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The effect of process writing software on the quality and length of ESL students' writing

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**THE EFFECT OF PROCESS WRITING SOFTWARE ON THE QUALITY AND
LENGTH OF ESL STUDENTS' WRITING**

Rodolfo Argueta

**Dissertation submitted to the College of Human Resources and Education
at West Virginia University
in partial fulfillment of the requirements
for the degree of**

**Doctor of Education
in
Technology Education**

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Technology Education

Morgantown, West Virginia

2006

**Keywords: computers and writing, computer-assisted writing, process writing software,
word processing and writing, ESL writing and computers**

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ABSTRACT

The Effect of Process Writing Software on the Quality and Length of ESL Students' Writing

Rodolfo Argueta

The purpose of the study was to investigate the effect of process writing software on the quality (holistic score) and length (total number of words) of the writing produced by ESL students enrolled in an advanced reading and writing class. Four advanced-intermediate ESL students who had enrolled in an advanced reading and writing class volunteered to participate in the study. During the six weeks of the first summer session of 2004, participants received regular classroom instruction and utilized process writing software (*Essay Punch*) to write two academic essays. In addition to the two essays written with process writing software, participants wrote a pretreatment essay, a take home essay—immediately after the second essay with *Essay Punch*—, and a posttreatment essay. Three ESL experts assigned each essay a quality rating according to the scoring guidelines of the *Test of Written English Guide* (2004). The total number of words per essay was also calculated using *Microsoft Word*. The quantitative analysis did not produce conclusive results. While all participants obtained their highest quality rating in one of the two essays written with *Essay Punch* and also wrote their longest essay with this software, their quality ratings and word totals per essay tended to be lower in the posttreatment essay than in the pretreatment essay. To gain a better understanding of the participants' experiences using the software, the researcher also gathered qualitative data through a demographics questionnaire, field notes, a posttreatment questionnaire, and a teacher's survey. Qualitative data were analyzed using inductive analysis, which yielded a list of categories that was later organized into major themes. The qualitative analysis revealed that factors such as the poor integration of the software with the curriculum, the short duration of the experiment, the limited time spent writing with the software, and the individual goals of each participant may have negatively influenced participants' writing performance.

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TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGEMENTS	iii
List of Tables	ix
List of Figures	x
CHAPTER I: INTRODUCTION.....	1
Background	2
Need for the Study	3
Statement of the Problem.....	4
Purpose of the Study	4
Research Questions	5
Assumptions.....	5
Variables	6
Independent Variable	6
Dependent Variables	6
Definition of Terms.....	6
CHAPTER II: REVIEW OF LITERATURE	8
The Writing Process.....	9
Planning	10
Translating	11
Reviewing	11
The Monitor	11
Computer-Assisted Writing	12

Level I Writing Tools.....	13
Level II Writing Tools	14
Level III Writing Tools.....	14
Computer-Assisted Writing Research.....	16
Computer-Assisted Writing and Writer's Anxiety.....	18
Computer-Assisted Writing and Writer's Attitude toward Writing	19
Research on First Language Speakers	21
Research on ESL, EFL, Limited English Proficiency (LEP) students	24
Research on Process writing Software.....	26
Summary	30
CHAPTER III: METHODOLOGY	31
Data Collection	31
Research Design.....	31
Participants.....	31
Setting	33
Equipment.....	35
Classroom	35
Writing software	36
Instruments.....	53
Demographics questionnaire.....	53
Scoring guide	54
Word counts.....	55
Posttreatment questionnaire	55

Field notes.....	56
Instructor survey	56
Researcher's Role	56
Instructor's Role	57
Procedures.....	58
Data Analysis	63
Limitations of the Study.....	71
CHAPTER IV: RESULTS AND DISCUSSION	73
Participants' Writing Performance	82
Participants' Stories.....	88
Frank	88
Tina	91
David.....	93
Linda	97
Intervening Factors	99
Logistics.....	104
Curriculum	105
Software	111
Participants' Characteristics	113
Summary	117
CHAPTER V: CONCLUSIONS	119
Implications for Instruction.....	126
Implications for Research	130

Implications for ESL writing software design	132
REFERENCES	133
Appendix A: Demographics Questionnaire	143
Appendix B: <i>Test of Written English Guide</i>	146
Appendix C: Posttreatment Questionnaire.....	148
Appendix D: Instructor Survey	150
Appendix E: Script for the Study	153
Appendix F: Essay Topics	155

List of Tables

Table 1: Test score ranges for student placement at the Intensive English Program	34
Table 2: Research schedule.....	60
Table 3: Essay scores from practice rating session.....	66
Table 4: Methodology overview	70
Table 5: Scores assigned by raters to each essay before and after they conferred	76
Table 6: Participants' quality rating in each essay after raters conferred.....	77
Table 7: Total number of words per essay.....	80
Table 8: Frank's quality rating, total number of words per essay, and time on task.....	83
Table 9: Tina's quality rating, total number of words per essay, and time on task.....	84
Table 10: David's quality rating, total number of words per essay, and time on task	85
Table 11: Linda's quality rating, total number of words per essay, and time on task.....	87
Table 12: Themes and categories from qualitative data	101
Table 13: Number of hours spent by participant in each <i>Essay Punch</i> essay.....	108
Table 14: Participants' feelings toward writing and toward writing with computers before and after the treatment	116

List of Figures

Figure 1: <i>Essay Punch</i> window prompting users to complete a thesis statement.....	40
Figure 2: <i>Essay Punch</i> window at the Outlining stage	42
Figure 3: <i>Essay Punch</i> window at the Writing stage	44
Figure 4: <i>Essay Punch</i> at the Organizing stage	46
Figure 5: <i>Essay Punch</i> window showing the options menu	47
Figure 6: <i>Essay Punch</i> screen at the Publishing stage	49
Figure 7: <i>Essay Punch</i> screen interface	51
Figure 8: Participants' quality ratings in each of the five essays	78
Figure 9: Number of words per essay in each of the five essays.....	81
Figure 10: Average number of hours spent by participants on each <i>Essay Punch</i> essay	107

CHAPTER I: INTRODUCTION

The use of computers as teaching and learning tools has become an area of paramount importance. Areas such as computer-aided instruction (CAI) and computer-based training (CBT) have gained popularity among educators and trainers. In the field of language instruction, computer assisted language learning (CALL) is the term that encompasses the use of computers as aids for teaching and learning language skills (e.g., speaking, listening, reading, and writing). One of the areas of language instruction in which computers have become an important tool is students' writing. The term Computer-Assisted Writing (CAW) has been coined to cover issues related to the use of computers as writing aids.

In the language classroom, computers were initially used for practicing language drills and for typing documents, but as computers incorporated more features, writing teachers began utilizing them in more creative ways (e.g., for collaboration, grading students' papers, and publishing). However, even though word processing programs facilitate typing such programs were not pedagogically designed for teaching writing. Publishers of software programs such as *Essay Punch*, on the other hand, claim their software has been developed based on sound writing pedagogy.

The incorporation of computer software for the teaching and learning of writing has raised a need for empirical research on the benefits or detriments of using such tools. In response to this need, a considerable amount of research on computer-assisted writing has been conducted on first language (L1) learners; yet, research dealing with second language (L2) learners has been rather limited. With the goal of making a contribution to the body of research in this area, this study aimed to investigate the impact of process writing software on the written produced generated by ESL students enrolled in an advanced reading and writing class.

Background

The notion of using computers for teaching languages was conceived as early as the 1950s but it did not begin to be implemented until the 1960s and 1970s (Warschauer & Healey, 1998). During the early years of CALL, computers were used primarily for language drills, but developments in computer hardware and software made them better tools for teaching language skills such as listening, writing, and speaking. Currently, language teachers and learners have at their disposal a variety of software packages that purport to facilitate language learning.

The adoption of computers in language classrooms posed the question whether computers improved language learning among students. In search of answers to this question, researchers began investigating the role of computers on several areas of language teaching and learning. Computer-Assisted Writing (CAW) became one of the areas that captured the interest of researchers who began to explore topics such as word processing and motivation (Warschauer, 1996), word processing and writers' attitudes toward writing (Bierman, 1998; Devers, 1994; Nasser, 1994; Moore, 1997; Neu & Scarcella, 1991; Phinney, 1991), learners' attitudes toward computers (Neu & Scarcella, 1991; Phinney, 1991; Warschauer, 1996; Yao & Warden, 1998), and word processing and students' writing quality (Bierman, 1988; Bursztein, 1993; Burton Head, 2000; Haas, 1989; Hawisher, 1987; Licano-Lerew, 1997; Nasser, 1994; New, 1999; Pivarnik, 1985; Pullen, 1993).

Most of the research available on computer-assisted writing has concentrated on the effects of word processing on writing. Researchers have suggested that the features of word processors make them appropriate for teaching writing in a process-based approach (Boone, 1991; Kitchin, 1991), which sees writing as a recursive process in which writers move back and forth through different processes--prewriting, writing, revising and editing (Kitchin, 1991). This

generative process is facilitated by word processors, which among other things, allow writers to insert and delete blocks of texts; access thesaurus, dictionaries, and grammar checkers (Liu, Moore, Graham, & Lee, 2003); and print clean copies easily (Montague, 1990).

Research on the effect of word processors has covered a variety of topics and populations. Some studies have focused on the composing process in which writers engage as they compose, while others have looked at characteristics of the final product such as writing quality and length. Studies have included samples comprised of elementary school children, high school teenagers, college students, and in some cases English as a Second Language (ESL) or Foreign Language (FL) students. In other cases, participants have not been students but writers classified either as inexperienced or experienced. However, most studies in CAW have been conducted in settings where English is taught as a first language (e.g., elementary, secondary, and college students in an English speaking community) and fewer studies have been conducted in settings where English is taught as a second language (English as a Second Language or English as a Foreign Language). ESL and EFL writing teachers have largely relied on findings generated by research conducted in settings where English is the first language.

Need for the Study

Despite the good qualities that researchers and language teachers saw in word processors during the 1980s and early 1990s, early versions of those computer tools were not as complete and intuitive as today's word processors, nor were they designed for teaching the writing process. In addition, typing on a word processor was still a novelty and many students did not have the skills to create texts on the computer. Given these conditions, several researchers wanted to know whether composing on a word processor benefited students more than composing with pen and paper. Findings from studies were not categorical: some studies found a statistical

significance while others did not find any significant difference between the two conditions.

Today, word processors have become an indispensable tool in education, rendering the comparison of writing with computers versus writing with pen irrelevant. Currently, it is more important to ask whether software designed with the purpose of teaching writing does in fact improve students' writing.

Process writing software is designed for teaching writing according to the principles of the process writing paradigm. Besides being equipped with word processing tools, process writing software such as *Essay Punch* incorporates a series of activities that assist writers in planning, writing, and editing their text. This study aimed to find out whether a software package (*Essay Punch*) that purports a process writing approach had any effect on the quality and length of the writing produced by ESL students enrolled in an advanced reading and writing class.

Statement of the Problem

Although research has provided some answers to the questions about the effects of word processing software on writing, it has only sporadically addressed questions about the effects of process writing software on writing quality and length.

Purpose of the Study

The purpose of the study was to investigate the effect of process writing software on the quality (holistic score) and length (total number of words) of the writing produced by ESL students enrolled in an advanced reading and writing class.

Research Questions

This study sought to answer the following research questions:

1. What is the effect of process writing software on the quality of writing produced by ESL students enrolled in an advanced reading and writing class?
2. What is the effect of process writing software on the length of writing produced by ESL students enrolled in an advanced reading and writing class?

Assumptions

This study made the following assumptions:

Participants will have a similar English proficiency level. At the beginning of the semester, students in the Intensive English Program are placed into proficiency levels based on their scores in the Test of English as a Foreign Language (TOEFL) and the Michigan Test (Huntley, 1999). In addition, students produce an in-class writing sample in test-like conditions during the first week of classes. In response to instructors' requests, during the first two weeks of the semester, the director of the IEP can move students up or down levels if students demonstrate a proficiency level that corresponds to a level other than that in which they were initially placed (Huntley, 1999).

Participants will have sufficient computer skills and will be able to perform the basic tasks of a word processor (e.g., creating and saving a file; typing, inserting, deleting, copying, and pasting text; and using the language tools of a word processor).

Training on the use of process writing software will be equally effective for all the participants. To determine that all the students know how to use the software, at the end of the

training, they will be asked to perform a series of tasks with the software. If some students need further training or assistance it will be provided to them.

Variables

Independent Variable

The independent variable of this study was process writing software.

Dependent Variables

This study addressed two dependent variables: (a) quality of writing, defined as a holistic rating (on a 1 to 6 scale) that resulted from averaging the ratings of three raters, and (b) length of writing, defined as the number of words in the essay counted using *Microsoft Word*[®].

Definition of Terms

Act of writing: The mechanical act of transforming ideas into words by means of pen-and-paper or a computer.

Computer-Assisted Language Learning (CALL): Using computer technologies as aids for language learning.

Computer-Assisted Writing (CAW): The use of computer software for writing (e.g., word processors, process writing software, and online writing tools).

English as a Foreign Language (EFL): Teaching English to non-native speakers of English in a setting where English is not the native language of the community.

English as a Second Language (ESL): Teaching English to non-native speakers of English in a setting where English is the native language of the community

First Language (L1): The mother tongue, or first language, of a speaker.

Holistic scoring: The process of assessing the overall value of a composition and assigning it a single score.

Length of writing: The total number of words in a composition, which was calculated using *Microsoft Word*[®].

Process writing: A series of cognitive processes that include generating idea, transforming them into words, and reviewing what has been written.

Process writing software: Software designed for teaching writing using a process writing approach.

Quality of writing: The average rating of an essay that resulted from averaging the ratings of three independent raters.

Second Language (L2): Any language other than one's first language.

Word processing software: Computer software that allows users to type, edit, and save text on a computer. It may include tools such as spell checkers, dictionaries, thesaurus, and translators that help writers in revising text.

Writing: Depending on the context in which it appears, this term may designate (a) the writing process and all its subprocesses (b) the mechanical act of transforming ideas into words using tools such as pen-and-paper or a computer, and (c) the written product such as an essay.

CHAPTER II: REVIEW OF LITERATURE

As computer software has been incorporated into the teaching of listening, speaking, reading, and writing skills in language classrooms, language-teaching professionals have felt the need to know how effective it has been in improving students' skills and attitudes. For teachers of writing, a major question has been whether computer-assisted writing improves the quality of the final written product. Research, which mostly has concentrated on word processors, has not offered a definitive answer to this question. While some studies have shown that word processors improve students' attitudes toward writing and/or writing quality, others have found no significant difference between groups using word processors and groups using pencil and paper.

Studies that have found a positive effect of word processors claim word processors possess features that facilitate teaching writing within a process approach. Based on this premise, it is expected that process writing software, such as *Essay Punch*, which is designed for teaching writing, will have a positive effect on students' writing. While there is a considerable amount of research on the effects of word processing on the process and product of students' writing, there is very little research on the role of process writing software on students' writing. The following literature review will present an overview of past research on computer assisted writing in the context of the current study.

The literature review will begin with a short discussion of the approach to teaching writing as a process. It will continue with an overview of major research findings in the areas of computer-assisted writing and writer's attitude toward writing, computer assisted writing and writer's attitude toward computers, and computer assisted writing and writing quality. It will follow with a summary of past research dealing with process writing software and students'

writing. Throughout the literature review, studies about writing in a first and a second language will be discussed.

The Writing Process

Traditionally, the teaching of writing was only concerned with the quality of the written product. However, as research began to examine the strategies that learners utilize during the writing process, focus shifted from an emphasis on product to an emphasis on process. Instead of judging a piece of writing for what is present on the written page, supporters of the process approach emphasize the need for paying attention to the different stages a writer goes through en route to creating a written piece. In the process approach, brainstorming, prewriting, drafting, writing, and revising are more important than the product of the act of writing. Those stages, however, do not occur in a linear fashion. Writers may move back and forth between different stages at any point in the process.

Flower and Hayes (1981) point out that the traditional paradigm for composing was dominated by the "stage process model" which "describes the composing process as a linear series of stages, supported in time, and characterized by the gradual development of the written product" (p. 367). Stage process models usually include a prewriting stage, a writing stage, and a revising stage, although different researchers may label each differently. Pre-writing corresponds to the planning phase, writing involves the actual action of putting ideas into words, and revising refers to an examination of the final product to correct errors (Flower & Hayes, 1981). Flower and Hayes (1981) identified Gordon Rohman's pre-write/write/re-write and Britton's conception/incubation/production as two typical stage process models.

Flower and Hayes (1981) contended that stage process models concentrate on the written product instead of the processes in which writers engage as they compose. Stage process models

portray writing as a linear process composed of discrete stages and do not consider the fact that writers are constantly planning and revising as they write. As an alternative to stage process models, Flower and Hayes (1981) advocate a cognitive process model that highlights the processes involved in the act of writing. In their model "the major units of analysis are mental processes, such as the process of generating ideas" (p. 367). Flower and Hayes contend that such processes have a hierarchical structure (i.e., they contain subprocesses) and can exist at any phase of the composing process. Drawing on information collected from analysis of verbal (or thinking aloud) protocols of the strategies that writers employ as they compose, Flower and Hayes (1981) developed a cognitive model composed of three major elements: the task environment, the writer's long-term memory, and writing processes. The task environment covers all that is external to the writer; the writer's long-term memory includes the writer's knowledge of the topic, audience, and writing conventions; and the writing processes comprise planning, translating, and reviewing.

Planning

According to Flower and Hayes (1981), "in the planning process writers form an internal representation of the knowledge that will be used in writing" (p. 372). Planning is further divided into three subprocesses: (a) Generating ideas, the act of retrieving ideas from long-term memory; (b) organizing, the act of trying to transform ideas into meaningful structures, during which the writer identifies categories and makes decisions about the order of presentation of ideas; and (c) goal setting, which entails establishing process and content goals for the writing task. Process goals are instructions on how the writer plans to carry out the writing task while content goals dictate what the writer intends to convey to an audience (Flower & Hayes, 1981). Like idea generating, goal setting can happen at any point in the writing process because writers are

constantly revisiting and recreating their goals as their text or plans evolve. In addition, goal setting and idea generating influence each other: new goals can lead to new ideas and new ideas can demand new goals.

Translating

Hayes and Flower (1980) define translating as "the process of putting ideas into visible language" (p. 373). Translating not only involves the writer's knowledge of syntactic and semantic constraints of the language, but also the writer's motor skills during the act of writing.

Reviewing

During the reviewing process, writers read the text that they have produced and examine it to determine if they need to do more translating or revising. Reviewing contains two subprocesses (evaluating and revising) that can occur at any stage of the composing process.

The Monitor

The monitor represents one's way of deciding when to move from one writing process to the next and depends on one's goals and writing habits and styles (Flower & Hayes, 1981).

Flower and Hayes (1981) warn that although their model divides the writing process into three processes, it does not indicate those processes appear in a sequential (linear) order. Rather, their model portrays processes in a hierarchical structure. In one occasion, for example, a process may be part of a larger process; in another, it may accommodate several processes within itself. In addition, a process can occur at any point of the writing process and at the same time initiate a different process. It is this constant recycling of processes that makes the writing process recursive in nature.

Kim (2002) presents an overview of several models of the writing process published after the Flower and Hayes' model. Bereiter and Scardamalia's (as cited in Kim, 2002) model

identifies two processes according to the cognitive complexity of the task: knowledge-telling and knowledge-transforming. Knowledge-telling does not require the use of complex cognitive tasks and involves only transforming one's knowledge into written text. Knowledge-transforming, on the other hand, demands the use of more complex cognitive tasks such as an assessment of the audience and consideration of writing conventions. Kim points out that in 1996, Hayes added context factors such as audience, collaborators, and composing medium to the earlier Flower and Hayes' model, thus approximating it to Bereiter and Scardamalia's knowledge-telling approach. According to Kim (2002), Burnett (as cited in Kim, 2002) proposed five writing processes "(1) inventing and exploring, (2) planning and organizing, (3) drafting, (4) revising, and (5) editing" (p. 16). Kellogg's (as cited in Kim, 2002) model comprises the processes of formulation, execution, and monitoring which do not necessarily occur in a linear manner. In Kellogg's model, working memory makes connections between basic processes that make up the processes of formulation, execution, and monitoring. Grabe and Kaplan (as cited in Kim, 2002) integrate language proficiency into their model of L2 writing, which is comprised of cognitive processing, verbal processing, and context. According to Kim (2001), Celce-Murcia & Olshtain's (as cited in Kim, 2002) model describes writing as the interaction of top-down processing (e.g., writer's knowledge of content and audience awareness) and bottom-up processing (e.g., grammar and punctuation). Kim (2002) concludes that all these models agree that writing is a non-linear process that involves planning, writing, and composing.

Computer-Assisted Writing

The use of computers in writing instruction has been labeled as either Computer-Assisted Writing or Computer-Aided Writing (CAW). In some instances, researchers have used the term GroupWare to designate the use of computers in a networked environment (Forman, 1991;

Knox, n.d.). To avoid creating confusion with the terminology, the term Computer-Assisted Writing (CAW) is used throughout this review to designate the utilization of computers for writing.

In the CAW literature, word processors have received most of the attention; however, there are a variety of tools that support writers during the writing process. In the prewriting stage, writers can use concept-mapping software such as *Inspiration* to create outlines of ideas (Warschauer & Healey, 1998). As they engage in turning ideas into words, writers can resort to spell-checking programs, style-checking and usage-checking programs, monolingual or bilingual dictionaries, and thesauri (Ross, 1991). Although each of those tools may be a separate program, they may also be integrated into a word processing program (Montague, 1990). Newer word processing programs even incorporate text-to-speech (Ross, 1991; Warschauer & Healey, 1998) and speech recognition capabilities (*Microsoft Office XP*, for example). Other programs such as *Essay Punch* not only incorporate features of a word processor but are designed to teach writing under a process writing approach. For the purpose of this study, software designed to provide support to students throughout the writing process is called process writing software.

In her classification of writing software according to its features, Montague (1990) identified three different levels:

Level I Writing Tools

These tools encompass programs used for editing and revising surface features, such as spell-checkers, online dictionaries, thesauri, and editing commands (e.g., copy, paste, delete, and insert).

Level II Writing Tools

Level II writing tools cue the writer to certain features of the text but do not provide suggestions for correcting mistakes. This level comprises software programs used to check diction, style, and grammar. An example of this type of programs is *Writer's Workbench*[®], which includes tools for organizing an essay, evaluating paragraph length, correcting lexical items, checking spelling and punctuation, and checking language usage (Montague, 1990).

Level III Writing Tools

This level includes programs providing guidance to writers during the different phases of the writing process. Although early programs at this level were designed for helping writers in the prewriting and planning, newer programs also address the areas of composing and revising. Montague (1990) discussed briefly a few programs in this category. *Think Tank*[®] was a program that helped writers organize their ideas and create lists during the prewriting phase. *QUILL*[®], another program, addressed both reading and writing skills and contained six components: planner, library, publisher, mailbag, story maker, and writer's assistant (Montague, 1990).

Montague (1990) suggests there are still other composing support tools such as genre-based programs, synthesized speech programs, and telecommunications networks. Genre-based programs, for instance, help writers in creating a specific type of writing (e.g., description, narration, classification, persuasion, journal writing, comparison and contrast, and critical essays). Some genre-based programs may even feature a built-in word processing program (Montague, 1990).

In a discussion of the use of computers in writing, Reed (1996) categorizes software tools into three types: "(a) word processing use only, (b) modified word processing use, and (c) composing software" (p. 1). In word processing only, learners use a word processing program

such as *Microsoft Word*[®] to compose. Using a word processor, however, implies learners already have the prewriting and editing skills necessary to work independently. In modified word processing, a word processing program is modified to provide prompts to learners. According to Montague (1990), prompting programs "are useful throughout the writing process as an aid to planning, writing, and revising compositions and take the form of checklists to follow, lists of questions to answer, or self-generated questions and comments" (p. 94). Reed (1996), however, questions the value of prompting programs arguing that prompts may disrupt the flow of ideas in the writer's mind. Unlike unmodified word processors, which leave writers on their own, composing software guides them through the different stages of the writing process. Reed (1996), however, cautions that some composing software packages present the stages of the writing process in a linear fashion (e.g., prewriting, drafting, and revising), thus violating the recursive nature of the composing process.

Several researchers have pointed out that the simplicity with which text can be edited in a word processor is a major advantage of computer-assisted writing. New (1999) claims that computer-assisted writing allows learners to (a) see the text as "something ephemeral" that can be changed, (b) understand the interactive nature of the writing process, and (c) "step back from their work in order to facilitate reviewing and revising" (p. 82). Learners learn to focus on the process rather than on the product of writing, they learn to see revision as a constantly ongoing part of the writing process, and also become critics of their writing (Neu & Scarcella, 1991). When they write in a word processor, students can concentrate on the process of writing rather than on the mechanics of typing or handwriting (Chen & Warden, 1997). In addition, the variety of features available in a word processor facilitates editing tasks. According to Powell-Hart (1991), "cut and paste functions give the text fluidity and the quality of being portable, allowing

components of the text to be moved anywhere in the composition that the writer may choose" (p. 37).

Computer-Assisted Writing Research

Most of the research on Computer-Assisted Writing (CAW) has concentrated primarily on word processing. The majority of studies have compared writing with a computer [unmodified or modified word processor] versus writing with pen and paper. Students' writing quality and quantity, writers' attitude towards writing, writers' attitude toward computers, and writers' anxiety are some of the dependent variables measured in several studies. Spiess (1998) suggests that research on word processors has evolved around attitudes towards writing using word processors, revision prompting programs, and composing. Reed (1996) groups research on word processing into four subcategories: "(a) writing attitudes; (b) writing fluency, writing quality, and syntactic complexity; (c) revision; and (d) internalizing computer-based writing strategies" (p. 5).

Some researchers have stressed the need to conduct more empirical research in certain areas of computer assisted writing. In a discussion of groupware and collaborative writing, Forman (1991) called for more involvement of composition specialists in cross-disciplinary research involving collaborative writing and computers. She argued that social psychologists or information systems specialists, who cannot say much about writing as a collaborative process, have conducted much of the research available in collaborative work. Forman (1991) suggested that composition specialists should join social psychologists and information systems specialists in the "research, design, and theory of computing and collaborative writing" (p. 67). In her recommendations, Forman (1991) proposed that research focus on three key aspects:

1. The reasons behind the choice of groups to use groupware for collaborative writing. Some of the factors that could be researched include group characteristics (e.g., size, age, gender, motivation, and leadership), task characteristics (e.g., type of document and frequency of writing task), and technology involvement (e.g., computer infrastructure, and technology use outside the writing center).
2. The reasons that motivate writing groups to use technology. Some of the issues that may be pursued are individual or group learning experience, compliance, and leadership.
3. The advantages and disadvantages of groupware choices.

Some of the research of writing has focused on writing as a collaborative process. Murray (1992) ascertains that "writing is not a solitary act...rather, it is the result of the interaction among people, contexts, and texts" (p. 100). Through collaboration learners not only converse about the process of writing but they also learn from each other (Johnson, 1991) to become experts (Neu & Scarcella, 1991). The use of GroupWare for writing may help learners understand the social nature of writing by allowing conversation and sharing with other members of the group (Knox, n.d.).

An issue of concern is that most studies dealing with second language writing samples have focused on "discrete, formal elements of language" and have paid limited attention to discourse features (Chiang, 1999, p. 219). Chiang (1999) investigated which features raters considered important in rating the papers of a group of learners of French as a Foreign Language and how those features impacted the rater's perception of quality of the written pieces. He found that raters gave more importance to discourse features than to grammatical features in rating the overall quality of a paper. But despite the suggested notion that teachers value more discourse than grammar, grammatical features are still given a lot of attention. In a study of the revision

strategies used by five students enrolled in a one-semester intensive intermediate college French course, New (1999) discovered that both self-reported good writers and self-reported poor writers made more surface (mechanical or local) than content (global) changes. In another study (Neu & Scarcella, 1991), students expressed that word-processing helped them pay more attention to features such as grammar and vocabulary. Even though research on writing in ESL has suggested that the strategies and abilities of writers "remain consistent across" (New 1999, p. 81) languages, their application depends on the level of writing competence and experience of the writers. In addition, results from second language research have shown that revision in a second language occurs more frequently and demands more time than it does in a first language (New, 1999).

Computer-Assisted Writing and Writer's Anxiety

In a study about computer assisted writing and writer's anxiety, Phinney (1991) investigated if ESL students enrolled in a freshman composition class exhibited anxiety toward writing. She found that the group that wrote using a computer reported a decline of anxiety in all subscales, except in editing. Unlike the computer group, a group that was taught using traditional instruction did not show a reduction of their anxiety levels. Phinney (1991) concluded that computers "did reduce writing apprehension, improve attitudes, help students deal with deadlines, and enhance their perceptions of their ability to deal with complex material" (p. 199).

In a similar vein, Shen (1999) investigated whether computer-assisted writing helped ease student writing anxiety and improve their writing proficiency. Shen's study involved five junior students from the School of Foreign Languages at Suzhou University who were majoring in Foreign Trade English. Shen (1999) found that students felt less anxious and "more confident in their writing" (Findings and discussion section, para. 1) when they wrote in a computer lab

than when they did in a traditional writing class. These findings are congruent with Powell-Hart's (1991) study, which compared dispositional anxiety, situational anxiety, and computer anxiety levels among freshmen college students enrolled in a writing class. Powell-Hart's study included three groups that were taught with a different method: (a) word processor, (b) composing process software and (c) traditional (no computer-based tasks). In her analysis, Powell-Hart found a significant difference in dispositional anxiety between the group that used computers and the traditional group. While anxiety levels decreased for both the word processor and composing process software groups, they increased for the traditional group. However, the study did not reveal any significant difference in either situational anxiety among the three groups or in computer anxiety between the two computer groups. Another study, Neu and Scarcella (1991), reported that students using word-processing perceived writing in a computer as "challenging and non-threatening" (p. 180). Neu and Scarcella suggest that such positive attitudes increase students' willingness to write, revise, and share their writing with other learners, which will result in an improvement of their writing abilities.

Computer-Assisted Writing and Writer's Attitude toward Writing

Studies on CAW and writers' attitude have shown that students' attitude toward writing improved after they used computer-assisted writing (Bierman, 1988; Devers, 1994; Nasser, 1994; Neu & Scarcella, 1991; Phinney, 1991; Yao & Warden, 1998). Warschauer (1996) researched "which aspects of using a computer for writing and communication FL students find motivating," the effect of student background on those motivating aspects, and "how student motivation vary from class to class, teacher to teacher, and L2 to FL situation" (p. 3). He surveyed 167 intermediate and above level students enrolled in twelve ESL and EFL classes in the United States, Hong Kong, and Taiwan. Results from the study revealed that students had a positive

attitude toward using computers. Learners perceived the computer as a tool that helped them communicate with other speakers around the world, empowered them, and made them better and more independent learners (Warschauer, 1996). In addition, Warschauer found that self-rated computer knowledge and experience using e-mail played a major role in the results of the study, but he cautions that because the information in his study was self-reported, it may not be completely reliable. According to Warschauer (1996), highest motivation scores existed when computers had an "integral," rather than a "peripheral" role, in the classroom. He further suggests: "the best results are achieved when on-line activities are well integrated into the ongoing structure of student assignments and interaction rather than included as an informal add-on" (Differences among classes and teacher section, para. 2). Additionally, Warschauer (1996) found that students had a positive attitude toward the use of computers for writing and communication in the language classroom regardless of students' gender, level of typing skill, or computer skills. Some of the factors accounting for this positive attitude could be "the benefits of computer mediated communication, the feeling of personal empowerment, and the enhancement of learning opportunities" (p. 10).

In a similar vein, other researchers reported positive effects of word processors on writer's attitude toward writing. Devers (1994) found that the attitude toward writing of third and fourth grade students who wrote with word processor was significantly more positive than the attitude toward writing of students who wrote without word processor. Devers also reported that the word processing group exhibited a significantly more positive attitude toward computers than did the non-word processing group. In another study, Nasser (1994) found that six twelve grade English as a Foreign Language speakers of Arabic showed an improvement in their attitude toward writing after they received process writing instruction and wrote using computers.

Moore's (1987) study, on the contrary, did not find any significant change in student's attitude toward writing among students who used word processor. Moore researched the effect of word processing on the writing quality, attitudes toward writing, and revision strategies of fourth and fifth grade students in a Developmental Writing Program (DWP). To measure students' attitude toward writing, Moore administered a survey before, during, and after the treatment. In her analysis of the surveys, Moore found no significant difference in the attitude toward composing between fourth and fifth graders who composed using a word processor and those who composed on paper.

Research on First Language Speakers

Several studies conducted with elementary school and secondary school students reported a positive effect of word processors on student's writing quality. Montague (1990) points out that besides the impact of word processing on the quality of student writing, some studies dealing with secondary school students have found that the use of word processing is related to "an increase in motivation; greater peer involvement; and more positive attitudes toward instruction, writing ability, and revision" (p. 90).

Nichols (1996) compared the quality and length of papers written using pen-and-paper with the length and quality of papers written using a word processor by 38 sixth-graders. Each participant in the study wrote one composition with pen-and-paper and one with word processor. The researcher then collected three measurements from each composition: total number of sentences and words, reading ease score, and overall score. In the analysis of the results, Nichols found no significant difference in overall quality (holistic score) between the two conditions (pen-and-paper and word processor). However, he found that compositions that had been written

with a word processor had in average more sentences and more words than compositions that had been written with pen-and-paper.

Studies by Burton Head (2000), Licano Lerew (1997), Moore (1997), Pullen (1993), and Pivarnik (1985) also reported a positive impact of computer assisted writing on the quality or length of students' writing. In a study that compared the quality of the written product created by eight graders writing with a word processor and with pen and paper, Burton Head (2000) claims: "students instructed to utilize revision strategies or manipulate text on the screen produce a higher quality of writing" (p. vi). Licano Lerew (1997) found that the scores of low-achieving Hispanic students who wrote using computers were twenty percent higher than the scores of students who wrote using pen and paper. She also found that students who had the lowest entry level language skills gained the largest benefit from using computers. Similarly, Moore's (1997) study reported that fourth and fifth grade students who used word processors showed significant improvement from pre- to posttest in their writing quality in comparison to students who did not use word processors. In a study of the writing performance of third grade students with and without computers, Pullen (1993) found significant differences favoring the computer group over the pen and paper group in terms of the total number of words, unique words, and T-units included in the composition. Pivarnik (1985) studied the effect of word processing on the writing of 76 "below average eleventh grade English classes" (Abstract). In the study, each student was assigned to an experimental group or a control group. The experimental group wrote an essay using word processor and the control group wrote it using pen and paper. Results of the study showed that the mean score of the word processing group was significantly higher than the mean of the pen and paper group

In a study that compared the writing of college students enrolled in a writing class, Powell-Hart (1991) found significant differences in the quality of the writing produced by students who used no computers, word processing software, and process writing software. In this study, the group that used word processing software and the group that used process writing software showed a significant improvement in holistic scores over the group that used no computers. Even more so, the group that used no computers exhibited a decline in their overall score (Powell-Hart, 1991).

In contrast to Powell-Heart's findings, Bierman (1998), Devers (1994), and Hawisher (1987) did not find any significant differences between groups writing with word processors and groups writing with pen and paper. Bierman's (1988) study found no difference between the compositions of a group of seventh graders who wrote with word processor and the compositions of a group of seventh graders who wrote with pen and paper. Devers (1994) investigated the effect of word processing on student writing quality, student attitude toward writing, and student attitude toward computers of third and fourth graders. Devers selected the experimental group (55 participants) from a school where students had access to a computer lab and the control group (52 participants) from a school where students had no access to a computer lab. Participants wrote one writing sample at the beginning of the study and another sixteen weeks later. Participants completed an attitude toward writing survey after each writing sample. They also responded to an attitude toward computers survey after the attitude toward writing survey. Devers' analysis revealed that the overall writing quality of the two groups increased but there was no significant difference between them. Nevertheless, analytical scores were higher for the non-word processing group than for the word processing group.

In a study dealing with college writers, Hawisher (1987) found no difference in writing quality of texts produced with word processor and texts produced with pen and paper. Hawisher explored the effects of word processing on the revision strategies of 20 advanced college freshmen with the aim of finding out if those students revised more and better with a computer than with pen and paper. Results of the study indicated that students who wrote on the computer did not revise more and that their essays did not receive higher ratings than the essays written by students writing with pen and paper or typewriter.

Another study, Haas' (1989) found a negative effect of word processing on planning. Students who used word processing planned significantly less before they started writing in comparison to students who wrote with pen and paper. Haas also reported that students in the word processing group engaged in significantly "less conceptual or higher-level planning" and significantly more "local and sequential" planning (p. 181).

Research on ESL, EFL, Limited English Proficiency (LEP) students

Computer assisted writing research conducted with ESL learners has yielded similar results as research carried out with native speakers of English. Neu and Scarcella (1991) conducted a study to investigate if non-native speakers of English (NNSE) participating in an ESL writing class (a) thought that word processing helped improve their writing skills, (b) had difficulties in learning to use computers as they learned English, and (c) focused on specific aspects of writing while they composed in a computer. The outcome of the study showed that students thought that computers increased their confidence for writing in English. Neu and Scarcella (1991) conclude that students felt that "computers benefited their performance in writing" and that word-processing let them concentrate on certain aspects of their writing (e.g., grammar, vocabulary, and organization) (p. 180).

Reichelt (2001) conducted a comprehensive review of research dealing with different areas of writing in a foreign language. Reichelt reviewed studies that found no effect, significant effects, or mixed effects of computers on students' written product. Among studies that found little or no effect of computers on gains in students' writing proficiency Reichelt mentions Herrmann (1990), Leh (1997), and McGuire (1997). Reichelt also reports that in Ittzes' (1997) study, raters rated higher the accuracy, lexical richness, and comprehensibility of journals generated using computer conferencing, and that Flores-Estrada's (1995) study of online e-mail exchanges claimed that the computer group performed better in the use of grammar points than the pen and paper group. Nirenberg's (2001) study on the effect of word processing on fluency of students' writing yielded mixed results; of the two groups that used word processing (beginners and advanced) only the advanced group did better in fluency than the group that wrote with pen and paper (as cited in Reichelt, 2001).

Three more studies that utilized ESL students or Limited English Proficiency (LEP) students also reported a positive effect of word processors on student's written product. Silver & Repa's (1993) study claimed that the quality of the written product of beginning ESL students who wrote with word processor was significantly better than the writing of beginning ESL students who wrote with pen and paper. In a similar fashion, Nasser (1994) found that six twelve grade English as a Foreign Language speakers of Arabic wrote longer compositions after they received process writing instruction and wrote using computers. Bursztein (1993) researched the impact of word processing on the writing productivity of Limited English Proficient (LEP) students. Four third graders, five fourth graders, and four fifth graders served as participants in the study. During the treatment, each participant wrote a composition with pen and paper and one with computer. Bursztein reported that essays written with word processor received

significantly higher scores than essays written with pen and paper. Burstein's findings, however, should be taken with caution. First, the study utilized only 13 participants and their two sets of essays were compared using a t-test. Second, the word-processed composition was written two months after the pen and paper composition and after three weeks of computer instruction, which makes it difficult to determine if the effect was due to word processing alone.

Research on Process writing Software

Even though there are several research studies dealing with word processing and writing, there are only a few studies focusing on process writing software. Two studies that dealt with process writing software, Reed (1989) and Meem (1992) concentrated on the writing program *Writer's Helper*. Reed (1989) investigated the relationship between the directions given by *Writer's Helper* and the quality and syntactic complexity of the final written product. He used a total of 63 college freshman writers (21 basic writers, 21 average writers, and 21 honors writers). Each writer was assigned to one of three discourse modes and then spent 15 minutes prewriting, 30 minutes writing, and 15 minutes rewriting. Based on the findings of his study, Reed suggests that "the revision components of *Writer's Helper* appeared to be fairly reliable predictors of essay quality" (p. 80). Reed, however, points out that writers produced essays of better quality only if they were able to understand and act upon the directions provided by *Writer's Helper*. Thus, writers who lack effective writing strategies may not benefit as much as writers who already possess them.

Meem (1992) conducted a five-year study to investigate whether the use of word processing and/or composing software improved the writing quality of basic college writers. Participants in Meem's study were assigned to one of three conditions: a) non-computer use (control), b) word processing (*Bankstreet Writer II*), and c) process writing software (*Writer's*

Helper). Results of Meem's study revealed no significant difference in writing quality between the groups that used computers and the group that did not use computers. Meem (1992), however, acknowledges that non-traditional students showed higher score gains from pre- to posttest measurements. Meem also discovered that at the end of the study, participants who wrote at the computer expressed a significant higher positive attitude toward the instructor and toward the course.

Perhaps the most comprehensive research endeavor available to date on the effects of process writing software was reported by Rowley, Carlson, and Miller in 1998. Rowley and colleagues investigated the effectiveness of a user-adaptive reading and writing system, the Reading and Writing Supportive Environment (R-WISE), which was designed based on cognitive writing process models like Flower and Hayes'. Describing the R-WISE system, Rowley et al. state that "R-WISE provides an environment in which the cognitive nature of the subprocesses of the writing process are made visually explicit, with guidance available to help the students learn the writing process during a series of developmental writing exercises" (p. 262).

To test the effectiveness of R-WISE, Rowley, Carlson, and Miller (1998) conducted four one-year long studies that included both experimental and control groups. The first-year study compared experimental groups receiving R-WISE instruction with control groups receiving traditional instruction. The second-year study compared students using R-WISE versus students using a word processor. The third-year study investigated whether software mode and teacher's instructional style had any influence on students' writing scores. The fourth-year study aimed to replicate the previous three studies.

During the first-year study, conducted from late January to late May 1993, the researchers tested "the efficacy of the R-WISE software design" (Rowley, Carlson, & Miller, 1998, p. 266). The researchers used a quasi-experimental design that involved 852 ninth-grade students studying English in two high schools. One school was assigned to the experimental condition (R-WISE instruction) and the other to the control condition (traditional instruction). A pretest writing sample was collected from each participant and was scored both holistically, in a scale from 1 to 6, and analytically. Both the experimental and the control group received traditional instruction but some of the classroom meetings of the experimental group were replaced with work on R-WISE. Results from the study showed that the experimental group outperformed the control group. However, students in the experimental group whose scores were lower in the pretest (below the 50th percentile) showed the largest improvement. The researchers suggest two reasons that may explain why this happened: a ceiling effect in which scores regress to the mean and an unreliable pretest measure.

In the second-year study, conducted between mid-August 1993 and mid-June 1994, Rowley, Carlson, and Miller (1998) compared R-WISE with word processing. According to the researchers,

The effectiveness of word processors alone in improving writing up to an average effect size of .21 standard deviations had been demonstrated through a meta-analysis of studies conducted by Robert Bangert-Drowns. The expectation that R-WISE could outperform the use of a word processor was realistic, given that R-WISE functions as a 'cognitive tool' to teach mental models of understanding and following procedures of composition that can be self initiated in the absence of technology whereas word processors act solely as mechanical task facilitators. (p. 273)

The second-year study included a final sample of 1151 eight- and ninth-grade students studying English at any of the eight public schools included in the study. The control group (N=779) received traditional instruction and wrote using the word processor embedded in R-WISE but received no instruction on the "coaching features" of R-WISE. The treatment group, on the other hand, received not only traditional instruction but also instruction on all the features of R-WISE. Both groups wrote with computers for approximately 14 hours during the academic year. Results from this study showed a significant difference in score gains from pre- to posttest between the R-WISE group and word processor group in both holistic and analytical measures; larger gains, however, were found on analytical scores than on holistic scores. Unlike the findings from the first-year study, findings from the second-year study revealed that students with higher pretest scores benefited the most from using R-WISE. From the findings of this study, Rowley, Carlson, and Miller (1998) suggest that the pedagogy behind the design features of R-WISE and the support that it provides may explain why students who wrote with R-WISE performed better than students who wrote with a word processor.

Rowley, Carlson, and Miller's (1998) third-year study investigated whether the interaction between operating mode of the R-WISE software (open versus guided) and teacher's instructional style had any influence on the effectiveness of R-WISE. The researchers correlated teacher's instructional style with students' performance before and after using R-WISE and found a significant main effect for both teacher's instructional style and software operating mode.

The fourth-year study was a quasi-experimental contrasted group design that aimed to replicate the studies from the three previous years. The study included 617 ninth-graders (treatment = 356 and control = 261), 10 schools, 13 teachers, and 39 classes. Results of this study showed a significant main effect for all dependent measures. The treatment group (R-WISE)

performed significantly better than the control group in both holistic and analytic measures. Based on those studies, Rowley, Carlson, and Miller (1998) conclude that students who used R-WISE consistently performed better than students who received classroom instruction alone.

Summary

Most of the research on computer-assisted writing has focused in the use of word processors. Researchers have highlighted that such software incorporates features that facilitate the teaching of writing as a process. Some research studies on the effect of word processors on the written product generated by students have yielded mixed results while others have suggested that word processors improve students' attitudes toward writing, and in some cases, students' writing quality. If word processors, which are not pedagogically designed for teaching writing, have a positive effect on writers, process writing software, which has been developed based on pedagogical principles for teaching writing within a process approach, should benefit writers even more. Research on the effects of process writing software on students' writing is very limited and of the studies reported in the literature very few have been conducted with ESL or EFL students. The studies discussed in this literature review report a positive effect of process writing software on the written product generated by students; however, more research is still needed in this area before those findings can be generalized.

CHAPTER III: METHODOLOGY

The purpose of this study was to investigate how process writing software affects writing produced by ESL students enrolled in an advanced reading and writing class in an Intensive English Program. The proposed study aimed to answer the following research questions:

1. What is the effect of process writing software on the quality of writing produced by ESL students enrolled in an advanced reading and writing class?

2. What is the effect of process writing software on the length of writing produced by ESL students enrolled in an advanced reading and writing class?

Data Collection

Research Design

The current study utilized a mixed methods design that included concurrent collection of quantitative and qualitative data. According to Morse (2003), this design employs strategies that “aid in the interpretation of data in the core project, providing explanations for unexpected findings or supporting the results” (192). This study utilized a purposeful sample composed of four English as a Second Language students who were studied as individual cases. The independent variable was process writing software and the dependent variables were quality and length of students' writing. Quality of writing was defined as the average rating assigned to an essay by three independent raters. Length of essays was defined as the total number of words of an essay, calculated using *Microsoft Word*[®].

Participants

The study utilized a purposeful sample composed of four international students enrolled in a Mid-Advanced ESL class. Purposeful sampling is used when the researcher chooses a sample that represents the best fit for the goals of the research and when random sampling is not

possible (Wiersma, 1995). In quantitative research, a sample size of four participants is considered too small to make generalizations; however, this sample size can be appropriate in qualitative research which is more concerned with depth than with breadth. In the study, each participant was viewed as a separate case whose experiences during the study were as important as the ratings that he or she obtained in each of the essays. Patton (1980) states "cases can be individuals, programs, institutions, or groups" (p. 303). The quantitative data collected from this small sample does not permit making generalizations about the entire ESL student population; however, the qualitative data helps to understand some of the issues that ESL students in this subset of the population--students who have an advanced language proficiency level but still lack the skills to engage in academic writing at the college level--have to cope with as they learn the conventions of academic writing in English.

The sample comprised four ESL students enrolled in an advanced reading and writing class. To maintain anonymity the participants have been given the pseudonyms of Frank, Tina, David, and Linda.

Frank was a Japanese student in the 22 to 25 year-old bracket. In the Demographics questionnaire he answered that before coming to the United States he had studied English for one year in Japan. Later, he told the researcher that he had been studying English for ten years but only the last year had been good. When the study started, he had been in the United States for only four days. After completing the Intensive English Program, Frank enrolled as an undergraduate student at the university where he had completed his ESL training.

Tina was a Japanese speaker in the 18-21 age group. She had studied English in Japan for six years and came to the United States to study English after completing high school in her home country. Like Frank, Tina had arrived in the United States only a few days before the start

of the study. After completing her ESL training, Tina also enrolled as an undergraduate student at the university where she had attended ESL classes.

David was a speaker of Portuguese, who belonged in the 34+-age bracket and worked as a Business Administrator in Brazil, his home country. He had been studying English for five years, but had been in the United States for only one month. At the end of the first summer term, David returned to his home country, Brazil.

Linda, a native speaker of Korean in the 18-21 age bracket, was an undergraduate student of Business Administration in Korea. She spoke German and had been studying English for six years but had arrived in the United States just a few days before the beginning of the study. At the end of the second summer term, on August 2004, Linda returned to Korea to continue her undergraduate studies.

Setting

This study was conducted at West Virginia University during the six-week period of the first summer term of 2004. Participants met for class during three 120-minute periods every week. Four international students enrolled in the course English 3D: Reading and Writing, taught at the Intensive English Program, participated in the study. According to H. Huntley (personal communication, April 23, 2004), students in English 3D: Reading and Writing have a good command of listening, reading, and speaking, but their writing skills are still limited. Even though instructors start teaching the conventions of academic writing at the intermediate level, English 3D: Reading and Writing is the first course requiring ESL students in the Intensive English Program to start producing essays showing the characteristics of academic writing. Fint (2004) added that English 3D: Reading and Writing is designed for international students who have an advanced proficiency level in English but still lack the skills to write at an academic

level. It aims to prepare students' reading and writing skills to perform in their academic field of study in the United States. Students learn to summarize, paraphrase, find and cite bibliographic sources, revise organization and mechanics, and edit their essays. To complete the course successfully students have to write two essays and one research paper that "show advanced proficiency in content, rhetoric, and mechanics" (Fint, 2004).

Students in the Intensive English Program at West Virginia University are assigned to one of three proficiency levels (beginner, intermediate, or advanced) based on their scores on the institutional Test of English as a Foreign Language (TOEFL) and the Michigan Test (Huntley, 1999) that are administered at the beginning of the semester. Depending on the number of students that enroll in the program in a given semester, more than one group may be created at each level (see Table 1) (Huntley, 1999). According to Huntley (1999), placement of students into levels is determined based on the following score ranges:

Table 1

Test score ranges for student placement at the Intensive English Program.

Level	Michigan Placement Test	TOEFL
Elementary (1)	0-34	280-349
Low Intermediate (2A)	35-42	350-379
High Intermediate (2B)	43-54	380-409
Low Advanced (3A)	55-64	410-449
Mid-Advanced (3B, 3C)	65-79	450-499
Advanced (3D)	80-100	500-550

Note: From *Intensive English Program handbook*, by H. Huntley, 1999 (p. D6). Reprinted with permission of author.

In addition to the TOEFL and the Michigan Test, Reading/Writing teachers collect a writing sample in test-like conditions and Communication Skills teachers administer an oral test during the first week of classes (Huntley, 1999). Through assessment of student performance in those tests and in class during the first days of classes, teachers may move students up or down levels at any time during the first two weeks of the semester (Huntley, 1999).

Equipment

Classroom. To write their essays, participants used personal computers equipped with the software *Essay Punch*. During the first four class meetings, the group met at a high-tech classroom managed by the University's Academic Information Services. This classroom held 32 Dell Optiplex GX300 computers with 17-inch flat screen displays. Each computer was equipped with a 728 MHz Intel Pentium III processor, 128 MB of RAM, a 15GB hard drive, CD-drive, and a floppy drive. It had *Windows XP Professional*, *Microsoft Office XP Professional*, *Netscape*, and *Internet Explorer* installed, and connected to the Internet through a high speed line. In addition, the classroom contained a smart board and a podium with an AMX touch screen panel used to control a Sharp XG-NV6XU Notevision 6 LCD projector mounted on the ceiling. The classroom had glass windows, desks arranged in rows, and cushioned chairs facing the front of the room.

The High-Tech classroom had to undergo renovation and the class had to move to another classroom on the fifth class meeting. Finding an available classroom was difficult because some of the computer classrooms were inappropriate, were being renovated, or were located in an inconvenient location for students to move between classes. After contacting several people, a computer classroom was secured. This classroom held 12 Dell Optiplex GX150 computers and 15-inch flat panel displays. Each computer had 128 MB of RAM, a 10GB hard

drive, CD-drive, floppy drive, and USB ports in the front. It had Windows 2000 Professional (service pack 4), Microsoft Office 2003 Professional, Internet Explorer, and connected to the Internet through a high speed line. There was a printer in the classroom but it was not connected to the computers. Even though the researcher and the instructor would have preferred to stay in the High-Tech classroom, they were compelled to use the new classroom for the remainder of the study.

The new classroom was barely suitable for teaching. Located in the basement of a building, it had no windows; desks and chairs were facing one side of the room; the opposite side had some tables covered with old computers and computer cables; the back of the room (facing the instructor) was a storage area for old computers and monitors. The front of the room had a whiteboard covered with marker stains that could not be removed. Computers and desks were covered with a thin layer of dust.

In the High-Tech classroom *Essay Punch* had been installed on the network. In the network installation, participants were able to access their work from any computer and the researcher was able to collect participants' data on a single file from any computer. In the stand-alone installation, on the other hand, students had to sit at the same computer all the time to be able to access what they had previously written. To collect data for all participants, the researcher had to gather the files from each individual computer and then compile them into a single file.

Writing software. Essay Punch (2004b), a software package published by Merit Software for ESL or college writers, purports to help students write essays following a process writing approach. *Essay Punch* offers practice in three different types of essays (persuasion, information,

and description) and "contains 9 writing topics and 1,080 help prompts to guide students through each step of the writing process" (*Essay Punch* [software manual CD], 2004c, p. 1).

Essay Punch can be used in stand-alone stations or in a networked environment.

According to Merit Software (2004a), *Essay Punch* includes "a centralized student record keeping/management system utility called the Teacher Program Manager (TPM)" (p. 32) that allows the teacher to "view/print records for an entire class, view/print details of an individual student record, import class lists, delete records, track student time, share student scores with other applications, export student work confidentially, and set security preferences" (p. 32).

When users open the program, they have to select one of the three types of essays. To log in, users click on their class code in one column and on their user ID in another column. Upon logging in, users have to select a graphic theme (Confetti, Munchies, Goomakers, and Meritkins). When the sound button is toggled on, the program produces a sound every time users perform a task. Every time users open the program and reach this point, *Essay Punch* asks them if they want to continue from the point where they left off. If users select "Yes" the program advances to that point; however, if they choose "No" the program takes them to the starting point of a new essay and users will lose any portion of the last essay that they were writing. If users are starting a new essay, they will see a screen that presents a short introduction to *Essay Punch*.

The introduction works as an advanced organizer for users. It outlines the aim of *Essay Punch* and the steps to follow in writing an essay: brainstorm, organize ideas, write paragraphs, and combine paragraphs. The window on the screen displays six buttons (Tip, Graphic, Sound, Print, Review, and Subject) that may be highlighted or dimmed depending on their relevance to the current task. While the graphic and sound buttons do not provide any help to users, the "Tip"

button offers support related to the current task. After the introduction, *Essay Punch* displays three "Subjects" (topics) from which users have to select one for the current essay.

The process of writing an essay in *Essay Punch* can be roughly divided into four stages (or subprocesses): prewriting, writing, revising, and publishing. Prewriting, generating ideas in preparation for writing the essay, can also be subdivided into two substages: brainstorming and outlining. Writing represents mainly the act of translating ideas into text but also, to some degree, organizing the parts of the essay. Reviewing entails an analysis of the logical flow of the essay and of specific content features such as style, sentence structure, and grammar, and making changes where they are considered appropriate. Publishing includes checking the spelling of the essay, printing it, saving it, or exporting it to *Microsoft Word*[®].

In the first prewriting activity, *Essay Punch* displays an "Input" window and prompts users to write a word or phrase that may later be used as the title of the essay. Next, the program informs users that in the following screens they will be asked to brainstorm words or phrases to start writing their essay. In an informative essay, for example, *Essay Punch* prompts users to write a positive idea about the topic. The program emphasizes that users do not have to write full sentences, but only words or phrases. After users write their first word or phrase and click "OK", the word or phrase is moved to the "Pre-Writing Notepad". Next, *Essay Punch* prompts users to type a second positive word or phrase about the subject and when they have written it and pressed "OK" the phrase is also moved to the "Pre-writing Notepad". For a third time, *Essay Punch* prompts users to add another idea but this time they are not required to write it. If they decide not to add any more ideas, they press "OK" and move to the next step. If they choose to add more ideas, they have to click on "More". Users can continue adding ideas until they are ready to move to the next step, at which time they have to click on "OK". Having users write at

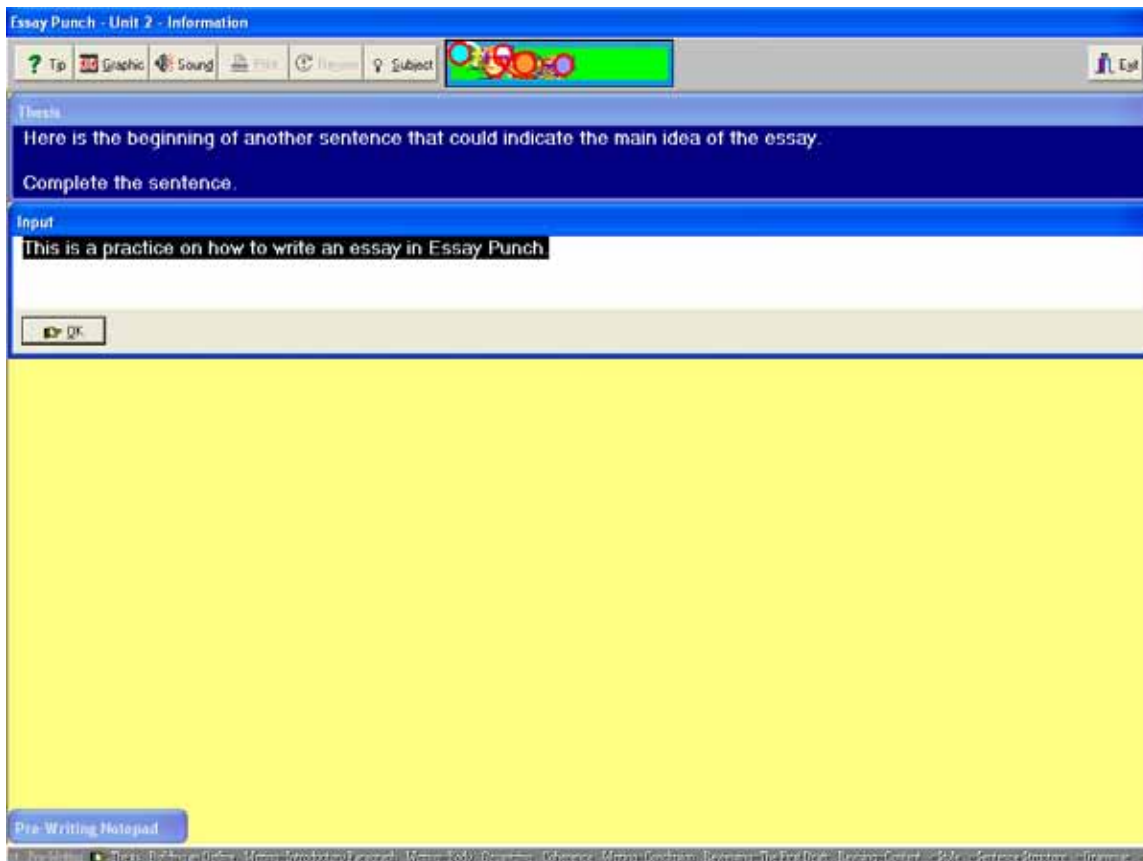
least two items and then letting them add more items if they want to is the typical routine of a task in *Essay Punch*.

The next prewriting steps follow the same sequence of tasks as the first step. First, *Essay Punch* prompts users to write one word or phrase describing what equipment is needed to complete the task mentioned in the topic. Second, *Essay Punch* asks users to write a similar word or phrase. Third, *Essay Punch* lets users choose to add more ideas or move to the next step. In the next step, quality of skills needed to complete the task, *Essay Punch* prompts users to write the first and second required words or phrases and gives them the option to add more words or phrases if they want to do it. After users have completed those three steps, *Essay Punch* asks users if they want to add more items. This suggestion somehow confuses users because it does not provide a specific focus as did the previous steps. Users, however, are not compelled to write anything and can click on "OK" to move to the next step.

In the next screen, *Essay Punch* introduces the idea of a thesis statement and provides an example. The program then prompts users to complete an incomplete sentence that may be a thesis statement (see Fig. 1). Users are then asked to write their own thesis statement. This can be disconcerting for users because they may believe the sentence they have just completed is their thesis statement; however, *Essay Punch* treats that sentence as practice and does not incorporate it into the user's essay. After users have written their own thesis, *Essay Punch* summarizes what a thesis is and encourages users to review the thesis they have written.

Figure 1

Essay Punch window prompting users to complete a thesis statement.



Next, *Essay Punch* introduces them to the technique of outlining through a short explanation. In the explanation, *Essay Punch* also presents the concepts of "Headings" and provides an example in the "Input" window. All the ideas that users wrote during brainstorming are listed in the "Pre-Writing Notepad" underneath the "Input" window. *Essay Punch* directs users to write a heading for the first two, or more related ideas. After users write their first heading, it is moved to the "Heading-related ideas" window, located to the right of the "Pre-Writing Notepad". *Essay Punch* prompts users to move ideas that correspond to the first heading from the "Pre-Writing Notepad" to the "Heading-related ideas". Users can manipulate text in the

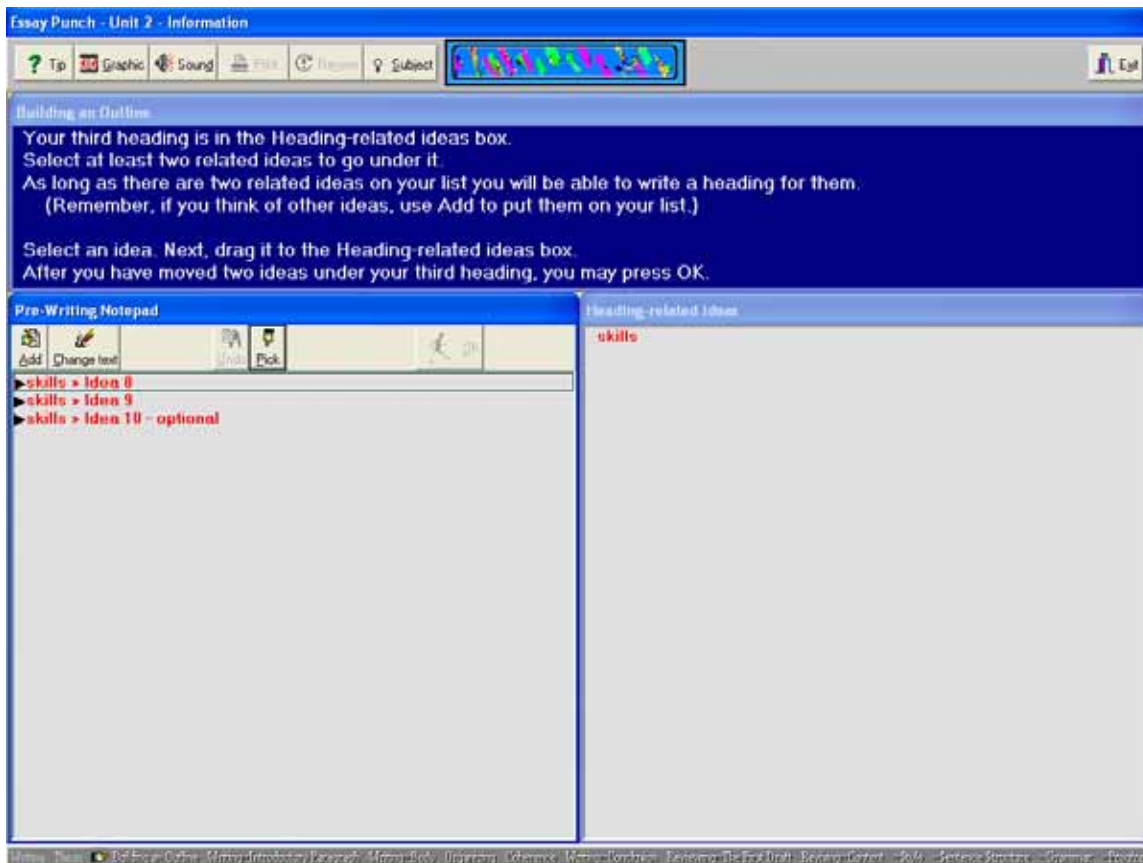
headings using the buttons "Add", "Change text", "Undo", and "Pick" that appear at the top of the "Pre-Writing Notepad". To help users, *Essay Punch* provides hints on how to move ideas from one location to the other at the bottom of the screen. At the top of the computer screen, *Essay Punch* also displays two buttons: "Tip" and "Subject". Clicking on the "Tip" button displays help related to the current task and clicking on the "Subject" button shows the current essay topic on the screen.

To complete their outline, users write the second heading and move corresponding ideas under it in the "Heading-related ideas" window (see Fig. 2). Then, they repeat the same process for the third heading. *Essay Punch* explains to users that each heading will become the "Topic" of a paragraph and each idea will become a "Subtopic" under its respective topic. The outline that users have created is displayed in the "Outline window" on the computer screen. Users can modify any text by clicking on the text inside the outline window and then clicking on the "Change text" button.

Essay Punch guides users to write an essay that comprises at least one introductory paragraph, three body paragraphs, and a conclusion. The program encourages users to develop the three headings they wrote in the outline into the three paragraphs that make up the body of the essay. To write each paragraph, users complete a sequence of tasks similar to the sequence they followed during brainstorming: write the topic sentence for the paragraph → add a supporting sentence → write another supporting sentence → add optional supporting sentences. As a rule in *Essay Punch*, each paragraph should include at least a topic sentence and two supporting sentences.

Figure 2

Essay Punch window at the outlining stage.



The first paragraph users write is the introductory paragraph of the essay. *Essay Punch* presents a brief explanation of "Introductory Paragraph" and instructs users to write the first sentence of the introductory paragraph. Users may choose to keep the thesis statement that they previously wrote, which is then displayed on the "Input" window, as the first sentence of the introductory paragraph. *Essay Punch* gives users the option to convert the two headings from the outline into supporting sentences for the paragraph. It also reminds users to write one sentence at a time and then press the "OK" button on the "Input" window. A recurrent problem among some of the participants was that they wrote more than one sentence on the input window and

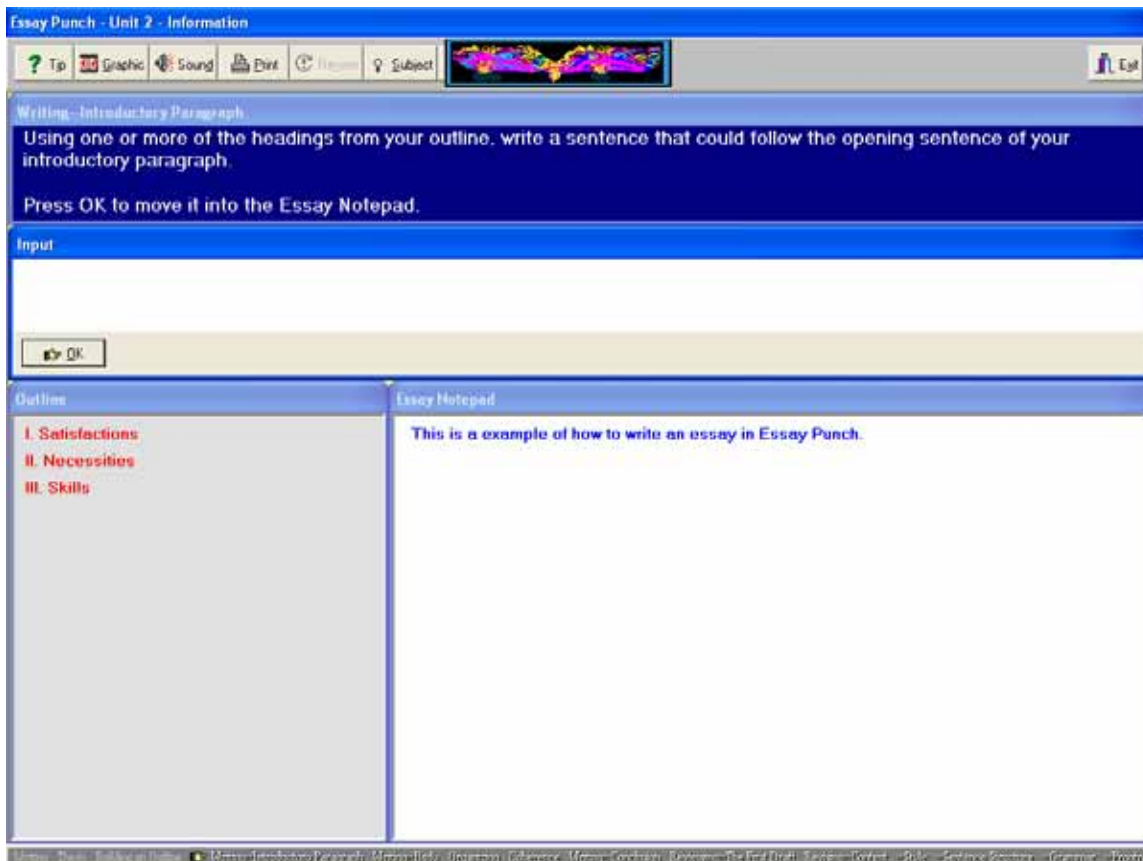
when the program prompted them to write another sentence they did not have anything else to write. However, if participants have not written the two mandatory sentences, the program would not let them continue unless they had written something on the "Input" window.

During the writing stage, the layout of the screen changes to display windows and buttons that are not available during pre-writing (see Fig. 3). At the bottom of the screen appears a progress bar that shows the list of all the steps of writing an essay in *Essay Punch* and highlights the point at which users are located writing the current essay. The "Outline" window and the "Essay Notepad" window appear minimized above the progress bar. Even though they can be maximized, those windows cannot be resized, which may hinder work on the screen. Unlike a word processor, *Essay Punch* does not have buttons on the upper right-hand corner that allow users to resize windows. Similarly, it does not give users the flexibility to resize or reposition windows by dragging them from their corners or their edges.

After users have completed the introductory paragraph, they start writing the first paragraph of the body of the essay. *Essay Punch* prompts users to write the first sentence (topic sentence) of this paragraph using the first header of the outline. When users complete it, the sentence is moved to "Essay Notepad". The program then prompts users to write two more sentences for this paragraph using the ideas underneath the first heading. As required by *Essay Punch*, users must write one sentence at a time in the input window and press OK before they write another sentence, however, they can opt to add more sentences after they have written the two that are compulsory.

Figure 3

Essay Punch window at the writing stage.



Writing the subsequent paragraphs of the body of the essay entails a similar process to that followed in writing the introductory paragraph: users write one sentence at a time that is then moved to the "Essay Notepad" window. Although *Essay Punch* only requires that users write a topic sentence and two supporting sentences for each paragraph, users have the option to continue typing more sentences after they have written those three necessary sentences.

After users have written the body of the essay, *Essay Punch* advances to the "Organizing" step. Although this step may fit into the reviewing stage of the process, in *Essay Punch* it is embedded between writing the body and writing the conclusion of the essay. *Essay Punch*

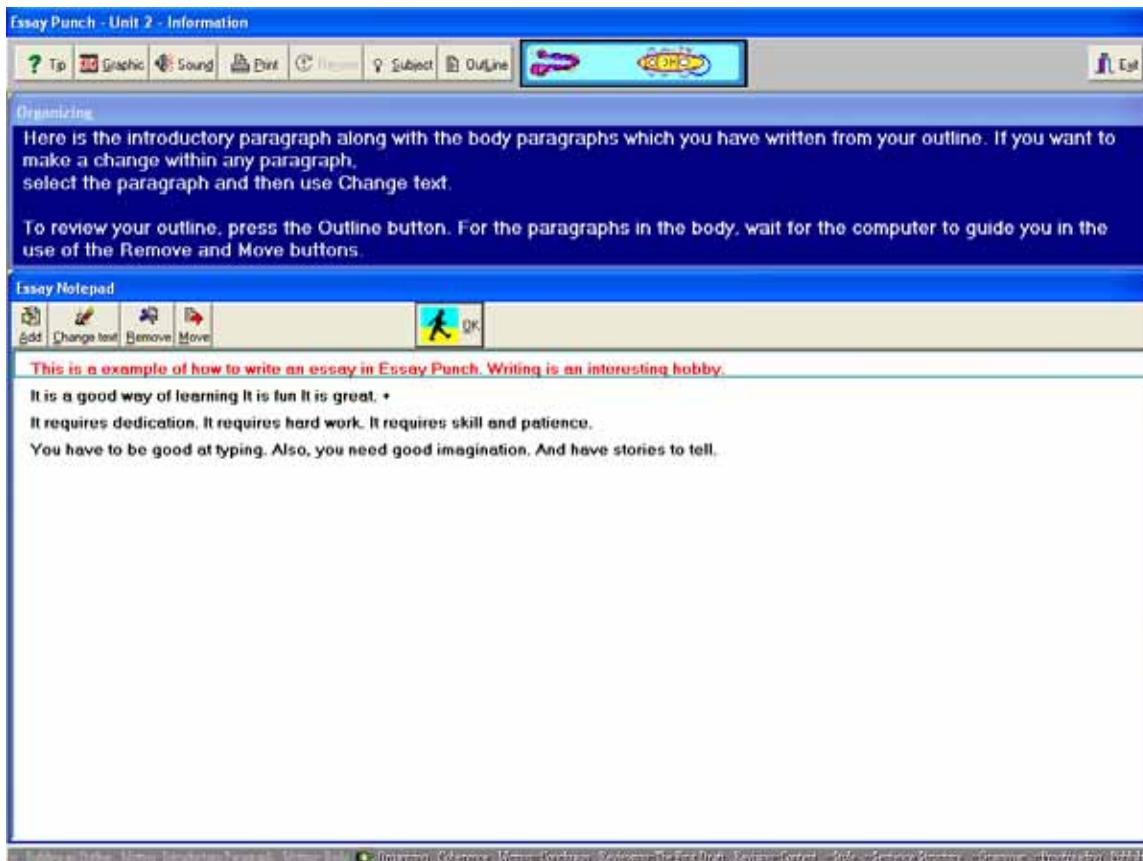
displays all the paragraphs on the notepad window and encourages users to review the order of the paragraphs and their content. Using the buttons "Add", "Change Text", "Remove", and "Move", users can add paragraphs, add or modify text within a paragraph, delete a paragraph or move it to a different location in the essay. At the bottom of the screen *Essay Punch* provides hints on how to use each of those buttons to work with paragraphs. At the top of the screen *Essay Punch* displays the following buttons: "Tip", "Graphic", "Sound", "Print", "Subject", and "Outline" (see Fig. 4). During Organizing, *Essay Punch* also instructs users to review coherence between sentences and to insert connecting words where they deem them necessary. If users want to see an explanation or an example of connecting words, they can click on the "Tip" button at the top of the screen.

After reviewing the structure of their essay and determining that paragraphs and sentences logically follow one another, users have to write the conclusion. *Essay Punch* displays brief directions on how a good conclusion should be written and prompts them to write the first sentence of the conclusion in the "Input" window. Then, users are asked to write at least one more sentence to restate their point of view in the conclusion. As they do throughout the program, in the conclusion users have to write one sentence at a time in the input window.

In the Reviewing phase, *Essay Punch* directs users to review the overall organization of the essay, the structure of each paragraph, and specific features of the content. First, users are directed to read the entire essay and then they are asked to review the topic sentence and the supporting sentences of the introductory paragraph. If they want to make changes, they select the text and click on "Change Text". In the following screens, *Essay Punch* instructs users to review each paragraph in the body of the essay and the sentences in each paragraph.

Figure 4

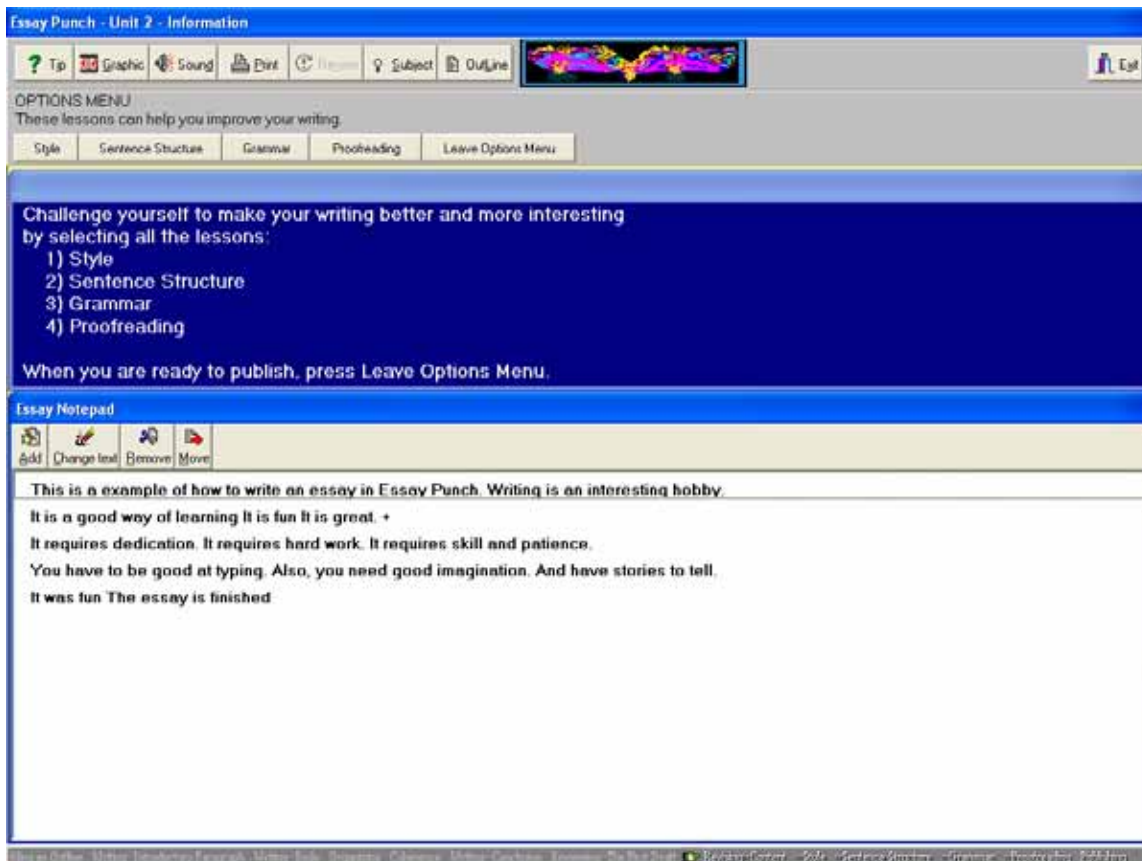
Essay Punch at the organizing stage.



To help users in revising content, *Essay Punch* presents them with three questions and a series of lessons that may be used as a guide for making corrections. *Essay Punch* poses three questions regarding the essay: is it on topic?, is each paragraph on target?, and is the information easy to understand? *Essay Punch* supports users in revising four areas of content: style, sentence structure, grammar, and proofreading. The layout of the screen changes to display an "Options Menu" that contains a button for each of those options (see Fig. 5). Clicking on one of the buttons presents users with a series of short lessons on how to improve that area of the content (five lessons in style, three lessons in sentence structure, and four lessons in grammar).

Figure 5

Essay Punch window showing the options menu.



An assumption in *Essay Punch* is that users will go through each of the lessons and revise their essay according to the suggestions given. However, due to the way users have to navigate through the lessons they may not even notice them and skip most of them. When users click on style, for example, the first lesson (about two or three lines) is displayed. Users may then revise their essay following the explanation given in the lesson. To move to the next lesson in style, users have to click on the "OK" button. They have to continue clicking on "OK" until they go through all the lessons in that area. When they have completed all the lessons in an area a checkmark appears in the button that represents that area in the options menu. However, if users

click only once on the buttons in the "Options Menu", they will access only the first lesson in that area. Even though the lessons in each area are sequenced, users can click on any button at any time during reviewing to access the lessons in that area. Clicking on the "Tip" button displays a window with an example of the current lesson. When users have completed all the lessons, they can click on the "Leave Options Menu" button to advance to the "Publishing" stage.

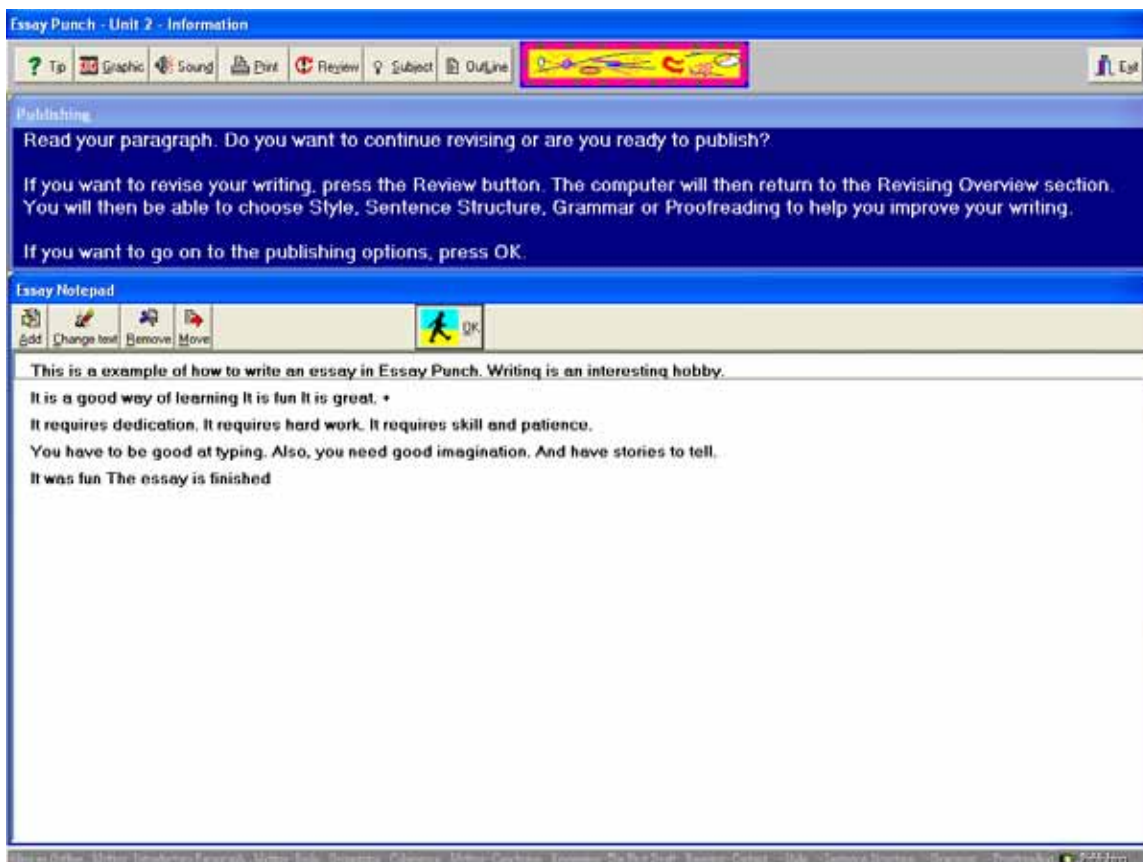
In *Essay Punch*, Publishing entails checking spelling, saving, printing, or exporting the essay to *Microsoft Word*[®] (see Fig. 6). Before they publish their document, users are reminded to click on the "Review" button to go back to the "Options Menu" and make changes to the essay. When users are ready to publish, they can click on one of the buttons available "Print", "Save", "Word processor", or "New Subject" to execute that action. If users choose to export the essay to *Microsoft Word*[®], *Essay Punch* displays a splash screen congratulating the user for completing the essay. *Essay Punch* shuts down as *Microsoft Word*[®] opens and displays the essay on the screen.

During the study, one major constraint in the use of *Essay Punch* had to do with record keeping. *Essay Punch* allows two types of installation: networked and standalone. In a networked installation, users can use any of the computers in the network where *Essay Punch* is installed and their work is automatically saved on the server. In addition, in this type of installation the teacher can access student progress records using the Teacher Program Manager from any computer in the network. In a standalone installation, the program saves students' work in the local computer and users have to sit at the same computer every time they want to use *Essay Punch*. To access students' progress records the teacher has to open the Teacher Program Manager in every computer used by students. In the study, the researcher had initially obtained permission to use a classroom in which the software was installed on the network but this room

was no longer available after the first week of class because it was being renovated. Forced to look for another classroom, the researcher finally found a classroom but the technician in charge of the room could not install the software on the network and instead performed a standalone installation.

Figure 6

Essay Punch screen at the Publishing stage.

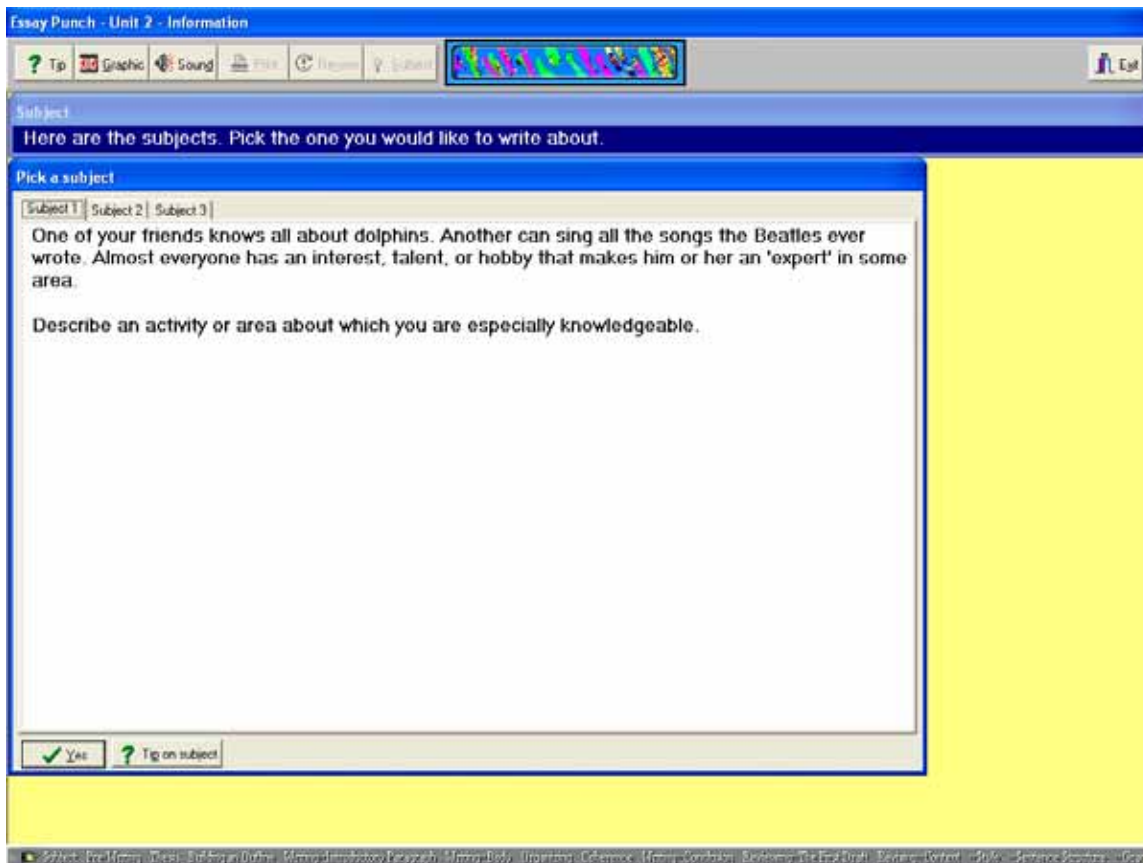


Another limitation of the program was the lack of control users had in manipulating windows on the screen. Unlike other software programs that allow users to change the size and location of the windows on the screen, *Essay Punch* is very rigid and does not give users much

choice to manipulate windows. Once the program is launched, its window occupies the entire screen, covering the "Start" button, and users cannot access the desktop or another program unless they close *Essay Punch* (see Fig. 7). In several occasions, participants wanted to change the size and location of the "Essay Notepad" window, or other windows, and they clicked on the corners or on the edges to drag the window with the mouse, but they could not do it. Also the "Minimize," "Restore," and "Close" buttons available at the upper right-hand corner of other applications are missing in *Essay Punch*. A similar shortcoming of the program is the difficulty to open other programs while *Essay Punch* is running. In one occasion the instructor wanted to keep Internet Explorer open so students could use the resources from www.dictionary.com while they were writing. It was not until Linda suggested that by pressing the "Windows" key on the keyboard participants could display the "Start" menu and open other programs at the same time. Even though pressing the "Windows" key displayed the "Start" menu and icons of open programs at the bottom of the screen, as soon as *Essay Punch* was started those icons were hidden behind the *Essay Punch* window. The only way to switch between programs was to press the "Windows" key on the keyboard. In other programs, however, program switching is easily done by clicking on the minimized tabs representing open programs that appear at the bottom of the screen.

Figure 7

Essay Punch screen interface.



Although the program presents short and straightforward explanations of concepts, and most of the time, clear directions, in some cases it may be confusing. Usually, before a task the program displays one or more screens that explain the upcoming task. Some times, however, participants got confused by some of the screens that did not clearly specify what users had to do. For example, after a short explanation of what a thesis statement is, the program prompts users to complete a sentence that may be the thesis of the essay. During the practice session, the instructor wrote the thesis at this point and clicked "OK." She was puzzled when, in the following screen, *Essay Punch* prompted her to type her own thesis statement. She reacted and

said "but I wrote it already." What the program had not specified was that the first sentence was only for practice and was not part of the essay. Another area of the program that demands some intuitive effort from users appears in the reviewing stage. In the study, participants assumed that they only needed to click on the buttons ("Style," "Sentence structure," "Grammar," and "Proofreading") available on the options menu, to revise that particular area of the essay.

However, they needed to read the first lesson and click on "OK" to advance to the next lesson in the same area. After reading the second lesson, participants had to review their essay following the directions in the lesson. They had to navigate through the lessons until they had completed all of them and a checkmark indicating that revisions in that area had been completed appeared on the button. It was common among participants to access the first lesson in each area and skip the remaining lessons. By examining students' records in the Teacher Program Manager the teacher can determine if students completed all lessons in each area and revised their essay accordingly.

Even though the researcher has mentioned some possible shortcomings of *Essay Punch*, the software nevertheless incorporates some helpful features for ESL writers. First, it attempts to teach writing as a process and guides users through brainstorming, writing, and revising. It makes an attempt to make writing recursive by allowing users to revisit stages of the process that have previously been completed. It does, however, limit users on how and when they can review and revise. For example, Tina wanted to correct spelling errors she had made during brainstorming but the program did not allow corrections at that point. Second, explanations and directions are usually short and easy to understand for ESL students, although in some occasions navigation and manipulation of screen elements are not very intuitive. Third, *Essay Punch* takes a step-by-step approach in teaching users how to write an essay. It presents information piece-by-piece and asks users to complete a single task at a given time. Although this breaking down of

content and tasks can be beneficial in channeling users to follow established writing conventions, it can also be a hindrance to their creative process of writing. For example, when users are writing paragraphs, *Essay Punch* instructs them to write only one sentence in the input window and press "OK" to move it to the "Essay Notepad." Some participants find it difficult either to grasp this concept or break their flow of ideas, as was the case with Tina who kept writing entire paragraphs in the "Input" window. Fourth, *Essay Punch* incorporates routines that may help learners grasp the conventions of writing more easily. A usual routine in *Essay Punch* comprises:

- do task A and press "OK",
- do task B and press "OK",
- do task C and press "OK",
- do task D and press "OK", or press "More" to keep adding items.

Despite its limitations, *Essay Punch* may be a useful tool for ESL students and teachers; however, some of its features need some fine-tuning (e.g., user interface). More research also needs to be done not only on the effects on *Essay Punch* on the quality of students' writing but also on students' attitudes toward the software and its approach.

Instruments

The instruments used in the current study were a demographics questionnaire (Appendix A), a scoring guide (Appendix B), *Microsoft Word*[®] word-count feature, field notes, a posttreatment questionnaire (Appendix C) and an instructor survey (Appendix D).

Demographics questionnaire (Appendix A). To complement the quantitative data from the essays, a demographics questionnaire was developed by the researcher. It covered aspects of writing instruction that have been the focus of previous research (writing experience, computer experience, writers' feelings toward computers, and writers' feelings toward writing). To validate

the content of the questionnaire, it was given to a Foreign Language Teacher who holds a Masters Degree in Foreign Languages. She read the questions and made suggestions about how the questions could be better stated. The Demographics questionnaire was then submitted to the chair of the dissertation committee who suggested changes in the content and wording of the questions. After two revisions, the chair of the dissertation committee approved the questionnaire.

Scoring guide (Appendix B). Permission was obtained from Educational Testing Service (ETS) to use the TOEFL® Test of Written English (TWE) Scoring Guide to score participants' essays. The TWE Scoring Guide follows a holistic approach to scoring writing. White 1985 (p. 120) stated that holistic scoring "treats writing as a whole" and, unlike analytic scoring which focuses on specific features that are scored separately, holistic scoring assigns a single score for a series of characteristics that describe a criterion. An essay rated using the TWE Scoring Guide may be assigned a score between 1 and 6. According to ETS (2004), "the TWE Scoring Guide was developed to provide concise descriptions of the general characteristics of essays at each of six points on [a] criterion-referenced scale." (p. 6)

Before implementing use of the TWE Scoring Guide, ETS undertook several studies to determine its validity and reliability. The validity of the scoring guide was tested on research essays and pretest essays in 1985. The TWE Scoring Guide was then used to score the first TWE essays in 1986. It was later revised by a committee of TWE essay reading managers in 1989 with the purpose of making it "a more easily internalized tool for scoring TWE essays during a reading" (ETS, 2004, p. 6). ETS (2004) states that "the revised scoring guide was reviewed, used to score pretest essays, and approved by the TWE committee in February 1990" (p. 6).

Moskal (2000) pointed out that using scoring rubrics--which describe specific characteristics of a particular score on the rating scale--improves reliability of holistic scoring.

Word counts. *Microsoft Word*[®] was used to count the number of words in each essay. According to Polio (2001), counting words is a commonly used measure of writing fluency. However, Polio pointed out that "fluency may have no relation to quality or, possibly, a negative one." (p. 107) Thus, it is possible to have a longer paper (with a larger number of words) that receives a lower holistic score than a shorter paper. Although *Microsoft Word*[®] displays readability statistics that include word and sentence counts, averages, and readability statistics, the proposed study only used word counts.

Posttreatment questionnaire (Appendix C). The posttreatment questionnaire was a modified version of the demographics questionnaire administered at the beginning of the study. Both the demographics questionnaire and posttreatment questionnaire comprised questions about participants' feelings toward writing and toward writing with computers. In addition, the posttreatment questionnaire included questions about participants' experiences using *Essay Punch*.

The posttreatment questionnaire was validated in the same ways as the demographics questionnaire. The questionnaire was given to a Foreign Language Teacher who holds a Masters Degree in Foreign Languages. She read the questions and made suggestions about how the questions could be better stated. The Demographics questionnaire was then submitted to the chair of the dissertation committee who suggested changes in the content and wording of the questions. After two revisions, the chair of the dissertation committee approved the questionnaire.

Field notes. The researcher observed class meetings and wrote down field notes about the classroom environment, teacher and participants' interactions, and each participant's experiences. In the field notes the researcher recorded any events that appeared to be relevant to the research purpose such as instructor's and students' comments about the software, participants' behavior and emotions that may be caused by the software, participants' struggles and accomplishments with the software, and participants' progress.

Instructor survey (Appendix D). The instructor survey, completed by the instructor at the end of the study, contained several open-ended questions intended to explore how the teacher felt about using *Essay Punch* to teach writing. It also asked her to compare the current group with the group she had taught in the previous semester (demographic composition, education level, and writing proficiency). The Instructor Survey was validated in the same manner as the other two questionnaires. It was given to a Foreign Language Teacher who holds a Masters Degree in Foreign Languages who read the questions and made suggestions about how the questions could be better stated. The Demographics questionnaire was then submitted to the chair of the dissertation committee who suggested changes in the content and wording of the questions. After two revisions, the final version of the questionnaire was approved by the chair of the dissertation committee.

Researcher's Role

In qualitative research, the role of the researcher can range from being an observer, detached from the action, to a participant, who is actively involved in the setting. The level of involvement of the researcher; however, is not an all or nothing phenomenon but it may fall somewhere on the observer-participant continuum (Patton, 1980). In the planning phase of the study, the researcher expected that his role would be restricted to collecting quantitative and

qualitative research data and managing the software (e.g., installing, maintaining, and troubleshooting it). However, the researcher did not only perform those tasks but was often involved with classroom instruction and course content. On several occasions, participants asked him questions that dealt with content taught by the instructor or inquired about grammar issues that they had as they wrote their papers. For example, David who was a speaker of Portuguese tended to substitute the English apostrophe (') with the Portuguese crase (`). The researcher, a speaker of Spanish with background in TESOL and Linguistics, explained the difference to him. Other times, the researcher gave explanations to individual participants on aspects related to writing academic essays in English. In every class, as participants engaged in any writing activity, the researcher moved around observing what participants were writing, taking notes, and answering their questions. He only sat down when the instructor was lecturing or conducting an activity that did not involve participants in writing.

Instructor's Role

During the study, the instructor was in charge of managing classroom instruction. She developed the course syllabus, planned daily class instruction, carried out teaching activities, and assessed participants' achievement. Since the class covered two language skills, reading and writing, the instructor planned activities to practice both skills. Reading activities usually evolved around participants reading a passage and then holding a questions and answers discussion with the instructor. Writing practice activities were done in *Essay Punch* at specific periods designated by the instructor as the class developed. As a result, participants ended up writing for a longer period in some classes than in others.

Instructor's involvement with *Essay Punch* centered on guiding participants through the writing process outlined by the software. She led participants step-by-step in writing their first

essay in *Essay Punch*. As she guided participants, the instructor explained topics or concepts such as thesis statement and topic sentence that were brought up by the software. She did not have to deal with installation and management of the software (e.g., creating class rosters, adding users, and saving and exporting files); those tasks were the responsibility of the researcher. During the study, the instructor showed a positive attitude toward the software which she sometimes communicated to the participants in statements such as "This is a very good program" and "it will help you write much better."

Procedures

To comply with legal, moral, and ethical principles on the treatment of human subjects for research purposes, an official request for approval of the study was submitted to the Institutional Review Board (IRB), which granted permission to conduct the research. As the study developed, the researcher ensured that every activity conducted adhered to legal and ethical principles and procedures for the use of human subjects in research.

After receiving approval from the IRB, the researcher explained the study to the parties involved and requested their permission. First, the researcher explained the study to the Director of the Intensive English Program and asked her for permission to utilize an instructor and students from the program in the study. Then, the researcher spoke with the instructor who very enthusiastically offered to cooperate. The researcher also requested support from Merit Software, which donated 20 licenses of *Essay Punch* for use in the study. In addition, the researcher contacted Academic Information Services to request permission to use a High-Tech classroom and to arrange installation of the software on a server.

Assignments of students to groups were still being finalized on the first day of classes and the teacher and the researcher did not find out how many students would be in English 3D

until the class assembled in the classroom. This small number of participants was due in part to the class being taught in the summer, a time when fewer students enroll in classes, and to the fact that several international students faced last-minute situations that impeded their traveling.

In the first class meeting (see Table 2), the researcher explained in English the study to participants, emphasizing that they were not required to participate, everything would be kept confidential, they could withdraw from the study at any time, and that their agreement or refusal to participate would not effect on their class grades or visa status. Four of the five students in the class were over 18 years of age and agreed to participate. The fifth student was under 18 and the researcher explained to him why he could not participate in the study. The researcher gave a copy of the Demographics Questionnaire (see Appendix A) to each of the four students who agreed to participate. Each questionnaire included a copy of the script (which appears on Appendix E) and a code number on the upper right-hand corner of the first page. Each participant was asked to remember his or her code--a number between 1 and 4. The researcher read the script and encouraged participants to ask questions about the study. Frank asked several questions about the meaning of words on the script. The researcher answered every question and made sure that participants understood the answers.

Table 2

Research schedule.

Day	Activity	
1	Consent Forms Demographics Questionnaire	Field Notes
2	Pretreatment essay (<i>Microsoft Word</i> [®])	TPM records
3	Essay 1 in <i>Essay Punch</i>	
4	(Day 5: Moved to a different classroom)	
5		
6		
7		
8		
	Essay 2 in <i>Essay Punch</i>	
9		
10		
11	Day 11: Take home assigned	
12		
13	Day 13: Posttreatment questionnaire distributed	
14	Take Home essay and Posttreatment Questionnaire returned Posttreatment essay (<i>Microsoft Word</i> [®]) Instructor Survey	

In preparation for the first day of classes, the researcher created a class roster on *Essay Punch*, identifying each participant by the code on his or her Demographics Questionnaire. On Day 2, participants wrote the pretreatment essay in *Microsoft Word*[®]. Before participants started writing the essay, the instructor wrote the topic "What do you tell someone who is moving to your town?" on the whiteboard. She explained it and asked them if they understood it. All participants replied that they had understood it. The researcher handed out two sheets of blank paper to each participant that they could use to write down ideas. They were told, however, that the paper would be typed using *Microsoft Word*[®]. The researcher showed participants how to open *Microsoft Word*[®] and showed them how to save a file using "Save as". He asked them if they had used this software before and they replied affirmatively. Participants wrote for 50 minutes on *Microsoft Word*[®] and then saved their essays on the computer. Each file was saved using the student code and the type of essay, for example, the file name "1_pre.doc" stood for Frank's pretreatment essay. A similar coding system was used to name the rest of the essays.

On Day 3, the researcher introduced *Essay Punch* and then asked each participant to log in the program using his or her code. The instructor read the instructions displayed by the program on the screen. Participants began writing their first essay on *Essay Punch* and continued writing it until Day 8 (see Appendix F). On Day 5, however, the group had to move from the High-tech classroom to another classroom.

It should be noted that although each class meeting lasted two hours, participants did not spend all class time writing on *Essay Punch*. At the beginning of each class, the instructor usually had a discussion of the previous day homework or class content. After the discussion, the instructor instructed participants to write in *Essay Punch*. Sometimes participants wrote for a short time while at other times they wrote for longer periods because the decision of when to

start and end writing in *Essay Punch* was made at the moment by the instructor. On average, participants spent a total of 5.27 and 4.15 hours writing Essay 1 and Essay 2 in *Essay Punch*, respectively. To minimize the possibility of inflated log records, participants were asked to remain logged in the program only during the time they were working on their essays.

On Day 8, participants began writing their second essay in *Essay Punch*. Frank and David finished their second essay on Day 12 and Tina and Linda finished theirs on Day 13. On Day 11, the instructor assigned a take home essay that participants could write by hand or on a word processor. On Day 13, the researcher handed out the Posttreatment Questionnaire, emphasizing that he was interested in their honest responses. Participants returned the questionnaire on the next class meeting (Day 14). On this day, participants also wrote the posttreatment essay in *Microsoft Word*[®] on a topic similar to that of the pretreatment essay. The researcher attempted to allocate the same amount of writing time for the posttreatment as for the pretreatment (50 minutes); however, writing during the posttreatment may have been less than 50 minutes due to interruptions by the participants and the instructor and other events that took place the last day of classes.

Because the study comprised the collection of qualitative data to provide more in-depth answers to the research questions, the researcher wrote field notes during each class meeting. In the notes, the researcher recorded any event that took place in the classroom such as classroom conditions and instructor, researcher, and participants' experiences with the software and with overall classroom instruction. In addition, at the end of every class meeting and at the end of the study, the researcher collected the logs generated by the Teacher Program Manager.

Data Analysis

To begin the analysis of data, the researcher transferred the original essays to a uniform format. At the end of every class session, the researcher saved a copy of the "Results" folder of the program, which holds the records of the each user of the program. In case the original "Results" folder on the computer were accidentally deleted or became corrupt, the researcher could replace it with the back up copy. After participants wrote their essays, the researcher saved a digital copy of each essay on a portable drive. To ascertain that the appearance of the essays did not influence raters during rating, each essay was word-processed using the same font size and style and double-spaced. Any mistakes that appeared on the original essays were reproduced. The researcher printed three copies of each essay and proceeded to code them.

In coding the essays, essays were numbered from one to twenty. The first step in coding the essays involved putting together the four essays in each of the five measurements (pretreatment, *Essay Punch 1*, *Essay Punch 2*, take home, and posttreatment)--keeping together essays that corresponded to the same topic would facilitate reading at the time of rating. The second step involved numbering the four essays in each measurement sequentially. In doing so, Frank's essay was numbered first, Tina's second, David's third, and Linda's fourth. Using this method, Frank's pretreatment essay was coded number 1, Tina's number 2, David's number 3, and Linda's number 4. Sequential numbering continued with *Essay Punch 1*, *Essay Punch 2*, take home, and posttreatment essays. A packet containing the 20 numbered essays was prepared for each of the three raters.

To answer the research question about the effect of process writing software on the quality of writing, holistic ratings assigned to each essay by three independent raters were utilized. Deming (1987) defines holistic scoring as a "a method of rating essays based on the

general impression of the worth of a piece of writing....This method gives a single score to an essay rather than separate scores for each section or aspect of the essay" (p. 15). Johnson, Penny, and Gordon (2001) point out that using two or more raters increases the level of interrater reliability. In holistic scoring of writing samples, an acceptable level of interrater reliability requires that two raters differ by no more than one point in the score they assign to a paper (White, 1985). Scores that differ by one point are said to be continuous. Scores that differ by more than one point are considered divergent (Dyer & Thorne, 1994) and have to be scored by a third rater (expert) to resolve the disagreement. Johnson, Penny, and Gordon (2001) discussed four methods of score resolution (a) averaging or summing the scores of the original raters when they differ by no more than one point, (b) replacing both original scores with the score of the expert, (c) combining the score of the original raters with the score of the expert, and (d) combining the score of the expert with the closest score assigned by either of the two raters. Johnson, Penny, and Gordon (2001) found that combining the scores of the raters and the expert (method c) produced a higher interrater reliability index than replacing the scores of the original raters with that of the expert (method b). Cherry and Meyer (1993) advocate using the average of the three scores stating that according to classical statistical theory, this is "the best estimate of a true value" (p. 122). They argued that calculating reliabilities using modified scores (e.g., replacing original scores with the scores of an additional rater) "result in an inflated and false report of interrater reliabilities" (p. 112).

The three raters were experienced ESL teachers who had been teaching writing courses for several years. Rater 1 had been an ESL teacher for seven years. He had taught beginning to advanced courses in reading and writing for academic research. Rater 2 had been teaching ESL learners for 20 years. He had been Assistant Director of the Intensive English Program. He had

taught graduate composition classes to ESL students and was at the time teaching English 102 composition to a group of students made up of approximately fifty-percent of native speakers of English and fifty-percent non-native speakers. Rater 3 had taught ESL writing courses to students at different proficiency levels for about 10 years but had not taught writing in the last five years. At her job, she was in charge of assessing entry writing samples of ESL students, using the TWE Scoring Guide. She also offered workshops to new teachers on using the TWE Scoring Guide to assess writing.

The three raters met with the researcher one morning, for three hours, to practice rating and to rate the essays. The researcher welcomed raters and handed them a sheet of paper on which they were asked to write a few lines describing their experience teaching ESL writing. The researcher distributed a copy of the TWE Scoring Guide to each of the raters, asked them to read it, and ask any questions they had about it. Rater 2 expressed that he was not familiar with the scoring guide and asked a question about it that Rater 1 and Rater 3 answered. The researcher then handed a packet containing six scored papers that exemplified each of the scores in the TWE Scoring Guide. Participants were asked to read them and express any comments or concerns.

To give raters the opportunity to practice rating essays before engaging in rating participants' essays, the researcher gave each rater a packet containing six sample essays from the *Test of Written English Guide* (2004) representing the six ratings on the rating scale. According to White (1985), the goal of scoring sample papers "is not only to obtain agreement on the scores of sample papers and on the usefulness of the scoring guide but to help the readers internalize the scoring scale by combining description with example" (p. 25). Before the meeting, the researcher had shuffled the essays so they were not ordered in a systematic order.

The researcher asked raters to rate the six essays and when they finished rating, he asked them for their ratings. Ratings from the practice session are presented on Table 3. The researcher invited raters to explain why they had assigned a particular rating to each of the essays. In the discussion, raters found out that they agreed most of the time--in five of the six essays (83.3% of the time) the difference between their ratings was no more than one point. Their scores were divergent only on paper number 2--Rater 1 gave it a rating of 3 while Raters 2 and 3 gave it a rating of 1. Rater 1 explained why he had assigned a rating of 3 and agreed that the paper deserved a rating of 1.

Table 3

Essays ratings from practice rating session.

Essay Number	Rater			Average	ETS score
	1	2	3		
1	5	4	4	4.33	4
2	3	1	1	1.66	1
3	6	5	5	5.33	6
4	3	2	3	2.66	2
5	3	2	3	2.66	3
6	6	6	5	5.66	5

After raters achieved consensus, the researcher handed each of them a sealed manila envelope that contained a printed copy of each of the 20 essays and asked them to start rating them. At that point, Rater 3 asked about the conditions under which the essays had been written

and if the participants had written more than one draft. The researcher answered the questions and rating of essays began. When all three raters finished rating the essays, the researcher asked them to say the score that they had assigned to each essay. According to ETS's guidelines for scoring the Test of Written English when raters disagree in their ratings by more than one point, a third rater intervenes to resolve the disagreement (ETS, 2004). In this study, when any of the raters disagreed by one or two points, they discussed the reasons for their assessment and most of the time one or two of them modified his or her rating to be closer to those of the other raters. After consensus, raters achieved 100 percent agreement in their ratings of the pretreatment, *Essay Punch 1*, take home, and posttreatment and 75 percent agreement in their rating of *Essay Punch 2* (agreement was defined as no more than 1 point discrepancy between two ratings). Those percentages indicated an appropriate level of interjudge reliability during rating. The three ratings assigned after consensus were then averaged to calculate a single rating for each essay.

To answer the research question about the effect of process writing software on the length of essays, the total number of words was calculated for each essay using *Microsoft Word*[®]. To do so, the feature "Spelling and Grammar..." available under the "Tools" menu in *Microsoft Word*[®], was run for each essay. *Microsoft Word*[®] identified spelling and grammar mistakes but was instructed to ignore all of them. Upon completion of the spelling and grammar check, *Microsoft Word*[®] displayed essay statistics that included the number of words in the essay. Total number of words ratings and quality ratings of each essay were entered into SPSS for analysis.

Using a descriptive approach, results from each measurement were compared. Quality ratings were compared from pre- to posttreatment and from first to second essay in *Essay Punch*. Similarly, total words per essay were compared from pre- to posttreatment and from first to

second essay in *Essay Punch*. Changes in quality ratings and total number of words from one measurement to the next were also compared.

To better understand what affected participants' performance on those essays, the researcher collected qualitative data throughout the study. In the demographics questionnaire and in the posttreatment questionnaire, participants were asked to rate their feelings toward writing and toward writing with computers. In the posttreatment questionnaire, participants were asked to mention which aspects of *Essay Punch* helped or did not help their writing. At the end of the study, the instructor completed a posttreatment questionnaire that contained questions about the participants and the instructor's experiences teaching with *Essay Punch*. Raters also wrote descriptive comments at the end of each essay when they rated them. Most of the qualitative data, however, came from observation notes that the researcher wrote in every class meeting.

To analyze qualitative data, categories and themes were generated using an inductive approach. First, the researcher read all the data and started looking for recurring categories (Cherry, Jr., 2000; Patton, 1980). In subsequent readings, the researcher began to discover that certain categories reoccurred in the observation notes and sometimes on the data collected by means of the other instruments. Portions of the data that the researcher thought belonged to a category were color-coded and placed together. Data in each category were examined to determine whether they had been assigned to the correct category. Each category was then analyzed to see whether it was distinct enough to be listed separately. In the process, several redundant categories were eliminated. In addition, categories that dealt with more than one idea were split into two or more.

The resulting list of categories was very large so the researcher decided to look for themes that could encompass similar categories. As a result, categories were grouped into major

themes that would become major areas of discussion in the results section. To add validity to the analysis, data were compared across participants and across sources. Even though every participant was a unique case, data pertinent to one participant were compared to data relevant to other participants to trace any commonalities. In addition, data from one source (e.g., researcher's notes) were compared to data from other sources such as participants' comments and instructor comments, to find out whether generalizations could be made about the four participants.

Table 4

Methodology overview

Research Questions	Independent Variable	Dependent Variable	Data Sources	Data Analysis
1. What is the effect of process writing software on the quality of writing produced by ESL students enrolled in an advanced reading and writing class?	Process writing software.	Quality of writing (holistic rating of essay).	Pretreatment essay. <i>Essay Punch</i> essay 1. <i>Essay Punch</i> essay 2. Take Home essay. Posttreatment essay. Demographic Questionnaire. Posttreatment Questionnaire. Instructor Survey. Researcher's field notes. Raters' comments.	Descriptive Statistics Inductive content analysis.
2. What is the effect of process writing software on the length of writing produced by ESL students enrolled in an advanced reading and writing class?	Process writing software.	Length of writing (total number of words per essay).	Pretreatment essay. <i>Essay Punch</i> essay 1. <i>Essay Punch</i> essay 2. Take Home essay. Posttreatment essay. Demographic Questionnaire. Posttreatment Questionnaire. Instructor Survey. Researcher's field notes. Raters' comments.	Descriptive Statistics. Inductive content analysis.

Limitations of the Study

The study was limited to students enrolled in English 3D: Advanced Reading and Writing, during the six weeks of the first summer term of 2004. The study examined the quality and length of essays produced by participants using process writing software. Quality was defined as the average rating assigned to an essay by three expert raters. Length of writing was defined as the total number of words in the essay.

The study had the following limitations:

The number of available participants was too small for conducting in-depth quantitative analysis. To compensate for the lack of participants, qualitative data was collected along with quantitative data.

The duration of the study, six weeks, was too short. This period was not sufficient to allow students to become comfortable using the software and then produce a variety of essays.

Because of the short duration of the study, participants wrote only two essays in *Essay Punch*. Two essays did not provide enough evidence to support any effects of *Essay Punch* on participants' writing.

The writing software, *Essay Punch*, was not well integrated into the course syllabus. The decision on when students started and ended writing in *Essay Punch* was made spontaneously in every class meeting.

Goals for studying English differed among participants. Three of the four participants had plans to continue studies at a University in the United States or in another language-speaking country and were interested in improving their academic writing skills. The fourth participant, David, on the other hand, only wanted to improve his speaking ability to be more efficient at his workplace in his home country.

The participants had to be moved from a comfortable high-tech classroom to an untidy classroom on the fifth class meetings. Some of the participants looked uncomfortable in the new classroom, until the researcher dusted it and wiped desks and computer hardware.

One of the participants had very limited typing skills. His typing was slow and sometimes had difficulties identifying and using certain keys on the keyboard. The other three participants were very proficient typists and *Microsoft Word*[®] users.

CHAPTER IV: RESULTS AND DISCUSSION

The purpose of this study was to investigate the effects of process writing software on the writing produced by ESL students enrolled in an advanced reading and writing class. The study aimed to answer two research questions:

1. What is the effect of process writing software on the quality of writing produced by ESL students enrolled in an advanced reading and writing class?

2. What is the effect of process writing software on the length of writing produced by ESL students enrolled in an advanced reading and writing class?

Four ESL students, who for the purpose of this study, have been called Frank, Tina, David, and Linda participated in the study. The study was conducted from May 21, 2004 to June 29, 2004, period that covered the duration of Summer Session I. During the study, participants received instruction on reading and writing from the instructor and wrote their in-class writing assignments using *Essay Punch*. Throughout the study, they were asked to write five essays: Pretreatment essay, written in *Microsoft Word*[®] 2003 (Pre); Essay 1 written in *Essay Punch* (EP1); Essay 2 written in *Essay Punch* (EP2); Take Home, written by hand or on computer (TH); and Posttreatment essay, written in *Microsoft Word*[®] 2003 (Post).

Research Question 1. What is the effect of process writing software on the quality of writing produced by ESL students enrolled in an advanced reading and writing class?

To answer the first research question, three raters were asked to rate each of the 20 essays written by participants. To rate the essays, raters used a rubric (the TWE Scoring Guide) designed by Educational Testing Service (ETS) for scoring the Test of Written English administered to non-native speakers of English. The *Test of Written English Guide* (2004) delineates the criteria that correspond to each score on a 1-to-6 point scale. Although with some

modifications, scoring procedures in the present study are based on guidelines set forth by ETS for scoring the Test of Written English. The *Test of Written English Guide* (2004) establishes that three raters are needed to score TWE essays. Two of the raters score the essay, but if their scores differ by more than one point, the third rater is called upon to assign a score to the essay (ETS, 2004). In the present study three raters rated all 20 essays independently. After raters finished rating all the essays, the researcher asked them to discuss the rating they had assigned to each essay. This discussion was particularly important in finding consensus among raters when two or all three raters disagreed by more than one point. According to rating guidelines, one-point differences among ratings were not considered disagreements and required no adjustments but two-point differences represented discrepancies among raters and needed to be adjusted. During discussion, the rater who assigned the discrepant score usually modified it to be closer to those of the other raters. The three ratings given to an essay after discussion (agreed ratings) were then averaged to calculate a single rating for that essay (see Table 5).

The following example will illustrate the steps followed toward calculating a single rating for one of the essays. Raters 1, 2, and 3 assigned ratings of 3, 6, and 4 respectively to Frank's pretreatment essay. Following rating guidelines, the one-point difference between ratings 3 and 4 does not represent disagreement (therefore, ratings do not need to be modified), but the two-point difference between ratings 4 and 6 and the three-point difference between ratings 3 and 6 represent discrepancies that must be resolved in order to find consensus. The researcher asked raters to discuss why they had assigned a particular rating to Frank's essay. In the discussion Rater 1 admitted that he had been too rigorous in his assessment of Frank's essay and changed his rating from a 3 to a 4. Rater 2 acknowledged that she had been too lenient and changed her score of 6 to a 5. Rater 3 maintained his original rating of 4. Through the discussion, the three

raters achieved consensus (i.e. their "agreed ratings" of 4, 5, and 4 differed by no more than one point). The three agreed ratings were then averaged to calculate a single rating for Frank's pretreatment essay. The resulting rating, 4.33, was the same as the average of the three original ratings.

Raters found consensus (i.e. their ratings were the same or differed by only one point) in rating all essays except for Frank's first essay in *Essay Punch* (see Table 5). Initially, raters assigned ratings of 3, 6, and 4 to Frank's first essay in *Essay Punch* but these ratings had the same discrepancies as those of the ratings assigned to Frank's pretreatment essay: the rating of 6 differed from the rating of 4 by two points and from the rating of 3 by 3 points. In the subsequent discussion, Rater 2 modified her rating of 6 to a 5 but Rater 1 and Rater 3 did not change their ratings of 3 and 4. The resulting ratings (3, 5, and 4) show that consensus was not achieved among the 3 raters: ratings 3 and 5 differ by more than one point. When the three "agreed ratings" were averaged to calculate a single rating for Frank's pretreatment essay, the result was a rating of 4.00 points. This average was a third of a point lower than the average of the original scores.

For the analysis, the researcher decided to utilize the average of the three "agreed ratings" given to an essay. The rationale behind this decision was that "agreed ratings" were obtained by consensus among raters and did not exhibit the discrepancies present in original ratings. Table 6 displays all averaged ratings, which in the remaining of this study will be referred to as *quality ratings or ratings*.

Table 5

Ratings assigned by raters to each essay before and after they conferred.

	Individual rating						Average Rating	
	Original ^a			Agreed ^b			Original	Agreed
	R1	R2	R3	R1	R2	R3		
Pretreatment								
Frank	3	6	4	4	5	4	4.33	4.33
Tina	3	5	4	3	4	4	4.00	3.67
David	3	2	3	3	2	3	2.67	2.67
Linda	3	3	4	3	3	4	3.33	3.33
EP1								
Frank	4	5	5	4	5	5	4.67	4.67
Tina	4	4	5	4	4	5	4.33	4.33
David	3	2	4	3	3	4	3.00	3.33
Linda	4	3	5	4	3	4	4.00	3.67
EP2								
Frank	3	6	4	3	5	4	4.33	4.00
Tina	3	3	3	3	3	3	3.00	3.00
David	2	1	2	2	2	2	1.67	2.00
Linda	4	5	5	4	5	5	4.67	4.67
Take Home								
Frank	4	5	4	4	5	4	4.33	4.33
Tina	4	4	3	4	4	3	3.67	3.67
David	2	1	2	2	2	2	1.67	2.00
Linda	3	1	3	3	2	3	2.33	2.67
Posttreatment								
Frank	3	4	4	3	4	4	3.67	3.67
Tina	4	3	3	4	3	3	3.33	3.33
David	2	1	2	2	2	2	1.67	2.00
Linda	3	2	4	3	3	4	3.00	3.33

Note:

Pre = Pretreatment, EP1 = First essay in *Essay Punch*, EP2 = Second essay in *Essay Punch*, TH = Take Home, Post = Posttreatment.

R1 = Rater 1, R2 = Rater 2, R3 = Rater 3.

^a Original rating = The rating assigned by raters initially. ^b Agreed rating = rating assigned by raters after consensus (If two or all three raters disagreed by more than one point, they held a discussion and one or two of them changed his or her rating to be closer to the other ratings).

Table 6
Participants' quality ratings in each essay after raters conferred.

	Essay				
	Pre	EP1	EP2	TH	Post
Frank	4.33	4.67	4.00	4.33	3.67
Tina	3.67	4.33	3.00	3.67	3.33
David	2.67	3.33	2.00	2.00	2.00
Linda	3.33	3.67	4.67	2.67	3.33

Note:

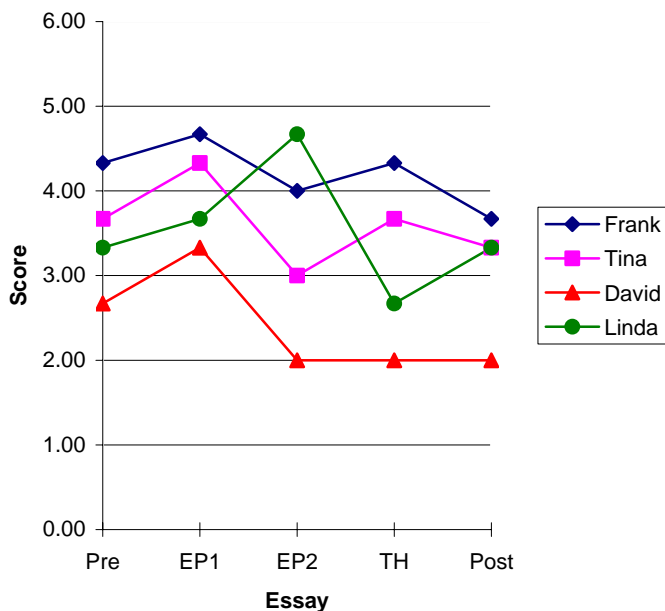
Pre = Pretreatment, EP1 = First essay in *Essay Punch*, EP2 = Second essay in *Essay Punch*, TH = Take Home, Post = Posttreatment.

Results of the study show that all participants obtained higher ratings on the first essay on *Essay Punch* than on the pretreatment but no difference between the two scores of a participant was more than two thirds of a point (See Fig. 8). A comparison of participants' ratings on the first and the second essays in *Essay Punch* shows that Frank's, Tina's and David's ratings on the second essay were lower than their ratings on the first essay in *Essay Punch*: Frank's rating was two thirds of a point lower, and Tina's and David's were 1.33 points lower. Linda's quality rating on the second essay in *Essay Punch*, on the contrary, was the highest rating assigned to any participant in this essay. Unfortunately, her rating on the Take Home essay was two points lower than her rating on the second essay in *Essay Punch*. In contrast, Frank's and Tina's ratings on the same essay were higher than their ratings on the second essay in *Essay Punch* (one third and two thirds of a point, respectively): Frank's rating was one third of a point and Tina's was two thirds of a point higher. In the Posttreatment essay, Frank's and Tina's ratings were lower than their ratings on the Take Home essay, but Linda's rating was higher than her rating on the Take Home

essay. David's ratings were the same on the second essay in *Essay Punch*, Take Home essay, and Posttreatment essay. With the exception of Linda who had her highest quality rating on her second essay in *Essay Punch*, all participants obtained their highest quality rating on the first essay in *Essay Punch*.

Figure 8

Participants' quality ratings in each of the five essays.



Note:

Pre = Pretreatment, EP1 = First essay in *Essay Punch*, EP2 = Second essay in *Essay Punch*, TH = Take Home, Post = Posttreatment.

Although ratings fluctuated across essays, three participants tended to score consistently at the same level in relation to each other. Frank consistently scored higher than Tina and David in every essay and David received the lowest rating in every essay, especially on his last three essays on which he obtained a rating of 2.0. Linda's ratings did not follow the same trend as the

ratings of Frank, Tina, and David. Although her ratings were lower than Frank's and Tina's on the pretreatment, first essay in *Essay Punch*, and Take Home essays, she outscored all participants on the second essay in *Essay Punch*. The placement of the lines on Figure 8 may be interpreted as an indicator of the level of writing proficiency of each participant. Judging from the graph, participants could be ranked from highest to lowest writing proficiency in the following order: Frank, Tina, Linda, and David. This ordering, however, does not appear completely reliable. Despite being third on the ranking, Linda had the highest rating, along with David, on the second essay in *Essay Punch*. This fact suggests that other factors (e.g., time, software, and motivation) may have played a role on essay quality.

Research Question 2: What is the effect of process writing software on the length of writing produced by ESL students enrolled in an advanced reading and writing class?

To answer the second question, each essay was opened in *Microsoft Word*[®] 2003 and checked with the "Spelling and Grammar" tool without making any corrections. When the spelling and grammar check was completed *Microsoft Word*[®] 2003 displayed a series of essay statistics, including total number of words in the essay. The total number of words in each essay is displayed on Table 7.

Table 7

Total number of words per essay.

	Essay				
	Pre	EP1	EP2	TH	Post
Frank	285	543	398	283	277
Tina	281	372	251	242	208
David	155	476	147	93	131
Linda	303	581	419	222	304

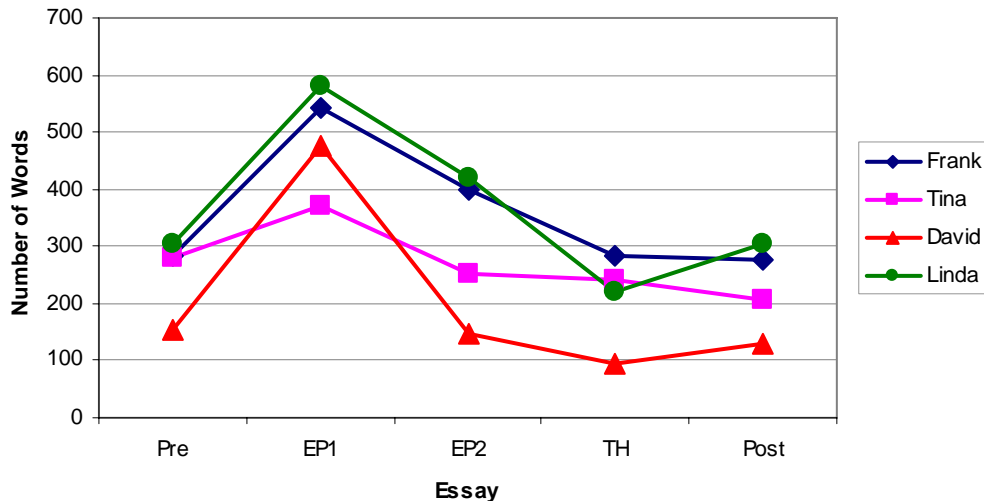
Note:

Pre = Pretreatment, EP1 = First essay in *Essay Punch*, EP2 = Second essay in *Essay Punch*, TH = Take Home, Post = Posttreatment.

Plotted on a graph (see Fig. 9), the distribution of word totals shared some similarities with that of quality ratings: with the exception of Linda's, everybody's word totals were lower in the posttreatment than in the pretreatment; word totals on the second *Essay Punch* essay were lower than word totals on the first essay in *Essay Punch*; and in most cases, a larger word total corresponded to a higher quality rating. Frank's, Tina's, and David's posttreatment essays not only had fewer words but also received quality ratings that were two thirds of a point lower. Of the four participants, only Linda wrote a longer posttreatment essay than a pretreatment essay (304 words versus 303 words), nevertheless, both essays received the same quality rating (3.33 points).

Figure 9

Number of words per essay in each of the five essays.



Note:

Pre = Pretreatment, EP1 = First essay in *Essay Punch*, EP2 = Second essay in *Essay Punch*, TH = Take Home, Post = Posttreatment

In a comparison of length of the two *Essay Punch* essays, data showed that the each participant's second essay contained fewer words than her or his first essay. The average length of the second essay was 303.75 words while that of the first essay was 493 words. Although word totals of all participants contributed to this large difference, David's word totals was the largest influence (his first *Essay Punch* essay comprised 476 words but his second *Essay Punch* had only 147). In a similar fashion, Take Home essays contained fewer words than second *Essay Punch* essays. The average length of a Take Home essay was 210 words (the average length of a second *Essay Punch* essay was 303.75). Once again, David's word totals (97 words on the Take Home essay) contributed with the largest portion of this difference. Both Tina and Frank had lower quality ratings and word totals on the posttreatment than on the Take Home essay. Linda's posttreatment rating and word total, on the other hand, were higher than her Take

Home rating and word total. David wrote a larger number of words on the posttreatment than on the Take Home essay but his quality rating was the same for both essays.

In most cases, higher word totals corresponded to higher quality ratings. For instance, the first essay written by participants in *Essay Punch* was their longest (had the largest number of words) and, with the exception of Linda's essay, received the highest quality rating that a participant got in any essay. Participants' second *Essay Punch* essay contained fewer words and all but Linda's received a lower quality rating (despite containing fewer words than her first *Essay Punch* essay, Linda's second *Essay Punch* essay was awarded the highest quality rating). In every case, Linda's essays tended to show a negative relationship between word total and quality rating. For example, her first *Essay Punch* essay consisted of 581 words and received a quality rating of 3.67, while Frank's essay contained 543 words and received a quality rating of 4.67. Also, Linda's posttreatment essay contained 304 words and Tina's was only 208 words long; however, both essays had the same quality rating (3.33 points).

Participants' Writing Performance

During the study, each participant wrote a total of five essays: pretreatment (Pre), first essay in *Essay Punch* (EP1), second essay in *Essay Punch* (EP2), Take Home (TH), and Posttreatment (Post). A quality rating and word total were calculated for each essay. To calculate the quality rating, three raters rated each essay on a 1-6 point scale and their ratings were then averaged to calculate a single quality rating for each essay. As they rated an essay, raters also wrote comments on it. The word total of each essay was calculated using *Microsoft Word*[®] 2003. The following section presents a discussion of the quality ratings, word totals, and raters' comments corresponding to each participant's essays.

Frank's was usually the best performer on the essays; his quality ratings and word totals are presented on Table 8. The quality rating of Frank's posttreatment essay was lower than the quality rating of his pretreatment essay (i.e. 3.67 and 4.33, respectively). Similarly, his second essay in *Essay Punch* was assigned a lower quality rating than his first essay in *Essay Punch* (EP2 = 4.00, EP1 = 4.67). Frank's first *Essay Punch* not only recorded the highest quality rating that Frank received in any essay but also was the longest of his five essays--it comprised 543 words.

Table 8

Frank's quality ratings and total number of words per essay.

	Essay				
	Pre	EP1	EP2	TH	Post
Quality rating	4.33	4.67	4.00	4.33	3.67
Number of Words	285	543	398	283	277

Note:

Pre = Pretreatment, EP1 = First essay in *Essay Punch*, EP2 = Second essay in *Essay Punch*, TH = Take Home, Post = Posttreatment.

In their assessment of Frank's essays, raters commented positively on the organization and development of the essays but found several deficiencies in content, style, and grammar. Raters praised the organization of Frank's writing with comments such as "well-arranged and developed with clear examples" (Rater 3, Pre), well developed and well organized into paragraphs" (Rater 3, EP1), and "wow! Well organized and succinct. Very good" (Rater 2, EP2). Raters pointed out deficiencies in Frank's essays with comments such as "shows patterns of

syntactic errors" (Rater 3, Pre), "a lot of repetition" (Rater 3, EP2), "frequent grammatical errors" "some coherence/diction issues" (Rater 2, EP1), "rather simplistic grammar and vocabulary which is repeated" (Rater 3, TH), and "narrow vocabulary" (Rater1, EP1).

Although Tina's quality ratings were always lower than Frank's, they showed a similar pattern to Frank's (see Table 9). Like the essays of the other three participants, Tina's posttreatment essay received a lower quality rating than her pretreatment essay (Post = 3.33, Pre = 3.67). Also, her second *Essay Punch* essay received a lower quality rating than her first *Essay Punch* essay (EP2 = 3.00, EP1 = 4.33). Besides having the highest quality rating of all of Tina's essays, Tina's first *Essay Punch* essay contained the largest word total of her five essays (372 words). The factors that may have influenced this difference are explained later in this chapter.

Table 9

Tina's quality ratings and total number of words per essay.

	Essay				
	Pre	EP1	EP2	TH	Post
Quality rating	3.67	4.33	3.00	3.67	3.33
Number of Words	281	372	251	242	208

Note:

Pre = Pretreatment, EP1 = First essay in *Essay Punch*, EP2 = Second essay in *Essay Punch*, TH = Take Home, Post = Posttreatment.

As with Frank's writing, but in a lesser degree, Tina's essays also received good comments regarding their organization from the raters. On the pretreatment essay and the first essay written on *Essay Punch*, raters wrote comments like "good organized words" (Rater 2 on

pretreatment), and "good organization, well-developed paragraphs..." (Rater 3 on EP1). Unlike Frank's essays, which according to writers contained frequent grammatical or lexical errors, some of Tina's essays showed evidence of good grammar and vocabulary use. Rater 2 wrote about Tina's Take Home essay: "Good grammar", but Rater 3 found "patterns of grammatical errors" on Tina's pretreatment essay. Raters also pointed out that Tina's pretreatment essay, second essay in *Essay Punch*, Take Home essay, and on posttreatment essay lacked development, details, and/or content.

Quality ratings and word total for each of David's essay are presented on Table 10. Similar to Frank's and Tina's, David quality ratings were lower on the posttreatment than on the pretreatment (Post = 2.00, Pre = 2.67). Also, the quality rating of his second *Essay Punch* essay was lower than that of his first *Essay Punch* (EP2 = 2.00, EP1 = 3.33). Unfortunately, his last three essays were very short and received a quality rating of 2.00.

Table 10

David's quality ratings and total number of words per essay.

	Essay				
	Pre	EP1	EP2	TH	Post
Quality rating	2.67	3.33	2.00	2.00	2.00
Number of Words	155	476	147	93	131

Note:

Pre = Pretreatment, EP1 = First essay in *Essay Punch*, EP2 = Second essay in *Essay Punch*, TH = Take Home, Post = Posttreatment.

In their assessment of David's essays, raters pointed out several flaws in organization, development, content, vocabulary, and grammar. Although Rater 2 saw "good development of ideas" in David's first essay in *Essay Punch*, the rater noted that "organization was not always clear." For the remaining essays, raters highlighted the lack of organization and development with comments such as "digresses-needs conclusion, more development of ideas" (Rater 2, Pre), "Simplistic" (Rater 2, EP1), "major problems with organization and development" (Rater 3, EP2), "Inadequate development" (Rater 3, TH), and "not beginning and ending" (Rater 2, Post). Although they were fewer than those on organization, comments focusing on syntactic and grammatical features also tended to highlight shortcomings of the essays. For example, Rater 3 three noted that David's first essay in *Essay Punch* contained "many grammatical and syntactic errors."

Linda's essays quality ratings were the same for the posttreatment and the pretreatment (i.e. 3.33 in each essay) (see Table 11). Unlike the remaining participants, who received their highest quality rating on the first *Essay Punch*, Linda attained her highest quality rating (4.67) on the second *Essay Punch*. Apart from Linda, Frank was the only other participant who attained this high rating in an essay. Despite having the highest quality rating, Linda's second *Essay Punch* was not her longest; instead, it was her first *Essay Punch* essay that contained more words (581). Like her first *Essay Punch* essay, most of Linda's essays comprised a considerable number of words but received ratings that other participants achieved in essays of shorter length (e.g. Frank's pretreatment essay had 285 words and a quality rating of 4.33 points while Linda's had 303 words and a quality rating of 3.33).

According to raters, four of Linda's five essays showed good organization and development but also several grammatical deficiencies. For Linda's first essay in *Essay Punch*,

Rater 3 wrote "well developed and organized [but] syntactic errors are frequent." The same rater saw the same characteristics on Linda's second essay in *Essay Punch*: "strong organization and development, but some grammatical problems and vocabulary oddities." Raters also made good comments for Linda's posttreatment essay, however, they pointed out several limitations of Linda's Take Home essay with comments like "hard to follow, disjointed" and "good specific details, but not related to a main idea."

Table 11

Linda's quality ratings and total number of words per essay.

	Essay				
	Pre	EP1	EP2	TH	Post
Quality rating	3.33	3.67	4.67	2.67	3.33
Number of Words	303	581	419	222	304

Note:

Pre = Pretreatment, EP1 = First essay in *Essay Punch*, EP2 = Second essay in *Essay Punch*, TH = Take Home, Post = Posttreatment.

While quality ratings and word totals represent a measure of participants' performance on the essays, they offer no information about the factors that may have influenced such performance. An examination of each participant's background and his or her experiences during the study, on the other hand, may not only help understand those factors, but may also offer insights into areas that need to be given attention when planning to integrate writing software into ESL instruction.

Participants' Stories

Frank

Frank was an undergraduate student in the 22 to 25 year-old bracket who was a native speaker of Japanese. In the Demographics questionnaire he answered that before coming to the United States he had studied English for one year in Japan. Later, he told the researcher that he had been studying English for ten years but only the last year had been good. He had been in the United States for only four days. Frank considered his writing in Japanese to be excellent and expressed that he enjoyed writing. He had been using computers for ten years and believed he was very proficient using *Microsoft Word*[®]. Frank also expressed that he loved writing with computers. In the demographics questionnaire, Frank responded that when he wrote a research paper he preferred to brainstorm, outline, and write the first draft by hand but preferred to organize content and review grammar using the computer.

In the first class meeting, after the researcher explained the study, participants who qualified for the study and agreed to participate in it, completed the Demographics and Familiarity with Computers Questionnaire. When Frank received his copy of the questionnaire, which contained a copy of the script, he wanted to understand every word that appeared on the script and on the questionnaire. Sometimes he asked the teacher or the researcher about the meaning of words, other times he looked them up in either a hard copy or an electronic dictionary. Due to his interest in understanding every word in the questionnaire, he took more time than the rest of the participants to complete it. He seemed to be highly motivated, but it was noticeable that his speaking skills in English were limited. He expressed that he had studied English for about 10 years in his home country but the classes he had attended had not been very good until a year before when their quality improved.

In Day 2 of the study, participants wrote the pretreatment essay in *Microsoft Word*[®]. Before typing his essay on the computer, Frank wrote a few sentences on a piece of paper, creating what looked like a rough outline of his paper. As he wrote the pretreatment writing sample, Frank often used a dictionary to look up words.

On Day 3 of the study, participants were introduced to *Essay Punch*, the process writing software used in the study. Given the sequence of activities in *Essay Punch*, participants had to start working on their first essay in *Essay Punch* as soon as they logged into the program. In Day 4 and Day 5 of the study, Frank continued writing his first essay in *Essay Punch*. Toward the end of the writing session on Day 5, Frank had started writing a paragraph using the ideas he had placed under the second header of his outline. As he had done during the demographics questionnaire, Frank often resorted to a dictionary to look up words that he wanted to include in his essay.

On Day 6 of the study, participants wrote the paragraphs that made up the body of the essay. Frank was not shy to speak and liked to ask questions in class. On this day, while students in the class were writing, Frank asked the teacher where he could buy a phone. The teacher answered him that he could buy it at a local store. Frank then continued asking more questions on where the store was and how he could get there. Because Frank had been in the area only a few days and was not very familiar with it, he did not understand easily the explanation that the teacher gave him about the location of the store. While the teacher and Frank engaged in this conversation for about five minutes, the remaining participants did not write on their essays as they were listening to the teacher and Frank. Despite this distraction, by the end of the day, David had made more progress than other participants; he had finished paragraph 2, 3, and 4 and began reviewing his essay. On Day 7, Frank continued reviewing his essay, expressing that he

wanted to remove parts of it that he considered to be not very good. He finished reviewing his essay on Day 8 and exported it to *Microsoft Word*[®].

On Day 9, participants started writing their second essay in *Essay Punch*. When participants began brainstorming ideas for their second essay in *Essay Punch*, Frank asked the teacher if he could brainstorm ideas in his native language but the teacher replied that he was not allowed to do that. As in previous occasions, Frank began brainstorming ideas on paper and then typed them on the computer. On a piece of paper he wrote an outline that included a thesis, ideas in favor, ideas against, and conclusion. In the process, he created a draft of the topic sentence for each of the three paragraphs of the body of the essay, and also wrote down ways to combine those ideas. After completing brainstorming, Frank was the first of all participants to move to the next step in the program sequence--organizing the ideas into columns.

On Day 11, Frank had already completed writing the number of paragraphs that the structure of *Essay Punch* allowed him to write. He decided to add another paragraph before the conclusion but *Essay Punch* prompted him to write the conclusion and he was unable to add the paragraph.

On Day 13, participants wrote the posttreatment essay. As he had done when he started writing previous essays, Frank first wrote ideas by hand on paper and then continued typing his essay on the computer. Throughout the course, he was very skillful typing on the computer and almost always completed his essays before other participants finished writing theirs. When he was writing the posttreatment essay, he even took time to have a conversation with David.

In the posttreatment questionnaire, Frank acknowledged his confidence in his writing skills when he wrote "I have my idea to organize paragraphs. So do not need the process to write essay." Regarding the influence of *Essay Punch* on his writing, he stated that it was effective in

finding a topic but he did not need "such a excellent" software to write because he could "write essay without this software." Nevertheless, he felt that using *Essay Punch* was a "good experience."

Tina

Tina was a Japanese speaker in the 18-21 age group. She had just arrived in the United States after completing High School in Japan. Tina had been studying English for six years and one month and considered herself an excellent writer who loved writing in her native language. She had used computers before and rated her abilities using *Microsoft Word*[®] as "average." In the demographics questionnaire she expressed that she liked writing with computers and that whenever she wrote a paper she did everything on the computer.

Tina seemed to be a very quiet and shy person; however, when she was asked a question she answered it very fluently and with good pronunciation. On Day 2 of the study, when participants started writing the first essay in *Essay Punch*, Tina did all her brainstorming for ideas on the computer. According to her answers on the demographics questionnaire, this was something that she preferred to do. On Day 3 of the study, Tina faced some difficulties with *Essay Punch* even though she was a very skillful computer user. On Day 3, Tina wanted to correct a mistake she had made during brainstorming but the instructor and the researcher told her, and the rest of the class, that she could not do it at that moment because *Essay Punch* did not provide that option; instead, she had to wait until the program had advanced to the stage where the program allowed her to make changes. In another instance, Tina wanted to resize the program window on the screen. In other applications, this is accomplished by dragging the corners or the edges of the window, but when Tina tried to do the same in *Essay Punch*, she found out that she could not resize it.

On Day 4 of the study, Tina continued having difficulties with *Essay Punch*. She had written headings for the ideas she had come up with during brainstorming when the program prompted her to add a third heading. She did not want to add more headings but instead she wanted to advance to the next task. Confused, she started clicking on different areas of the screen. Later the same day, after she had written the topic sentence of the introductory paragraph, *Essay Punch* prompted her to write one sentence. She wrote several sentences and clicked "OK". *Essay Punch* prompted her to write another sentence but she had written all she intended to write for that paragraph on the previous screen. The program, however, would not advance until something was typed on the input window. The instructor told her to write anything, like a single word, and click "OK" to move to the next screen.

On the next few days, Tina did not experience significant issues with the software. She kept writing her first essay in *Essay Punch*, often spending a considerable amount of time thinking before typing her ideas on the computer or looking up words in an electronic dictionary. She finished her first essay on *Essay Punch* on Day 7 of the study and reread it a couple of times before handing it in to the instructor.

On Day 10 of the study, however, Tina came upon a major issue with *Essay Punch*. Before the class, the researcher had tried to remove some duplicate records that had been created due to the fact that the software was installed on individual computers instead of on a network. When Tina logged in and tried to access her work, which was supposed to include all the ideas she had brainstormed for her second essay in *Essay Punch*, the program took her to the beginning of the program sequence. All her ideas had been deleted so she had to start brainstorming again. She clustered some ideas on a piece of paper, typed them on the computer, and exited the program. Usually, when users closed the program, *Essay Punch* saved whatever

they had written but when Tina opened the program, she could not find her work from the previous session because it had been deleted for a second time. At the end of the class that day, Tina only had what she had written on the piece of paper. On Day 11, Tina mistakenly logged into a default class created by *Essay Punch* called "NO CODE". Because neither the researcher nor the teacher had removed the option "Add New Student" from this class, Tina selected this class and added herself as a new student. When the researcher discovered that she was logged into the wrong class, he logged her off and logged her into the correct class.

At the beginning of class on Day 12, Tina and Linda had not finished writing their second essay in *Essay Punch* when the instructor asked them how much time they needed to finish their essays. She let them continue writing but started a new activity with Frank and David who had already finished their essays. As they did this activity, the instructor, Frank, and David spoke loudly while Tina and Linda continued writing their essays. It took Tina the entire class to finish her essay.

In her responses on the posttreatment questionnaire, Tina gave credit to *Essay Punch* for helping her organize her essays. She wrote "I learned the effective way of making and using outline. *Essay Punch* helped me how to organize an essay". She also had good comments about the step-by-step approach taken by *Essay Punch*, "I didn't confuse because we wrote step-by-step". However, she felt that *Essay Punch* constrained her by impeding her correcting mistakes whenever she wanted, "I wished to be able to check back and correct anytime the sentences which I'd had written already."

David

David was a Business Administrator from Brazil who belonged in the 34+ age bracket. He was a speaker of Portuguese who had been studying English for 5 years but had been in the

United States for only one month. He expressed that he liked writing in his native language and rated his writing as being "good". David had been using computers for only two months and regarded his proficiency in using *Microsoft Word*[®] as "poor". In response to a question in the demographics questionnaire that asked participants to check on a list of basic word processing tasks those that they were able to perform, he only checked "open an existing file". In addition, he expressed that he disliked writing with computers and that whenever he had to write an essay he preferred to brainstorm, outline, write drafts, organize, and review the content by hand instead of doing it on the computer.

From the beginning of the course, David showed limited computer skills. On Day 2 of the study, the researcher noted that David was having difficulties using the keys on the keyboard and proceeded to show him how to delete characters using the backspace key and also how to move text using the arrow keys. In addition, David typed very slowly, usually pausing and searching for the next key after every keystroke. On the second day, he asked the researcher why some words on the screen were underlined on red. The researcher explained to him that *Microsoft Word*[®] 2003 marked those words because they were not spelled correctly. As he was writing, David paused frequently, looked around, and hesitated before writing. Most of the time, he spent a considerable amount of time writing a single sentence, in the process, he often looked words up on a dictionary.

David's difficulties with computers were more noticeable when he started using *Essay Punch*. Sometimes he could not understand and follow the directions of the program or could not figure out what he had to do after completing a task. For example, on Day 3 of the study, he had written something and needed to click "OK" to move to the next screen, but he was unable to do so until the researcher told him what to do. In another occasion, he was not able to recognize a

program prompt. At the start of the "Outlining" stage, the program asks users to create headings for related ideas generated during brainstorming. For each heading the program provides a prompt that users could keep if they consider it adequate for the ideas they have written, or replace it with one that is more appropriate. When David reached this point, he kept the suggested heading and moved to the next screen. The teacher then explained to him in his native language that the heading was only one example and that his composition would be better if he replaced the text with his own ideas.

On Day 4 and Day 5 of the study, David's pace through the program was different from that of the other participants. Even though he typed slowly and reread every new sentence he added, he was completing the tasks of the program too fast. While the other participants were still engaged in organizing ideas, David was already starting to write the introduction of his first essay in *Essay Punch*. As he wrote the first paragraph, David struggled again following the directions of the program. *Essay Punch* prompted him to write a sentence but he wrote a string of sentences. Later, he decided that he wanted to make the last sentences that he wrote the beginning of a new paragraph but the program did not allow him to split the paragraph.

On Day 6 and Day 7, David wrote the second paragraph of the essay and on Day 8 he wrote the conclusion but he continued dealing with the same issues he had had in previous days using the software. He kept typing slowly and asking a lot of questions about the meaning of words. Sometimes he could not grasp what the instructor was saying and she had to explain things to him in his native language. Despite being reminded by the software, the instructor, and the researcher to write only one sentence at a time and press "OK", David kept writing several sentences before clicking "OK"; as a result, he ended writing very long paragraphs. When he moved those long paragraphs from the "Input" window to the "Essay Notepad" window the last

sentences of the paragraph were not displayed. After the second time that this happened he became very upset and complained to the researcher that *Essay Punch* was deleting his essay.

As David began writing his second essay in *Essay Punch* and continued to struggle with the software, his interest in the class and his willingness to write seemed to decline. On the tenth day, he clicked on an area of the screen that closed the active window on the screen. The next day he did not look motivated to write at all and spent about five minutes writing an assignment for another class while he was logged in on *Essay Punch*. On Day 13, he started clustering some ideas on a piece of paper and began typing them on the computer. When he was typing, he looked at the keyboard and searched for the appropriate key before every keystroke.

On Day 13, David did some work on his essay but it appeared that he just wanted to finish it. To start the writing session of the day, he opened the program to "Information" and could not see his essay which was on "Persuasion". To erase a sentence he clicked on "Change Text" but was unable to access any editing options. He was told that he had to select (click on) a paragraph before clicking the "Change Text" button. With help from the teacher he managed to make the changes he wanted. However, he relied a lot on the teacher, constantly asking "Is this OK?" Before other participants had finished their essays, David said that his was done and asked "Can I open the Internet?" The instructor suggested he reviewed his essay but he replied that he had already done it. However, his essay had a lot mistakes, such as misspelled words, no spaces between words, and crase (') instead of the apostrophe (').

Despite the difficulties he encountered using the software David had positive comments about his experience. In the posttreatment questionnaire he wrote "you can unit [combine] ideas and choose the best way to write" but acknowledged that his limited knowledge of computers was a constraint, especially at the beginning of the course: "I don't know use computer very well,

but that work helped develop my skills...When *Essay Punch* began, I had more difficulty because of the computer, but after I learned more and started to develop my ideas."

Linda

Linda, a speaker of Korean in the 18-21-age bracket, was an undergraduate student of Business Administration in Korea. She spoke German and had been studying English for six years. Like Frank and Tina, Linda had been in the United States for only a few days. She regarded her writing in Korean as "good" and expressed that she loved writing in her native language. She considered her ability in using *Microsoft Word*[®] as "average" although she had been using computers for ten years. When she was asked to check on a list of word processing tasks those that she could perform, she selected all of them. She also expressed that she liked writing with computers but that whenever she had to write an essay she preferred to create an outline and revise grammar and spelling by hand.

From the beginning of the study, Linda appeared to have a good command of English and a solid working knowledge of computers. On Day 1, participants filled out the demographics questionnaire and Linda was the first to complete it. She spoke English very fluently and pronounced words very well. By the end of the writing session, Linda had written the introduction, the first and second paragraphs, and was working on the fourth paragraph of her first essay in *Essay Punch*. When she wrote, she often paused to think or look up words on a dictionary.

On the fifth day of the study Linda discovered that *Essay Punch* did not behave exactly the same way as other Windows applications. She wanted to make corrections to paragraphs that she had written and then moved to the "Essay Notepad" window. She thought that this task would be done in *Essay Punch* in the same way as it was done in other applications: highlight the

text and then type the corrections. She clicked on the paragraph but the software did not allow her to highlight it. In both occasions she was not able to modify the paragraph because this action was not supported at this stage on the program sequence. Editing was only allowed during the editing stage, which came later in the program sequence.

On Day 6, Linda displayed her knowledge of computers by suggesting a solution to a question the instructor had about *Essay Punch*. The instructor told students and the researcher that she would have liked that the students accessed www.dictionary.com and kept a window of this website opened on the screen while they wrote on *Essay Punch*. Unfortunately, when *Essay Punch* is open, the active program window covers the full area of the screen, hiding the "Start" button. Linda showed the researcher that this problem could be solved with the key that contains the "Windows" logo. Pressing this key displays the "Start" button and the taskbar at the bottom of the screen. Users can open other applications, besides *Essay Punch*, from the "Start" button and click on the minimized windows on the taskbar to switch between applications.

At the beginning of her second essay in *Essay Punch*, Linda had the same problem that Tina had using *Essay Punch*: the software had not saved her work. When Linda logged in to *Essay Punch* all the ideas she had brainstormed had disappeared and she had to start recreating them. She wrote some of them on a piece of paper and then typed them on the computer. Throughout the study, she used the keyboard very efficiently--typing quickly and using keyboard shortcuts to execute commands such as copy and paste text inside the input window. She even discovered a way to minimize *Essay Punch* windows and anchor them at different areas of the screen. This was significant because *Essay Punch* displays a very rigid layout of the screen and users do not have much control over it. Despite her good knowledge of computers, Linda experienced one of the problems that David had using *Essay Punch*. On Day 12, she wrote a long

paragraph on the "Input" window but when she pressed "OK" to move it to the "Essay Notepad", the program cut off the last two sentences. Several times during her writing Linda used an electronic dictionary to look up words.

Day 13 was the last day for participants to finish their second essay in *Essay Punch* but Linda may have not had enough time to finish it. At the beginning of the class, Frank and David told the instructor that they had finished writing their essays, but Tina and Linda had not finished theirs. The instructor asked Tina and Linda how much time they needed to finish and then allowed them to continue writing on *Essay Punch* while she conducted a speaking activity with Frank and David. At the end of the class, both Linda and Tina said that they had completed their essays.

In the posttreatment questionnaire, Linda gave credit to *Essay Punch* for helping her "not forget the steps and important points" and for giving her "information how to paraphrase, build next step, and correcting spelling..." However, she pointed out one restriction that *Essay Punch* imposed on users: "If I want to change something immediately, that doesn't work." It was no surprise that Linda wrote this comment because she had attempted, at least twice, to make corrections to her essays but the software did not let her make them.

Intervening Factors

To provide a more complete answer to the research questions, qualitative data were also collected throughout the study. At the beginning of the study, participants completed a demographics questionnaire that asked them about their background, their feelings toward writing and toward writing with computers, and their experiences with writing and with computers. At the end of the study, participants completed a posttreatment questionnaire that included some of the questions asked in the demographics questionnaire. Also, at the end of the

study, the instructor completed an "Instructor Survey" that asked her to assess different aspects of the participants' experience in the course. In addition, during every class session, the researcher collected a series of field notes that provided the majority of data for the qualitative analysis.

Qualitative data were open-coded and categories were derived from the coded data. For the analysis, all categories were grouped into four major themes: logistics, curriculum, software, and students' skills (see Table 12). Issues related to the physical setting and software installation were assigned to the theme Logistics, those that referred to one or more aspects of the planning and delivery of instruction were placed under Curriculum, concerns about features of *Essay Punch* were grouped under Software, and matters that revolved about individual characteristics of the participants were subsumed under the theme of Participants' Skills. In occasions when a category covered more than one area it was divided into subcategories. In this study, labeling of the categories and the decision to arrange them under those three major themes has been the researcher's choice. For this reason, the reader may find that a category could belong in more than one theme, for example, native language which appears under Curriculum could also be placed under Participants' characteristics.

Table 12

Themes and categories from qualitative data.

Categories	Subcategories	Examples
Logistics		
Classroom setting		The participants met at a High-Tech classroom for the first four days but they had to move to a neglected classroom for the rest of the study.
Software installation		In the High-Tech classroom, <i>Essay Punch</i> was installed on the server and participants could work from any computer on the network. In the second classroom used <i>Essay Punch</i> was installed on each computer and participants had to use the same computer all the time.
Curriculum		
Time Management	Time allocated to <i>Essay Punch</i>	"The summer group did not have the time to improve grammar..." (Instructor, Instructor Survey).
	Time on/off task	"David wrote an assignment for another class while he was still logged on <i>Essay Punch</i> " (Researcher Notes, Day 11).
	Time for instruction of class content	The group "did not have the time to improve grammar" (Instructor, Instructor Survey).
Class Planning and Preparation	Integration of <i>Essay Punch</i> into curriculum	The first essay participants wrote in <i>Essay Punch</i> was informative. At the start of the second essay, the instructor decided to write a persuasive essay.
	Setting up software before class	" <i>Essay Punch</i> requires that a code be set up for each type of essay and none was set for persuasion" (Researcher Notes, Day 8).

(table continues)

Table 12 (continued).

Categories	Subcategories	Examples
Computer Training	Typing skills	David "had to look at the keyboard to locate every key before pressing it" (Researcher Notes, Day 9).
	Using hardware and software	Linda "explained to the researcher that it was possible to open another program or switch between open programs by pressing the Windows key on the keyboard" (Researcher Notes, Day 9).
Native Language		The teacher explained things to David on his native language. (Researcher Notes, Day 6).
Software		
Program sequence	Constraints	Linda "wanted to add sentences to a paragraph..." but the software did not allow her to make changes at that point. (Researcher Notes, Day 5) . Frank "wanted to add another paragraph to the body of the essay but the software prompted him to write the conclusion" (Researcher Notes, Day 11).
	Predetermined paragraph length	When David moved to the "Pre-writing Notepad" a long paragraph that he had written, the last sentences were cut off (Researcher Notes, Day 8).
User Interface	Purposeless images	<i>Essay Punch</i> displays images on the top of the screen that serve only for decoration
	Fixed window size	"Tina wanted to resize the windows on the screen but the program did not have this feature" (Researcher's Notes, Day 3).
User control	Limited editing opportunities	Tina wanted to correct a spelling error she had made during brainstorming but she was told that she had to wait. (Instructor Notes, Day 3).

(table continues)

Table 12 (continued).

Categories	Subcategories	Examples
Strengths and weakness	Window resizing	"It is not possible to resize windows by dragging them by their corners" (Researcher Notes, Day 3).
	Directions	"The directions were clear, especially for novices" (Instructor, Instructor Survey).
	Step-by-step approach	"I didn't confuse because we wrote step by step" (Tina, posttreatment questionnaire).
	Process writing approach	"I learned the effective way of making and using outline. <i>Essay Punch</i> helped me how to organize an essay" (Tina, Posttreatment questionnaire).
Participants' characteristics		
Language skills	Listening	"Initially, I thought the students had a low level of comprehension..." (Instructor, Instructor Survey).
	Pronunciation	Frank "hesitates a lot when he pronounces..." (Researcher Notes, Day 1).
	Vocabulary	David "asks a lot of questions about the meaning of words" (Researcher Notes, Day 6).
Writing skills	Speed	Frank and David had finished their second essay in <i>Essay Punch</i> but Tina and Linda were still writing theirs. (Researcher Notes, Day 13).
	Knowledge of composing	Frank "wrote a few sentences, creating a simple outline on a piece of paper" (Researcher Notes, Day 2).
	Writing by hand/computer	"On a piece of paper, [Frank] wrote the main idea for each of the 3 body paragraphs and the conclusion" (Researcher Notes, Day 9).
	Creativity	The group's "organization skills and writing creativity were high average" (Instructor, Instructor Survey).
	Preferences for reviewing	"If I want to change something immediately, that doesn't work" (Linda, Posttreatment questionnaire).

(table continues)

Table 12 (continued).

Categories	Subcategories	Examples
Computer skills	Typing	David "was typing very slowly" (Researcher Notes, Day 5).
	Using computer peripherals	"The researcher showed [David] how to delete characters using the backspace key and move the cursor using the arrow keys" (Researcher Notes, Day 2).
	Using applications	Linda "uses keyboard shortcuts to copy, cut and paste blocks of text inside the input window" (Researcher Notes, Day 13).
Motivation	Purpose for studying English	David told the researcher that he was studying English because he wanted to be able to communicate in English with businesspeople who made business with his company (Researcher Notes).
	Feelings toward writing	
	Feelings toward writing with computer	

Logistics

A factor that affected not only instruction but also the research was the physical environment where class interaction took place. For the first four class meetings, the class met at a High-Tech classroom equipped with 32 computers, a touch-screen presentation system, and an LCD projector mounted on the ceiling. The room was very spacious, well-arranged, and furnished with comfortable chairs and computer desks. *Essay Punch* was installed on the network, which allowed participants to work at any computer in the classroom and their records were automatically updated on the server. On Day 5 of the study, the class had to move to a different classroom because the university started renovating the High-Tech classroom. Unfortunately, the conditions of the new classroom were almost unsuitable for teaching: it was dusty and cluttered with several old computers and monitors and had 12 usable computers positioned on desks arranged against a wall.

The technical staff that managed this lab could not install the software on the server and instead installed it on each computer. In the "stand-alone" installation, participants' records, and whatever they wrote during the day, were saved only on the computer that they used that day. To be able to continue from where they left off the previous class, participants had to sit at the same computer all the time because their records and whatever they wrote were not updated on all the computers. Besides being inconvenient for participants, a stand-alone installation complicated record management for the researcher. In the networked installation, the researcher could open the Teacher Program Manager (TPM) and access the records of all participants from any computer; however, in the stand-alone installation, the researcher had to open the Teacher Program Manager in each computer to access the records of the participant who had used that computer. This procedure meant that to consolidate data from one writing session, the researcher had to collect the records from each individual computer and then save them in Microsoft Excel.

Curriculum

The study lasted only six weeks, which limited what the researcher, the instructor, and the participants could accomplish in such a short period. The limited time available made it impossible to allocate class time exclusively to computer training. Different computer skills were taught when participants needed them in the course of the study. Also, because of the short length of the study, participants only wrote two essays in *Essay Punch*. The first essay, however, served to familiarize them with the majority of the program features. Despite having used the program once, when participants wrote the second essay in *Essay Punch*, they did not have sufficient time to use the corrections tools available in *Essay Punch*. The duration of the course did not only affect how much participants utilized *Essay Punch*, but also the amount of

instruction and practice that participants had on language skills. As the instructor commented on the Instructor Survey, the group "did not have the time to improve grammar."

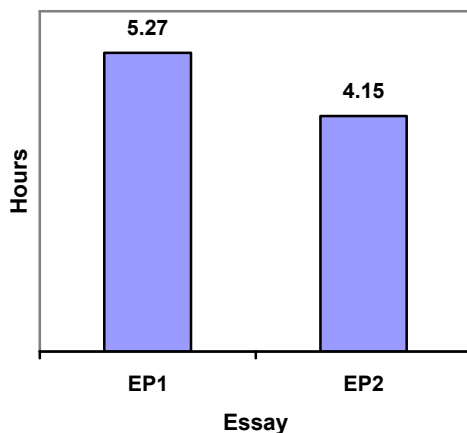
Time dedicated to writing *Essay Punch* essays was not even across essays or across participants. Participants wrote two essays in *Essay Punch* between May 26, 2004 and June 25, 2004, a total of 11 days. Each class meeting lasted 90 minutes but participants did not write in *Essay Punch* for the entire duration of the class. Class time was distributed between classroom instruction and writing in *Essay Punch*. The decision of how much time to allocate to each of them was made by the instructor during class. As a result, there were days when participants dedicated almost an entire class to writing in *Essay Punch* and also days when they used the software for only a few minutes.

On average, participants spent more time on the first essay than on the second essay written in *Essay Punch* (average time in EP1=5.27 hours versus average time in EP2=4.15 hours) (see Fig 10). They wrote the first essay between May 24, 2004 and June 14, 2004 and the second essay between June 14, 2004 and June 25, 2004. Even though the instructor assigned the starting and ending point of every writing session in *Essay Punch* for the entire group, net time writing in *Essay Punch* varied across participants (see Table 13). Of all participants, Frank spent the least amount of time (8.02 hours) but he was the most efficient user of *Essay Punch*. Except for a few exceptions when he got sidetracked, Frank always generated some type of written product whenever he was logged in *Essay Punch*. The second shortest time was recorded by David. The opposite of Frank, David was the least efficient user of *Essay Punch*; he spent a lot of time thinking before writing a sentence and when he was typing he did it very slowly. On Day 12, he looked unmotivated and told the instructor that his essay in *Essay Punch* was done (although the essay was noticeably short). Linda wrote for a total of 10.23 hours. She was very familiar with

computers and did not waste much time dealing with software issues-except the time when the researcher accidentally deleted her record. Tina dedicated more time than anybody writing in *Essay Punch* (10.46 hours) but this amount may not represent the exact time that she spent writing in *Essay Punch*. Twice her record was deleted from the program and any record of the time she had spent on brainstorming for the second essay also disappeared. One explanation for Tina having the largest amount of time could be that she was a very careful and detailed writer who devoted a lot time polishing what she had written.

Figure 10

Average number of hours spent by participants on each *Essay Punch* essay.



Differences in time spent by participants in *Essay Punch* may be explained by several reasons. First, the amount of time was calculated using data gathered by the Teacher Program Manager (TPM), a feature of *Essay Punch*. The TPM keeps a log of the time that users remain logged in the program without regard to whether they are active or idle. In the study, there were moments in which participants got distracted while they were logged in *Essay Punch*. On Day 6, for example, Frank started asking where he could buy a telephone. The instructor gave him the

name of a store in town and explained to him how to get there. He had difficulty understanding the directions and kept asking more questions. As the teacher spoke, the other participants stopped writing to listen to the conversation for about five minutes. Second, some participants may have chosen to log off the program when they were idle or when they had difficulties with the software but others may have remained logged on. On Day 10, Tina's work on her second essay in *Essay Punch* was deleted twice. Along with what she had already written, the program also erased her record on that essay. At the end of the class, Tina had accomplished nothing in *Essay Punch* and had wasted about an hour of possible writing time. Third, some participants simply did not have all the time they needed to complete their essays. At the beginning of class on Day 12, Tina and Linda had not finished writing their second essay in *Essay Punch* but Frank and David had completed theirs. The instructor allowed Tina and Linda to continue working on their essays while she conducted a speaking activity with Frank and David; however, the dialogues between the instructor and Frank and David may have interrupted Tina and Linda.

Table 13

Number of hours spent by participant in each *Essay Punch* essay.

	Essay		Total
	First	Second	
Frank	4.63	3.39	8.02
Tina	5.25	5.21	10.46
David	5.86	3.25	9.11
Linda	5.36	4.87	10.23

Another constraint was the poor integration of *Essay Punch* with the class curriculum. Warschauer's (1996) study found that students showed higher motivation when computers played an "integral" rather than a "peripheral" role in the classroom. *Essay Punch* had never been used to teach this course and integrating it into the class curriculum was a challenge. The course syllabus aimed to strengthen students' reading and writing skills and did not stipulate how and how much *Essay Punch* would be used in the class. There was no plan specifying how much time participants would spend on each essay or on each stage of the program and the decision of when and for how long students wrote in *Essay Punch* during a class session was made on the spot by the teacher. Because participants had to practice other language skills (e.g. reading and speaking), writing in *Essay Punch* was supplementary most of the time. Nevertheless, there were several occasions when the teacher planned instruction around a concept brought up by *Essay Punch*. For instance, the teacher told participants to stop writing when they saw "thesis statement" mentioned for the first time on the program. The next day, she taught a class on how to write a thesis statement before allowing participants to continue writing in *Essay Punch*. She proceeded in a similar fashion when *Essay Punch* introduced the topics "Brainstorming", "Organizing", "Outlining", and "Topic sentence".

An event that best illustrates the lack of planning took place at the beginning of the second *Essay Punch* essay. At the start of an essay in *Essay Punch*, users have to decide if they want to write an informative, descriptive, or persuasive essay. In the study, the teacher and the researcher decided that the first essay in *Essay Punch* would be of the informative type. Participants completed the first essay in *Essay Punch* in the middle of a class and the instructor moved on to assign the second essay. At that moment she decided that second essay would be a persuasive essay. The researcher had thought that participants would start writing another

informative essay the following day and he had not setup a class roster for a persuasive essay (*Essay Punch* requires that the teacher creates a class roster for each of the three types of essays). As a quick solution, the researcher asked each participant to add his or her name to a class. Having participants add their name was not a major issue because the program was not networked and each participant used the same computer all the time. However, the decision to write two different types of essays may have confounded the results.

The short time span of the course, the poor integration of *Essay Punch* into the course syllabus, and the way *Essay Punch* functions, made it difficult to train participants on basic computer skills and/or on *Essay Punch* at the beginning of the course. In the Demographics questionnaire participants were asked to rate their experience using computers. Frank, Tina, and Linda rated their proficiency with *Microsoft Word*[®] as "average" but David rated his as "poor". They were also asked to indicate if they could perform seven basic tasks on the computer. Frank and Linda indicated that they could perform six of them (except, "use grammar checker"), Tina that she could do all them, and David that he could perform only one ("Open an existing file"). It was realized then that David needed more help in using computers; however, it was not possible to schedule classes to train him exclusively on basic computer skills because time was limited and he had to participate in class activities planned by the teacher. Therefore, David received advice on how to perform certain computer tasks as he needed it. For example, he was shown how to save a file, how to copy text, and how to type certain characters on the keyboard whenever he need to do those tasks. He learned how to save and retrieve files, manipulate text in *Microsoft Word*[®], and use spell checker, but his keyboarding skills did not improve much: he typed slowly, constantly looking at the keyboard.

Frank, Tina, and Linda did not need special training on computer skills and because they were familiar with how Windows applications work they did not have much difficulty learning how to use *Essay Punch*. The few things that sometimes confused them were very peculiar features of the software (e.g. having to write one sentence at a time and not being able to edit at any moment). David, on the contrary, struggled with several program features (e.g. following directions, navigating through the program, and using spelling and grammar correction tools). Although the researcher introduced the software before participants started using it, participants did not become familiar with all the features of the software until they had written an entire essay. Thus, participants began writing the first essay in *Essay Punch* knowing very little about the software and continued to learn about it as they progressed through it. Unfortunately, to understand the full sequence of the program they had to complete an essay; an approach that could potentially confound the research results considering that participants wrote the first essay in *Essay Punch* at the same time that were being trained on it.

Software

Besides curricular factors, design issues and instructional approach of *Essay Punch* may have also played a role on the results. Even though *Essay Punch* is an application for the Windows platform, it does not have some of the standard features of other Windows applications. Participants complained that it was difficult to manipulate open program windows on the computer screen. *Essay Punch* does not display the "minimize", "restore", and "maximize" buttons which appear at the top right-hand corner of the screen on Windows applications. In addition, when *Essay Punch* is opened the program window covers the entire screen, thus hiding any other windows that may be minimized on the taskbar. One day the teacher wanted that students accessed www.dictionary.com as they worked on *Essay Punch* but it was not done

because the taskbar at the bottom of the screen was hidden and nobody in the class knew how to switch between programs without using the mouse. Later, Linda suggested that it was possible to display the "Start" menu by pressing the "Windows" key on the keyboard. In one of her comments, the teacher noted that *Essay Punch* lacked a drag and drop feature inside the "Essay Notepad" window.

Something that tended to confuse participants was the lack of flexibility of *Essay Punch*. Although the software purports to follow a process writing approach it stills compels users to follow a linear set of routines and steps. In a process writing approach users can move to any stage of the process at any time, but *Essay Punch* forced participants to complete one step before they moved to another. Reed (1996) cautions that some writing programs that contend to teach writing under a process writing approach tend to present the stages of the writing process in a linear fashion. In the course of the study, there were several times when participants struggled with the limited control that *Essay Punch* allowed them. One day Tina wanted to correct some sentences she had brainstormed but could not do it until she had written the body of the essay and was ready to edit it. Frank wanted to add another paragraph to the body of the essay but the program prompted him to write a conclusion. In more than one occasion, David wrote a long paragraph in the "Input" window but when he moved it to the "Essay Notepad" window the last sentences of the paragraph were cut off.

Perhaps what frustrated David the most, and caused some disappointment among participants, was that *Essay Punch* instructed participants to write one sentence at a time in the "Input" window. At the beginning, all participants had some difficulty following such directions and would end writing a full paragraph instead of a sentence. In writing a paragraph, the software prompted participants to write a topic sentence and then it would prompt them at least twice

more to add a supporting sentence. If participants wrote an entire paragraph at the first prompt (e.g. as David and Tina did), they ended up not having anything else to write at the second and third prompts. For the program to advance, they had to type anything, even nonsense, on the "Input" window and then press "OK". After a while, Frank, Tina, and Linda managed to do what the program asked them to do but David, continued having difficulties all the way to the end of the course. Not being able to follow the directions of the software may have hindered participants' performance in the essays, which would support Reed's (1998) findings that participants were able to write essays of better quality only if they understood and were capable of acting on the directions of the software.

Although the rigidity of the program may have had a negative influence on participants, it may have also served to guide participants in a precise direction. According to the teacher, "*Essay Punch* allowed students to start writing more quickly" (Instructor Survey). She also noted that the difficulty participants had not being able to correct anytime they wanted "wasn't necessarily a bad thing, it allowed students to think about their writing and then change it" (Instructor Survey). Some participants agreed that the step-by-step approach taken by *Essay Punch* helped them master what was important in learning to write. In the posttreatment questionnaire, Tina wrote: "I could easily make an outline and use effectively. I didn't confuse because we wrote step-by-step." Linda wrote, it "makes me not forget the steps and important points" (Posttreatment questionnaire).

Participants' Characteristics

In addition to logistic, curricular, and software issues, individual characteristics of the participants could have also influenced participants' writing performance. Participants had been assigned to the class based on their level of language proficiency but their language skills were

not homogenous. According to the teacher, at the beginning of the course she thought that the group had a low level of listening comprehension. The researcher also noted that Frank hesitated a lot when he spoke and pronounced English with a well-marked accent. Like Frank, David hesitated a lot and was frequently inquiring about the meaning of words. Linda and Tina spoke more fluently and with good pronunciation, but unlike Frank who was constantly asking questions or speaking in the class, they rarely spoke unless they were asked a question.

In the demographics questionnaire, Frank and Tina ranked their writing proficiency as "excellent" and David and Linda considered theirs as "good". In her assessment of participants' writing abilities, the teacher stated that their "organization skills and writing creativity were above high average" (Instructor Survey). From the beginning of the study, Frank gave signs that he had a method for writing an essay. Before he wrote each of the four essays he created on a sheet of paper an outline that usually included the first sentence for each of the paragraphs. In some of the cases, he also wrote down connecting words that he would use to transition between paragraphs. In the posttreatment questionnaire, Frank stated that he had his own idea on how to organize paragraphs and that he did not need *Essay Punch* to tell him how to do it. Tina complemented brainstorming in *Essay Punch* with brainstorming on paper. For example, before starting to write her second essay in *Essay Punch* she clustered ideas about the topic on a sheet of paper.

Another area of differences among participants was their computer skills. Frank, Tina, and Linda responded in the demographics questionnaire that they could perform six of the seven basic computer tasks presented to them. They also considered to have an "average" knowledge of *Microsoft Word*[®]. In the study, the three of them did not have any difficulty using computers (e.g., typing, opening and saving files, manipulating, and editing text). Among all participants,

Linda displayed the highest level of computer knowledge. She used keyboard shortcuts to copy, paste, and move text, and even provided an answer to a question that the teacher and the researcher had about *Essay Punch* (i.e. how to switch between two open programs in *Essay Punch*). David, on the other hand, had the lowest level of computer skills. He confided to the researcher that in his home country he did not have to type on computers because whenever he needed something typed his secretary did it for him. He was not very familiar with the English keyboard and tended to confuse the apostrophe (') with the crase (`) from Portuguese. On the second day of the study, the researcher showed him how to delete characters using the backspace key and also how to move the cursor using the arrow keys. One day he asked the teacher why some words in his essay were underlined in red. David expressed in the posttreatment questionnaire that at the beginning of the study he had more difficulties because of the computer.

Not only language and computer skills differed across participants but also their motivation for studying English and their feelings toward computers and toward writing with computers. Frank and Tina were studying English because they wanted to enroll as undergraduates at a University in the United States. Linda was an undergraduate student in Business Administration who returned to her home country two months after the end of the study. David was a business administrator who was studying English to improve his speaking ability to be able to communicate with businesspeople who did business with his company.

Participants were asked how they felt about writing and how they felt about writing with computers at the beginning and at the end of the study. In the demographics questionnaire, all participants expressed positive feelings toward writing. Frank, Tina, and Linda expressed that they loved to write and Frank said that he liked it (see Table 14). Frank's and David's responses did not change from pre- to posttreatment, but Tina's and Linda's did. In the demographics

questionnaire, Linda answered that she loved writing but in the posttreatment questionnaire she answered that she liked it. Although "Love it" and "Like it" were two different choices, they represented two different degrees of a positive attitude toward writing and it is possible that Linda interpreted them differently in each of the two surveys. Tina's response in the posttreatment questionnaire, however, represents a drastic change of feelings. In the demographics questionnaire she answered that she loved writing but in the posttreatment questionnaire she said that she disliked it. Although it is possible that several factors affected Linda's change of opinion, the most likely cause could be the problems that she experienced with *Essay Punch*.

Table 14

Participants' feelings toward writing and toward writing with computers.

	Condition	Essay	
		Pretreatment	Posttreatment
Frank	Writing	Love it	Love it
	Writing with computers	Love it	Love it
Tina	Writing	Love it	Dislike it
	Writing with computers	Like it	Dislike it
David	Writing	Like it	Like it
	Writing with computers	Dislike it	Dislike it
Linda	Writing	Love it	Like it
	Writing with computers	Like it	Like it

Tina showed a change of feelings not only toward writing but also toward writing with computers. In the demographics questionnaire, she answered that she loved writing and she liked writing with computers but in the posttreatment questionnaire she expressed that she disliked both of them. The most plausible explanation for this change in her responses could be attributed the negative experiences that Tina had with *Essay Punch*. Linda's feelings toward writing changed from "Love it" to "Like it" from pre- to posttreatment. Despite the slight change, Linda's response was still positive. Frank, David, and Linda did not show any change of feelings toward writing with computers from pre- to posttreatment. Frank maintained that he loved writing with computers, David that he disliked it, and Linda that she liked it. It is no surprise that since the beginning of the study David felt negatively about writing with computers considering that he had almost no computer skills. He gained some familiarity with computers during the study but he also experienced difficulties with the software several times. Despite how they felt about writing, all participants answered that *Essay Punch* helped them improve their writing. Tina and Linda both said that *Essay Punch* improved their writing a lot; Frank and David responded that it helped them improve their writing to some extent.

Summary

Results of the study indicated that quality ratings and word totals declined from pre- to posttreatment essay. Similarly, three participants' quality ratings decreased from the first to the second *Essay Punch* essay. All participants, except Linda, attained their highest quality rating on the first *Essay Punch* essay. They all wrote the largest number of words on the first *Essay Punch* but also spent on this essay the largest amount of time dedicated to any of the essays. Results of the study also showed differences on quality ratings among participants: usually Frank achieved the highest quality rating, Tina and Linda an average rating, and David the lowest. The length of

essays also varied across participants (e.g., most of David's essays were much shorter than other participants' essays). Unfortunately, despite efforts of the researcher to control time on task, participants did not spend the same amount of time on some of the essays (i.e. first and second *Essay Punch* essays). In the demographics questionnaire, the four participants expressed that they either loved or liked writing with computers. However, in the posttreatment questionnaire Tina changed her response to "dislike it". In the demographics questionnaire Frank, Tina, and Linda also expressed a positive feeling toward writing with computers. In contrast, David expressed that he disliked it. In the posttreatment questionnaire Frank and Linda were consistent in their positive response but Tina's response changed from positive to negative. David's response was a consistent "dislike it" in both the pretreatment and the posttreatment questionnaires.

In an effort to go beyond just presenting and discussing qualitative results, qualitative data were also collected during the study. The analysis of these data presented each participant as an individual with different characteristics, skills, and limitations. It also discussed each participant's experience during the study and a series of factors (i.e. logistics, curriculum, software, and students' skills) that may have influenced participants' performance on the essays.

CHAPTER V: CONCLUSIONS

The purpose of the current study was to investigate the effects of process writing software on the writing produced by ESL students enrolled in an advanced reading and writing class. The study aimed to answer two research questions:

1. What is the effect of process writing software on the quality of writing produced by ESL students enrolled in an advanced reading and writing class?

2. What is the effect of process writing software on the length of writing produced by ESL students enrolled in an advanced reading and writing class?

In the planning phase of the study, the researcher was expecting to include at least 15 participants in the study; however, on the first day of classes he found out that the class he was planning to use was comprised of only five students. Four of the five students were over 18 years of age and agreed to participate in the study. The fifth student was under 17 years of age and was not involved in the study. For the study, participants' real names have been omitted and replaced with the names Frank, Tina, David, and Linda.

During the study, participants wrote a total of five essays: Pretreatment essay, written in *Microsoft Word*[®] 2003 (Pre); Essay 1 written in *Essay Punch* (EP1); Essay 2 written in *Essay Punch* (EP2); Take Home, written by hand or on computer (TH); and Posttreatment essay, written in *Microsoft Word*[®] 2003 (Post). A quality rating and word total were calculated for each essay. From the analysis of data, the researcher formulated the following conclusions:

1. Posttreatment quality ratings were equal or lower than pretreatment quality ratings.
2. Most posttreatment essays had fewer words than pretreatment essays.

3. The fact that participants obtained their highest quality rating in one of the two *Essay Punch* essays is congruent with previous research studies that found a significant effect of process writing software over word processing software or no software.
4. This study is in line previous research on the effect of word processors in writing (some studies found a significant improvement in students writing after using word processor and others did not find any significant improvement).
5. The writing performance of the participants may have been affected by the following factors (a) The classroom setting, (b) poor integration of the software with the curriculum, (c) short duration of the study, (d) uncontrolled events at the time of writing, (e) the characteristics of the software, and (f) participants' characteristics and goals for studying English.

Posttreatment quality ratings were equal to or lower than pretreatment quality ratings; however, all participants obtained their highest quality rating on one of the two essays in *Essay Punch*: Frank, Tina, and David on the first essay and Linda on the second. In addition, the first *Essay Punch* was each participant's longest essay. The fact that participants received their highest quality rating on one of the two *Essay Punch* essays (Frank, Tina, and David on EP1; Linda on EP2) is congruent with previous research that found that students using process writing software produced essays of better quality (Powell-Hart, 1992; Rowley, Carlson & Miller, 1998) than students who used word processing software or no software at all. Unfortunately, this suggestion can be questioned on the grounds that participants spent at least four hours writing in the process writing software but only 50 minutes in the word-processed essays. In addition, participants had the opportunity and the time to revise the essays written with process-writing software but not the essays written with word processor.

With the exception of Linda's posttreatment essay--which contained one more word than her pretreatment essay-- participants' posttreatment essays contained fewer words than their pretreatment essays. The shorter length of three of the four participants' posttreatment essays may suggest that *Essay Punch* had a negative impact on the writing ability of the participants. However, results in the posttreatment writing session may have been influenced by factors that could not be controlled, or were not controlled well, during the writing sessions. The pretreatment and posttreatment were written using word processor in a time-constrained situation. The researcher had planned to allow participants to write for the same amount of time during the pretreatment and the posttreatment essays but during the posttreatment essay there were several situations that may have reduced time on-task. In addition, it is not possible to determine whether, in such a short period of time, *Essay Punch* made a sufficient impact on participants' ability to determine their performance on the posttreatment essay.

Even though this study dealt with process writing software, its results are congruent with Rosenbluth's (1990) findings in her review of several studies of the impact of word processing and process writing on the quality of students' writing in which she found that “the results appear[ed] almost evenly split between those studies that demonstrate a quality increase and those that do not” (p. 22). Rosenbluth's findings help better understand the results of the current study. As it happened with word processors and process writing software, it is probable that of all the studies dealing with the effect of process writing software on the quality of students' writing some will report a positive effect while others will report a negative impact. This variation in the results could be due to the choice of research strategies employed by the researchers in the different studies.

The current study faced some limitations (e.g., small sample, short duration, and uncontrolled variables); thus, it does not claim that these findings are applicable to other populations of ESL students. Instead, it presents those results as the distinctive experiences of the individuals involved in the study. In addition, it does not contend that changes in quality ratings and length of essays are due exclusively to the process writing software (i.e. *Essay Punch*) used in the study. Besides *Essay Punch*, there were a series of logistic, curricular, technical, and individual factors that determined each participant's writing performance.

One factor that affected not only instruction but also the research plan was the classroom setting. The group began meeting at a well-equipped High-Tech classroom but after a few classes it moved to a second classroom that did not have the same resources. Participants, especially Tina, looked uncomfortable working on the dusty desks, until the researcher performed a complete dusting and cleaning of the room and the computers. In addition, in the second classroom the software had been installed using a "stand-alone" installation. In this type of installation, each participant had to sit at the same computer every time he or she wrote something because his or her work was saved only on that computer. A stand-alone installation not only hindered participants' choice to sit wherever they wanted but it caused a big inconvenience for the researcher. To gather the records of all the participants after a writing session, the researcher had to access the Teacher Program Manager (TPM) on each computer and then consolidate the records of the four participants into a single file.

Lack of advanced planning resulted in poor integration of *Essay Punch* into the course curriculum. The course syllabus did not include *Essay Punch* as an integral part of instruction (e.g., it did not specify beforehand how class content would be intertwined with tasks in *Essay Punch*, which topics students would write about, and how much time would be spent in *Essay*

Punch each day). There was no plan detailing which tasks in *Essay Punch* participants would complete each day and several decisions were made spontaneously. For example, at any point in the class the instructor decided when students began and ended writing in *Essay Punch*. This lack of planning sometimes caused confusion among participants who did not know what they were supposed to do. In addition, because some useful features of *Essay Punch*, such as the grammar lessons, were not addressed in lesson plans, participants used them a little, or not at all. Some of the reasons for the poor integration of *Essay Punch* were that the course did not focus exclusively on writing but also on reading, *Essay Punch* had never been used to teach this class, and the course only lasted six weeks.

The short duration of the study limited participants' time on task in *Essay Punch*. The aim of the course was to improve students' reading and writing but it only lasted six weeks. Participants wrote in *Essay Punch* for approximately 10 out of the 24 contact hours. They only completed two essays in *Essay Punch* but on average they spent more time writing the first than the second essay. The longer time dedicated to writing the first essay could be one reason why three participants scored better on the first essay than on the second essay in *Essay Punch*. Despite efforts from the researcher and the instructor to give participants the same amount of time using *Essay Punch*, some participants spent more time than others using it. Frank, for example, wrote in *Essay Punch* for the least amount of time but he was a very efficient writer: he usually developed an outline on paper before typing his essay on the computer, and when he started typing he did not hesitate or pause.

Differences in time allocated to writing each essay influenced quality rating and length of essays. Usually, essays that took more time to write received higher quality scores and contained more words. For example, most participants obtained their highest score on the first essay in

Essay Punch but they also spent the largest amount of time writing this essay. Although the researcher planned 50 minutes of writing time for each the pretreatment and the posttreatment essays, it is possible that participants did not spend the same amount of time on each essay. Both essays were written during the first 50 minutes of the class; however, participants may have spent less time on the posttreatment. This happened because the day the pretreatment was written participants were not distracted and were probably eager to start the course. The posttreatment essay was written on the last day of the class and the instructor had planned to take students out for a coffee to celebrate the end of the course. While participants wrote the posttreatment essay, the instructor was still making oral announcements to the class. At the same time, students knew that they had to complete the essay quickly because they were going out. They turned in their essays but they may have not had enough time to complete them. In the view of Rater 2, David's posttreatment essay had "no beginning and ending" and according to Rater 3, Linda's essay was "not finished".

Most of the time, *Essay Punch* takes participants through a rigid linear sequence. *Essay Punch* takes users step-by-step from prewriting to publishing an essay but it gives them little control over navigation at certain stages of the process. From "Listing" to "Writing the conclusion" of an essay, users must complete one step before they move to the next. Also, users cannot make corrections to text they have already written in a previous task. Although *Essay Punch* gives users the option to complete or skip some optional tasks (e.g. add extra headings to the outline and add more sentences to a paragraph, and choose not to use all the information generated during brainstorming), it still requires that users follow the program routines. Such approach may maintain users focused on a specific task but it fails to implement a recursive process of writing that allows writers to revisit any stage of the writing process at any time.

Participants indicated that *Essay Punch* impinged on their ability to edit text whenever they wanted.

Participants had little control to manipulate program windows and other elements on the computer screen. *Essay Punch* windows were anchored on certain areas of the computer screen and could not be moved or resized in the same way as in other Microsoft Windows applications. Sometimes, participants wanted to resize an open screen window but they found that the usual methods for doing so--dragging them by their corners or edges--did not work. In other cases, they wanted to minimize a window but *Essay Punch* lacked the Minimize, Restore, and Close buttons that appear on the upper right-hand corner in most Windows applications. Opening other applications and switching between them while *Essay Punch* was open was also difficult because when *Essay Punch* was open it covered the entire screen. Manipulating chunks of text was not easy either. Moving, cutting and pasting, and editing paragraphs could be done only at specific points of the program sequence and following certain steps.

Difficulties participants encountered with the software may have contributed to their negative responses toward writing with computers or to lowering their motivation toward writing. In the demographics questionnaire, Tina responded that she liked writing with computers but in the posttreatment questionnaire she answered that she disliked writing with them. She did not have many difficulties with *Essay Punch* but the few times she did could have been demoralizing. In one class, *Essay Punch* did not save her work and she had to start over her essay twice. David's pretreatment essay was not as short as his last essays. He had difficulties keyboarding and following the directions of the software and he may have thought that it was not worth to continue struggling with the software. Not only his computer skills but also his goals for studying English hindered David's motivation. He was studying English to improve his speaking

ability and learning to write academic essays was not one of his priorities. In addition, keyboarding on the computer was not a skill that he needed in his professional or personal life. In one occasion he confided to the researcher that whenever he needed something typed his secretary did it for him.

Frank, who obtained the highest quality rating in four of the five essays, may have been a better writer from the onset of the study. His pretreatment essay was well-organized, concise, and on target, which would indicate that he already had a good foundation of how to compose an essay. To start writing each essay, he first created an outline that included topic sentences of paragraphs and sentence connectors. Of the five essays, four of his essays received the highest score but only one contained the largest number of words. The fact that he was writing essays of better quality using fewer words supports the notion that he was a more accomplished writer.

Implications for Instruction

Despite the results of this study, it is not suggested that Essay Punch is ineffective or that it, or any other process writing software package, should not be used for teaching writing to ESL students. The researcher believes that better implementation of the software would more likely yield positive results but before a decision to incorporate process writing software into the classroom is made, the following aspects need to be considered:

1. The instructor needs to ascertain the availability of the required infrastructure and technology.
2. The instructor must be familiar with the content and structure and of the program and each individual activity.
3. The instructor needs to be able to manage the administrative tools of the software.

4. The software should be incorporated as an "integral" component of instruction.
5. The instructor needs to set up the software and class rosters in advance.
6. Process writing software should be used for a considerable amount of time so students can learn it and then use it with confidence.
7. Students with limited computer skills should receive computer training, but if it is not possible to train them and they prefer to write by hand, they should be allowed to do so.
8. ESL programs should explore students' goals for studying English and help those students develop the skills that will best allow them achieve those goals.
9. The instructor needs to assess students' writing performance in *Essay Punch* to determine whether use of the software should continue.

Before starting to use *Essay Punch*, or any other process writing software, the instructor needs to ascertain that the infrastructure and technology needed for using the software are available. First, the instructor needs to secure a classroom for the full length of the course. Some foreign language departments have a CALL lab that instructors can reserve for class instruction but others do not have one and instructors have to request computer classrooms that belong to other departments in the school. If the number of computer classrooms is limited or if they are in high demand, ESL instructors may be unable to gain access to a computer classroom. Second, computers used should be capable of running *Essay Punch* and saving files to some type of portable digital media (e. g. floppy or zip disks, thumb drive, or CDs). This may not be a major issue considering that *Essay Punch* has minimal hardware requirements and any computer used in the classroom meets those requirements. Third, students should have access to a printer for printing hard copies of their essays. Fourth, if the infrastructure allows it, a "networked installation", where *Essay Punch* is installed on a server and shared on client computers, should

be utilized instead of a "stand-alone installation". In a networked installation students can work at any computer and their work and records are automatically updated on the server. This type of installation also gives the instructor access to students' records from any computer on the network.

To use the software successfully, the instructor must be familiar with the content and structure and of the program and each individual activity. This familiarity with the software should also cover aspects such as (a) the types of essays and the topics available in *Essay Punch*, (b) the concepts or writing strategies introduced in the program, and (c) the writing aids (e.g., grammar lessons and spell-checker) integrated in the software. The instructor needs to select the type of essay and the topic in advance and also train students on the conventions of such type of writing before they are asked to write a complete essay. The instructor has to know at which point of the program sequence a writing strategy or concept is introduced (e.g., thesis statement during pre-writing). In addition, the teacher should know which grammar concepts are discussed in each of the short grammar lessons presented in *Essay Punch*. The instructor could allocate more time to practicing the concepts of some of those lessons or may just encourage students to access those lessons that she or he considers more important (in this study, participants rarely accessed those grammar lessons, although they did use the spell-checker).

Besides her or his understanding of the instructional aspects of the program, the instructor should have the technical knowledge to manage the software efficiently. She or he should know how to (a) to install the software in a "stand-alone" mode, (b) access program folders and files on the local computer, (c) add classes and add/delete students, (d) interact with students using comments, (e) navigate the program, and (f) save and export students' work and records.

For *Essay Punch* to be effective, the course syllabus needs to incorporate *Essay Punch* as an "integral" part of instruction. It should include clear details on (a) how writing in *Essay Punch* will be intertwined with regular classroom instruction, (b) what essays students will write, (c) how much time they will spend writing each essay, and (d) when and for how long students will use *Essay Punch* in each class.

In the planning phase, the instructor needs to make provisions for a flawless operation of *Essay Punch*. She or he should set up class rosters in advance and eliminate menu options that may confuse students. For example, the buttons "New Student" and "Add Class Codes" should be removed from the students' log in screen. The instructor needs to make sure that the completed essays can be exported to *Microsoft Word*[®] with no problems. Also, the instructor may want to ensure that students have access to a printer for printing their final essays.

Students should use *Essay Punch* for a longer period of time to gain some benefit from using the software. Students should write at least two essays of the same type (e.g. Information), but if the goal is that they practice the three types of essays (e.g. information, description, and persuasion) they should write at least six essays. Because each essay type entails not only different writing conventions but also comprises different activities in *Essay Punch*, the first essay in each of the types should be aimed to familiarizing students with the process of writing such type of essays.

Participants with limited computer skills should also be trained on basic computer tasks. At the beginning of the course, the teacher should assess the level of computer skills of students and have one or two computer training classes for those who need it. Unfortunately, if some students lack keyboarding skills, one or two days of training may not be enough to turn them into

good typists. If those students feel that keyboarding hampers their ability to write and they can write better by hand, the teacher may consider allowing them to write their essay by hand.

English as a Second Language Instruction should match the goals and objectives of the learners. Although the goal of most students enrolled in ESL programs is to reach a proficiency level that meets the English language requirements for admission specified by universities in the United States, there are a few students like David whose goal for studying English is learning just enough to communicate in business situations. Students like David would benefit more from enrolling in a program (e.g. language for specific purposes) or a class (e.g. conversation class) that addresses their particular needs than in a class where all the language skills are taught. Even though the decision to enroll in a program is made by students, ESL programs or instructors could explore students' goals for studying English and based on their findings try to help students attain those goals.

The instructor needs to assess students' writing performance in *Essay Punch* to determine whether use of the software should continue. The instructor could, for example, assess the quality of the essays that students write using *Essay Punch*. In addition, the instructor could have conversations with students to discuss their experiences using the software. If the quality of the essays does not improve, or if students report constant difficulties with the software, the instructor must be ready to stop using the software.

Implications for Research

To be able to make more generalizations from data, more participants must be involved in the study. The current study involved only four participants who may not have been representative of the population of ESL students. Given the small sample size, it was not possible to run statistical tests and make generalizations to other groups of ESL students. A larger sample,

on the contrary, would be more representative of a typical ESL group and would produce enough data for making conclusions that can be generalized to other populations of ESL students.

A study of the effect of *Essay Punch* on ESL students' writing needs to be conducted for a longer period of time. One of the implications for instruction stated that students need to use *Essay Punch* longer if they are to benefit from it. Similarly, a study of the impact of *Essay Punch* on students' writing should be long enough to allow students to master all the features of the software and write a variety of essays with it.

The researcher needs to get involved in planning the syllabus of the course. Before preparing the syllabus of the course, both the researcher and the instructor should be very familiar with *Essay Punch*. It is paramount that the researcher be confident with the software to be able to anticipate and answer participants' questions. In planning the syllabus they need to examine issues such as how *Essay Punch* can be best used to meet course objectives, how *Essay Punch* activities will be integrated with regular classroom instruction, and how much participants will use *Essay Punch*. The researcher should have a thorough understanding of the course syllabus as well as of individual lesson plans. The course syllabus should be followed closely, avoiding spontaneous instructional decisions that may conflict with the research plan and ultimately contribute to invalidate research results.

The researcher must set up the software for use in advance. The researcher should create class rosters for each of the three types of essays before lessons start. He or she should also check that every student can log into the program and can save his or her work without difficulties. To do so, the researcher may log in as each participant, complete some of the tasks, exit the program, and then open it again to verify that it has saved his or her work. From the

researcher's experience, it is perhaps not recommended to modify records by accessing program folders on the hard drive because essential files may accidentally be deleted.

A study of the effects of *Essay Punch* on ESL students' writing should also include posttreatment interviews aimed to explore participants' feelings toward the software. In this study, participants were asked two questions about their feelings toward writing and toward writing with computers but no posttreatment interviews were conducted. Posttreatment interview data could have helped explain some of the issues raised by qualitative results (e.g. the short length of David's essays). In a posttreatment interview participants could be asked, for example, what they liked and did not like about the software, what was easy/difficult, which features of the software worked or did not work, and how they felt at the beginning and at the end of the study. If it is not feasible to interview all participants in the class, the researcher should interview at least some of them.

Implications for ESL writing software design

Software publishers should conduct research to investigate whether a step-by-step approach may become too rigid that it impinges on students' cognitive processes as they write. Participants in this study had difficulty getting accustomed to the idea of writing one sentence at a time. They also complained several times that *Essay Punch* did not allow them to correct mistakes whenever they wanted. Some of them also felt that *Essay Punch* locked them into a predefined structure (e.g. number of paragraphs in an essay and paragraphs of certain length).

Software publishers may also research how the software design and interface affect users. *Essay Punch* windows do not have some of the standard features of a typical Windows application and cannot be manipulated easily. They could, for instance, explore the possibility of giving users more control over the placement of program objects on the computer screen.

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APPENDICES

Appendix A: Demographics Questionnaire

Demographics and Familiarity with Computers questionnaire

1. What is your age range?

_____ 17-20 _____ 21-24 _____ 25-28 _____ 29-32 _____ 33+

2. What is your profession (or occupation)?

3. What is your first (native) language?

4. What other languages do you speak?

5. What is your education level?

_____ High School _____ Undergraduate _____ Graduate

6. How long have you been studying English?

_____ Years _____ Months

7. How long have been in the USA or any other English-speaking country?

_____ Years _____ Months

8. When you write in your native language, how would you rate your writing?

_____ Excellent. _____ Good. _____ Average. _____ Poor.

9. How do you feel about writing in your native language?

_____ I love it _____ I like it _____ I dislike it _____ I hate it

10. How long have you been using computers?

_____ Years _____ Months

11. How proficient are you using *Microsoft Word*[®]?

_____ Excellent _____ Good _____ Average _____ Poor

12. Which of the following can you do in *Microsoft Word*[®]? (Please check all that apply).

<input type="checkbox"/>	Create a new file	<input type="checkbox"/>	Save a new file
<input type="checkbox"/>	Open an existing file	<input type="checkbox"/>	Copy and paste text
<input type="checkbox"/>	Use spell checker	<input type="checkbox"/>	Move text and paragraphs
<input type="checkbox"/>	Use grammar checker	<input type="checkbox"/>	

13. How do you feel about writing with computers? (Please check one)

I love it I like it I dislike it I hate it

14. When you write a research paper, how do you prefer to do each of the following activities?

(Please check one in each row).

	By hand	On the computer
Brainstorm ideas to come up with the topic	<input type="checkbox"/>	<input type="checkbox"/>
Create an outline of the paper	<input type="checkbox"/>	<input type="checkbox"/>
Write the first draft	<input type="checkbox"/>	<input type="checkbox"/>
Organize the content of the essay (add, delete, and move the paragraphs)	<input type="checkbox"/>	<input type="checkbox"/>
Review grammar and spelling	<input type="checkbox"/>	<input type="checkbox"/>

Appendix B: *Test of Written English Guide*

Test of Written English Guide

<http://www.ets.org/Media/Tests/TOEFL/pdf/tweguid.pdf>

Material selected from TOEFL *Test of Written English Guide*, Educational Testing Service, 2004. Reprinted with permission of Educational Testing Service, the copyright owner.

Appendix C: Posttreatment Questionnaire

Posttreatment Questionnaire

1. How do you feel about writing in your native language?

I love it I like it I dislike it I hate it

2. How do you feel about writing with computers?

I love it I like it I dislike it I hate it

3. How did *Essay Punch* make writing easier?

3. How did *Essay Punch* make writing more difficult?

4. How much did *Essay Punch* help you improve your writing skills?

Nothing A little Some A lot

Please explain

Appendix D: Instructor Survey

Instructor Survey

1. How would you rate the level of writing proficiency of each group at the beginning of the course?

Spring group:

Summer group:

2. How homogenous was each group in terms of language proficiency?

Spring group:

Summer group:

3. Please compare the level of interest and effort that each group demonstrated in the course?

Spring group:

Summer group:

4. How would you rate the level of writing proficiency of each group at the end of the course?

Spring group:

Summer group:

5. How much did *Essay Punch* help improve participants' writing skills?

6. Is there anything else you would like to add?

Appendix E: Script for the Study

Script for the Study

Good morning (afternoon). Thank you for agreeing to participate in my study. The goal of my research is to investigate how process writing software affects the quality (holistic score) and length (total number of words) of the writing produced by ESL students. The information collected will be used for my doctoral dissertation.

I want to point out several things before we start:

Your participation is entirely voluntary and you do not have to respond to every item or question;

Your responses will remain anonymous and confidentiality will be maintained;

Neither your class standing, visa status in the United States, nor grades will be affected by refusing to participate or by withdrawing from the study.

Thank you for agreeing to participate in this study.

Appendix F: Essay Topics

Essay Topics

Pretreatment essay: What do you tell someone who is moving to your country?

Essay 1 (Information, topic 1): One of your friends knows everything about dolphins. Another can sing all the songs the Beatles ever wrote. Almost everyone has an interest, talent, or hobby that makes him or her an 'expert' in some area.

Describe an activity or area about which you are especially knowledgeable.

Essay 2 (Persuasion, topic 1): Some members of the school board in your community have recommended that all students be required to do community service each semester. Students are invited to express their opinion, in writing, for or against required community service.

Essay 3 (Take home typed in word processor): Almost everyone likes to go the movies, as well as watch films at home on VCR or DVD. Write about a movie that taught you something, that is your favorite, or that you like to watch over and over again. Give reasons why this film is important to you.

Posttreatment essay: A friend you have met at the IEP is going to visit your home country for a few weeks. Tell your friend how to prepare for the visit and what he or she should see or do in your home country.