/9/14 [??] ?? 11:51
To: Chia-Hui Lin
Subject: RE: Could I obtain your permission to use the CLES survey instrument?

Chia-Hui

You have my permission to use the CLES.

Good luck with your research.

Barry Fraser

From: Chia-Hui Lin [mailto: [REDACTED]]
Sent: Thu 14/09/2006 10:46 PM
To: Barry Fraser
Subject: Could I obtain your permission to use the CLES survey instrument?

Hi Professor Fraser:

My name is Chia-Hui Lin, I am PHD student in Lynn University in Florida.

I am very interested in your survey instrument.

Those subscales and itemes are very useful for me to do my research.

Could I obtain your permission to use your survey instrument?

Thank you so much for your help.

Best Regard.

Chia-hui Lin

E-Mail Permission Letter for Constructivist Learning Environment Survey (CLES)

Sender: Peter Taylor [REDACTED] Date: 2007/7/29
[Thursday] PM
11:45

Receiver: Chia-Hui Lin

Cc:

Subject: RE: May I have your permission to adapt your CLES survey instrument?

Attachment:

Dear Chia-Hi Lin

Thank you for your request.

You are most welcome to use/adapt the CLES for your research.

best wishes

Peter

Dr Peter Charles Taylor

A/Prof of Transformative Education
Science & Mathematics Education Centre (SMEC)
Curtin University of Technology
email: [REDACTED]
url: <http://pctaylor.com>
tel: [REDACTED]
post: GPO Box U1987, Perth, WA, 6845

From: Chia-Hui Lin

Sent: Fri 7/27/2007 4:21 AM

To: [REDACTED]

Subject: May I have your permission to adapt your CLES survey instrument?

Hi Professor Taylor:

My name is Chia-Hui Lin; I am PHD student in Lynn University in Florida.

In 2006, I got your permission to use your survey instrument.

However, I adapt your CLES survey instrument (questionnaires).

So again, May I have your permission to adapt your CLES survey instrument?

I adapt your 7 items and translate your survey into Chinese.

My dissertation is title is: "ENGLISH FOR SPECIFIC PURPOSES (ESP) PROGRAMS,
WITH AND WITHOUT COMPUTER-ASSISTED LANGUAGE LEARNING (CALL),
FOR TAIWANESE COLLEGE STUDENTS"

I am very interested in your survey instrument.

Some are very useful for me to do my research.

Thank you so much for your help.

Best Regard,
Tina.

Hell Chia-Hui Lin

You are very welcome to use the CLES in your doctoral research.

I presume you have a copy. It is downloadable from:

<http://surveylearning.moodle.com> ('<http://surveylearning.moodle.com>');

and there are some background papers there too.

Best wishes

Peter

Dr Peter Charles Taylor

Associate Professor of Transformative Education
Science and Mathematics Education Centre (SMEC)

Curtin University of Technology

post: GPO Box U1987, Western Australia, 6845

email: [REDACTED]

fax: [REDACTED]

web: <http://pctaylor.com>

-----Original Message-----

From: Chia-Hui Lin [mailto:[REDACTED]]

Sent: Thursday, 14 September 2006 11:16 PM

To: Peter Taylor

Subject: Could I obtain your permission to use the CLES survey
instrument?

Hi Professor Taylor:

>

> My name is Chia-Hui Lin, I am the PHD student in Lynn University in

Florida.

>

> I am very interested in your CLES survey instrument.

Those items will be very useful for me to do my research.

Could I obtain your permission to use the CLES survey instrument?

>

> Thank you so much for your help.

>

> Best regard.

>

> Chia-Hui Lin.

E-Mail Permission Letter for CISS (Course Interaction, Structure, and Support)

Sender: Najmuddin Shaik [REDACTED] Date: 2007/7/26
[Thursday] PM 9:38

Receiver: Chia-Hui Lin; Scott D Johnson

Subject: RE: May I have your permission to adapt CISS survey instrument?

Attachment:

Hi Tina

You have my permission to adapt the CISS survey instrument. I have also cc this note to Dr. Scott Johnson for his approval.

Good luck with your research.

Regards
Naj

From: Chia-Hui Lin [mailto:[REDACTED]]
Sent: Thu 7/26/2007 3:14 PM
To: Najmuddin Shaik; Scott D Johnson
Subject: May I have your permission to adapt CISS survey instrument?

Hi Professor Shaik and Johnson:

My name is Chia-Hui Lin, I am PHD student in Lynn University in Florida.

In 2006, I got your permission to use your survey instrument.

However, I adapt your CISS survey instrument (questionnaires).

So again, May I have your permission to adapt your CISS survey instrument?

I adapt your 11 items and translate your survey into Chinese.

My dissertation is title is: "ENGLISH FOR SPECIFIC PURPOSES (ESP) PROGRAMS,
WITH AND WITHOUT COMPUTER-ASSISTED LANGUAGE LEARNING (CALL),
FOR TAIWANESE COLLEGE STUDENTS"

I am very interested in your survey instrument.

Some are very useful for me to do my research.

Thank you so much for your help.

Best Regard,

Tina.

From: Najmuddin Shaik [mailto:]
Sent: 2006/9/14 [??] ?? 10:46
To: Chia-Hui Lin
Cc: Scott D Johnson
Subject: RE: Can I get your permission to use the CISS survey instrument?

Hi Chia-Hui Lin,

You have our permission to use the CISS instrument. Good luck with your research.

I thought I emailed you a pdf and MS Word copy of the CISS questionnaire. If you need any other info relating to CISS let me know.

Regards
Prof. Scott Johnson
Naj Shaik
University of Illinois Urbana-Champaign

-----Original Message-----

From: Scott D Johnson
Sent: Thursday, September 14, 2006 9:40 AM
To: Najmuddin Shaik
Subject: FW: Can I get your permission to use the CISS survey instrument?

FYI

Scott D. Johnson | Professor & Head

Department of Human Resource Education
University of Illinois at Urbana-Champaign
350 Education Building
1310 South Sixth Street

Champaign, IL 61820

Voice: [REDACTED]

Fax: [REDACTED]

E-mail: [REDACTED] <

----- Forwarded Message

> From: Chia-Hui Lin <[REDACTED]>

> Date: Thu, 14 Sep 2006 10:06:40 -0400

> To: [REDACTED]

> Conversation: Can I get your permission to use the CISS survey instrument?

> Subject: Can I get your permission to use the CISS survey instrument?

>

> Hi Professor Johnson:

>

> My name is Chia-Hui Lin, I am the PHD student in Lynn University in Florida.

>

> I have contacted with you before to obtain your CISS survey instrument.

>

> I need to get your permission again from my Lynn formal email .

>

> Thank you so much for your help.

>

> Best regard.

>

> Chia-Hui Lin.

----- End of Forwarded Message

E-Mail Permission Letter for CISS (Course Interaction, Structure, and Support)

Sender: Scott Johnson [REDACTED] Date: 2007/7/26
[Thursday] PM
10:46

Receiver: Chia-Hui Lin; Najmuddin Shaik
Subject: RE: May I get your permission to adapt CISS survey instrument?

Attachment:

You also have my approval. Good luck on your research.
Scott

Scott D. Johnson | Professor

**Associate Dean for Online Learning
& Chief Information Officer
College of Education**

Head, Dept. of Human Resource Education

University of Illinois at Urbana-Champaign
350 Education Building
1310 South Sixth Street
Champaign, IL 61820
Voice: [REDACTED]
Fax: [REDACTED]
E-mail: [REDACTED]

From: Chia-Hui Lin <[REDACTED]>

Date: Thu, 26 Jul 2007 16:08:39 -0400

To: [REDACTED]

Cc: [REDACTED]

Conversation: May I get your permission to adapt CISS survey instrument?

Subject: May I get your permission to adapt CISS survey instrument?

Hi Professor Shaik and Johnson:

My name is Chia-Hui Lin, I am PHD student in Lynn University in Florida.

In 2006, I got your permission to use your survey instrument.

However, I adapt your CISS survey instrument (questionnaires).

So again, May I have your permission to adapt your CISS survey instrument?

I adapt your 11 items and translate your survey into Chinese.

My dissertation is title is: "ENGLISH FOR SPECIFIC PURPOSES (ESP) PROGRAMS, WITH AND WITHOUT COMPUTER-ASSISTED LANGUAGE LEARNING (CALL), FOR TAIWANESE COLLEGE STUDENTS"

I am very interested in your survey instrument.

Some are very useful for me to do my research.

Thank you so much for your help.

Best Regard,

Tina.

From: Najmuddin Shaik [mailto: [REDACTED]]
Sent: 2006/9/14 [??] ?? 10:46
To: Chia-Hui Lin
Cc: Scott D Johnson
Subject: RE: Can I get your permission to use the CISS survey instrument?

Hi Chia-Hui Lin,

You have our permission to use the CISS instrument. Good luck with your research.

I thought I emailed you a pdf and MS Word copy of the CISS questionnaire. If you need any other info relating to CISS let me know.

Regards
Prof. Scott Johnson
Naj Shaik
University of Illinois Urbana-Champaign

-----Original Message-----

From: Scott D Johnson
Sent: Thursday, September 14, 2006 9:40 AM
To: Najmuddin Shaik
Subject: FW: Can I get your permission to use the CISS survey instrument?

FYI

Scott D. Johnson | Professor & Head

Department of Human Resource Education
University of Illinois at Urbana-Champaign
350 Education Building
1310 South Sixth Street
Champaign, IL 61820

Voice: [REDACTED]

Fax: [REDACTED]

E-mail: [REDACTED]

----- Forwarded Message

> From: Chia-Hui Lin [REDACTED]

> Date: Thu, 14 Sep 2006 10:06:40 -0400

> To: [REDACTED]

> Conversation: Can I get your permission to use the CISS survey instrument?

> Subject: Can I get your permission to use the CISS survey instrument?

>

> Hi Professor Johnson:

>

> My name is Chia-Hui Lin, I am the PHD student in Lynn University in Florida.

>

> I have contacted with you before to obtain your CISS survey instrument.

>

> I need to get your permission again from my Lynn formal email .

>

> Thank you so much for your help.

>

> Best regard.

>

> Chia-Hui Lin.

----- End of Forwarded Message

Appendix B

Part 1: Background Demographic Characteristics

Part 1: Background Demographic Characteristics

Directions: Please circle the appropriate one in the following questions or fill in the blank.

1. Student Code Number _____
2. Gender: Male Female
3. Age in years: _____
4. Report the highest level of education attained by each of your parents:
Father: Middle school, High school, College, Graduate school.
Mother: Middle school, High school, College, Graduate school.
5. Household income by family:
\$ < 30000, \$30000-49999, \$50000-69999, \$70000-89999, \$ > 90000 or more
6. Please write in number of hours of enrollment in language programs _____
7. In your present English language learning classroom, please indicate if you used *computer assisted language learning* in the classroom:
Circle one response: Yes NO
8. Please write in number of hours that you used the computer each week in the English language programs classroom _____

Appendix C

Part 2: Attitudinal Characteristics

Part 3: Learning Environment

Part 4: Course Satisfaction

Part 2: Attitudinal Characteristics

Directions: In answering these questions, you should have circled one of the below alternatives. Some people will circle strongly disagree, others will circle strongly agree, and still others would circle one of the alternatives in between. Which one you circled would indicate your own feelings based on everything you know and have heard. Note, there is no right or wrong answer. All that is important is that you indicate your personal feelings.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1	2	3	4	5	
1. Learning English is really great.	1	2	3	4	5
2. I really enjoy learning English.	1	2	3	4	5
3. English is an important part of the school program.	1	2	3	4	5
4. I plan to learn as much English as possible.	1	2	3	4	5
5. I love learning English.	1	2	3	4	5
6. I hate English.	1	2	3	4	5
7. I would rather spend my time on subjects other than English.	1	2	3	4	5
8. Learning English is a waste of time.	1	2	3	4	5
9. I think that learning English is dull.	1	2	3	4	5
10. When I leave school, I shall give up the study of English entirely because I am not interested in it.	1	2	3	4	5
11. If I were visiting a foreign country, I would like to be able to speak the language of the people.	1	2	3	4	5
12. Even though Taiwan is relatively far from countries speaking other languages, it is important for Taiwanese to learn foreign languages.	1	2	3	4	5

13. I wish I could speak another language perfectly.	1	2	3	4	5
14. I want to read the literature of a foreign language in the original language rather than a translation.	1	2	3	4	5
15. I often wish I could read newspaper and magazines in another language.	1	2	3	4	5
16. I would really like to learn a lot of foreign languages.	1	2	3	4	5
17. If I planned to stay in another country, I would make a great effort to learn the language even though I could get along in English.	1	2	3	4	5
18. I would stay a foreign language in school even if it were not required.	1	2	3	4	5
19. I enjoy meeting and listening to people who speak other languages.	1	2	3	4	5
20. Studying a foreign language is an enjoyable experiences.	1	2	3	4	5

Note. From “*Attitude/Motivation Test Battery (AMTB)*” by Gardner, 1985. Technical report,. Adapted permission of the author.

Part 3: Instructional Learning Environment

Directions: 1. The questionnaires ask you to describe this classroom which you are in right now. There is no right or wrong answers. This is not a test. Your opinion is what you wanted. 2. Do not write your name. Your answers are confidential and anonymous. 3. Circle one number corresponding to your answer.

Almost Never	Seldom	Sometimes	Often	Almost Always
1	2	3	4	5

- | | | | | | |
|---|---|---|---|---|---|
| 1. It is OK to ask the teacher “Why do we have to learn this?” | 1 | 2 | 3 | 4 | 5 |
| 2. I feel free to ask question the way I am being taught. | 1 | 2 | 3 | 4 | 5 |
| 3. It is OK to complain about activity that are confusing. | 1 | 2 | 3 | 4 | 5 |
| 4. It is OK to complain about anything that stops me from learning. | 1 | 2 | 3 | 4 | 5 |
| 5. I am free to express my opinion. | 1 | 2 | 3 | 4 | 5 |
| 6. It is OK to speak up your rights. | 1 | 2 | 3 | 4 | 5 |
| 7. I feel unable to complain about anything. | 1 | 2 | 3 | 4 | 5 |

Note: From “*CLES an instrument for monitoring the development of constructivist learning environments*” by Taylor, P. C., Fraser, B. J. and White L. R., 1994. American Educational Research Association, New Orleans. Adapted permission of the author.

Part 4: Student Satisfaction

Directions: The following statements relate to your perceptions of the learning environment. For each statement, please show the extent to which you believe the learning environment has the features described by the statement. We are interested in your opinion that best described your perceptions of the learning environment. Please circle your choice to each statement.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1	2	3	4	5	
1. I was able to share the learning experiences with other students in this course.	1	2	3	4	5
2. The instructor helped me identify problem areas with my studies in this course.	1	2	3	4	5
3. I was not able to interact with the instructor during the class sessions.	1	2	3	4	5
4. I was able to interact with the instructor outside of the regular class time.	1	2	3	4	5
5. Increased contact with fellow students helped me get more out of this course.	1	2	3	4	5
6. I was not able to communicate with other students in this course.	1	2	3	4	5
7. The instructor informed me about my progress periodically during the course.	1	2	3	4	5
8. The instructor provided me feedback that is useful.	1	2	3	4	5
9. The instructor provided comprehensive feedback on my assignments.	1	2	3	4	5
10. I feel comfortable with the instructor as a person.	1	2	3	4	5
11. A sense of community existed with fellow students taking this course.	1	2	3	4	5

Note. From “Distance learning in postsecondary career and technical education: A comparison of achievement in online vs. on-campus.” by Benson, A. D., Johnson, S. D., Taylor, G. D., Treat, T., Shinkareva, O. N., and Duncan, J., 2004. St. Paul: University of Minnesota, National Center for Research in Career and Technical Education. Adapted permission of the author.

Appendix D

Lynn University's IRB Approval Letter



Lynn University

Principal Investigator: Chia-hui Lin

Project Title: English for Specific Purposes (ESP) Programs With and Without Computer-Assisted Learning (CALL), Learning Environment, Attitudes, and satisfaction for Taiwanese College Students.

IRB Project Number 2007-002:

APPLICATION AND PROTOCOL FOR REVIEW OF RESEARCH INVOLVING HUMAN SUBJECTS OF A NEW PROJECT: Request for Exempt Status Expedited Review Convened Full-Board

IRB ACTION by the CONVENED FULL BOARD:

Date of IRB Review of Application and Research Protocol: 02/01/07

IRB ACTION: Approved Approved w/provision(s) Not Approved Other

COMMENTS:

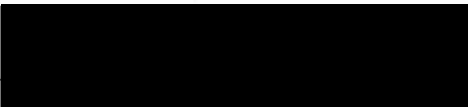
Consent Required: No Yes Not Applicable Written Other

Consent forms must bear the research protocol expiration date of 02/01/08.

Application to Continue/Renew is due:

- 1) For a Convened Full-Board Review, two months prior to the due date for renewal
- 2) For an Expedited IRB Review, one month prior to the due date for renewal
- 3) For review of research with exempt status, one month prior to the due date for renewal

Name of IRB Chair Farideh Farazmand

Signature of IRB Chair  Date: 02/01/07

Cc. Dr. Andreas

Institutional Review Board for the Protection of Human Subjects
Lynn University
3601 N. Military Trail Boca Raton, Florida 33431

Appendix E

Permissions Letters from Two Colleges in Taiwan

中臺科技大學

Central Taiwan University of Science and Technology

No.11, Buzih Lane, Beitun District, Taichung City 40601, Taiwan (R.O.C.)

TEL: [REDACTED] # 2002 E-mail: [REDACTED]

同意書

Letter of consent for survey

中臺科技學同意林佳慧到本校做問卷. 她的博士論文是關於“英文為具體目的課程在使用電腦語言學習和非使用電腦語言學習,學習環境,態度,和滿意程度對於臺灣大學學生”. 我們有 140 個學生為具體目的課程, 140 個學生接受林佳慧進行問卷調查. 謝謝.

Central Taiwan University of Science and Technology allows and gives the consent to Chia-Hui Lin (the researcher) for conducting her survey in our college. Her dissertation topic is about the “English for specific purposes (ESP) programs with and without computer-assisted language learning (CALL), learning environment, attitudes, and satisfaction for Taiwanese college students”. Our department has 140 students enroll in the ESP programs for Chia-Hui Lin to do her research. Thanks.

Your truly,

Central Taiwan University of Science and Technology

[REDACTED]



NATIONAL CHIN-YI INSTITUTE OF TECHNOLOGY

35, Lane 215, Chung Shan RD., Sec.1,
Tai Ping, Taichung, Taiwan, R.O.C.

TEL [REDACTED]

問卷同意書

Letter of consent for survey

茲同意佛羅里達 Lynn 大學林佳慧君到本校進行博士班論文研究，其主題為「特用英語計畫乃針對台灣大專校院學生設計的課程，無論使用電腦輔助語言學習機制與否，都可應用並強化學習情境、學習態度，並增加學習滿意度」，為協助林佳慧君研究順利，本校將安排 96 名學生協助進行問卷調查。

I give the consent to Chia-Hui, Lin (the researcher) to conducting her survey in our department for her PH.D. Dissertation at Lynn University. Her dissertation topic is about the English for specific purposes (ESP) programs with and without computer-assisted language learning (CALL), learning environment, attitudes, and satisfaction for Taiwanese college students. The school has 96 ESP students enroll in the classes for Chia-Hui, Lin to conduct her research, and I hope that Chia-Hui Lin could succeed in her endeavor. Thanks.

Sincerely,

National Chin-Yi Institute of Technology

Signature: [REDACTED]

Date: 16 NOV. 2006

Appendix F

Certification of Translation of Consent Form

AFFIDAVIT

I, LISA YU, SWEAR THAT I AM FLUENT WITH BOTH THE Chinese
AND English LANGUAGES AND FURTHER SWEAR THAT THE
ATTACHED TRANSLATION IS TRUE AND CORRECT TO THE ORIGINAL
TO THE BEST OF MY KNOWLEDGE.

[Redacted Signature]

LISA YU
TRANSLATOR

STATE OF FLORIDA)

COUNTY OF DADE)

SWORN AND SUBSCRIBED BEFORE ME THIS

JAN 26 2007

[Redacted Notary Name]

NOTARY PUBLIC

MY COMMISSION EXPIRES:

NOTARY PUBLIC
HSIEN YU CHOU
MY COMMISSION # DD383670
EXPIRES: March 16, 2009
1-800-3-NOTARY Fl. Notary Discount Assoc. Co.



BOMING 國際翻譯

INTERNATIONAL TRANSLATION SERVICE INC

8830 NW 146 LANE

MIAMI LAKES, FL 33018

TEL: [REDACTED]; FAX: [REDACTED]

E-MAIL: [REDACTED]





林恩大學

這個文件只有被使用提供授權給自願的同意書

企劃案的主題: 英文為具體日地課程在使用電腦語言學習和非使用電腦語言學習,學習環境,態度和滿意程度對於臺灣大學學生

企劃案 IRB 號碼: _____ 林恩大學 3601 N. Military Trail Boca Raton, Florida 33431

2007-002

我 林佳慧,是一位博士生在林恩大學。我現在在讀全球化的領導學,主修是教育領導學。我的學業的一部份是要去做一個學術研究調查。

指導方向對於參加者:

你已經被邀請去參加我的學術研究調查。請小心閱讀下面的描述。這個表格提供你資訊關於這個研究。主要的研究者(林佳慧)將會回答你所有的問題。你可以問所有你不清楚的問題在於你決定是否去參加之前。在任何時間(在做研究調查之前,期間,或在做研究調查之後),你可以自由的去問任何問題。你年紀已十八歲以上,且你沒有藥物,語言或教育障礙而妨礙了了解授權給自願的同意書內容。

這個研究調查的目的: 這個研究是關於“英文為具體日地課程在使用電腦語言學習和非使用電腦語言學習,學習環境,態度和滿意程度對於臺灣大學學生”。這個研究將會大約有 236 個人參加。參加者的年紀在 18 歲以上。參加者是從 2 個學校在臺灣。參加者是在台中市和台中縣學校在台灣而且他們必須能夠去讀,寫,說中文。

過程: 如果你同意去參加這個研究,你需先完成一份 8 個問題的人口統計背景特徵問卷的檔案。然後你會要求去完成一份 20 個問題的態度特徵問卷, 7 個問題的教學的學習問卷, 和 11 個問題的學生滿意問卷。你將會私下地完成這份問卷。這四份問卷大約會花費 20 分鐘去完成。一開始, 研究者會和教授或指導員進入教室。參加者將會被告知那些資料將會匿名地被保存。沒有任何的參加者識別符號在於問卷上。在研究者發問卷給參加者之前, 研究者將會解釋這個論文的調查和參加者的權利而且將會得到參加者的同意。在研究者發問卷給參加者之後, 研究者將會離開場所。在參加者完成問卷之後, 參加者將會把完成的問卷放入每一個空的信封裡而且將會密封它而且參加者會把完成的問卷放入一個箱子裡。一個箱子將會被研究者放在場所裡。在每位參加者離開場所之後, 研究者將會進入場所裡而且把箱子帶走。

可能的風險或不適: 這個研究包含極小的風險。你可能會發現一些問題是敏感的。除此以外, 參加在這個研究中會要求你一點點的時間和努力。在做問卷過程中你也許會經歷焦慮。研究者會做任何事去減少你的不安。如果你選擇不參加問卷並不影響你課堂分數。

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可能的利益: 在參加這個研究中可能沒有直接的利益給你。但是你可能會得知識以提升英文學習者的觀點在於英文為具體目的地課程。

財務上的考慮: 對於你的參加在這個研究裡,沒有財務上的補償。你的參加在這個研究裡,沒有任何的費用。

匿名

問卷將是匿名的,你將不會被確認且資料會報導成一群的答覆。參加者參加問卷是自願的且歸還完成的問卷會是你了解情況下去參加。

每一個努力將會去維持匿名。在這個研究裡,你的身分將會是機密的。在課堂一開始,你將會使用數字去代表妳們每一位參加者。研究者將會創造一個密碼的資料庫為了完全的機密。

這個研究的結果可能會被出版在一個博士論文學術上,科學的期刊或者被呈現在專業上的會議上。除此之外,在所有的出版中或這個研究的結果中,你個人的隱私將會被保護。

在收集所有資料研究中,如先前所描述,將會被研究者嚴密地保存。資料將會被保存在研究者辦公室的一個上鎖的文件櫃。這個研究執行五年之後,這些資料將會被消毀。所有資料會被嚴密地保存且不會被公開除非法律或規章要求。

權利去退出: 你是自由的去選擇是否參加這個研究。假如你選擇不去參加的話,你將不會有任何的處罰或利益上的損失。如果你選擇不參加問卷並不影響你課堂分數。

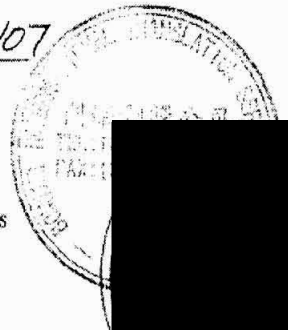
問題上的聯絡/同意書的聯絡: 現在或者未來的任何時間,你有任何更進一步的問題關於這個研究或你的參加將會被林佳慧(主要的研究者)回答。你可以和他取得聯繫在: [REDACTED] 指導教授 Cynthia Andreas 博士,你可以和她取得聯繫在: [REDACTED]。當做一位研究參加者,對於任何的問題關於你的權利,你可以打電話給 Farideh Farazmand 博士,林恩大學 IRB 對於人類參加者的保護的主席,在: [REDACTED]。在這個研究的結果中,假如你有任何的問題,請直接地聯繫主要的研究者(林佳慧)和指導教授(Cynthia Andreas 博士)。一份同意書的副本將會給你。

研究者的宣誓書: 我已經仔細地解釋這份企劃案的本質給參加者。參加者已經向我指出他/她至少 18 歲而且他/她沒有醫學上的問題或者語言或者教育上的障礙妨礙他/她的理解能力。我特此保證研究參加者在這個企劃案裡已經明確地了解這個本質,需求,利益,和風險被包含在他/她的參與。

IRB 通過的日期: 02/01/07

研究者的簽名

Institutional Review Board for the Protection of Human Subjects
Lynn University
3601 N. Military Trail Boca Raton, Florida 33431





Lynn University

THIS DOCUMENT SHALL ONLY BE USED TO PROVIDE AUTHORIZATION FOR VOLUNTARY CONSENT

PROJECT TITLE: English for Specific Purposes (ESP) Programs With and Without Computer-Assisted Language Learning (CALL), Learning Environment, Attitude, and Satisfaction for Taiwanese College Students.

Project IRB Number: _____ Lynn University 3601 N. Military Trail Boca Raton, Florida 33431

2007-002

I, Chia-Hui Lin, am a doctoral student at Lynn University. I am studying Global Leadership, with a specialization in Educational Leadership. One of my degree requirements is to conduct a research study.

DIRECTIONS FOR THE PARTICIPANT:

You are being asked to participate in my research study. Please read this carefully. This form provides you with information about the study. The Principal Investigator (Chia-Hui Lin) will answer all of your questions. Ask questions about anything you don't understand before deciding whether or not to participate. You are free to ask questions at any time before, during, or after your participation in this study. You acknowledge that you are at least 18 years of age, and that you do not have medical problems or language or educational barriers that precludes understanding of explanations contained in this authorization for voluntary consent.

PURPOSE OF THIS RESEARCH STUDY: The study is about English for specific purposes (ESP) programs with and without computer-assisted language learning (CALL), learning environment, attitude, and satisfaction for Taiwanese college students. There will be approximately 236 number of people invited to participate in this study. The participants' ages are at least 18 years old. The participants are from two colleges in Taiwan. Participants are students in Taichung city and county in Taiwan, and they must be able to read, speak, and write in Chinese language.

PROCEDURES:

If you agree to participate in this study, then you need to first complete a Background Demographic Characteristics profile with 8 questions. You will be asked to complete an Attitudinal Characteristics with 20 questions, Instructional Learning Environment with 7 questions and Student Satisfaction with 11 questions. You need to complete the survey in private. These four surveys should take about 20 minutes to complete. In the beginning, the researcher will enter to the classroom with the professors or instructors. Participants will be informed that data will be anonymity. There are no subject identifiers on the survey form. Before the researcher distributes the survey to the participants, the researcher will explain the dissertation research and participants' rights, and will get the consent of the participants. After the researcher distributes the survey to each participant, the researcher will leave the room. After the participants finish the survey, the participants will put survey into an envelope and seal it, as well

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as the participants will put it in a box. A box will be placed in the room by the researcher. After every participant left the room, the researcher will enter the room and pick up the surveys (box).

POSSIBLE RISKS OR DISCOMFORT: This study involves minimal risk. You may find that some of the questions are sensitive in nature. In addition, participation in this study requires a minimal amount of your time and effort. You might experience anxiety during the survey process. The researcher will do everything possible to minimize any discomfort. There is no impact on your course grade if you choose not to participate.

POSSIBLE BENEFITS: There may be no direct benefit to you in participating in this research. But knowledge may be gained which may help English language learners to enhance their perspectives about learning English in English for specific purposes (ESP) programs.

FINANCIAL CONSIDERATIONS: There is no financial compensation for your participation in this research. There are no costs to you as a result of your participation in this study.

ANONYMITY

Surveys will be anonymous. You will not be identified and data will be reported as "group" responses. Participation in this survey is voluntary and return of the completed survey will constitute your informed consent to participate.

Every effort will be made to maintain anonymity. Your identity in this study will be treated as confidential. During the beginning of the course, you will be given a code number. Data will be coded with that code number.

The results of this study may be published in a dissertation, scientific journals or presented at professional meetings. In addition, your individual privacy will be maintained in all publications or presentations resulting from this study.

All the data gathered during this study, which were previously described, will be kept strictly confidential by the researcher. Data will be stored in locked files and destroyed after five years. All information will be held in strict confidence and will not be disclosed unless required by law or regulation.

RIGHT TO WITHDRAW: You are free to choose whether or not to participate in this study. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate. If you decide not to participate, there is no impact on your course grade.

CONTACTS FOR QUESTIONS/ACCESS TO CONSENT FORM: Any further questions you have about this study or your participation in it, either now or any time in the future, will be answered by Chia-Hui Lin (Principal Investigator) who may be reached at: [REDACTED] and Dr. Cynthia Andreas, faculty advisor who may be reached at: [REDACTED]. For any questions regarding your rights as a research subject, you may call Dr. Farideh Farazmand,, Chair of the Lynn University Institutional Review Board for the Protection of Human Subjects, at [REDACTED]. If any problems arise as a result of your participation in this study, please call the Principal Investigator (Chia-Hui Lin) and the faculty advisor (Dr. Cynthia Andreas) immediately.

A copy of this consent form will be given to you.

INVESTIGATOR'S AFFIDAVIT: I have carefully explained to the subject the nature of the above project. The person participating has represented to me that he/she is at least 18 years of age, and that he/she does not have a medical problem or language or educational barrier that precludes his/her understanding of my explanation. I hereby certify that to the best of my knowledge the person who is signing this consent form understands clearly the nature, demands, benefits, and risks involved in his/her participation and his/her signature is legally valid.

Signature of Investigator

Date of IRB Approval: 02/01/07



Institutional Review Board for the Protection of Human Subjects
Lynn University
3601 N. Military Trail Boca Raton, Florida 33431

Appendix G

Certification of Translation of Questionnaires

AFFIDAVIT

I, LISA YU, SWEAR THAT I AM FLUENT WITH BOTH THE Chinese
AND English LANGUAGES AND FURTHER SWEAR THAT THE
ATTACHED TRANSLATION IS TRUE AND CORRECT TO THE ORIGINAL
TO THE BEST OF MY KNOWLEDGE.

[REDACTED]

LISA YU
TRANSLATOR

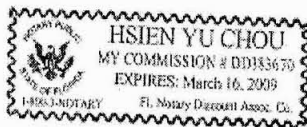
STATE OF FLORIDA)
COUNTY OF DADE)

SWORN AND SUBSCRIBED BEFORE ME THIS _____
JAN 20 2007

[REDACTED]

NOTARY PUBLIC

MY COMMISSION EXPIRES:



BOMING 國際翻譯

INTERNATIONAL TRANSLATION SERVICE INC

8830 NW 146 LANE

MIAMI LAKES, FL 33018

TEL: [REDACTED] : [REDACTED]

E-MAIL: [REDACTED]



人口統計背景特徵問卷

請在適當答案 畫圈 或填入 適當答案

1. 學生代號_____

2. 性別 男生 女生

3. 年紀_____

4. 父母最高學歷

父親: 國中, 高中, 大學, 研究所.

母親: 國中, 高中, 大學, 研究所.

5. 全家收入所得

\$ < 少於 30000, \$30000-49999, \$50000-69999, \$70000-89999, \$ > 90000 或更多

6. 請填入學習此英文課程已多少小時_____

7. 在現在英文課程裡,是否用電腦去輔助英文學習

請畫圈 是 否

8. 請填入每星期使用電腦學習英文小時數_____



態度特徵問卷

在回答問題時,你可圈下面的數字. 一些人可圈非常不同意, 或圈非常同意或其它項目. 你所圈的數字是根據你的感覺在於你所知到或聽到的事物上. 注意, 下面問題沒有正確的答案. 下面的數字是代表個人意見或看法

非常不同意	不同意	沒意見	同意	非常同意
1	2	3	4	5
1. 學習英文是非常棒的事				
2. 我很享受學習著英文				
3. 英文在學校課程裡是很重要的部分				
4. 我計畫盡可能的去學英文				
5. 我喜歡學習英文				
6. 我討厭英文				
7. 我寧願花時間在其它科目也不願學英文				
8. 學習英文很浪費時間				
9. 我認為學習英文很無聊				
10. 當我離開學校,我會全部放棄學習英文,因為我一點也沒興趣				
11. 如果我去拜訪外國,我能說著他們的語言				
12. 即使臺灣距離其它不同語言國家很遙遠,學習外國語言對臺灣人來說很重要				
13. 我希望我可以說著很完美的外國語言				
14. 我想要用原文去讀外國文學而不是用翻譯去翻外國文學				
15. 我通常希望用其它語言去讀報紙和雜誌				
16. 我真的很喜歡去學各種外國語言				



- | | | | | | |
|--|---|---|---|---|---|
| 17. 如果我計畫去另一個國家 我會很努力的
去學英文即使我的英文不錯 | 1 | 2 | 3 | 4 | 5 |
| 18. 我會在學校學習外國語言即使學校沒有要求 | 1 | 2 | 3 | 4 | 5 |
| 19. 我很喜歡看別人和聽別人說著外國語言 | 1 | 2 | 3 | 4 | 5 |
| 20. 學習著外國語言是個很愉快的經驗 | 1 | 2 | 3 | 4 | 5 |

資料來源: 從 Gardner 博士 (1995) 的態度/動機 測試組的問卷 在 University of Western Ontario 網站. 得到作者的許可去採用和修改這份問卷.



教學的學習環境問卷

這個問卷要求你去描述現在你所在的教室。這沒有對或錯的答案。這不是考試。只要表達你的觀點。不要寫下你的名字。你的答案是機密的和匿名的。圈下一個號碼適合你的答案。

幾乎沒有 1	很少 2	有時候 3	通常 4	幾乎總是 5
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|-------------------------------|---|---|---|---|---|
| 1. 問老師“爲何我們要學這個?”,這個問題是 OK 的. | 1 | 2 | 3 | 4 | 5 |
| 2. 當我被教時,我覺的很自在的去提出問題. | 1 | 2 | 3 | 4 | 5 |
| 3. 抱怨有些活動是很模糊不清的,這是 OK 的舉動. | 1 | 2 | 3 | 4 | 5 |
| 4. 抱怨任何事有關阻礙我去學習,這是 OK 的舉動. | 1 | 2 | 3 | 4 | 5 |
| 5. 我覺的很自在去表達我的意見. | 1 | 2 | 3 | 4 | 5 |
| 6. 說出你的權力,這是 OK 的舉動. | 1 | 2 | 3 | 4 | 5 |
| 7. 我覺得無法去抱怨任何事. | 1 | 2 | 3 | 4 | 5 |

資料來源: 從 Taylor, P. C., Fraser, B. J. and White L. R. 博士們 (1994) 的 CLES 測量儀器去監視構成學習環靜的發展 的問卷。在紐奧良 美國教育研究學會得到作者們的許可去採用這份問卷。



學生滿意問卷

以下的陳述有關你的學習環境的看法。對於每個陳述，請秀出你相信學習環境的範圍。我們對於有關你對學習環境的意見很有興趣。對於每個陳述，請圈出號碼來。

非常不同意 1	不同意 2	沒意見 3	同意 4	非常同意 5	
1. 在課堂上,我與其他同學分享學習經驗.	1	2	3	4	5
2. 在課堂上,老師幫我找出我的問題.	1	2	3	4	5
3. 在課堂上我不能和老師互動交流.	1	2	3	4	5
4. 在課堂以外的時間,我能和老師互動交流.	1	2	3	4	5
5. 和同學增加互動,使我從課堂上學到更多.	1	2	3	4	5
6. 在課堂上我不能和同學溝通.	1	2	3	4	5
7. 老師定期告訴我在課堂上的進度.	1	2	3	4	5
8. 老師給我的評語是非常有用的.	1	2	3	4	5
9. 老師給我作業全面的評語.	1	2	3	4	5
10. 我覺的跟老師相處的很愉快.	1	2	3	4	5
11. 同學們是一個共同體去修這堂課.	1	2	3	4	5

資料來源: 從 Benson, A. D., Johnson, S. D., Taylor, G. D., Treat, T., Shinkareva, O. N., and Duncan, J. 博士們 (2004) 的“遠距學習在中等教育職業和科技教育: 比較在網路上和學校學習的成就。” 聖保羅: 明尼蘇達州, 在職業和科技教育國家研究中心得到作者們的許可去採用這份問卷.



Attitudinal Characteristics

Directions: In answering these questions, you should have circled one of the below alternatives. Some people will circle strongly disagree, others will circle strongly agree, and still others would circle one of the alternatives in between. Which one you circled would indicate your own feelings based on everything you know and have heard. Note, there is no right or wrong answer. All that is important is that you indicate your personal feelings.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

- | | | | | | |
|---|---|---|---|---|---|
| 1. Learning English is really great. | 1 | 2 | 3 | 4 | 5 |
| 2. I really enjoy learning English. | 1 | 2 | 3 | 4 | 5 |
| 3. English is an important part of the school program. | 1 | 2 | 3 | 4 | 5 |
| 4. I plan to learn as much English as possible. | 1 | 2 | 3 | 4 | 5 |
| 5. I love learning English. | 1 | 2 | 3 | 4 | 5 |
| 6. I hate English. | 1 | 2 | 3 | 4 | 5 |
| 7. I would rather spend my time on subjects other than English. | 1 | 2 | 3 | 4 | 5 |
| 8. Learning English is a waste of time. | 1 | 2 | 3 | 4 | 5 |
| 9. I think that learning English is dull. | 1 | 2 | 3 | 4 | 5 |
| 10. When I leave school, I shall give up the study of English entirely because I am not interested in it. | 1 | 2 | 3 | 4 | 5 |
| 11. If I were visiting a foreign country, I would like to be able to speak the language of the people. | 1 | 2 | 3 | 4 | 5 |
| 12. Even though Taiwan is relatively far from countries speaking other languages, it is important for Taiwanese to learn foreign languages. | 1 | 2 | 3 | 4 | 5 |



- | | | | | | |
|--|---|---|---|---|---|
| 13. I wish I could speak another language perfectly. | 1 | 2 | 3 | 4 | 5 |
| 14. I want to read the literature of a foreign language in the original language rather than a translation. | 1 | 2 | 3 | 4 | 5 |
| 15. I often wish I could read newspaper and magazines in another language. | 1 | 2 | 3 | 4 | 5 |
| 16. I would really like to learn a lot of foreign languages. | 1 | 2 | 3 | 4 | 5 |
| 17. If I planned to stay in another country, I would make a great effort to learn the language even though I could get along in English. | 1 | 2 | 3 | 4 | 5 |
| 18. I would stay a foreign language in school even if it were not required. | 1 | 2 | 3 | 4 | 5 |
| 19. I enjoy meeting and listening to people who speak other languages. | 1 | 2 | 3 | 4 | 5 |
| 20. Studying a foreign language is an enjoyable experiences. | 1 | 2 | 3 | 4 | 5 |

Note: From "Attitude/Motivation Test Battery (AMTB)" by Gardner, 1985. Technical report,. Adapted and modified pending permission of the author.



Instructional Learning Environment

Directions: 1. The questionnaires ask you to describe this classroom which you are in right now. There is no right or wrong answers. This is not a test. Your opinion is what you wanted. 2. Do not write your name. Your answers are confidential and anonymous. 3. Circle one number corresponding to your answer.

Almost Never	Seldom	Sometimes	Often	Almost Always
1	2	3	4	5

- | | | | | | |
|---|---|---|---|---|---|
| 1. It is OK to ask the teacher "Why do we have to learn this?" | 1 | 2 | 3 | 4 | 5 |
| 2. I feel free to ask question the way I am being taught. | 1 | 2 | 3 | 4 | 5 |
| 3. It is OK to complain about activity that are confusing. | 1 | 2 | 3 | 4 | 5 |
| 4. It is OK to complain about anything that stops me from learning. | 1 | 2 | 3 | 4 | 5 |
| 5. I am free to express my opinion. | 1 | 2 | 3 | 4 | 5 |
| 6. It is OK to speak up your rights. | 1 | 2 | 3 | 4 | 5 |
| 7. I feel unable to complain about anything. | 1 | 2 | 3 | 4 | 5 |

Note: From "CLES an instrument for monitoring the development of constructivist learning environments" by Taylor, P. C., Fraser, B. J. and White L. R., 1994. American Educational Research Association, New Orleans. Adapted pending permission of the author.



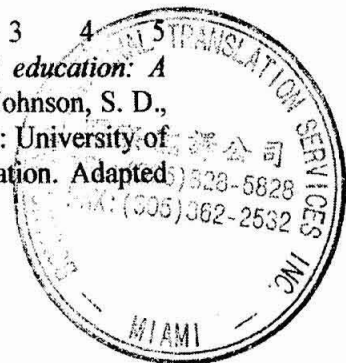
Student Satisfaction

Directions: The following statements relate to your perceptions of the learning environment. For each statement, please show the extent to which you believe the learning environment has the features described by the statement. We are interested in your opinion that best described your perceptions of the learning environment. Please circle your choice to each statement.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

- | | | | | | |
|---|---|---|---|---|---|
| 1. I was able to share the learning experiences with other students in this course. | 1 | 2 | 3 | 4 | 5 |
| 2. The instructor helped me identify problem areas with my studies in this course. | 1 | 2 | 3 | 4 | 5 |
| 3. I was not able to interact with the instructor during the class sessions. | 1 | 2 | 3 | 4 | 5 |
| 4. I was able to interact with the instructor outside of the regular class time. | 1 | 2 | 3 | 4 | 5 |
| 5. Increased contact with fellow students helped me get more out of this course. | 1 | 2 | 3 | 4 | 5 |
| 6. I was not able to communicate with other students in this course. | 1 | 2 | 3 | 4 | 5 |
| 7. The instructor informed me about my progress periodically during the course. | 1 | 2 | 3 | 4 | 5 |
| 8. The instructor provided me feedback that is useful. | 1 | 2 | 3 | 4 | 5 |
| 9. The instructor provided comprehensive feedback | 1 | 2 | 3 | 4 | 5 |
| 10. I feel comfortable with the instructor as a person. | 1 | 2 | 3 | 4 | 5 |
| 11. A sense of community existed with fellow students | 1 | 2 | 3 | 4 | 5 |

Note: From "Distance learning in postsecondary career and technical education: A comparison of achievement in online vs. on-campus." by Benson, A. D., Johnson, S. D., Taylor, G. D., Treat, T., Shinkareva, O. N., and Duncan, J., 2004. St. Paul: University of Minnesota, National Center for Research in Career and Technical Education. Adapted pending permission of the author.



Skill and Certification:

Obtained the TOEFL 550 to enter the Lynn University.

Some certifications of English as a Second Language (ESL) for different levels of English when I studied English in the United States.

Hobby:

Reading is my favorite interest. I am making time to read books of education related subjects to strengthen my knowledge. Reading English novels, watching movies, and communicating with people are also my interests. I particular enjoy challenging myself so I try to get more diplomas and certifications. I like to work out in the fitness center to release myself when I study hard on the academic books.

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