

EFFECTS OF TECHNOLOGY-ENHANCED LANGUAGE LEARNING ON SECOND  
LANGUAGE COMPOSITION OF UNIVERSITY-LEVEL  
INTERMEDIATE SPANISH STUDENTS

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Today's global culture makes communication through writing in a foreign language a most desirable tool to expand personal and professional relations. However, teaching writing is a complex, time-consuming endeavor in any language. Foreign language teachers at every level struggle to fit writing into an already full curriculum and need the most effective methods and tools with which to teach. Technology may provide a viable scaffold to support writing instruction for teachers and students.

The purpose of this research was to determine any benefits of weekly/structured, in-class, computer-assisted grammar drill and practice on the composition quality and quantity of intermediate university Spanish learners. A related purpose was to determine whether students who participated in such practice would access a computer-based writing assistant differently during writing than students without the treatment. The research design was a nonequivalent groups pretest-posttest design. Fifty-two subjects' compositions were graded with both holistic and analytic criteria to analyze composition quality and quantity, and statistical analyses assessed interactions of treatment and effects. The computer-based *Atajo* writing assistant, which could be accessed during composition, had a logging feature which provided unobtrusive observation of specific databases accessed by each student.

There were no statistically significant differences found between the two groups in overall composition scores or in subscale scores. Improvements across time were observed in composition performance for both the experimental and control groups. The implementation of

computer-based grammar and vocabulary practice did show a small to moderate positive effect; that is to say, students who received weekly, structured computer grammar and vocabulary practice had higher scores for composition quality and quantity on the posttest measure and accessed the databases less than the control group. The consistent positive trends in the composition data results intimate that over a more extended period of time, computer-based grammar instruction might enhance the quality and quantity of written composition in the foreign language classroom.

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## CHAPTER 1

### PURPOSE, BACKGROUND, AND HYPOTHESES OF STUDY

The purpose of this study was to examine the effects of technology-enhanced language learning on university-level intermediate Spanish students' composition skills in the second language (L2) in order to identify and to describe the possible benefits of grammar computer drill and practice on the writing of intermediate Spanish students. Specifically, the treatment was the use of a grammar and vocabulary practice software program (*Spanish Partner*) and a writing assistant program (*Atajo*). The goal of this study was to determine whether or not students who are provided scheduled sessions to practice grammar skills using *Spanish Partner* software access a writing assistant software program differently than students who are not provided regular opportunities to practice grammar skills with *Spanish Partner* software and whether said practice improves their composition-writing ability. This study investigated the differences in student performance on composition quality and quantity for students in a technology-enhanced instructional approach that incorporated 30 minutes minimum per week in a lab setting during class time and those who received traditional instruction in the classroom.

There were no statistically significant differences between the experimental group and the control group on composition quantity and quality. However, results of this study indicate that there were improvements over time in composition performance for both the experimental and the control groups. Students in the experimental group accessed the databases of the *Atajo* writing assistant less on the final composition than the control group and showed greater gains in composition quality. The treatment of grammar practice with *Spanish Partner* showed a small to

moderate effect from pretest to posttest indicating that the treatment produced some gains in the experimental group compared to the control group. These results may encourage a shift in the curriculum to include more writing in practice and assessment and the need to maximize the appropriate use of technology in language learning.

### Background of the Study

Today our worlds (both global and local) are increasingly culturally and linguistically diverse. Being able to communicate in a foreign language expands the possibilities for expressing oneself to others to create positive personal and professional relationships. Administrators and educators at colleges and universities have recognized this increasing diversity and responded by “internationalizing” their curricula. One of the most obvious places to begin is with the inclusion and strengthening of foreign or world language offerings with the belief that the study of world languages can enhance an individual’s ability to communicate effectively with others and be a contributing and productive member of the world community (Frantz, 1996; Weatherford, 1986). Thus, numerous institutions of higher education require study of a foreign language for admission or as a degree requirement for graduation as a result of this globalization of the curriculum.

In foreign language education circles the tendency in recent years has been to move in terminology from “foreign languages” to “world languages.” This highlights the multicultural and diverse nature of language use and study in the United States. In other words, Spanish, for example, is not “foreign” to our shores. Although many people continue to utilize the more familiar term “foreign languages” (as evidenced by U.S. Senate Resolution 170 declaring 2004 and 2005 “Years of Foreign Language Study” (Morrison, 2003)), promotion of the celebration

by the American Council on the Teaching of Foreign Languages (ACTFL) refers to it simply as “The Year of Languages.”

Leadership in the United States has consistently supported language study on paper and verbally (if not always in funding). The National Governors Association has repeatedly called for better second language skills. Indeed foreign languages were included in Goals 2000: Educate America Act (Goals 2000, 1994). Goals 2000 encouraged a strengthening of the standards movement and a measurement of what every child should know and be able to do. Under the No Child Left Behind Act of 2001 (NCLB Act) foreign languages continue to be emphasized and are considered a core academic subject. In comments to the ACTFL Annual Convention in 2003, Secretary of Education Rod Paige stated:

Foreign language instruction should be part of every child’s education. A language is more than sounds and syntax: it is a culture, a way of thinking, and a perspective on the world. Each language is a precious resource that must be studied, used and preserved precisely because a language opens the mind to new possibilities. The study of language is the study of life, literature, history, and thought. It is nothing less than the study of our world and ourselves. (Paige, 2003)

From a humanitarian perspective, the study of world languages is an avenue for global understanding and, perhaps, the lessening of national security concerns through improved communication amongst people from different cultural groups (Pratt, 2002). Appointed president of Brown University in 2001, Ruth Simmons, the first African American to lead an Ivy League institution, chose to study languages in the sixties as a way of overcoming racial ignorance. She has “argued persistently in favor of language study as an essential element of any long-term strategy for abating conflict and sustaining peace” (Simmons, 2004, p. 682). The cross-cultural

ability of communicating in a foreign language is thus clearly beneficial at many levels, personal and professional.

There are also economic, social, and academic benefits to the mastery of a second language, including job advancement (Morris, 2002). In various job growth areas such as global marketing, the ability to read and write one or more foreign languages is particularly desirable. In light of this, postsecondary foreign language programs are placing an increased emphasis on the expression and production of language. While communication through oral language proficiency has been a recent focus of language instruction, there is an increasing need for second language learners to become more fluent in their written expression as there are more employers and licensing agencies who look for assurances and documentation of these skills (Swaffar, 1998). Thus it is essential to assess the communication skills of second language learners and specifically the writing ability of these learners in order to determine the students' level of language acquisition and fluency.

#### *Communication within the Standards Movement*

Education in the 21<sup>st</sup> century is more standards-driven than ever before, and foreign language education has not escaped the wave. The ACTFL Proficiency Guidelines, originally published in 1986, were a product of grants from the U.S. Department of Education. Intended to be used for global assessment of language ability, the Proficiency Guidelines provide a generic rubric of skill levels for speaking, listening, reading, and writing from novice to superior (Stansfield, 1992). Ten years later, in 1996, the National Standards for Foreign Language Education (National Standards) emerged to define what students should know and be able to do in foreign language education at different educational levels. While still broad, the Standards speak more specifically to curricular aims. They are organized around five main goals that focus

on (a) communicating in the target language, (b) understanding the target culture, (c) connecting with other disciplines and acquiring information through the target language, (d) comparing the target language and culture with one's own, and e) being able to participate in a global community (Standards, 1999). While the 5 Cs—Communication, Culture, Connections, Comparisons, Communities—are represented as interlocking rings, implying some degree of equality of importance and interdependency, communication is at the heart of second language study whether that communication is spoken, written or read.

When first published, the Standards did not portray the reality of the day in language classrooms, but a vision for the future of language study in the United States. While the original intent was to provide a framework for K-12 classrooms, benchmarks for grades 4, 8, 12, and 16 were included in the language specific Standards published in 1999. Professional language organizations such as ACTFL, Modern Language Association (MLA) and the American Associations of Teachers of the various foreign languages (AATs) have encouraged their usage at levels K-16; however, faculty in colleges of arts and sciences or humanities have been slow to align the curriculum to the Standards. The Standards have been utilized in schools and colleges of education as part of new teacher preparation, and the Standards have been employed to operationally define assessment for reviews by National Council for Accreditation of Teacher Education (NCATE) and Southern Association of Colleges and Schools (SACS). Thus, the disconnect between the high school and university philosophies for foreign language study and the corresponding curricula continues.

#### *Foreign Language Learning and Second Language Acquisition*

Language acquisition potential is optimal during the elementary years (Ackerman, 2004; Curtain & Dahlberg, 2004; Hamayan, 1986; Krashen, Scarcella & Long, 1982) yet foreign

language instruction is less prevalent at this level than at a secondary level. Regardless, college and university language programs still have their share of novice-level learners. Success in acquiring a second language at this level can be fraught with challenges as university-level adult learners are forced to address receptive (listening and reading) as well as expressive (speaking and writing) skills. Krashen's (1982) affective filter hypothesis is relevant to this situation. He notes that learner anxiety, especially when elevated, plays a role in learning language; i.e., a "filter" or mental block exists that impedes the second language from getting in—a low filter is associated with relaxation, confidence to take risks and a pleasant learning environment. Building on Krashen's theory of language acquisition, Terrell (1982) proposed a natural approach methodology to language learning which has greatly impacted the foreign language curriculum through an emphasis on communicative competence in a "natural order" of language acquisition of a second language similar to the learning of the first or native language (L1); i.e., comprehension of input precedes production of speech or writing with a minimal emphasis on grammatical structures. Communicative competence, according to the theory, is the ability to use the language system appropriately in any circumstance, with regard to the functions and the varieties of language, as well as social and cultural appropriateness for a given situation.

One possible explanation for the common acceptance of the "natural order" sequence by L2 pedagogues is that traditional approaches to language learning have placed a strong emphasis on "readiness," the idea that certain skills must be mastered before other skills can be introduced (i.e., language is acquired first through listening and learning specific words, then speaking, then reading progressively more cohesive text and finally experimenting with written expression). In a typical four-semester sequence (which at many institutions of higher education fulfills the second or foreign language requirement), the progression of instructional emphasis begins with

listening as the receptive mode and speaking as the expressive mode. Emphasis on reading longer text sections generally begins in the second semester, and within the basic or first-year language sequence, writing is mostly at the word and sentence levels; creating any extended piece of text is rarely attempted. In the third semester, students continue learning grammar and vocabulary, and it is only in the fourth semester that learners read and begin to write more cohesive pieces of text. While such a progression seems logical, there is a large body of research that indicates that the language arts (reading, writing, listening, and speaking) are reciprocal processes that inform each other and are best learned in conjunction with each other as opposed to being taught as separate entities (Fletcher, 1993; Smith, 1982; Weaver, 1994). Today, within current foreign language methodology and pedagogy, this theory-based integrated four-skills approach addressing listening, speaking, reading and writing in concert is promoted as most beneficial and desirable to language learning.

Swain's comprehensible output hypothesis (1985) maintains that the development of a learner's communicative competence does not merely depend upon comprehensible input: the learner's output has an independent and indispensable role to play. Swain's thesis has proved to be of relevance to the writer's experience in learning a second language and the writer as a self-directed learner. She argues that comprehensible output is a necessary mechanism of acquisition independent of the role of comprehensible input. Swain points out that producing the target language may be the trigger that forces the learner to pay attention to the means of expression needed in order to successfully convey his or her own intended meaning. This will move the learner from a purely semantic analysis of the language to a syntactic analysis of it. Swain and Lapkin (1995) further argue that the noticing/triggering function of output can prompt L2 learners to recognize consciously some of their linguistic problems. It may make them aware of



something they need to find out about their L2 and help learners engage in grammatical analysis in the process. This is important in understanding the role of writing in second language acquisition. Writing can inform reading and may actually improve students' facility with language in the long run. Therefore, students may be better off engaging in more expressive types of writing early on at whatever level they are capable and using these early attempts as a scaffold for later, more structured forms.

### *The Importance of Writing*

From ancient times, philosophers, educators, and researchers have stressed the importance of writing. Writing has been called the core of education, and writing has been acclaimed as an important avenue for learning. The past chair of the National Commission on Writing, C. Peter Magrath, has said that "Good writing leads to clearer thinking—and successful communication" (National Commission, 2004). Yet there is growing concern that writing instruction, the use of writing as a valuable tool for learning, and opportunities for students to engage in writing cohesive meaningful texts have become scarce. Writing continues to take a back seat where instructional time and emphases are concerned. Consequently, the College Board founded the National Commission on Writing in America's Families, Schools, and Colleges in 2002 in hopes of ushering about "a writing revolution in the United States" (National Commission, 2003). Kroll (2003) deems writing an integral part of the higher education system in the United States, and Leki (2003) appropriately states that in academics, writing plays "a major gate-keeping role in professional advancement" (p. 324).

Without a doubt, writing is very important for an educated workforce and global economy. While much of business is conducted in English, multilingualism is part of this global economy. The North American Free Trade Agreement (NAFTA), along with the growing

number of Hispanics in the United States, has strengthened the need for increased literacy in Spanish. Individuals who are capable of communicating using reading and writing in more than one language on an advanced level open the door to greater business opportunities and increased avenues for success.

As previously indicated, knowing a foreign language can achieve higher purposes that reach beyond the individual. Knowing a foreign language can open doors to greater understanding and acceptance among people of different cultures. Coupling this concept with writing increases exponentially the potential for social change. Leki (2003) posits that “in a democracy, writing is a powerful tool for justice” (p. 318). Writing gives voice to people wanting to express their emotions or make their opinions known. This concept of writing as an avenue for social justice can only reinforce the powerful means of expression and advancement that is writing.

The importance of the role of writing in learning is also evident in the amount of research on writing in both first and second languages (Greenia, 1992b; Harklau, 2002; Kroll, 2003; Scott, 1996). In 1992, the *Journal of Second Language Writing* was founded to publish theoretically grounded reports of research and discussions of central issues in second and foreign language writing and writing instruction. Some areas in which research has been done at the university level include: personal characteristics and attitudes of L2 writers, L2 writers’ composing processes, features of L2 writers’ texts, readers’ responses to L2 writing, assessment/evaluation of L2 writing, and contexts (cultural, social, political, institutional) for L2 writing. While the journal has had more articles published regarding English as a Second Language (ESL) learners, it also includes foreign language learners. ESL and foreign language learners share some similarities in second language acquisition and second language learning processes. ESL

learners, however, often have higher academic and more immediate social needs for learning the language than U.S. students studying a second or foreign language, yet it is important to note the influence that research in ESL has upon research and practice in foreign language learning and writing instruction.

The journal *Assessing Writing*, founded in 1994, focuses on theory, practice and research concerning writing assessment from traditional to educational and alternative settings in the workplace. It presents all perspectives on writing assessment, including process, product and politics. Founded in the early 1980s, *Computers and Composition: An International Journal* is dedicated to exploring issues related to the use of computers in writing classes, writing programs, and writing research and includes descriptions of computer-aided writing and/or reading instruction, topics related to computer use or software development; and explorations of ethical, legal, or social issues related to the use of computers in writing programs. More specific to language education is the journal *Language Learning and Technology*, a refereed journal for foreign and second language educators that began in 1997, published exclusively on the World Wide Web. All language skills, a variety of technological media, and presentation from theoretical pieces to product reviews are included in this resource.

#### *Writing in the Foreign Language Curriculum*

Despite a great deal of promotion and excitement about the significance of writing to learning in one's first language as well as English as a Second Language contexts, writing continues to be the neglected skill in the foreign language curriculum (Greenia, 1992a; Greenia, 1992b; New, 1994/1995; Scott & Terry, 1992) and perhaps not without reason. While writing in one's first language can be complex enough for some, second language learners are further challenged because of their incomplete command of grammar and vocabulary with which to

express their thoughts and ideas. This decreases greatly the degree of fluency with which these L2 writers can produce written text and express their ideas. Fluency in writing is a skill that develops only through practice (Atwell, 1998; Calkins, 1983; Graves, 1975; Romano, 1987). Students tend to struggle with fluent written expression because of limited vocabularies and limited knowledge of grammatical structures. Although a student might write well in their L1, these abilities do not necessarily “translate” into their L2; thus, fluent expression suffers. ACTFL defines fluency in terms of production and comprehensibility as perceived by the reader; i.e., as a flow in the language made possible by clarity of expression, the acceptable ordering of ideas, use of vocabulary and syntax appropriate to the context, with words, phrases, and idiomatic expressions that go together by common lexical convention. The concept of fluency thus encompasses the components of organization, grammar, and vocabulary in communication and not simply the number of words produced in a given period of time. Few studies actually separate the concepts of fluency and accuracy or measure fluency in any way other than a rate of production or the number of words produced in a given time (Chandler, 2003); thus, it is significant to define fluency in a more comprehensive manner.

*The role of grammar.* Although writing is impacted considerably by the learners’ knowledge of grammar, the role of grammar in language acquisition continues to be a highly contested and controversial issue in foreign language instruction. The pedagogical and philosophical continuum ranges from support of explicit grammar instruction to the support of implicit grammar instruction and all points in between. Krashen (1999), father of the monitor model, maintains a difference between grammar teaching that contributes to language learning but not true language acquisition which is primarily impacted by comprehensible input. Terrell (1991), however, has affirmed that there is a role for grammar in a communicative approach.

Referring principally to ESL, Frodesen and Holten (2003) state that “grammar is indisputably an essential element of second language writing instruction, but the ways in which it is integrated with other components of writing courses have varied” (p.141). In one intervention study of an intermediate Spanish content course, the effects of grammar supplementation and error correction feedback on writing were explored (Frantzen, 1995). While the results suggested that a grammar review is a beneficial addition to a content course, there were no significant differences between groups in terms of their scores on writing samples. In addition Reichelt (2001) noted design flaws in Frantzen’s study: no real control group, the same topic was used for both pretest and posttest writing samples, and the overall quality of writing was not measured. Also confounding the results is the fact that both a daily grammar and error correction feedback on written work were involved. Thus, there is a need to further the understanding of language researchers and pedagogues as to the effects of explicit grammar practice on intermediate university-level learners’ composition.

*The role of the teacher.* Further complicating the teaching of writing in foreign language settings is the fact that many language teachers do not consider composition instruction a primary part of their responsibility (Kassen, 1995). Also, teaching and improving writing are time-intensive endeavors. Part of the writing process is revision, feedback, and editing. A teacher can be overwhelmed trying to give assistance and feedback to each student. Due to the fact that curriculum in first and second year language instruction primarily focused on pronunciation, vocabulary acquisition, learning grammatical structures, and culture, often there is little emphasis on writing and certainly not in-class writing. As well, class sizes are often larger than ideal due to increased enrollments, particularly in Spanish. Given these conditions, providing personalized assistance to individual students can be difficult. The lone teacher is simply not able to provide

feedback and guidance to all of the students, all of the time. Foreign language educators must seek ways to facilitate the writing process, and developments in technology may provide beneficial avenues.

### *Role of Technology*

Technology-enhanced language learning is a recent term for what has been a growing and evolving area of interest in foreign language education and second language acquisition circles. Technology use and applications in language learning have progressed from listening to audiocassette tapes to online interaction. While much research appears to indicate that technology-enhanced language learning or computer-assisted language learning (CALL) can be effective tools for language learning (Blake, 1998; Bush & Terry, 1997; Chapelle, 2001; McCarthy, 1994; Pérez-Sotelo & González-Bueno, 2003), many educators remain unconvinced and continue to struggle with the integration of technology enhanced language learning into the curriculum (Gillespie & McKee, 1999). In some cases the resistance to using technology stems from philosophical or methodological differences or pedagogical unawareness; that is, teachers are not knowledgeable of the tools available or their appropriate use. In other cases, the use of technology in language instruction is dictated by facilities, access, budgetary constraints, and time to cover what is deemed the most important material. Nevertheless, technology is a flexible and multifaceted domain, “not a monolithic concept; it includes Web-based materials, CD-ROM, CALL (computer-assisted language learning) programs, and network-based communication” (Blake, 1998, p. 210). Methodological choices can be grounded in philosophies ranging from behaviorism to constructivism, but constructivist learner-centered pedagogies with technology seem to facilitate language-learning best (McAdoo, 2000; van Lier, 1998).

Hands-on technology tools, some of which give students immediate feedback, allow individuals to learn by working in what Vygotsky (1962) refers to as the zone of proximal development (ZPD). This requires the presence of an expert other who supports the learner on his/her journey through the ZPD. Learners utilize the language they have, working in the area between their native language and the second language being studied on an interlanguage continuum. On the path of language learning, interlanguage is the learner's use of language to communicate as effectively as possible with the skills they have, i.e., the learner's version of the target language. A computer practice program such as *Spanish Partner* allows students to work at their own pace to learn grammar. Writing assistant programs such as *Atajo* bridge the gap between what learners can accomplish at their current level of proficiency only with help and what they will ultimately be able to accomplish independently.

In composition, for example, students can utilize programs such as *Atajo* that combine a word processor with immediately available language reference databases that include a dictionary, grammar reference with examples of use, spell checker, and pronunciation help. This instantaneous accessibility may help students to express more fluidly their ideas, rather than becoming frustrated in their expression by having to wait for a teacher or stop to use a reference book. While peer writing can be helpful for editing if students are trained on the editing and conferencing process, this is not always desirable nor is it feasible.

Thus, technology may increase student production, fluency and possibly the writer's ability to produce meaningful texts earlier on in their language-learning curriculum. With such a variety of tools as well as methods available, technology integration has the potential to provide the necessary scaffolding and individual assistance for students in order to alleviate some of the frustrations of learning to write in a second language. The efficacy of such technological

components in instruction must be evaluated to make the best use of the learners' time and efforts in the enterprise of second language acquisition.

After a review of research on second language writing, Charlene Polio (2003) maintains that there is a "dearth of research on writing in a foreign language context, both on teaching English outside North America and on teaching languages other than English in North America" (p. 59). Harklau (2002) also confirms that despite its importance, writing is marginalized yet influential to second language acquisition. She calls for more emphasis on writing in classroom-based studies of second language acquisition, suggesting that it is important to study both how students learn to write in a second language and how students learn second languages through writing. Three issues of interest in foreign language writing research have emerged which merit further investigation: the effects of various approaches to teaching grammar (including explicit grammar instruction), the effects of various types of computer use (including grammar drill), and the influence of task types such as computer-mediated writing (Reichelt, 2001). Additionally, according to Hubbard (2003), "more than two decades after the microcomputer entered the domain of language teaching and learning, a substantial percentage of CALL experts continue to be concerned with the degree of its effectiveness in general as well as its effectiveness relative to specific alternatives" (p.151). This study contributed to addressing these areas of concern in foreign language writing research.

The purpose of this study, then, was to examine the effects of technology-enhanced language learning on students' composition skills in L2 by investigating the differences between students who received more traditional instruction in the classroom with no formal grammar computer practice and those in a technology enhanced section which included a minimum of 30 minutes in a lab setting per week with a grammar practice program.



## Research Questions

The goal of this study was to explore the intersection of technology, grammar instruction, foreign language writing, and second language acquisition. That is, the primary objectives of this study were to determine if systematic grammar and vocabulary computer practice would improve composition fluency of university-level intermediate Spanish students and how said practice would affect the students' use of a writing assistant program. The study focused on and was guided by the following research questions:

1. How will scaffolding provided by the use of a grammar and vocabulary practice software program (*Spanish Partner*) affect quantity in L2 students' compositions as measured by the total number of words per composition?
2. How will the systematic use of a grammar practice software program (*Spanish Partner*) affect the quality of L2 learners' compositions as measured by total composition score, and the subscale areas of Content, Organization, Vocabulary, Grammar/Language Use, and Mechanics (spelling, accentuation, and punctuation)?
3. What composition elements available through the writing assistant program (*Atajo*) do students access most?
4. What is the relationship between the number and type of help requests to *Atajo* and composition quality and quantity?
5. What are students' opinions regarding the usefulness of technology for composing in L2?

In this study the nonequivalent groups pretest-posttest design was employed. Pre and posttest measures were the first and last composition of the semester with the independent variable being scheduled grammar and vocabulary practice using *Spanish Partner*. The dependent variables are total composition quantity and quality as well as the subscale areas of Content, Organization,

Vocabulary, Language Use/Grammar, and Mechanics (spelling, accentuation, and punctuation). Help requests were also a dependent variable.

### Research Hypotheses

The first hypothesis was based on the first research question: How will scaffolding provided by the use of a grammar and vocabulary practice software program (*Spanish Partner*) affect quantity in L2 students' compositions as measured by the total number of words per composition? The researcher hypothesized that students with grammar and vocabulary practice would produce a greater number of words during composition after grammar and vocabulary practice.

H<sub>-1</sub> There is a significant difference ( $p < .05$ ) over time in the number of words produced by students who have computer grammar practice and those who do not.

The second set of hypotheses was based on the second research question: How will the systematic use of a grammar practice software program (*Spanish Partner*) affect the quality of L2 learners' compositions as measured by total composition score, and the subscale areas of Content, Organization, Vocabulary, Grammar/Language Use, and Mechanics (spelling, accentuation, and punctuation)? The researcher hypothesized that students with grammar and vocabulary practice would produce better quality compositions on the total composition score as well as the Vocabulary and Grammar/Language Use subscales.

H<sub>-1</sub> There is a significant difference ( $p < .05$ ) in the total composition score of students who have computer grammar practice and those who do not.

H<sub>-1</sub> There is a significant difference ( $p < .05$ ) in the Vocabulary subscale score of students who have computer grammar practice and those who do not.

H-1 There is a significant difference ( $p < .05$ ) in the Grammar/Language Use subscale score of students who have computer grammar practice and those who do not.

The third research question (What composition elements available through the writing assistant program (*Atajo*) do students access most?) is exploratory in nature. The researcher hypothesized that students would make use of all databases with the dictionary and grammar being the most frequently consulted and this pattern decreasing over time. The researcher also hypothesized that the students that had regular grammar and vocabulary practice on *Spanish Partner* would make fewer grammar inquiries to *Atajo* than the control group.

H-1 There is a significant difference ( $p < .05$ ) over time in the use of composition reference aids in *Atajo*.

The fourth research question (What is the relationship between the number and type of help requests to *Atajo* and composition quality and quantity?) is correlational and exploratory in nature, and the final research question (What are students' opinions of the usefulness of technology for composing in L2?) elicits the opinions of the students and is more qualitative in nature; thus, there is no researcher hypothesis for either of these research questions.

### Definition of Terms

The following definitions indicate how the terms were used in this study.

Technology-enhanced language learning—TELL is a recently emerging term and change from computer-assisted language learning, which was an outgrowth of computer-based instruction and may include the use of a variety of software programs, multimedia products or network applications. “The change in emphasis from *computer* to *technology* places direct importance on the media of communication made possible by the computer, which itself remains

unseen, rather than on the computer itself” (Bush, 1997, p. vii, emphasis in the original). While CALL may be the more familiar term, TELL is more descriptive of the trend to make the computer invisible and the interaction for learning foremost. In this study, it is not only the effect of the treatment of grammar and vocabulary drill and practice or the tutorial dimension of the computer that is important; the focus is to also look at the differences in interaction with the writing assistant *Atajo*.

*Atajo*—Writing assistants are word processing programs that provide learners with database or on-line aids for writing. *Atajo* is an example of a writing assistant with multiple databases as references for learners and is used as an unobtrusive observation tool for the writing process.

*Spanish Partner*—*Spanish Partner*, which is a generic software package not linked to nor based on a particular textbook, includes a variety of grammar and vocabulary drills suitable for practice and reinforcement of topics introduced in the classroom setting. In this study, the treatment for the experimental group is the use of *Spanish Partner*.

Intermediate level—The designation of “intermediate” is a standard classification for second-year language courses at institutions of higher education in the United States. It is also a level of proficiency as stipulated by ACTFL. The two are not necessarily comparable or mutually inclusive. This study uses the term as a description of the classification of students in the second year of study at the university level.

Fluency—Fluency in writing is defined by ACTFL as a flow in the written language as perceived by the reader, made possible by clarity of expression, the acceptable ordering of ideas, use of vocabulary and syntax appropriate to the context, with words, phrases, and idiomatic expressions that go together by common lexical convention. In this study, the measure of fluency will be the number of words produced in a specific period of time as well as a total composition quality.

The overview presented here establishes both a context and justification for examining the effects of computer-based grammar and vocabulary practice on the writing of intermediate-level Spanish students in the university setting. Communication is a fundamental part of the human experience, and the study of a foreign language only enriches the opportunities for communication in a global society that grows more culturally and linguistically diverse each day. Writing can play a key role in foreign language learning and second language acquisition, and technology can enhance the writing process and improve the written product. This study sought to explore the intersection of technology, grammar instruction, foreign language writing, and second language acquisition, specifically the effects of formal grammar computer practice on students' composition skills in L2 with the goal of making research-based curricular suggestions for Spanish foreign language pedagogy. A review of related literature follows in Chapter 2.

## CHAPTER 2

### REVIEW OF RELATED LITERATURE

It has been said that “A picture is worth a thousand words,” but only words unlock and express the pictures and thoughts in one’s mind; those telling words are the birth of true communication. Lee and VanPatten (1995) define communication as the expression, interpretation, and negotiation of meaning. Communicating one’s thoughts, feelings, and information is without a doubt an integral part of human interaction within the human experience, and there is a sense of empowerment in good communication. Carroll (1980) states that language is essentially a tool for communication, with oral and written language being the modes through which knowledge and ideas are expressed and shared with others. Written language and writing is a powerful means to clarify one’s thoughts and put them down in a concrete form of expression.

In one of the most widely accepted foreign language pedagogy handbooks, Omaggio Hadley (1993) aptly states the quandary of foreign language teachers with regard to teaching writing:

If learning to write in a second language were simply a matter of knowing how to “write things down” in the new code, then teaching writing would be a relatively easy task. A few minutes in each class period could be devoted to dictation, transcription, or manipulative written exercises, and a few guided compositions could be assigned for homework during the course of the semester, after which we could all rest easy because

we had cleverly managed to work the fourth skill into our crowded curriculum with a minimum of effort. (p. 290)

Unfortunately, writing in a second language (L2) is not this easy to teach or to learn. It is a complex and time-consuming endeavor (Bereiter & Scardamalia, 1987; Flower & Hayes, 1981) with which instructors at every level struggle. Specific issues related to writing include dealing with affective barriers on the part of the student, implementing effective instructional approaches, working within time constraints, giving meaningful feedback and assessing both process and product (Hedgcock & Lefkowitz, 1992). In addition, especially for L2 contexts, limited fluency with grammar and vocabulary add even greater challenges. Teaching foreign language writing remains an unsolved puzzle for most educators.

When considering instructional approaches that may better facilitate the teaching of writing within the foreign language classroom, there remain many questions to be explored as to the efficacy of various traditional methods as well as the use of technology (Reichelt, 2001). The purpose of this study was to examine the effects of technology-enhanced language learning on students' composition skills in L2 by investigating the differences between university students who received more traditional instruction in the classroom with no formal grammar computer practice and students in a technology-enhanced section which included a minimum of 30 minutes in a lab setting per week with a grammar practice program. The rationale for this study builds on extant research in the 1) application of the National Standards for Foreign Language Education (National Standards) to the foreign language curriculum, 2) grammar instruction within second language acquisition, 3) writing in L1 and foreign language writing, and 4) technology. Thus, this review of literature examines each of these areas.

## Standards for Foreign Language Learning

The field of foreign language learning has not been untouched by the standards movement of the 1980s. Both the National Standards and the American Council on the Teaching of Foreign Languages (ACTFL) Proficiency Guidelines emerged in part as a result of pushes from government and industry for accountability in language instruction, and their *de facto* purpose in combination is to provide the foundation for foreign language curriculum and instruction in the United States. The ACTFL Proficiency Guidelines were formulated as a result of a special President's Commission on Foreign Language and International Studies created in 1978 under President Jimmy Carter and in an attempt to bring some agreement with regard to language teaching (Omaggio Hadley, 1993). Another source for curriculum design in foreign language is the *Standards for Foreign Language Learning in the 21<sup>st</sup> Century* (commonly known to language educators as the 5Cs) developed in 1996 in a collaborative venture by the American Council on the Teaching of Foreign Languages, American Association of Teachers of French, American Association of Teachers of German, American Association of Teachers of Italian, American Association of Teachers of Spanish and Portuguese, American Classical League, American Association of Teachers of Russian, Chinese Language Association of Secondary-Elementary Schools/Chinese Language Teachers Association, and the National Council of Japanese Language Teachers/Association of Teachers of Japanese. This unprecedented involvement and consensus amongst educators across a range of languages gave (and continues to give) the National Standards added power to impact curriculum reform and study, and they have become the assessment criteria used by many accreditation agencies. From the researcher's analysis of state curricular documents, at least thirty states utilize the Standards to serve as the framework for their implementation of foreign language instruction.



### *National Standards*

While the National Standards do not specify methodology, they do address foreign language writing as they encourage educators to engage students in foreign language writing beyond the word and sentence level to include paragraphs and more cohesive texts. The Five Cs within National Standards which address five areas of language learning or goals include:

Communication: Communicate in Languages Other than English

Cultures: Gain Knowledge and Understanding of Other Cultures

Connections: Connect with Other Disciplines and Acquire Information

Comparisons: Develop Insight into the Nature of Language and Culture

Communities: Participate in Multilingual Communities at Home & Abroad

The Communication goal specifically addresses three standards that state that students will engage in interpersonal written communication and the formal presentation of information, concepts, and ideas in written form. Typically, students with little or no previous language experience are most likely to produce written language that will contain a variety of newly learned, yet mechanical, L2 language patterns or will look like English with words in the other language. This is a natural process, and, over time, students begin to acquire authentic patterns and to use appropriate styles.

### *ACTFL Guidelines*

Summary highlights of the ACTFL Proficiency Guidelines for writing (ACTFL, 2001) characterize the intermediate-level writer and provide more specific suggestions for incorporating writing into daily instruction:

by the ability to meet practical writing needs—e.g., simple messages and letters, requests for information, notes—and ask and respond to questions; create with the language and

communicate simple facts and ideas in a loosely connected series of sentences on topics of personal interest and social needs, primarily in the present time frame; and express meaning through vocabulary and basic structures that is comprehensible to those accustomed to the writing of non-natives. (p. 7)

These benchmarks compel educators to include writing in meaningful ways in the curriculum.

### Second Language Acquisition

If National Standards and ACTFL Proficiency Guidelines provide the foundation for foreign language curriculum and instruction, the area of second language acquisition research further describes instructional approaches and foreign language methodology. Bardovi-Harlig's (1997) recent definition of the parameters of second language acquisition includes all age ranges from child to adult learners.

The study of language acquisition has interpreted language in a broad sense, beyond pedagogical interpretations of the notion of grammar. Thus, language acquisition research addresses not only the acquisition of morphology and syntax (which are typically thought of as comprising grammar from a pedagogical perspective), but also phonology (pronunciation), lexicon (vocabulary), and semantics (meaning). In addition, pragmatics (language use) is often studied as is the construction and organization of conversation and writing. (p. 19)

In essence, language acquisition research now centers on all elements of communication for learners (Bardovi-Harlig & Hartford, 1997; Hinkel & Fotos, 2002), and thus it is learner processes and products along with perceptions of learners that become central when studying language acquisition, both receptive and productive.

Certainly one of the most dominant models of language acquisition since its popularization in the early 1980s is Krashen's monitor model with its five central hypotheses: the acquisition-learning distinction, the natural order hypothesis, the monitor hypothesis, the input hypothesis, and the affective filter hypothesis (Krashen, 1982). The first hypothesis is the acquisition-learning distinction which states that adult acquisition is similar to the way children develop language while learning refers to a conscious knowing and application of grammar. In practice, then, language input during language instruction should not be grammatically sequenced, and fluency emerges with time. The learner will acquire language structures in a natural order, and the learner must be relaxed and focused on meaning rather than the forms of grammar. Knowing grammar rules serve only as a "monitor" for self-correction.

Based on Krashen's model, Terrell's (1982) natural approach to language learning has also greatly impacted the foreign language curriculum through an emphasis on communicative competence in a natural order of language acquisition of a second language similar to the learning of the first or native language (L1). The main principles of his instructional approach state that:

1. Beginning language instruction should focus on the attainment of immediate communicative competence rather than on grammatical perfection.
2. Instruction needs to be aimed at modification and improvement of the student's developing grammar rather than at building that grammar up one rule at a time.
3. Teachers should afford students the opportunity to *acquire* language rather than force them to *learn* it.
4. Affective rather than cognitive factors are primary in language learning.
5. The key to comprehension and oral production is the acquisition of vocabulary.

It is the relaxed approach to grammar proposed by both Krashen and Terrell that has gathered momentum since the 1980s and garnered attention in more communicative instructional approaches. Instruction based on the communicative model is more implicit and has a greater focus on transmitting one's meaning with less attention to structure and function of grammatical units such as verb conjugation. In a fully communicative classroom there is no explicit instruction in grammar; rather, it is expected that the students will pick up grammatical form and function implicitly through the content of the message, language input, and the modeling of the teacher. Some researchers and practitioners are staunch opponents of grammar explanations in the classroom, and yet Ikpia (2001) found that fully communicative instructional approaches were detrimental to students who benefited from direct instruction in grammar. The pendulum regarding grammar instruction has not clearly swung to one of these two extremes: it is more of an erratic pattern that encourages teachers to maintain a communicative classroom with some "relenting" on the inclusion of explicit grammar explanations.

Therefore, one will still find classrooms where teachers continue to employ direct grammar instruction as a means to facilitate learning as well as classrooms with some combination of a communicative/grammar-based approach. In fact, Terrell (1991) states that explicit grammar instruction may help to speed up the language acquisition process hampered by the low number of hours of instruction in the university classroom, something that limits the amount of input and interaction that a language learner experiences. He proposes three manners in which explicit grammar instruction may positively affect language acquisition:

- 1) as an "advance organizer" to aid in comprehending and segmenting the input; 2) as a meaning-form focuser that aids the learner in establishing a meaning-form relationship

for morphologically complex forms; and 3) by providing forms for monitoring, which in turn, will be available for acquisition in the output. (p. 58)

Scott (1987/1988) conducted an empirical study of explicit and implicit grammar instruction in two university level advanced French conversation classes ( $n = 36$ ) in which students for the explicit condition heard the rules in French for the given grammatical structure and saw written examples on the board while the students in the implicit group heard a grammatical structure repeated frequently in a meaningful context while not being focused on structure. Students were compared with a written and oral test. While there was no significant difference on the oral measures, on the written sections of the test the students who had an explicit method of instruction performed better than those who had an implicit method of instruction.

Lee and VanPatten (1995) posit that traditional approaches to grammar instruction have mapped out a scope and sequence for grammar learning which reflects the student's progress through a continuum of learner "control" over grammar which ranges from rote and mechanical use to meaningful and finally communicative use of grammar. They assert that most traditional practice does not advance a student beyond the mechanical stage to the final two stages of meaningful nor communicative.

Within the communicative approach, there is a strong emphasis on oral proficiency and communication and less so on the other productive skill of writing. Yet research has shown that writing can actually be a helpful tool for learning and applying grammar and vocabulary in a meaningful way. In the language acquisition process, students may better construct their understanding of grammar as they write, reinforcing their language acquisition with their output (Swain, 1985; Terrell, 1991).

## Writing in L1

Many educators, researchers and philosophers have made high claims for the value of writing. Writing has been acclaimed not only as a means of showing learning but also as an avenue in itself by which meaning can be constructed and learning thus occurs (Ruggles Gere, 1985; Atwell, 1998). Writing can serve both aesthetic (personal) and efferent (academic) purposes. Writing and interaction with the written word form a vital part of everyday life. Pragmatic uses include reading the newspaper, writing a note to the teacher at school or composing a report for work. Writing is stressed in scholarly settings as well. The College Board added a writing section to the Scholastic Assessment Tests (SAT) in order to emphasize the importance of writing throughout a student's education. In a recent ad campaign by the College Board promoting the new SAT with Writing, an appeal is made which supports both the academic and the visceral elements of writing, to inspire passion and action for writing:

"If there's a book you really want to read, but it hasn't been written yet, then you must write it." Toni Morrison

"A writer ought to comfort the afflicted, and afflict the comfortable." Mark Twain

These sentiments reflect the idea expressed by Cheng (2002) that "writing is an emotional as well as cognitive activity, that is, we think and feel while we are writing" (p. 647). To many, writing is an intangible and complex process. The Romanian-born writer and Nobel Laureate Elie Wiesel (*Columbia*, 1996) stated:

Writing is not like painting where you add. It is not what you put on the canvas that the reader sees. Writing is more like a sculpture where you remove, you eliminate in order to make the work visible. Even those pages you remove somehow remain.

Viewing writing in this way places more of an emphasis on writing as an expression of the students' thoughts and feelings as opposed to writing that reflects specific pre-established structures (essays, business letter, etc.) The idea that writing could be more than simply academic began around 1980 (Applebee, 1981), riding on the coattails of the whole language movement. Teachers began to engage students in the writing process containing the elements of writing in which "real authors" engage when communicating meaning through the written word. While highly desirable, this approach compounds writing instruction and requires the devotion of a considerable amount of time to writing.

As one examines the writing process in the history of writing and composition research, an appreciation of the complexities of the field results. The writing process is seen alternately as the teaching or improving of writing and the multiple stages that a writer passes through when writing. There are a number of theories or models of writing, but the cognitive-process theory of writing L1 theory by Flower and Hayes (1981) is fundamental and has been further expanded upon by Hayes (1996) to include cognition and affect. The Flower and Hayes (1981) model is organized around the components of task environment, the writer's long-term memory, and writing processes. The concept of the writing process being complex, composed of several subprocesses requiring a monitor to access the needed information at the right time within the composition process, is echoed in the model of Bereiter and Scardamalia (1987). Pennington (1996) also cites several stages of writing such as Prewriting, Drafting, Revising, Editing and Presenting or Publishing, yet this "model is an idealization since the writing process is neither structured in stages nor strictly sequential" (p. 11) stressing the recursive nature of writing. The wealth of L1 and ESL writing and composition research serves as theoretical underpinnings for instructional practices found in foreign language classrooms.

## Foreign Language Writing

Foreign language writing theory and practice draw much from L1 writing and second language acquisition, and Kassen (1995) provides a succinct explanation of the relationship:

From the first area, we have learned to view writing not merely as “writing down” but as the complex interplay of cognitive processes by which writers discover and create meaning (Emig, 1971; Flowers & Hayes, 1981; Osterholm, 1986). L2 acquisition research, the second field, has demonstrated that learning a language is not simply habit formation; rather it involves the expression of communicative intent as mediated by various competencies, including grammatical, sociolinguistic, discursive, and strategies (Canale & Swain, 1980; Hatch, 1983). Meaningful, purposeful, contextualized language use is an essential component of numerous models of language acquisition, including those based on input (Krashen, 1982; Krashen & Terrell 1983), output (Swain, 1985) and interaction (Brumfit, 1984). (p. 100)

Even with such considerable contributions to language learning, for years writing has been minimized as part of foreign language learning. The curriculum-theorizing of Sachs (1989) on issues of the orality-literacy question or the rightful position of reading and writing in the foreign language curriculum spurred reconsideration of writing in the course of study, and a growing, continued interest in writing strengthened the argument that writing is one of the foremost skills to be developed by a literate person. It is only fully into the mid-1990s that a more resounding, urgent call was heard for increased attention to writing in the foreign language curriculum (Scott 1996; Greenia 1992a; Greenia 1992b). According to Lee and VanPatten (1995):

Writing should not be a neglected fourth skill in the communicative classroom, and instructors should distinguish between writing activities and composition development.



Instructors should understand what it means to communicate through writing and to keep in mind that composition development is not equivalent to transcription, however appropriate these may be for certain parts of a lesson. Composition involves a number of processes including thinking, organizing, reflecting, adjusting, and later, editing. *There is no reason why the development of composition should wait until advanced stages of language learning. Indeed, it should be present at all levels of instruction, including basic language.* (p. 271, emphasis added)

Writing traditionally may have been marginalized in the foreign language curriculum, but it is now viewed more widely as an important function in second language acquisition. Grabe and Kaplan (1997) declare that “knowing how to write is among the most important advanced abilities that L2 learners need to develop” (p. 172), and Harklau (2002) calls for more emphasis on writing in classroom-based studies of second language acquisition. She suggests that it is important to study both how students learn to write in a second language and how students learn a second language through writing.

While there is no universally accepted framework for inclusion of writing into foreign language instruction at the intermediate-level, in a seminal volume entitled *Rethinking Foreign Language Writing*, Scott (1996) postulated five hypotheses with regard to composition. They are as follows:

1. Writing competence is a general notion that is not language specific.
2. The foreign language writing process differs from the native language process.
3. Computer-aided writing enhances the foreign language writing experience.
4. Correcting and evaluating foreign language writing are complex tasks that involve the entire writing process.

5. Teaching foreign language writing is essential at all levels of language study.

The writing process, affect, fluency, and grammar all influence composition outcomes or written products, and thus it is important to explore these issues specifically.

### *The L2 Writing Process*

Foreign language writing theory and practice has drawn much from L1 research. Models specific to L2 writing contexts and research are tenuous at best, and are often still strongly based on the perspective of English language learners as opposed to English speakers learning other languages. Although English as a second language (ESL) and foreign language environments may differ, the nature of learning a second language or second language acquisition is similar. Efforts have been made to develop theories of second language writing that distinguish the differences as compared to writing in one's first or native language. This is the case of Grabe (2001) who highlights primarily cultural differences encountered by English language learners. Specific to foreign language learning, Valdés, Haro, and Echevarriarza (1992) also attempt a move toward a general theory of L2 writing, stating that the ACTFL Proficiency Guidelines are not based on descriptions of L2 writing process and thus are not the most effective tool for evaluating L2 writing in spite of the fact that they, along with National Standards, frequently serve as the inspiration for curricula as well as benchmarks for student achievement.

However, some research on the writing process specific to foreign languages has been conducted. Jannausch (2001/2002) had as participants six students in a German composition class, and the goal was to explore their writing processes. Methods of data collection included think-aloud protocols, questionnaires exploring their motivation, L2 learning history, experience in L1 and L2 writing and foreign language writing anxiety, the written products, and observation of their behavior in class. The students appeared to all rely on English as their native language to

plan, compose and revise. Focusing on one aspect of the writing process, Roca de Larios, Marín, and Murphy (2001) found that formulation time was the same regardless of whether their Spanish EFL (English as a foreign language) participants wrote in L1 or L2. Writing samples were obtained in L2 and L1 from participants in high school ( $n = 7$ ), university ( $n = 7$ ) and recent graduates ( $n = 7$ ) who were instructed to think aloud while composing for a maximum of one hour. L2 proficiency affected time in that the students with higher proficiency devoted less time to formulation.

Harrington (2002) conducted a study comparing the writing process in L1 and L2 for six elementary students in a transitional bilingual classroom. She found that the students generally used the same processes when writing in both English and Spanish. Not surprisingly, students were weaker in their second language with problems with accuracy in grammar and limited vocabulary. The researcher recommended explicit grammar instruction.

While the writing process seems to be of most interest in research studies searching to improve learning, examining written products is one means to assess and define the writing process. Polio (2001) describes recent methodology. Several research studies only describe the written text after a particular intervention, and numerous examples of studies exist utilizing what has become to be known as the Jacobs scale from the ESL Composition Profile (Jacobs, Zingraf, Wormuth, Hartfiel, & Hughey, 1981), which is a rubric that analyzes composition in five areas: Content, Organization, Vocabulary, Language Use, and Mechanics. The Jacobs scale has been used in its entirety or the various subscales to analyze writing products in numerous studies. These include examining the overall quality with the composite score (Pennington & So, 1993), linguistic accuracy using the grammar portion of the Jacobs scale (Hedgcock & Lefkowitz, 1992), lexical features using the vocabulary component (Hedgcock & Lefkowitz, 1992; Tsang,

1996), content (Hedgcock & Lefkowitz, 1992; Tsang, 1996), mechanics (Pennington & So, 1993; Hedgcock & Lefkowitz, 1992; Tsang, 1996), and coherence and discourse features using the organization portion of the Jacobs scale (Tsang, 1996). The written products of students alone do not give a clear picture of their processes while writing, thus researchers continue to seek other means and methods such as think alouds while composing (Roca de Larios, Marín, & Murphy, 2001; Jannausch, 2001/2002) and technology both to record and aid the writing process.

### *Writing and Affect*

Another important vein to writing and second language acquisition is the concept that writing can pose anxiety for writers. Using four language anxiety scales and a background questionnaire, Cheng (2002) investigated students' foreign language writing, focusing on variables such as learner differences, students' perceptions of their anxieties, and other forms of language anxiety experienced in the classroom or with different modes of communication such as speaking. The participants were Taiwanese English majors at the university level. The study's results suggest that students' perceived writing competence is a better predictor for L2 writing anxiety than of their actual L2 writing achievement. Low self-confidence appeared to be an important component in the anxiety construct. The researcher concludes that foreign language instruction should foster students' perceptions of their competence in addition to developing their writing skills.

Writing apprehension is also a point of concern for Jannausch (2001/2002). Using think-aloud protocols, questionnaires about motivation, observations of students' in-class behavior, analyses of students' written products, and an examination of students' L1 and L2 writing experiences, the researcher explored the writing processes of six American college students enrolled in the researcher's German composition classes as foreign language (FL) learners. All

the students relied heavily on their L1 as they were writing in their L2, but their motivation, writing anxiety, and contact with native speakers of the L2 seemed to affect their L2 writing processes and the quality of their products.

### *Fluency*

“Are you fluent?” is a question often asked of language learners, but what does being fluent entail, and how does the term relate to written expression? Does the term “fluent” refer to how closely one’s writing approximates that of a native speaker or how much a writer is able to compose in a given time? Fluency is commonly perceived as a state of production where language becomes fairly automatic, and it is seminal to successful communication in writing. Still, defining fluency in writing is a challenging task, not frequently addressed in the literature or with contrasting definitions. Many researchers define fluency as simply the number of words produced or the rate of production of text. This rate of production may be a count of words, clauses or sentences in text (Chenowith & Hayes, 2001; Paulson, 1993) and is defined in this manner to separate fluency the issue from proficiency, which takes into account grammatical and lexical accuracy and complexity (Chenowith & Hayes, 2001).

Other researchers, however, operationally define fluency differently. Chandler (2003) defined fluency as the amount of time that it took to write an assignment when a desired text-length was specified. In another definition, Wolfe-Quintero, Inagaki, and Kim (1998) concluded that:

Fluency is not a measure of how sophisticated or accurate the words or structures are, but a measure of the sheer number of words or structural units a writer is able to include in their writing within a particular period of time. (p. 25)

This means simply that more fluent writers more efficiently access a greater number of words and structures than less fluent writers. Polio (2001) expands on the concept: “If we find that writers are more fluent on one writing task as opposed to another then that may tell us something about the cognitive processes of completing the different writing tasks” (p. 106).

Further, on a more comprehensive note toward defining fluency, ACTFL (Breiner-Sanders, Swender, & Terry, 2002) describe fluency as:

a flow in the written language as perceived by the reader, made possible by clarity of expression, the acceptable ordering of ideas, use of vocabulary and syntax appropriate to the context, with words, phrases, and idiomatic expressions that go together by common lexical convention. (p. 8)

This definition takes into consideration the meaning or holistic expression achieved in composition that can be measured by an overall composition score, for example, as obtained on a holistic measure such as the ESL Composition Profile (Jacobs et al., 1981) in addition to the rate of production. For the purposes of this investigation, fluency will be measured by the number of words produced in a given period of time as well as a total composition score measuring overall quality.

### *Grammar*

How imperative is grammar to “good writing,” and what is the relationship of grammar to writing? For many, “good writing” is characterized by linguistic or grammatical correctness and “good use of language, including vocabulary” (Reichelt, 2003, p. 106). Grammatical accuracy actually plays quite an important role in evaluating the overall quality of writing, and problems with tenses, for example, can obscure meaning (Hinkel, 2002), yet as communicative and process approaches of language instruction rose to preeminence, grammar lost favor.

Grammar was associated with linear thought and “perceived as anathema to process because its teaching had always been identified with teacher-centered classrooms” (Devet, 2002, p. 10).

What some practitioners and researchers might refer to as the “grammar wars” persist with regard to the significance, inclusion and methodology of grammar instruction. Teaching grammar may range from purely communicative approaches to teacher-led explanations and translation exercises. In *New Perspectives on Grammar Teaching in Second Language Classrooms* (2002) Hinkel affirms:

In light of the research conducted in second language learning and acquisition, it appears that although overt instruction in grammar does not necessarily lead to direct improvement in language learning, it can serve as an indirect cognitive means of increasing learners’ exposure to language and their ability to notice discourse and language features. From this perspective, classroom analyses of time frames and the attendant tense uses can also add to learners’ awareness of language structures and systems and benefit the development of second language writing proficiency and fluency (p. 196).

Yet it is also Hinkel that notes that grammatical accuracy has a strong impact on evaluations of nonnative speakers’ writing and that ESL students do not always connect knowledge gained in grammar classes with their writing because they are taught separately. Foreign language learners are also affected by the need for grammatical accuracy, as it is a traditional component of composition evaluation. Kim (2001/2002) examined how the presence or absence of an explicit expectation to produce grammatically correct texts affected the revising processes of two ESL students. The author suggests that the different expectations did not result in different written products and claims that teaching grammar might not inhibit development of fluency.

It is interesting to note that there seems to be an emerging acceptance of varying methods in teaching grammar according to the learner's needs and curricular goals in ESL and English as a Foreign Language (EFL) settings (Hinkel & Fotos, 2002). In fact, Hinkel and Fotos (2002) encourage a familiarity with the changes in grammar instruction over time to be able to implement the most effective combination of approaches. Perhaps the *English Journal* reflection of 75 years ago rings true today:

The educational world believes that the right kind of grammar, taught in the right way, builds up in the pupil *power* of a most desirable and essential order. That is, power to express one's self and power to receive the expression of others—in short, power to speak, to write, to listen, and to read. Inherent in all these, of course, is the power to think; none of the others is possible except in connection with that. When we English teachers are exhorted to “teach clear thinking,” we may say: “To me this means ‘teach clear speaking, writing, listening, reading.’” If grammar is to help us do these noble things, it must be the right kind of grammar, taught in the right way. (Moffett, 1928/2003, p. 17)

If this “grammar revival” tendency is being seen in English and ESL, can acquiescence in foreign languages be far behind? Best of all, an acceptance of a variety of grammar teaching methods multiplies and expands the tools in a teacher's repertoire. Beyond the academic arguments, there is evidence that second language learners favor grammar instruction as well as error correction and consider formal grammar instruction an essential part of mastery of a foreign language (Ikpi, 2001; Schulz, 2001).

Pertaining to the relationship between grammar and writing, Greenia (1992b) posits that the relationship is one of “writing almost invariably at the service of learning grammar” (p. 35),



that is to say that many times writing is incorporated in the curriculum simply to reinforce grammar skills. Paulson (1993) found that grammatical knowledge and task focus functioned independently from one another; that is, both impact writing but without interactions. Students with high grammatical knowledge received significantly higher scores on holistic measures. Frantzen (1995) conducted a study with two sections of an intermediate Spanish culture and conversation course that were supplemented with a daily grammar review and error correction feedback on written work, with advantages shown for both groups.

Dykstra-Pruim (1995) found that knowledge of grammar rules correlated positively with writing abilities. In her cross-sectional study, 87 students enrolled in second, third and fourth semester university-level German classes participated in oral and written tasks as well as a grammar test to examine interlanguage or developing language. Abilities in various grammar elements correlated and contrasted differently across the three modes at different levels of instruction.

In a further examination of explicit grammar instruction, Pletsch de García (1995/1996) compared and contrasted a control group ( $n = 24$ ) in a program with a communicative methodology modeled on the natural approach; a traditional formal or explicit grammar instruction group ( $n = 24$ ) that received explanations and practice producing language (output), and a group ( $n = 23$ ) that received processing instruction that attempted to impact the way a learner perceives and processes input. The pretest/posttest consisted of an aural interpretation task, a written production task of a cloze paragraph, an oral production task, and a written composition with guided questions. Focusing on the production and composition task outcomes, results tend to lend support to the hypothesis that explicit grammar instruction specifically directed at interpreting input can be beneficial to second language acquisition.

## Technology and Technology Integration

Technology and its applications in socio-cultural, economic, and political settings made a tremendous impact on the twentieth century and plays an essential role in American society today. Product development and rapidly changing and expanding applications of technology appear to be on track to transform this century as well. Inventions such as the telephone, microwave, satellite, and computer have revolutionized the way we live, learn, work, and communicate with others. Since technology so profoundly touches our lives, the Congressional Office of Technology Assessment (OTA) was established in 1972 in order to assist lawmakers with understanding the existing and possible influences of technological applications and to be a resource to shape public policy. Until its closing in 1995, the OTA produced reports in such diverse areas as agricultural technology, aging, biological research, communications, defense technology, education, health care, law enforcement, space, and transportation, thus revealing the all-encompassing position of technology in this country.

Technology in education has been a central issue in educational reform and innovation in recent years. In 1997, President Bill Clinton made a Call to Action for American Education in the 21<sup>st</sup> Century that outlined a plan to have a “talented teacher in every classroom.” One component was to expand efforts to help teachers become technology literate and to use technology to improve training available to teachers. There have been considerable efforts in the area of pre-service teacher education in technology as evidenced by Preparing Tomorrow’s Teachers to Use Technology (PT3) projects. “The key is integration; technology has become so important that it cannot be ‘added on’ but must be infused into the context of teaching and learning” (McLafferty, 2000). While in the mid-twentieth century educational technology consisted of televisions, overhead projectors, phonographs, tape recorders, radios and cameras,

the advent of the computer tremendously changed the possible technology applications in the classroom. Technology integration in education today can involve an array of technologies including tutorials, presentation software, interactive multimedia, the Internet and the World Wide Web, and real-time communication.

With such diversity, proper integration of technology-enhanced language learning is fundamental to its overall success in improving teaching and learning. Many researchers are increasingly asking questions about how technology is integrated into educational settings and how to best match technological capacities with students' learning needs. Researchers and practitioners alike agree that successful integration involves more than simply introducing a software program or other innovation to the students in a classroom. Technology integration must be thoughtfully planned based on the curricular goals and instructional models and many obstacles exist that must be overcome to effectively integrate technology within the curriculum.

According to Cooley and Johnston (2000), there are eight major factors that have hindered technology integration in our schools. Some schools overspend on hardware and have too little software or funds for training teachers. Decisions about hardware and software purchases may be made with little teacher input, resulting in unused technology. Internet connections in schools may not be located where teachers can use them. Technology training for teachers seldom focuses on classroom applications. The use of technology implies the use of new teaching strategies that actively engage students and rely on collaboration among teachers. Inadequate technology support and not enough funding for maintenance, repair, and upgrades of equipment pose additional setbacks. Many teachers resist technology because it doesn't match their educational philosophy. Finally, school districts' incentive programs may focus on raising

students' test scores, leaving technology as a low priority item. The teacher remains a major gatekeeper to technology integration in the classroom.

### *Constructivism*

Constructivism is most simply defined as a philosophy of learning in which learners construct meaning by building on their own knowledge and understanding by reflecting on their experiences. Constructivist teaching suggests that students learn best when they are engaged in the learning process, actively constructing their own knowledge through collaboration, critical thinking, and inquiry. It promotes using curricula customized to the students' prior knowledge and emphasizes hands-on problem solving while educators focus on making connections between facts and fostering new understanding in students. Instructors tailor their teaching strategies to student responses and encourage students to analyze, interpret, and predict information.

Murphy (1997) provides a concise review of constructivist principles as they are manifested in teaching and learning environments. Activities, opportunities, tools and environments are provided to encourage metacognition, self-analysis, regulation, reflection, and awareness. The student plays a central role in mediating and controlling learning. Learning situations, environments, skills, content and tasks are relevant, realistic, authentic, and represent the natural complexities of the "real world." Teachers serve as guides, monitors, coaches, tutors and facilitators. Knowledge construction, and not reproduction, is emphasized. This construction takes place in individual contexts and through social negotiation, collaboration and experience. The learner's previous knowledge constructions, beliefs and attitudes are considered in the knowledge construction process. Problem-solving, higher-order thinking skills and deep understanding are emphasized. Errors provide the opportunity for insight into students' previous

knowledge constructions. Exploration is a favored approach in order to encourage students to seek knowledge independently and to manage the pursuit of their goals. Learners are provided with the opportunity for apprenticeship learning in which there is an increasing complexity of tasks, skills and knowledge acquisition. Knowledge complexity is reflected in an emphasis on conceptual interrelatedness and interdisciplinary learning. Collaborative and cooperative learning are favored in order to expose the learner to alternative viewpoints. Scaffolding is used to facilitate students' performance just beyond the limits of their current level of ability. Scaffolding can occur in many ways, from human to technological.

Many researchers have recently explored the connection between constructivism and technology use. McAdoo (2000) asserts: "Traditional or fearful teachers may not tolerate the kinds of exploratory, 'nonlinear,' constructivist approaches that students bring to web surfing and computer use" (p. 149). Many teachers who consider themselves traditional prefer students to learn in more teacher-directed, conservative ways. Roblyer (2003) contrasts behavioral and cognitive learning theories and suggests technology integration strategies based on each model of instruction. Several tenets of the directed and constructivist models are compared in terms of the roles of the teacher and student, curriculum characteristics, learning goals, types of activities, and assessment strategies. Learning language is a highly personal, intense, and constructivist act—that is to say that language acquisition occurs as an individual participates in certain language acts and experiences. There are constructivist underpinnings in the very act of writing and composing. While Roblyer (2003) notes that computer software programs that emphasize drill and practice are essentially related to directed instruction, they can play an important part in language acquisition. Furthermore, the teacher can be more hands-off and serve as facilitator. Use of a writing assistant program that is learner-directed extends on the concept of the student

being more autonomous and learning by doing, and thus the query-driven design of the writing assistant software program fits well within the constructivist model. Thus, constructivism can be construed as a vital component to the successful infusion of technology in teaching and learning.

### *Vygotsky*

The work of Lev Vygotsky has implications for language learning, writing and technology integration. Vygotsky formulated a multifaceted theory of cognitive and human development based upon the belief that human interaction is not a direct response to the environment; it is mediated, or guided, by culturally meaningful tools and signs. His greatest contribution lies in his “explanation of the dynamic interdependence of social and individual processes” (John-Steiner & Mahn, 1992) applicable to language and cognition and that cultural interactions are critical to forming meaning for individuals.

At the heart of Vygotsky’s theory are the ideas that teachers, other adults or peers can scaffold learners by serving as more knowledgeable partners or assistants in the learning environment. These individuals provide structure or scaffolding to facilitate learning within the zone of proximal development (ZPD). The ZPD is defined most simply as “the gap between the child’s current or actual level of development determined by independent problem solving and the child’s emerging or potential level of development determined by problem solving supported by an adult or through collaboration with more capable peers” (Dixon-Krauss, 1996, p. 196).

Vygotsky’s theories fit well within writing theory and pedagogy. In fact, Grabe and Kaplan (1997) confirm that Vygotskian approaches to writing development may have an emerging role in second language acquisition research. Writing in a second language is itself a form of problem-solving in which the learner must determine the correct grammar, word order, and vocabulary to express their thoughts. Vygotsky (1987) detailed steps in the development of

the ability to problem-solve in which the learner progresses by advancing from object-regulation to self-regulation. The surroundings or environment influences the learner at the object-regulation state while when learning is mediated by someone else by providing scaffolding or the strategies needed to solve the problem a learner is considered other-regulated. Pennington (1996) asserts that:

in the zone of proximal development where social mediation occurs, both the unconscious and the conscious forms of input by the teacher and other students during the writing stages can assist the non-native student writer to progress to a higher level of written output and language acquisition. (p. 12)

But it is important to note that mediation is limited in availability from one teacher and that often students learning a second language struggle with anxiety and affect, building fluency and internalizing and utilizing grammar. Mediated interpretations of meaning or understandings can happen additionally through other tools that may include written materials, the classroom environment, nonverbal gestures or technology (Hawkins, 2004). Technology may be able to speed this transition from other-regulated to self-regulation in composition. *Spanish Partner*, approximating the concept of grammar practice beginning with the more mechanical and progressing, under some topics, to communicative serves as the technological scaffolding for the students, encouraging them to convert inner speech or understanding of grammar to a measurable, outer construct in later written composition. Ultimately it is the realm of composition, and with the “knowledgeable other” of the writing assistant *Atajo*, that pushes the student forward to communicate as well as provides a means to test their language learning or interlanguage in the ZPD. *Atajo* “supports a learner-directed, query-driven model of language acquisition” (Martin, 1999). This sense of learner control and individualization of instruction and

learning is one of the benefits of technology-enhanced language learning. Pan and Zbikowski (1997) also affirm the benefits of composing in that the learner becomes a more critical user of the technology in their daily life.

### Technology-Enhanced Language Learning

Computer-assisted language learning or CALL perhaps remains the more commonly recognized term to refer to any language learning activity involving a computer in a significant role, including both tutor and tool uses, but Bush (1997) utilized the expression “technology-enhanced language learning” (TELL) which suggests a more inclusive sense of technology and its impact on teaching and learning language. Therefore, it is not just what the computer is able to do that is significant but also the interaction of the learner with the technology. Levy (1997) puts CALL into an interdisciplinary context including psychology, applied and computational linguistics, instructional technology and design, human-computer interaction, and artificial intelligence that reinforces the need for a more descriptive term such as technology-enhanced language learning. In this study, technology-enhanced language learning and the way in which computer-based grammar and vocabulary practice affect composition are the foci.

Research into the effectiveness of technology-enhanced language learning to improve student achievement is of interest at all educational levels, especially in light of the federal No Child Left Behind Act’s Enhancing Education through Technology Program established in 2002. Administrators, educators, and other education stakeholders are concerned with utilizing the best methods and technology tools available to improve and enhance student performance. A survey of experts on computer-assisted language learning (Hubbard, 2003) affirms that a substantial



number of experts are concerned with the degree of effectiveness of technology to enhance learning.

Vital also to the continued evolution of TELL is the examination of appropriate and successful uses in foreign language curriculum and instruction. Many ponder “whether technology should attempt to emulate the characteristics of a communicative classroom, engaging students in real and meaningful communication, or provide the types of tutorials and drills that tend to be de-emphasized in the current teaching practice” (Nutta, 1998, p. 49), but this researcher believes that there must be flexibility and a variable role for technology applications as well as instructional methods to appeal to diverse learners. Although with TELL/CALL students are often able to select exercises, tasks or information appropriate to their level and needs, frequently it is some type of assessment that raises student accountability and use of technology (Burston, 1991) since students may not use all the resources available or maximize the technology (Scott, 1990).

### Role of Technology in Writing and Writing Research

Computers have become known as useful tools in writing. Through word processing and computer-assisted composition (CAC), computers empower students in the writing process. An early supporter, Lynn Veach Sadler maintains in “The Computers-and-Effective-Writing-Movement: Computer-Assisted Composition” (1987):

first-wave CAC ... not only encourages revising but treats revision as a fact of the life of writing; makes the student, with teacher assistance, aware of writing as a process; makes writing a more communal activity; and enables the writer to become both creator and critic and thus use both right- and left-lobe powers (p. 32).

The Computer-Assisted Spanish-Composition Instruction Survey, conducted by T. Edward Harvey in 1986, was designed to define the place of computers in composition instruction and their future application. Using computers for composing was perceived to be motivating for students in the areas of editing, composing, typing time, and draft creation. In “Computers and Instructional Design in Foreign Language/ESL Instruction” (Hoffman 1995/1996), simple word processing with creative use was shown to evolve into cooperative learning exercises. Greenia’s (1992a) “Computers and Teaching Composition in a Foreign Language” outlined another such pioneer implementation, “any ordinary text editing program such as WordPerfect.” Writing with computers has now moved beyond just word-processing to e-mail and other forms of computer mediated communication (CMC) and innovative uses of the technology to create open-ended, interactive learning activities.

In Reichelt’s (1999) review of foreign language writing research, eleven of the works of research investigate the use of computer-aided instruction in foreign language writing—six of which examine the use of computer conferencing or e-mail while the remaining five studies investigate the uses of word-processing in FL writing instruction, several of them focusing on *Système-D*, the French word processing version of *Atajo*. *Système-D* has shown itself to have great promise for enhancing the writing experience but that careful planning and guidance is necessary (Burston, 1991; Scott, 1990). According to Reichelt, of the 140 works that discuss pedagogy in foreign language writing, there were 23 that concentrate on the use of various types of technology in FL writing instruction, addressing the use of word processing in FL writing or technologically-facilitated written interaction including e-mail, real-time, synchronous discussion over computer, and faxing. Other types of technology studied were the use of hypermedia, the World Wide Web, and film as well as video recording.

Word processing and e-mail in second language writing is an area of continued interest. Pérez-Sotelo and González-Bueno (2003, p. 870) state that “the foreign-language teaching community has broadly accepted the use of electronic writing as a beneficial tool for improving writing.” Biesenbach-Lucas, Meloni and Weasenforth (2000) compared the effects of using e-mail versus word-processing media to complete similar writing assignments. They focused on 12 cohesive features and on text length, concluding that cohesive features are similar across media but that students tend to elaborate less in e-mail writing assignments. The authors recommend developing standards for each medium and suggest that e-mail can be a valuable classroom tool if instructors teach the conventions and purposes of e-mail writing.

There are many benefits to writing with the computer, and Pennington (2003) aptly summarizes some of the computer potential for second language writers as follows:

- Increased writing efficiency and effectiveness
- Increased motivation
- Increased amount of writing
- More effective use of language
- Creative potential
- Interactivity and collaboration
- New modes and genres of writing
- Flexibility of access to tools, texts, helps, and partners
- Expanded access to writing resources, information, and the world

The concepts of increased writing efficiency and effectiveness, increased amount of writing, and more effective use of language are part of the definition of fluency, and thus it can be said that using computers to write may in part increase fluency in second language writing.

Foreign language educators continue to seek ways to facilitate the writing process, and developments in technology may provide beneficial avenues. Yet there are both supporters and opponents to including the computer in writing instruction and it can engender “enthusiasm, resistance, controversy, and mixed results” (Blankenship, 1998/1999, p. 75).

### *Computer-Assisted Second Language Research*

Computers serve not only as a language-learning tool but also as an instrument to aid in research. Numerous studies utilized *Système-D*, the French language version of *Atajo*. New’s study (1994/1995) was designed to determine whether intermediate level university students of French revised when writing in the foreign language and if so, if they revised for form or content or both. Results from compositions, logs from *Système-D*, and videotapes indicated that both the self-reported good writers and poor writers did revise their compositions, more surface-level rather than meaning-level changes. In post-writing questionnaires, the writers seemed to consider communicating the message of primary importance, but in reality, they acted more out of linguistic concerns.

Baily (1992/1993) classified inquiries to *Système-D* as Adjusting the Message, Circumlocution, Synonyms, or New Words compensation strategies. The length of compositions and the number of inquiries varied widely for each participant and each composition itself, nonetheless, a consistent 10% to 13% of inquiries could be tabulated as compensation strategies. Rogers’ 1998 study compared the use of CMC and *Système-D* on student writing and found the effects of using either medium to be minimal. The students enjoyed working independently with *Système-D* as well as the opportunity to interact via computer mediated communication and overall had positive attitudes toward both.

In a study examining fluency, Miller (2000) introduces an approach to studying the writing process that analyzes temporal aspects of the composing event and illustrates the application of the research tool with findings from a study of L1 and L2 writers. By recording keystroke presses made during composition of a text, the researcher examined pausing, fluency, and revision activity of one undergraduate Greek student studying in the British university system.

### *Computer-Mediated Grammar Instruction*

The computer has made definite contributions to learning a second language. Grammar drills are one area that has benefited from the technology in terms of the volume of data that can be easily retrieved, the immediate and interactive feedback, and individualization of instruction possible. McCarthy (1994) obtained responses via a survey of 20 students who utilized computer grammar drills over a six-month period for reinforcement of topics presented in class. By a ratio of two to one the positive comments outweighed the negative. In most cases it was computer-oriented issues themselves (required precision of typing, slow processing at times, eye fatigue from looking at the screen) that students complained about while the ability to self-pace was lauded.

Liou, Wang, and Hung-Yeh (1992) conducted a one-semester study with 42 college freshman EFL majors that addressed whether and in which way grammatically computer-assisted language learning can help English writing instruction in a Taiwanese setting. The courseware was drill and practice for remediation with a control group ( $n = 22$ ) who did homework sheets that they self-corrected and the experimental group ( $n = 20$ ) who did 10 CALL lessons over a 10-week period. Results suggest that classroom instruction combined with grammatical CALL is helpful to writing.

In a study to investigate the difference of acquisition of specific grammar points for students taught in computer-based instruction versus those in a teacher-directed class, Nutta (1998) used a sample of 53 students in ESL with a treatment of one hour of instruction a day for seven days. No significant differences resulted, but computer-based grammar instruction was deemed at least as effective as teacher-directed.

Lange (1993) suggests another type of computer-based grammar exercise for second language learners. She suggests teachers adapt effective exercises by “computerizing” them for students. In this fashion the student is able to become familiar with the manipulation of text, the ease of revision, and the mimicking of editing processes that ESL learners should acquire.

In a study attending to foreign language learners, Gillespie and McKee (1999) comment on the use of MCQ, a multiple choice grammar revision package for French, which was used eagerly by students because it provided answers and immediate scoring. The software was presented for occasional use, defined as the “introduction in class of packages which may be of interest or benefit to students but which do not form the basis of teaching for that part of a course or module” (p. 444). They did find, however, that active independent use by the students in general did not follow, reaffirming the idea that technology must be thoughtfully and systematically incorporated into the curriculum.

With the multifaceted interactions and intersections of technology, language learning and acquisition, and composition, researchers are faced with peeling back the layers and teasing apart the effects of instruction to find the most effective tools and methodology. Writing is a powerful means of communication, and teaching and learning to write is a time-consuming endeavor in any language. As the literature review indicates, the role of grammar instruction is highly contested yet it is a means by which students learn to better express themselves. Additionally,

technology-enhanced language learning is an area that can greatly impact student achievement and language acquisition. A major component involves the implementation of technology tools in a systematic manner and the assessment of student outcomes to encourage further implementation. The purpose of this research was to identify and to describe the possible benefits of grammar drill and practice on the composition of intermediate Spanish students at the university level. Furthermore, an examination of computer logs generated during the writing process may demonstrate that students may access a writing assistant differently based upon their grammatical practice experience, and that technology may (not) aid in composition abilities. Compositions were graded with both holistic and analytic criteria to analyze writing performance, and statistical analyses assessed interactions of treatment and effects. A further discussion of methods and procedures follows in Chapter 3.

## CHAPTER 3

### PROCEDURES AND METHODOLOGY

The purpose of this study was to examine the effects of technology-enhanced language learning on intermediate-level university Spanish learners' composition skills in second language (L2) in order to identify and to describe the possible benefits of grammar computer drill and practice on the composition of intermediate Spanish students. Specifically, the treatment was the use of a grammar and vocabulary practice software program (*Spanish Partner*) and a writing assistant program (*Atajo*). The goal of this study was to determine whether or not students who are provided scheduled sessions to practice grammar skills using *Spanish Partner* software access a writing assistant software program differently than students who are not provided regular opportunities to practice grammar skills with *Spanish Partner* software and whether said practice improves their composition-writing ability. This study investigated the differences in student performance on composition quality and quantity for students in a technology-enhanced instructional approach that incorporated 30 minutes minimum per week in a lab setting during class time over a 15-week semester and those who receive traditional instruction in the classroom. This study might yield results which would encourage a shift in the curriculum to include more writing in practice and assessment and maximize the use of technology in language learning.

This chapter begins with a summary of the research questions and hypotheses developed for this study. An explanation of the research design follows, including research site and subjects, data collection methods and instrumentation. Finally, the chapter will detail data



analysis procedures, including analysis of compositions and the statistical tests used to answer the research questions.

### Research Questions

In order to investigate the effects of technology-enhanced language learning on second language composition, this study was guided by the following research questions:

1. How will scaffolding provided by the use of a grammar and vocabulary practice software program (*Spanish Partner*) affect quantity in L2 students' compositions as measured by the total number of words per composition?
2. How will the systematic use of a grammar practice software program (*Spanish Partner*) affect the quality of L2 learners' compositions as measured by total composition score, and the subscale areas of Content, Organization, Vocabulary, Grammar/Language Use, and Mechanics (spelling, accentuation, and punctuation)?
3. What composition elements available through the writing assistant program (*Atajo*) do students access most?
4. What is the relationship between the number and type of help requests to *Atajo* and composition quality and quantity?
5. What are students' opinions of the usefulness of technology for composing in L2?

### Research Design

The overall research design was quasi-experimental and descriptive since there was no random assignment of subjects (McMillan & Schumacher, 1997). While randomization is often

touted as the “gold standard” for causal inferences in educational settings, this should not necessarily be so (Cook, 2002). Cook states that:

Random assignment prioritizes on unbiased answers to descriptive causal questions. But few educational evaluators share this priority and most believe that it compromises more important research goals. Cronbach (1982) rejects the assertion that internal validity is the *sine qua non* of experimentation (Campbell & Stanley, 1963) because of the neglect this implies for external validity. Experiments are clearly limited in time and space, and nationwide experiments are very rare. (p. 187)

In the current study the only randomization of the population was due to the students’ self-selection into the researcher’s classes. McMillan and Schumacher (1997) assert that the nonequivalent groups pretest-posttest design employed in this study is quite frequently utilized and beneficial in education.

The design involved two intact, intermediate-level Spanish classes, each with 30 students, taught by the researcher, one as control and the other as experimental. The classes wrote their first composition as the pretest, the grammar practice was the treatment and the final composition as the posttest. Group characteristics such as gender, majors/minors, comfort with writing, experience with technology, and pretest scores on compositions were compared to note any significant differences between groups. A repeated measures analysis of variance (ANOVA) where the treatment (weekly grammar practice in the lab vs. no weekly grammar practice in the lab) was the between subjects factor and composition results were the within subjects factor was used to determine measures of improvement on compositions for the experimental group with comparison to the control.

## Setting

### *The University Setting*

The setting was a major metropolitan university in the Southwest. The Department of Foreign Languages and Literatures offers majors in Spanish, French and German. Semesterly enrollments for the department as a whole are approximately 2800 of which roughly 300 students are in the intermediate-level Spanish class, SPAN 2040. The students enrolled in the university score at or slightly above national measures on the American College Testing (ACT) and Scholastic Assessment Tests (SAT) (National ACT: 21, University ACT: 22; National SAT: 1020, University SAT: 1086); the average age is 22.5. Fall 2003 enrollment figures indicate undergraduate enrollment at the university was 68% White, 10% Black, 9% Hispanic, 4% Asian Pacific Islander, 1% American Indian, and 8% Unknown or Other.

Consistent with the goals of providing a comprehensive, relevant education, the College of Arts and Sciences prepares students to acquire certain basic proficiencies including a working knowledge of a foreign language and foreign culture beyond the two years expected before entering college. The Department of Foreign Languages and Literatures encourages oral communicative proficiency following national trends, yet the curriculum has a strong grammar-based assessment in the first and second year sequence. The emphasis on grammar is not unusual and is often seen as a precursor to developing other literacy skills in Spanish as a foreign language.

### *The Lab Setting*

Writing compositions in a lab setting ensures that the students are doing their own work as well as allowing for control of actual time spent composing. The three in-class compositions were written in the whole classroom lab of the Foreign Language Learning Center (FLLC). The

FLLC is the multimedia lab facility for the Department of Foreign Languages and Literatures which consists of three classrooms with stadium seating, one large-screen video viewing room, a general access lab area where students can work individually on computers or view videos and other multimedia, and a classroom with student computer stations that instructors can utilize for whole class instruction. Since the FLLC whole classroom lab contains 26 computer stations in one room, the adjoining general access lab provided the overage needed for the remaining students when all students were present for class/writing session.

### *The Course*

SPAN 2040 is an intermediate-level Spanish language course. The designation of “intermediate” is a standard classification for second year language courses at institutions of higher education in the United States. This particular course includes grammar, listening and speaking activities, brief readings as well as writing. The instructional curriculum was identical for both groups with the only difference being the in-class lab time for grammar practice of a minimum of 30 minutes per week afforded one section noted on the course syllabus (Appendix A). The sections met two days a week for eighty minutes each session during the fifteen-week semester. The nature and typical structure of each class was grammar explanation followed by oral practice using thematic vocabulary. Culture-related topics were included in brief readings in the text.

The major grammatical point introduced and requiring mastery in this course is the subjunctive mood (both present and past). While the subjunctive does exist in English, its modern-day usage is much less frequent and generally does not require a completely different verb form. In Spanish grammar, however, the subjunctive is a critical element and always mandates the use of a different verb conjugation. It is used primarily in subordinate clauses after

an expression of any degree of doubt, denial, desire, or emotion. Often, the subjunctive in Spanish is the infinitive in English. In the following example, the verb *vaya* is in the present subjunctive in Spanish.

She wants me *to go* with her to the dance. Ella quiere que yo *vaya* con ella al baile.

### *Course Materials*

The control group used the text *Puntos de partida* (Knorre, Dorwick, Pérez-Gironés, Glass, & Villarreal, 2001) and the *Workbook to Accompany Puntos de partida* (Arana & Arana, 2001). The *Puntos de partida* text and ancillaries are a widely used, highly regarded program with a range of material from grammar or form-focused activities to communicative tasks. The experimental group used the same text and workbook as well as the computer software program *Spanish Partner*. Both groups wrote in-class compositions using the writing assistant *Atajo*. *Spanish Partner: Introductory Spanish Exercises for Personal Computers* (Morley & Fisher, 1994) is intended for use at the beginning levels of study, but it can be used at the intermediate level for skills practice and/or remediation, and is especially viable due to range of coverage of grammar topics and generic nature. The software program is often packaged with a textbook program but can be purchased separately. One reviewer of *Spanish Partner* notes that students at various levels of ability in Spanish have used the program with positive reactions and results (Raschio, 1998). The content is challenging and introduces each exercise in English. VanBuren (1997) describes *Spanish Partner* as “practical and user-friendly” as well as “a beneficial addition to any curriculum in which the acquisition and practice of grammar concepts are principal goals” (p. 528). The beginning Spanish grammar and vocabulary review is available on Macintosh—any model with 512 K of RAM—and comes on two 800K 3.5" diskettes; MS-DOS 604K RAM: two 720K 3.5" diskettes. *Spanish Partner* works in Windows® 1995 operating

system and Windows® 1998 operating system (Microsoft Corporation, [www.microsoft.com](http://www.microsoft.com)), although it may be better to launch it through MS-DOS® (Microsoft Corporation, [www.microsoft.com](http://www.microsoft.com)).

*Spanish Partner* includes 30 main volumes (Appendix B) with topics meant to help students review grammar and vocabulary. Although most volume titles are self-explanatory, the material contained within the *Un poco de todo* (A little of everything) volume is quite varied: there are vocabulary and structures ranging from the simple (such as telling the time, date, and weather; numbers; and negative and indefinite words) to issues that are quite different in Spanish or with no equivalents in English. Within the Vocabulary volume (detailed in Appendix B) there are a variety of lesson topics that would be of personal interest to the student or useful to basic, daily communication.

The student selects a volume and is then presented several exercises from which to choose. In most cases the exercises in each section increase in complexity with the first activities including a brief reminder of the pertinent grammar rules. Although *Spanish Partner* is definitely grammar-based, the program presents most of the activities in contextualized paragraphs or situations; for example, telling students to imagine themselves twenty years from now when they may have a nostalgic dialogue with their children about what life was like when they were a college student. The students are then told to change the verbs in the following sentences from the present to the imperfect tense.

Once a student chooses an activity, the items that follow may be fill-in-the-blank, multiple-choice or matching. The verb review section is a traditional drill-and-practice format in which the learner fills in a table with the verb forms in multiple tenses. In some sections, the learner must attend to the cultural clues in order to arrive at the correct response. In other

instances the authors utilize humor that may lower the affective filter of the students (i.e., Last night you had a terrible nightmare: You went to the doctor's office, and the doctor only spoke in Spanish. Write the *Ud.* commands that you dreamed about.). All answers receive some type of initial feedback in Spanish, i.e., "excelente," "bravo," or "así es." In most cases, feedback is accompanied by an affirmation of the correct grammar rule or an explanation of the applicable rule. Students can see the errors they made in each item as well as their score for each exercise and can print out their scores for up to 30 completed lessons in one session. *Spanish Partner* gives help with how to produce diacritical marks and how to skip over a troublesome item by utilizing the F10 key to give the answer.

*Atajo* 3.0 1<sup>st</sup> edition by Frank Dominguez, James S. Noblitt and Willem J. A. Pet (1999) is subtitled *Writing Assistant for Spanish*. (The word *atajo* in Spanish means "short cut" or "cut," as in editing, intimating the resources available with the program.) The *Atajo* Writing Assistant program combines a word processor with databases of language reference material. The publisher highlights the following features:

- 1) A sound feature highlights pronunciation of the core vocabulary, definitions, and examples of usage.
- 2) *Atajo* includes a word processor with a Spanish spellchecker.
- 3) *Atajo* has a core vocabulary of 10,000 Spanish words with English translations and examples of usage. Groups of words are organized by topics so students can build knowledge in areas of interest.
- 4) *Atajo*'s grammar reference includes 250,000 conjugated verb forms with examples of use in context.

- 5) Reference of functional phrases includes hard-to-define idiomatic expressions and models for correspondence and everyday communication.

The dual platform CD-ROM requires at least 4 MB of memory and a hard disk with 10 MB of space available for the program files. The User's Manual that is provided with *Atajo* reaffirms that the "program supports the creative use of language as you focus on the task of discovering how meaning is constructed in another language" (p. 2) and that "the computer offers information on demand, much like working with a native speaker" (p. 3). Students are able to compose on an Editor screen that is in a split screen arrangement where they are able to have their text and dictionary available at the same time. Students also have access to a Reference screen from which they can search Grammar, Phrases, or Vocabulary (Appendix C), and can employ a variety of strategies to search for words.

While no studies were found regarding the efficacy of *Atajo*, several studies using *Système-D*, the French language equivalent of *Atajo*, have been conducted. Noblitt and Bland (1991) posited that tracking the language learner in a computer-aided language-learning environment provides benefits for both the student and the instructor. In a study of adult learners of French and compensation strategies in writing, Baily (1992/1993) employed *Système-D* as a non-obtrusive observation tool. Scott and New (1994) concluded that the log is useful for analyzing the writing process. Rogers (1998/1999) found that students enjoyed working on *Système-D*, more than computer-mediated communication via an electronic synchronous discussion.

The Foreign Language Learning Center has a site license for *Atajo* and *Spanish Partner*. Students may also access the *Atajo* program from other general access labs on campus. *Spanish Partner* is currently available in the FLLC only as it does not easily run on Windows versions



newer than Windows98. Sign in sheets are available in the FLLC for students to document their independent time working in lab and analysis of results must account for the motivated students that go to lab on their own for grammar practice on *Spanish Partner*.

### Participants

The participants for this study were 52 students of intermediate-level Spanish at the university. The sample population consisted of two sections of SPAN 2040, each with 30 students enrolled. All students agreed to participate. Participation was voluntary, and no monetary compensation or extra credit was awarded. One section served as the control group, the other as the experimental group. In the experimental group, four students did not complete the course resulting in 26 participants ( $n = 12$  males,  $n = 14$  females). In the control group, three students did not complete the course and one doctoral student (age 31-35) was considered unlike the other participants who were undergraduates and primarily ages 16 to 25; also, the graduate student was in the English program. This resulted in a total number of 26 participants ( $n = 12$  males,  $n = 14$  females). The majority of the students in the course were fulfilling the College of Arts and Sciences language requirement of six hours of a foreign language at the intermediate level (LANG 2040 and 2050), with prerequisites of LANG 1010 and 1020 or credit by examination.

While utilizing the two sections can be considered a convenience sample, having the same instructor for both sections had the advantage of controlling for instructor effects, often stated to be a threat to internal validity. Selection bias (i.e., the comparability of groups prior to participation in the study) was addressed by looking at group characteristics in addition to

students' composition quality on the first composition to assess comparability and identify outliers.

## Procedures

### *Data Collection*

The project was reviewed and approved by the University Committee for the Protection of Human Subjects (Appendix D). The research study was explained to the students by reading the informed consent form (Appendix E), and signed informed consent forms were obtained to determine the students willing to participate. Data collection occurred during the spring semester. On the student's first day of class, a student information form (Appendix F) was completed which included contact information and the student's personal assessment of their ability levels in listening, speaking, reading, and writing, as well as several questions aimed at assessing the student's experiences with and opinions of technology. Instructors in the foreign language department normally obtain this type of student information at the beginning of each semester with some variation in the forms.

The researcher was the instructor for both classes and selected one as the experimental and the other as the control. The experimental group had regular class time allotted for practice in the lab on *Spanish Partner*, once a week during the fifteen-week semester barring any unusual circumstances for a total of 10 sessions, with the primary area of practice being the subjunctive mood. The control group remained in the regular classroom and completed traditional communicative activities. Students could independently go to the lab to practice, and this activity was documented on a sign-in sheet maintained by the staff in the FLLC and provided to the

instructor at the end of each week. A writing sample in English was also obtained from both sections to have a comparison of writing ability in English and Spanish.

As early in the semester as was possible, working around the first-year language labs that have priority access to the lab, both sections received an introduction to the lab facility, *Spanish Partner*, and *Atajo*. During the orientation to the lab, the features of the software programs were described. In another session the students were given a more hands-on overview of the writing assistant *Atajo* since students often do not take full advantage of the tool without some guidance (Burston, 1991; Scott, 1990). In the following example for guided composition, students were given the task and then are directed to the various databases for information.

Today you are going to write a letter to a friend or relative about cars. This can be a true or fictional story about a new vehicle or problems that you are having or have had with your car.

Access the following features to help you with this assignment:

1. Under Reference: Phrases: writing a letter (informal). Be sure to include the date.
2. Under Reference: Vocabulary: automobile. You may also use your text.
3. If you are talking about something in the past see Reference: Grammar: Verbs and scroll for imperfect, preterite or preterite vs. imperfect as needed.

### *Data Sources*

#### *Student Information Sheet (Appendix F)*

The Student Information Sheet included contact information and the student's personal assessment of their ability levels in listening, speaking, reading, and writing, as well as several questions aimed at assessing the student's experiences with and opinions of technology. The primary purpose related to the research questions was to elicit the students' opinions of using

technology to learn language. The Student Information Sheet was helpful in identifying potential outliers at either end of the language ability continuum. Questions were both on a Likert scale and open-ended:

3. How comfortable are you with writing in English? (please circle one)

Not at all comfortable    0    1    2    3    4    Extremely comfortable

4. How comfortable are you with writing in Spanish? (please circle one)

Not at all comfortable    0    1    2    3    4    Extremely comfortable

5. How would you rate your computer skills level? (please circle one)

No prior experience        Beginner        Intermediate        Expert

### *Compositions*

Three compositions were assigned during the course of the semester and all writing took place in the language lab, the Foreign Language Learning Center (FLLC), during class time. The three compositions assigned during the semester counted for 10% total of the final course grade. As per the informed consent form, the students were aware that the researcher was “interested in how [their] instruction affects your success....conducting a study of the effects of technology enhanced language learning on composition...”. The prompts in their entirety with the directions for logging on to *Atajo* are included as Appendices G, H, and I but are included here in abbreviated form for convenience of the reader.

Composition 1 (pretest): As we brainstormed in our pre-writing exercise on Tuesday, you will be writing about a problem or situation that impacts your environment. This could be a social or environmental issue, such as recycling, racism, excess noise or pollution.

Composition 2 (not included as a data source): Discuss your professional goals. This should include what you are studying now and what type of work you want to do. Talk about what your job will be like.

Composition 3 (posttest): Imagine that you are one of the “rich and famous” and would like to take a trip. Plan your trip including: where you would go, who you would invite, how you would travel, where you would stay, the clothes you would wear, the things that you would do in that place.

Composition 2 was not utilized in data analysis because the time intervals between writing assignments were not equal (thus, a nonequivalent groups pretest-posttest only design was used in this study). The topic is included here to illustrate the types of writing topics students completed during the semester. The composition tasks were designed to take advantage of the thematic vocabulary and grammatical structures studied at the particular time in the course; for example, the first composition task elicited writing on an issue affecting the students’ environment. This is parallel to the chapter entitled *El medio ambiente* (The Environment) with vocabulary terms including the ozone layer, recycling, and natural resources to public transportation, crime, and the fast pace of life. The National Standards (Standards, 1999) encourage the learner to discuss personal events and perspectives in writing at the intermediate level. The first composition written in the course served as the baseline or pretest comparison with the final composition in the semester serving as the posttest. Students were instructed to always use a pseudonym and not to put their name or other identifier on their compositions.

*Composition rubric.* All essays were collected and randomized prior to grading. The rubric (Appendix J) utilized for composition assessment was adapted from what has come to be known as the Jacobs scale. Originally called the ESL Composition Profile (Jacobs, Zingraf,

Wormuth, Hartfiel, & Hughey, 1981), the instrument has been used as both as a holistic and analytic measure for second language writing research (Polio, 2003), and modified for use in foreign language composition evaluation (Hedgcock & Lefkowitz, 1992). The profile contains five component areas, measured using a continuous scale, which can give a measure of overall composition quality. The five areas are Content, Organization, Vocabulary, Grammar/Language Use, and Mechanics. Research regarding the factors that influence readers most when evaluating composition guided the selection of the subscales. Each subscale is weighted according to its estimated contribution to written communication and has descriptors and criteria.

Consider Content as an example.

**CONTENT:**

27-30 Knowledgeable; substantive; thorough development of thesis; relevant to topic.

22-26 Some knowledge of subject; adequate range; limited development of thesis; mostly relevant to topic, but lacks detail.

17-21 Limited knowledge of subject; little substance; inadequate development of topic.

13-16 Does not show knowledge of subject; non-substantive; not pertinent, or not enough to rate.

Content, with 30 possible points, is comprised of knowledge of the subject, several main points discussed with a specific method of development. The subscales of Organization, Vocabulary, Grammar/Language Use, and Mechanics follow suit. The issue of semantics or meaning is addressed in the underlying principle in the design of the Composition Profile—the fact that it is the reader’s overall impression of the message communicated in the writing sample that matters most. “The five component scales thus are intended to be regarded as five different windows or

viewpoints from which to judge the writer’s overall communicative effect” (Jacobs et al., 1981, p. 32) with the total score being the most reliable indicator of a writer’s ability.

Extensive technical information regarding the reliability and validity of the Jacobs scale is provided in the original description of the Composition Profile (Jacobs et al., 1981). Reader reliability is shown to be .74 for one reader and .85 for two, although the range for 2 readers can be from .59 to .96.

*Atajo log.* Another valuable tool for data collection was the logging feature of *Atajo*, the word processing program that the students utilized in lab to write compositions. The writing log of *Atajo* provides unobtrusive observation of students’ use of the software and details the time the writing assistant is started, each occasion that the databases such as the dictionary, grammar, or phrases are accessed as well as requests to see examples or have verbs conjugated. A brief sample follows in Table 1. As seen in this sample log, the student “Duckie” began using *Atajo* at 11:10:54 then looked up the English word “career” and found one result, the Spanish word “carrera.” Then the student looked up the English word “now” and found three Spanish equivalents, including the word “ahora.” A more extensive example of a log is included as Appendix K.

Table 1

Sample *Atajo* Log

---

11:10:54 BEGS (BeginSession) 4/15/2004 “duckie”
S:\FORL\FLLC\OXFORD9\3DUCKIE.RTF
11:11:47 RSDI (RaiseDict) Spanish “atajo” “shortcut”
11:11:54 SRDI (SearchDict) “career” EnglishWM Items found:1 “career, race”
“carrera”

11:12:03 SLDH (SelectDictSearchHit) “career, race” “carrera”

11:12:05 RSED (RaiseEditFile) S:\FORL\FLLC\OXFORD9\3DUCKIE.RTF

11:12:30 RSDI (RaiseDict) English “carrera” “career, race”

11:12:32 SRDI (SearchDict) “now” EnglishWM Items found:3 “now” “ahora”

---

### *Demographic Data (Appendix L)*

At the end of the semester, additional information was collected from students. This included gender, academic classification/year in school, majors, minors and age, language and technology instruction experience.

### *Core Assessment Questionnaire for Communication (Appendix M)*

The Core Assessment Questionnaire for Communication was created by the Department of Foreign Languages and Literatures and employed for the evaluation required by the Higher Education Coordinating Board of courses that satisfy core university requirements. The following questions from the questionnaire are pertinent to this study:

To what extent has this course helped you to write more effectively in this foreign language?

To what extent has this course helped you to extend your understanding of the grammatical structure of this language?

To what extent has this course helped you to apply this grammatical structure to express your ideas, opinions, and needs in writing?

To what extent has this course helped you to organize your thoughts for oral/written presentations?



To what extent has this course helped you to choose appropriate language examples and visual aids for oral/written presentations?

A similar questionnaire elicited responses of the experimental group to the effectiveness of the technology to achieve the same goals for language learning (Appendix N).

### Data Analysis

Román-Odio and Hartlaub (2003) recommend approaches to CALL research based on recent trends and more complex statistical analyses. “General linear models, including both ANOVA and regression models, are used to investigate not only possible main effects of isolated factors, but also relationships between factors” (p. 595). All statistical analyses were conducted in the SPSS® Statistical Package for the Social Sciences 12.0 (SPSS, [www.spss.com](http://www.spss.com)). The significance level for all tests was set at the .05 level unless otherwise noted. Each research question will be addressed here. Each research question will be addressed here.

Research question 1: How will the use of a grammar and vocabulary practice software program (*Spanish Partner*) affect quantity in L2 students’ compositions as measured by the total number of words per composition?

This research question was the preliminary step in looking at the fluency of the students’ composition with regard to total number of words produced during a given period of time. Completing a count of words per composition provided the information needed to conduct repeated measures ANOVA. Repeated measures ANOVA tested the interaction effects or treatment by occasion (pre-test/post-test). This is graphically represented below in Figure 1.

Figure 1

Repeated Measures Analysis of Variance Design

	Composition 1 (PRE)	Composition 3 (POST)
Control	Word count	Word count
Experimental	Word count	Word count

Research question 2: How will the systematic use of a grammar practice software program (*Spanish Partner*) affect the quality of L2 learners' compositions as measured by total composition score, and the subscale areas of Content, Organization, Vocabulary, Grammar/Language Use, and Mechanics (spelling, accentuation, and punctuation)?

The quality of the written product is a measure of composition skill and development of fluency since ACTFL (Breiner-Sanders, Swender, & Terry, 2002) defines fluency as a flow in the written language as perceived by the reader, made possible by clarity of expression, the acceptable ordering of ideas, use of vocabulary and syntax appropriate to the context, with words, phrases, and idiomatic expressions that go together by common lexical convention. (p. 14)

The composition rubric measures the five subscale components. Measures of improvement in each area of composition for the experimental group with comparison to the control were determined by a repeated measures ANOVA design, specifically a mixed factor ANOVA. In this study the case was a pre and post design with measures being the first and last composition of the semester, the independent variable being scheduled practice using *Spanish Partner*. The dependent variables are total composition score, Content, Organization, Vocabulary, Grammar/Language Use, and Mechanics. Descriptive statistics such as the average or mean score, range of the scores for both the experimental and control group, frequency distribution of scores, and standard deviation were examined.

Research question 3: What composition elements available through the writing assistant program (*Atajo*) do students access most?

The *Atajo* writing assistant logging feature provided unobtrusive observation of students' use of the software, and analysis of the logs and comparison to resulting compositions can give valuable insights to the writing process. The writing logs from *Atajo* provided a detail of the database features accessed, as well as the word being looked up in the dictionary. A count will yield the data needed to utilize correlation analysis to determine the relationship between the number and type of help requests and overall composition quality and quantity.

Research question 4: What is the relationship between the number and type of help requests to *Atajo* and composition quality and quantity?

The purpose of the question was to determine whether the experimental group accessed fewer grammar topics due to their computer practice or if the students accessed the writing assistant in significantly different ways. Two separate correlation analyses were conducted. One attempted to predict quality using the overall score on compositions and frequency counts of writing features accessed. The second correlation addressed quantity measured in total words per composition and the writing features accessed.

Research question 5: What are students' opinions of utilizing technology to learn to compose in L2?

Both the student information sheet and Core Assessment Questionnaire contained Likert scale items and open-ended questions that probed the students' opinions of utilizing technology to learn to compose. A description of the student opinions was completed with a qualitative analysis of the responses. These opinions gave insight into the students' attitudes regarding computers and technology which can impact their use.

An overview of the research questions, the measurement instruments and the data analysis procedures is shown in Figure 2 below.

Figure 2

Research Questions and Data Analysis Summary

Research Question	Measurement Instruments and Data Sources	Data Analysis
1. How will scaffolding provided by the use of a grammar and vocabulary practice software program ( <i>Spanish Partner</i> ) affect quantity in L2 students' compositions as measured by the total number of words per composition?	Compositions	Word count Repeated measures ANOVA
2. How will the systematic use of a grammar practice software program ( <i>Spanish Partner</i> ) affect the quality of L2 learners' compositions as measured by total composition score, and the subscale areas of Content, Organization, Vocabulary, Grammar/Language Use, and Mechanics (spelling, accentuation, and punctuation)?	Measures are components of composition rubric (Appendix J): Total composition score, Content, Organization, Vocabulary, Language Use/Grammar, Mechanics (spelling, accentuation, punctuation); Which area(s) improve(s) or are affected significantly?	Mixed two factor ANOVA
3. What composition elements available through the writing assistant program ( <i>Atajo</i> ) do students access most?	Writing logs from <i>Atajo</i>	Frequency distribution
4. What is the relationship between the number and type of help requests to <i>Atajo</i> and composition quality and quantity?	Total score on composition rubric (Appendix J) and frequency counts on writing logs from <i>Atajo</i>	Correlation
5. What are students' opinions of the usefulness of technology for composing in L2?	Student info form and Core Questionnaire (Both have Likert scale and open-ended questions)	Qualitative analysis of responses to open-ended questions

## Research Hypotheses

This study sought to determine whether the following hypotheses were supported by the aforementioned data. The study hypotheses were as follows:

The first hypothesis was based on the first research question—how will scaffolding provided by the use of a grammar and vocabulary practice software program (*Spanish Partner*) affect quantity in L2 students' compositions as measured by the total number of words per composition? The researcher hypothesized that students with grammar and vocabulary practice would produce a greater number of words during composition after grammar and vocabulary practice. Stated in the null:

H<sub>0</sub> There is no significant difference over time in the number of words produced by students who have computer grammar practice and those who do not.

The second set of hypotheses was based on the second research question— how will the systematic use of a grammar practice software program (*Spanish Partner*) affect the quality of L2 learners' compositions as measured by total composition score, and the subscale areas of Content, Organization, Vocabulary, Grammar/Language Use, and Mechanics (spelling, accentuation, and punctuation)? The researcher hypothesized that students with grammar and vocabulary practice would produce better quality compositions on the total composition score as well as the Vocabulary and Grammar/Language Use subscales. Stated in the null:

H<sub>0</sub> There is no significant difference in the total composition score of students who have computer grammar practice and those who do not.

H<sub>0</sub> There is no significant difference in the Vocabulary subscale score of students who have computer grammar practice and those who do not.

H-0 There is a significant difference in the Grammar/Language Use subscale score of students who have computer grammar practice and those who do not.

The third research question—what composition elements available through the writing assistant program (*Atajo*) do students access most?—is exploratory in nature. The researcher hypothesized that students would make use of all databases with the dictionary and grammar being the most frequently consulted and this pattern decreasing over time. The researcher also hypothesized that the students that had regular grammar and vocabulary practice on *Spanish Partner* would make fewer grammar inquiries to *Atajo* than the control group. Stated in the null:

H-0 There is a significant difference over time in the use of composition reference aids in *Atajo*.

The fourth research question (What is the relationship between the number and type of help requests to *Atajo* and composition quality and quantity?) is correlational and exploratory in nature, and the final research question (What are students' opinions of the usefulness of technology for composing in L2?) elicits the opinions of the students and is more qualitative in nature; thus, there is no researcher hypothesis for either question.

### Limitations

The study was limited to the examination of the effects of two software programs provided by the foreign language department on the composition performance of intermediate level Spanish students. Since features of software programs are unique, care should be exercised in generalizing the results to the use of other grammar practice programs and technology-enhanced writing assistants designed to improve composition.

Students for the study were not randomly selected; the only randomization of the population was due to the students' self-selection into the researcher's classes. The sample size was limited to one entire class section as a control and one as the experimental treatment group (each  $n = 30$ ). While this can be considered a convenience sample, having the same instructor for both sections has the advantage of controlling for instructor effects, often stated to be a threat to internal validity. Group characteristics such as gender, majors/minors, previous course grades, comfort with writing, experience with technology, and pretest scores on compositions were compared to note any significant differences between groups.

Writing time allotted for composition in research studies (as in timed writings for placement and assessment) may be more restrictive in most cases for pre-writing, planning and actual writing than in a classroom setting, but it can also be comparable to in-class exam situations (i.e., students have limited time to complete an essay on a test instead of a homework assignment or take-home composition with unlimited time). There is not conclusive evidence that the time allowed seriously affects the reliability of scores (Jacobs et al., 1981). Students were allowed a minimum of thirty minutes for writing compositions, a time-limit imposition that is long enough to provide an adequate sample of writing behavior (Jacobs et al., 1981).

Understanding the impact of technology-enhanced language learning on students' composition process and product is important to the successful integration of technology into the foreign language curriculum. It is also useful to comprehend the perceptions and attitudes of students using technology to write. This study provided insights into the effects of grammar and vocabulary student practice on composition. The results of this data analysis are discussed in depth in Chapter 4.

## CHAPTER 4

### FINDINGS

#### Presentation of Findings

##### *Participants*

Fifty-two university-level foreign language learners enrolled in the researcher's intermediate Spanish classes (SPAN 2040) participated in this study. The purpose of this research was to identify and to describe the possible benefits of grammar drill and practice on the composition of intermediate Spanish students. The goal was to determine how students who are provided regular opportunities to practice Spanish grammar skills using *Spanish Partner* software access a writing assistant software program differently in comparison with students who are not provided regular opportunities to practice Spanish grammar skills with *Spanish Partner* software and whether said practice improves their composition ability.

The students completed a Student Information sheet (Appendix F) the first day of class in order to inform the researcher as to their comfort with speaking in Spanish, comfort with writing in English as well as Spanish, computer skill level, and experience with technology. Students also rated their ability in Spanish for listening, speaking, reading and writing. At the end of the course, the students provided additional demographic information (Appendix L) such as gender, age, race/ethnicity, classification, study of Spanish in grades K-12 as well as instruction in technology. While utilizing two sections taught by the instructor/researcher might be considered a convenience sample, having the same instructor for both sections had the advantage of controlling for instructor effects (often stated to be a threat to internal validity).



Table 2

## Demographics of the Control and Experimental Groups

	Group			
	Control ( <i>n</i> = 26)		Experimental ( <i>n</i> = 26)	
	Frequency	%	Frequency	%
Gender				
Male	<i>n</i> = 12	46.2	<i>n</i> = 12	46.2
Female	<i>n</i> = 14	53.8	<i>n</i> = 14	53.8
Age				
16-20	<i>n</i> = 14	53.8	<i>n</i> = 8	30.8
21-25	<i>n</i> = 12	46.2	<i>n</i> = 16	61.5
26-30	<i>n</i> = 0	0.0	<i>n</i> = 2	7.7
Race				
Asian	<i>n</i> = 0	0.0	<i>n</i> = 0	0.0
Black	<i>n</i> = 5	19.2	<i>n</i> = 4	15.4
Hispanic	<i>n</i> = 1	3.8	<i>n</i> = 0	0.0
White	<i>n</i> = 19	73.1	<i>n</i> = 20	76.9
Other	<i>n</i> = 1	3.8	<i>n</i> = 2	7.7
Classification				
Sophomore	<i>n</i> = 11	42.3	<i>n</i> = 3	11.5
Junior	<i>n</i> = 9	34.6	<i>n</i> = 13	50.0
Senior	<i>n</i> = 6	23.1	<i>n</i> = 10	38.5
Years prior study	<i>n</i> = 26	2.7	<i>n</i> = 26	3.2

### *Demographics*

Looking at group demographics (Table 2) revealed no selection bias prior to participation in the study. The groups were fairly well matched on age, gender, and race. Of the original thirty participants in the control group, three students did not complete the course and one doctoral student (in English) was considered unlike the other participants in terms of writing ability and was omitted from the study. Thus, the control group ultimately included 14 females and 12 males with 53.8% between the ages of 16 and 20 and 46.2 % in the category of ages 21 to 25 (Table 2).

In the experimental group, four students did not complete the course resulting in an *n* of 26 for the experimental group. There were 14 females and 12 males with 30.8% between the ages of 16 to 20, 61.5 % ages 21 to 25, and 7.7% from ages 26 to 30 (Table 2).

### *Major and Minor Areas of Study*

Undergraduate major and minor areas of study varied greatly, but in the control group there was one Spanish major and six Spanish minors at the beginning of the course. At the end of the course there were four more students that expressed an interest in or had declared a minor in Spanish, but one student dropped the Spanish minor and another had initially listed Spanish as a minor went to “possibly Spanish.” In the experimental group, there was one Spanish major at the beginning of the course and one who listed Spanish as a major with a question mark. The latter definitively stated being a major by the end of the course. There were seven Spanish minors in the experimental group. The number stayed the same at the end of the semester with one student dropping the minor and another adding.

### *Classification*

Demographic data also included the student’s classification in school by the traditional rankings of freshman, sophomore, junior and senior. There were no freshman students in either

class. While the two groups were mostly similar in classification, there were more upperclassmen in the experimental group than in the control group. Classification, however, was shown not to be correlated to composition gains for the entire population,  $r = .02$ ,  $p = .86$  or the individual groups: control,  $r = -.12$ ,  $p = .56$  and experimental,  $r = .10$ ,  $p = .65$ .

#### *Previous Study of Spanish*

Students were asked about their previous years of study of Spanish. The mean years of study for the control group were  $M = 2.73$  while that of the experimental were  $M = 3.19$ , a slightly higher average due to two participants that stated they had classes in elementary as well as middle school. Totally excluding the two cases yielded a mean of  $M = 2.58$  years of study for the experimental group. The two students were not considered outliers and were retained since no statistically significant correlation was found between years of previous study of Spanish and composition gain either for the entire sample of the study,  $r = .11$ ,  $p = .45$ ; the experimental group including them,  $r = .01$ ,  $p = .99$  or the experimental group excluding them,  $r = .21$ ,  $p = .34$ .

#### *Independent Use of Spanish Partner*

*Spanish Partner* is currently available in the Foreign Language Learning Center only as it does not easily run on Windows® versions newer than Windows® 1998 operating system (Microsoft Corporation, [www.microsoft.com](http://www.microsoft.com)). Sign in sheets are provided to the instructors from the FLLC which indicate the amount of time that the students spent in lab and what software program the students were using or task they were completing. In the control group only one student reported going to lab to work on *Spanish Partner*, for a total of 30 minutes.

Table 3

Descriptive Statistics for Midterm Exam, Final Exam, and Final Course Grade

	Group	
	Control ( $n = 26$ )	Experimental ( $n = 26$ )
Midterm Exam	$M = 83.12$	$M = 83.54$
	$SD = 8.62$	$SD = 10.57$
	Range 67 – 97	Range 55 – 100
Final Exam	$M = 85.62$	$M = 85.96$
	$SD = 8.83$	$SD = 11.34$
	Range 67 – 99	Range 58 – 100
Final Course Grade	$M = 85.27$	$M = 87.05$
	$SD = 6.12$	$SD = 6.93$
	Range 74 – 95	Range 73 – 100

*Course Assessments*

In relation to the midterm exam, final exam, and final course grades, the data revealed that students in both the control and experimental groups were very similar (Table 3). The means for the midterm exam, final exam, and final course grade are nearly identical for both the experimental and the control groups, implying comparability of groups. The standard deviations for the control on the midterm exam ( $SD = 8.62$ ) and the final exam ( $SD = 8.83$ ) are lower than the experimental group ( $SD = 10.57$  and  $SD = 11.34$ , respectively) which indicates that individuals in the control group tended to have less variability across their scores than the participants in the experimental group.

### *Pretest Composition 1*

An analysis of variance (ANOVA) was used to test the hypothesis that the means of the two groups were not significantly different on Composition 1. ANOVA is robust to departures from normality, and this sample population had comparable ranges and means, with a few extreme values deemed not to be outliers. A homogeneity of variances test was employed, and the Levene statistic ( $p = .01$ ) confirmed rejection of the null hypothesis that the variances are equal. ANOVA is robust to this violation when the groups are of equal or near equal size. In this study the control and experimental groups are both  $n = 26$ . For the ANOVA on Composition 1, the significance level was  $p = .16$ , indicating that there was no statistically significant difference in the performance of the two classes on Composition 1. This test was intended to give additional assurance as to the comparability of the two groups in terms of composition ability.

### *Self-rating of Language Skills*

The results from the Student Information Sheet (Appendix F) provided perceptions from students regarding their abilities in Spanish, the target language, as well as their comfort with speaking and writing. Question 1 asked students to rate their ability level in Spanish for listening, speaking, reading and writing based on modifications of the ACTFL Proficiency Guidelines. To determine average student self-rating of skills, “Novice High” was coded as 1 and “Superior” was coded as 8.

Table 4

Student Rating of Skills: Percentage and Number of Students\*

	Listening		Reading		Speaking		Writing	
	Control	Exp.	Control	Exp.	Control	Exp.	Control	Exp.
Novice High	7.7	0.0	0.0	3.8	7.7	7.7	3.8	7.7
<i>n</i>	2	0	0	1	2	2	1	2
Intermediate Low	11.5	23.1	7.7	11.5	11.5	23.1	3.8	15.4
<i>n</i>	3	6	2	3	3	6	1	4
Intermediate Mid	26.9	78.7	7.7	23.1	42.3	38.5	23.1	42.3
<i>n</i>	7	2	2	6	11	10	6	11
Intermediate High	23.1	57.7	42.3	30.8	23.1	23.1	42.3	19.2
<i>n</i>	6	15	11	8	6	6	11	5
Advanced Low	19.2	3.8	11.5	19.2	15.4	7.7	23.1	11.5
<i>n</i>	5	1	3	5	4	2	6	3
Advanced Mid	3.8	3.8	15.4	11.5	0.0	0.0	3.8	3.8
<i>n</i>	1	1	4	3	0	0	1	1
Advanced High	7.7	3.8	15.4	0.0	0.0	0.0	0.0	0.0
<i>n</i>	2	1	4	0	0	0	0	0
Superior	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>n</i>	0	0	0	0	0	0	0	0

\*Control *n* = 26; Experimental *n* = 26

Looking first at receptive skills, the mean for students in the experimental group for listening was  $M = 3.69$  (intermediate mid level), and the mean for self-rated reading ability was  $M = 3.85$  (upper intermediate mid level). The mean for the control group for listening ability was  $M = 3.77$  (in the intermediate mid level), and reading ability was  $M = 4.65$  (intermediate high level).

Continuing with the productive skills, the mean for students in the experimental group was  $M = 3.00$  for speaking ability (intermediate mid level), and their writing ability as  $M = 3.23$  (also in the intermediate mid level). The control group self-rated speaking ability as  $M = 3.27$  (intermediate mid level) and writing ability as  $M = 3.88$  (upper intermediate mid level). Full explanations of levels are presented in Appendix F.

Table 5

Analysis of Variance for Student Rating of Listening Skills by Group

Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between	1	0.09	0.08	.04	.85
Within	50	100.15	2.00		
Total	51	100.23			

There was not a statistically significant difference between the two groups for listening,  $F(1, 50) = .04, p = .85$ , and speaking,  $F(1, 50) = .80, p = .38$  (Table 5 and Table 6). However, reading  $F(1, 50) = 4.36, p = .04$  and writing  $F(1, 50) = 4.26, p < .05$  showed statistically significant differences (Table 7 and Table 8).

Table 6

Analysis of Variance for Student Rating of Speaking Skills by Group

Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between	1	0.94	0.94	.80	.38
Within	50	59.12	1.18		
Total	51	60.06			

Table 7

Analysis of Variance for Student Rating of Reading Skills by Group

Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between	1	8.48	8.48	4.36	.04
Within	50	97.27	1.95		
Total	51	105.75			

Table 8

Analysis of Variance for Student Rating of Writing Skills by Group

Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between	1	5.56	5.56	4.26	.04
Within	50	65.27	1.31		
Total	51	70.87			



The students' rating of their reading and writing skills were positively correlated ( $r = .74$ ,  $p < .01$ ) as might be expected with the strong relationship between reading and writing in literacy. However, neither the students' rating of their reading skills ( $r = -.20$ ,  $p = .16$ ) nor their rating of their writing skills ( $r = -.12$ ,  $p = .41$ ) were correlated to their overall total composition score gains.

#### *Comfort with Speaking and Writing*

Questions 2 through 4 of the Student Information Form required students to use a Likert-like scale of 0 to 4 to indicate their comfort with various language activities, where 0 indicated *Not at all comfortable* and 4 was *Extremely comfortable*. For Question 2: How comfortable are you with speaking in Spanish, the data indicated that the students in the control group were somewhat comfortable with their speaking abilities ( $M = 1.96$ ) as were the students in the experimental group ( $M = 1.65$ ). Regarding Question 3: How comfortable are you with writing in English, both the control and experimental group stated that they were extremely comfortable with this skill ( $M = 3.88$ ). This is compared to Question 4 regarding comfort with writing in Spanish in which the control ( $M = 2.15$ ) and the experimental ( $M = 2.12$ ) both said that they were only somewhat comfortable writing in Spanish.

#### *Data Analysis*

In "Classroom Assessment of CALL" Román-Odio and Hartlaub (2003) recommend approaches to CALL research based on recent trends and more complex statistical analyses. They state that "General linear models, including both ANOVA and regression models, are used to investigate not only possible main effects of isolated factors, but also relationships between factors" (p. 595). All statistical analyses were conducted using the SPSS® Statistical Package for

the Social Sciences 12.0 (SPSS, [www.spss.com](http://www.spss.com)). Reliability of data sources as well as each research question will be addressed here.

### *Reliability Measures*

*Interrater reliability.* Reliability is defined as the degree to which multiple assessments agree. When human beings are involved in making a judgment or a decision regarding a measurement or outcome, some assessment of the reliability of the measurement needs to be made. While the precise total scores given by the two graders on a given composition may differ, good compositions should receive higher scores than average compositions and average compositions higher than poor compositions. To test for this condition and determine interrater reliability, the intraclass correlation coefficient or ICC (McGraw & Wong, 1996) was used.

The ICC is an ANOVA-type model in which the graders' composition scores are responses. One source of variation is the student composition, which is assumed to be a random sample from a larger pool of compositions. Another source of variation is the graders, who are unique to this study and not from a random pool of graders. Thus, the two-way mixed effects model was used. Moreover, since a similar (versus exact) pattern of scores is acceptable, it was reasonable to check for consistency rather than absolute agreement. The competence and reliability of the first rater were enhanced by his being a Spanish teacher with twenty years in the profession, experienced in composition, and knowledgeable about national, university, and departmental standards. He had not taught students in the test group. The second rater used in this study was also a veteran Spanish teacher with twenty years in the profession at both the secondary and university levels and experienced in teaching composition courses. She also had not had any of the students in the test group. All compositions ( $N = 104$ ) were used to determine interrater reliability. The ICC for these two graders was .81.

*Cronbach's alpha.* Cronbach's alpha (Cronbach, 1951) is a commonly utilized measure of reliability. More specifically, alpha is a lower bound for the true reliability of a survey. Mathematically, reliability is defined as the proportion of the variability in the responses to the survey that is the result of differences in the respondents. That is, answers to a reliable survey will differ because respondents have different opinions, not because the survey is confusing or has multiple interpretations. The computation of Cronbach's alpha is based on the number of items on the survey and the ratio of the average inter-item covariance to the average item variance. Cronbach's alpha was run on a variety of measures utilized in this study such as the Core Assessment Questionnaire that was used in part to elicit students' perceptions of the usefulness of technology for composing in L2. Results are reported in the pertinent sections.

*Missing Data.* Statisticians address multiple approaches by which to handle missing data, most commonly used is replacement of the missing data with the mean, median or mode. Whether or not to replace missing values for analysis depends on the reason why they are missing. The best reason for replacing data is when data is missing at random. During analysis of *Atajo* logs it was found that in some cases students either neglected to turn on the logging feature or there was a technical malfunction. This resulted in missing data for the time spent composing and the inquiries made to the databases, two important issues in this study. To ascertain the best choice for data replacement, an analysis of the distribution and measures of central tendency was conducted. Commonly the mean is utilized, but the median is less sensitive to extreme scores (the mean is pulled toward the skewness in distribution). It was determined that the mean ( $M = 39$ ) was the best replacement for Composition 1 time spent composing for both groups. For Composition 3 time spent composing, the control data was replaced with the median ( $Mdn = 39$ ) and the experimental data was also replaced with the median ( $Mdn = 37$ ). As for the number of

total inquiries made to *Atajo* databases, the range of usage was very broad, and thus the median was utilized for all replacements.

### *Research Questions*

Research question 1: How will scaffolding provided by the use of a grammar and vocabulary practice software program (*Spanish Partner*) affect quantity in L2 students' compositions as measured by the total number of words per composition?

Writing sessions during class varied across students. *Atajo* logs revealed that composition times ranged from 28 to 49 minutes. Thus, in order to examine quantity of writing production, it was necessary to calculate words per minute in order to conduct a repeated measures ANOVA to test the interaction effects or treatment of grammar and vocabulary practice on composition performance by occasion (pre-test/post-test) for quantity of words produced. On Composition 1, the control group wrote  $M = 3.58$  words per minute while the experimental group wrote  $M = 3.74$  words per minute. On Composition 3, the control group wrote  $M = 4.27$  words per minute while the experimental group wrote  $M = 3.61$  words per minute. Although there was a slight gain for the control group, a repeated measures ANOVA on the change in words per minute showed no statistically significant difference between groups  $F(1, 50) = 2.54, p = .12$ .

Table 9

Analysis of Variance for Change in Words per Minute from C1 to C3 by Group

Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between	1	8.81	8.81	2.54	.12
Within	50	173.63	3.47		
Total	51	182.44			

The researcher hypothesized that students with grammar and vocabulary practice would produce a greater number of words during composition after grammar and vocabulary practice. Stated in the null:

H<sub>0</sub> There is no significant difference over time in the increase in the number of words produced by students who have computer grammar practice and those who do not. Data shows that there was no statistically significant difference over time in the increase in the number of words per minute between the control and experimental groups; therefore, the researcher was not able to reject the null hypothesis.

Research question 2: How will the systematic use of a grammar practice software program (*Spanish Partner*) affect the quality of L2 learners' compositions as measured by total composition score, and the subscale areas of Content, Organization, Vocabulary, Grammar/Language Use, and Mechanics (spelling, accentuation, and punctuation)?

All compositions were graded by two graders and the interrater reliability was .81. In 17 cases where the graders disagreed by more than 10 points on the total composition score, the researcher served as a third grader. The 10-point difference is cited in Jacobs et al. (1981) as the standard for reliability with scores with greater than 10 points difference necessitating an additional grader. The two closest scores were averaged and that score used for analyses.

Composition 1 yielded a Cronbach's alpha of 0.82 and Composition 3 Cronbach's alpha = 0.80.

Measures of improvement on the total composition as well as each component subscale of the composition rubric were examined at two levels. Gain scores were examined on the descriptive level as well as with independent *t* tests for Composition 1 (Table 10) and Composition 3 (Table 11).

Table 10

Mean Total and Component Subscale Scores for Composition 1<sup>\*</sup>

	Maximum Score	Control <i>M</i> ( <i>SD</i> )	Experimental <i>M</i> ( <i>SD</i> )	<i>t</i>
Total Score	100	81.12 (6.86)	77.71 (9.95)	1.44
Content	30	25.14 (2.65)	24.50 (2.65)	0.86
Organization	20	16.89 (1.08)	16.33 (1.89)	1.31
Vocabulary	20	15.83 (1.70)	15.17 (2.40)	1.13
Grammar	25	19.23 (1.89)	17.79 (3.06)	2.04
Mechanics	5	4.02 (0.30)	3.92 (0.58)	0.75

<sup>\*</sup>Control *n* = 26; Experimental *n* = 26

Table 11

Mean Total and Component Subscale Scores for Composition 3<sup>\*</sup>

	Maximum Score	Control <i>M</i> ( <i>SD</i> )	Experimental <i>M</i> ( <i>SD</i> )	<i>t</i>
Total Score	100	84.58 (6.30)	83.62 (5.93)	0.57
Content	30	25.94 (2.32)	25.73 (1.89)	0.36
Organization	20	17.52 (1.32)	17.39 (1.31)	0.37
Vocabulary	20	16.75 (1.37)	16.75 (1.31)	0.00
Grammar	25	19.90 (1.78)	19.44 (2.13)	0.85
Mechanics	5	4.37 (0.48)	4.27 (0.29)	0.87

<sup>\*</sup>Control *n* = 26; Experimental *n* = 26

No statistically significant results were found on any of the independent t-tests. However, it is very important to note that the percentage of change on the mean scores between Composition 1 and Composition 3 (Table 12) is higher for the experimental group in all measures except for Mechanics, which was equal for the experimental and the control.

Table 12

Mean Differences Between Composition 1 and Composition 3<sup>\*</sup>

	Control			Experimental			<i>t</i>
	<i>M</i>	%	<i>SD</i>	<i>M</i>	%	<i>SD</i>	
	change			change			
Total Score	3.46	3.46	8.47	5.90	5.90	8.67	-1.03
Content	0.81	2.70	3.20	1.23	4.10	2.42	-0.54
Organization	0.63	3.15	1.51	1.06	5.30	1.79	-0.92
Vocabulary	0.92	4.60	2.07	1.58	7.90	2.13	-1.12
Grammar	0.67	2.68	2.38	1.65	6.60	3.01	-1.30
Mechanics	0.35	7.00	0.49	0.35	7.00	0.65	0.00

<sup>\*</sup>Control *n* = 26; Experimental *n* = 26

#### *Evaluation of Total Composition Score and Rubric Subscales*

A mixed two factor ANOVA, which is a type of repeated measures ANOVA, was employed to look at the differences between the experimental and control groups over time on the total composition score as well as the subscales of Content, Organization, Vocabulary, Grammar/Language Use, and Mechanics. While there were no statistically significant differences

found between the experimental and control group in these analyses, the general trends in the increases for the experimental group are visible in the figure plots for the total composition score (Figure 3) as well as the subscales of Content (Figure 4), Organization (Figure 5), Vocabulary (Figure 6), and Grammar/Language Use (Figure 7).

Table 13

Mixed Two Factor Analysis of Variance for Total Composition Score

Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between subjects					
Group	1	123.87	123.87	1.68	.20
Error	50	3684.26	73.69		
Within subjects					
Time	1	570.12	570.12	15.52	.00
Time X Group	1	38.77	38.77	1.06	.31
Error	50	1836.99	36.74		

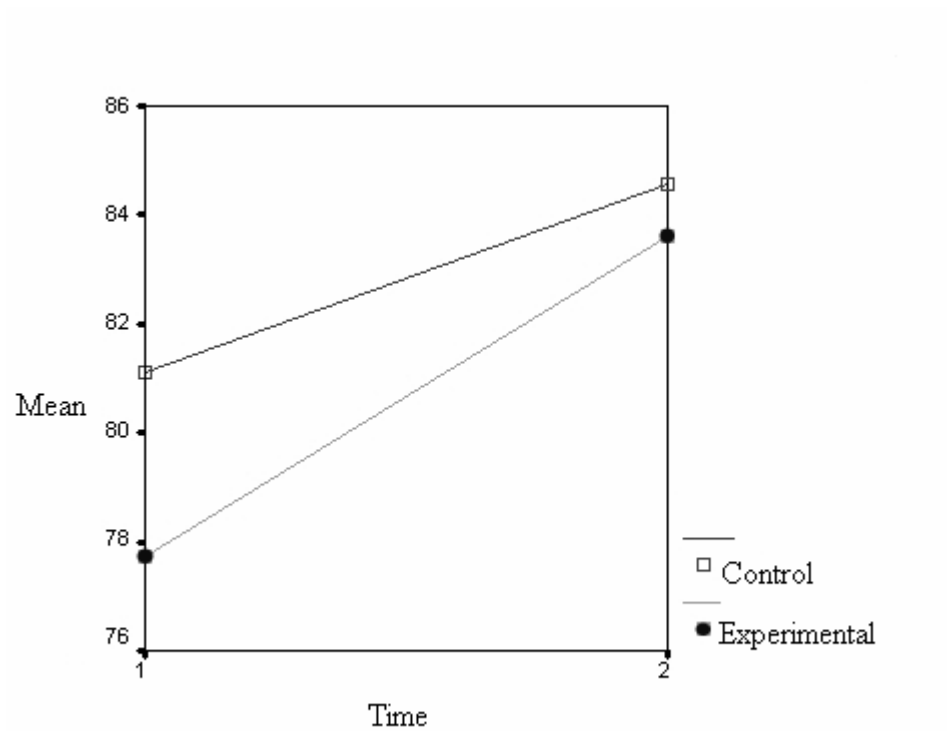
There was a statistically significant difference between the total composition scores for Composition 1 and Composition 3 with all participants in the study,  $F(1,50) = 15.52, p < .01$ .

When examining the interaction of effects between the control and experimental groups, there was no statistically significant difference,  $F(1,50) = 1.68, p = .20$ .



Figure 3

Plot of Means for Total Composition Score



As seen in Figure 3, while the differences in gains may not have been statistically significant, the experimental group was making some improvement in total composition score.

Table 14

## Mixed Two Factor Analysis of Variance for Content Subscale

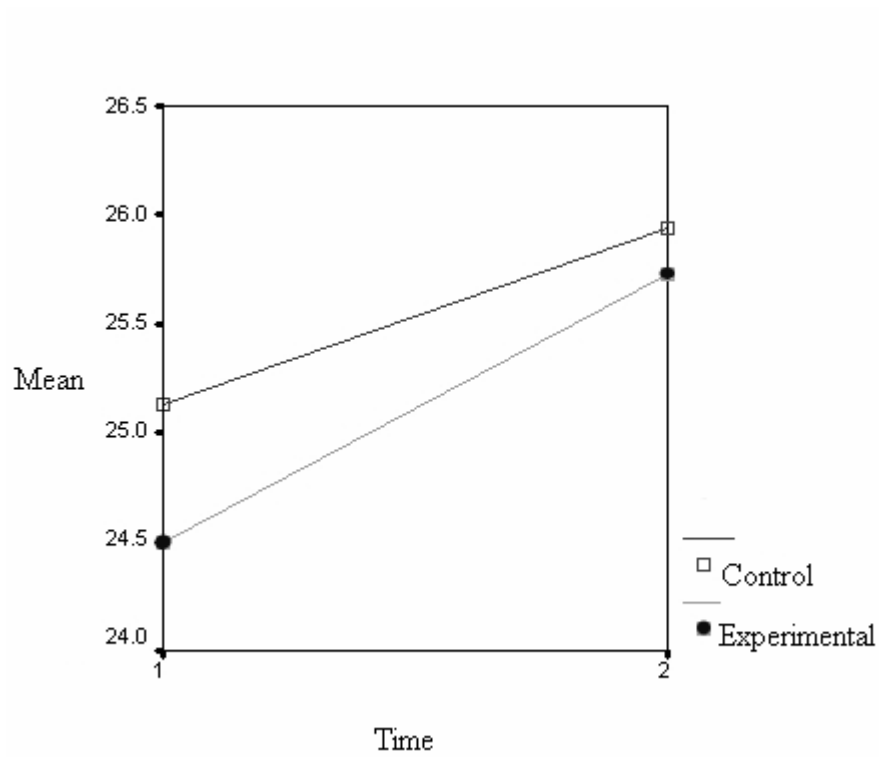
Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between subjects					
Group	1	4.65	4.65	.62	.43
Error	50	373.73	7.48		
Within subjects					
Time	1	27.01	27.01	6.71	.01
Time X Group	1	1.16	1.16	0.29	.59
Error	50	201.33	4.03		

There was a statistically significant difference between the Content subscale scores for Composition 1 and Composition 3 with all participants in the study,  $F(1,50) = 6.71, p = .01$ .

When examining the interaction of effects between the control and experimental groups, there was no statistically significant difference,  $F(1,50) = .62, p = .43$ .

Figure 4

Plot of Means for Content Subscale



As seen in Figure 4, while the differences in gains may not have been statistically significant, the experimental group was making gains in the Content subscale at a somewhat greater pace than the control group.

Table 15

Mixed Two Factor Analysis of Variance for Organization Subscale

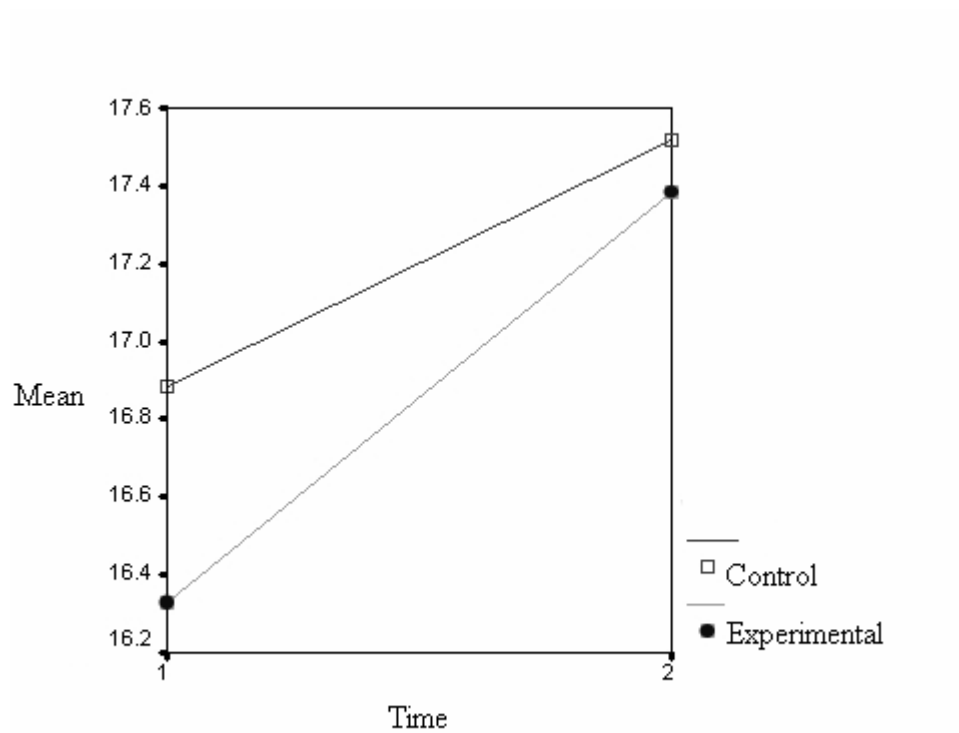
Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between subjects					
Group	1	3.12	3.12	1.14	.29
Error	50	136.80	2.74		
Within subjects					
Time	1	18.62	18.62	13.64	.00
Time X Group	1	1.16	1.16	0.85	.36
Error	50	68.22	1.36		

There was a statistically significant difference between the Organization subscale scores for Composition 1 and Composition 3 with all participants in the study,  $F(1,50) = 13.64, p < .01$ .

When examining the interaction of effects between the control and experimental groups, there was no statistically significant difference,  $F(1,50) = 1.14, p = .29$ .

Figure 5

Plot of Means for Organization Subscale



As seen in Figure 5, while the differences in gains may not have been statistically significant, the experimental group was making gains in Organization subscale scores.

Table 16

## Mixed Two Factor Analysis of Variance for Vocabulary Subscale

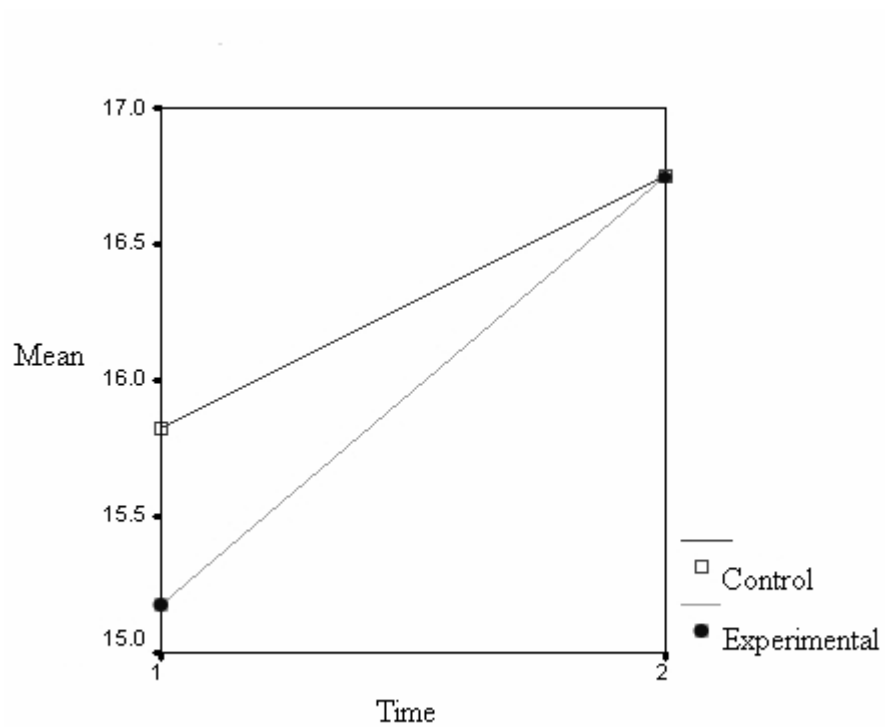
Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between subjects					
Group	1	2.78	2.78	0.71	.40
Error	50	195.60	3.91		
Within subjects					
Time	1	40.63	40.63	18.45	.00
Time X Group	1	2.78	2.78	1.26	.27
Error	50	110.10	2.20		

There was a statistically significant difference between the Vocabulary subscale scores for Composition 1 and Composition 3 with all participants in the study,  $F(1,50) = 18.45, p < .01$ .

When examining the interaction of effects between the control and experimental groups, there was no statistically significant difference,  $F(1,50) = 0.71, p = .40$ .

Figure 6

Plot of Means for Vocabulary Subscale



As seen in Figure 6, while the differences in gains may not have been statistically significant, the experimental group was making greater gains in Vocabulary subscale scores and ended at the same point as the control group while beginning at a lower point.

Table 17

## Mixed Two Factor Analysis of Variance for Grammar/Language Use Subscale

Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between subjects					
Group	1	23.56	23.56	3.55	.07
Error	50	331.95	6.64		
Within subjects					
Time	1	35.20	35.20	9.57	.00
Time X Group	1	6.25	6.25	1.70	.20
Error	50	183.93	3.68		

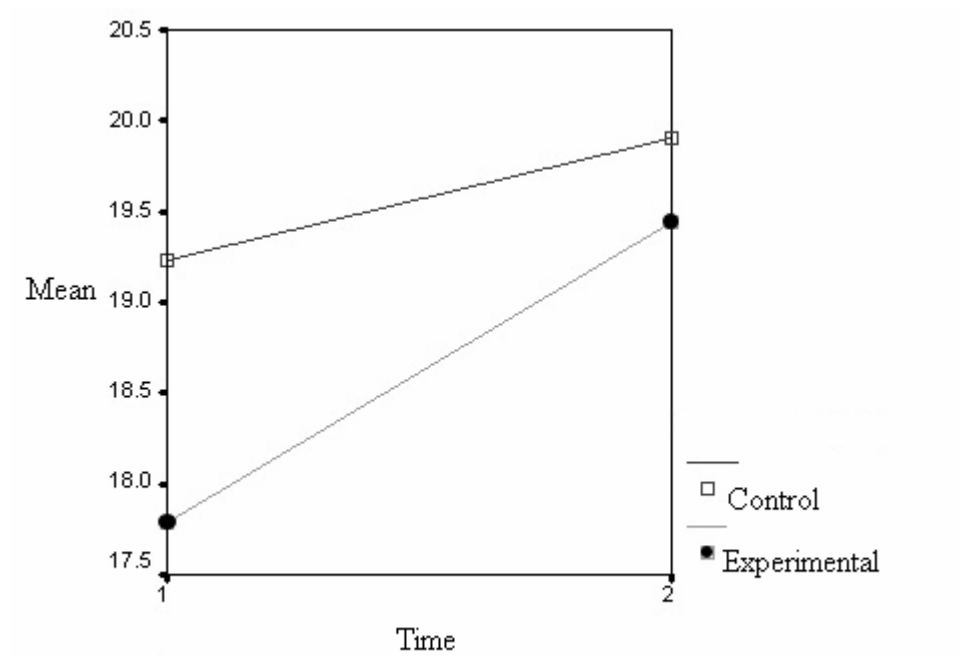
There was a statistically significant difference between Grammar/Language Use subscale scores for Composition 1 and Composition 3 with all participants in the study,  $F(1,50) = 9.57, p < .01$ .

When examining the interaction of effects between the control and experimental groups, there was no statistically significant difference,  $F(1,50) = 3.55, p = .07$ . This  $p$  value of .07 for Grammar/Language Use—the focus of this study’s treatment—gains between the experimental and the control groups comes the closest to statistical significance of all the subscale scores.



Figure 7

Plot of Means for Grammar/Language Use Subscale



As seen in Figure 7, while the differences in gains may not have been statistically significant, the experimental group was making gains in Grammar/Language Use.

Table 18

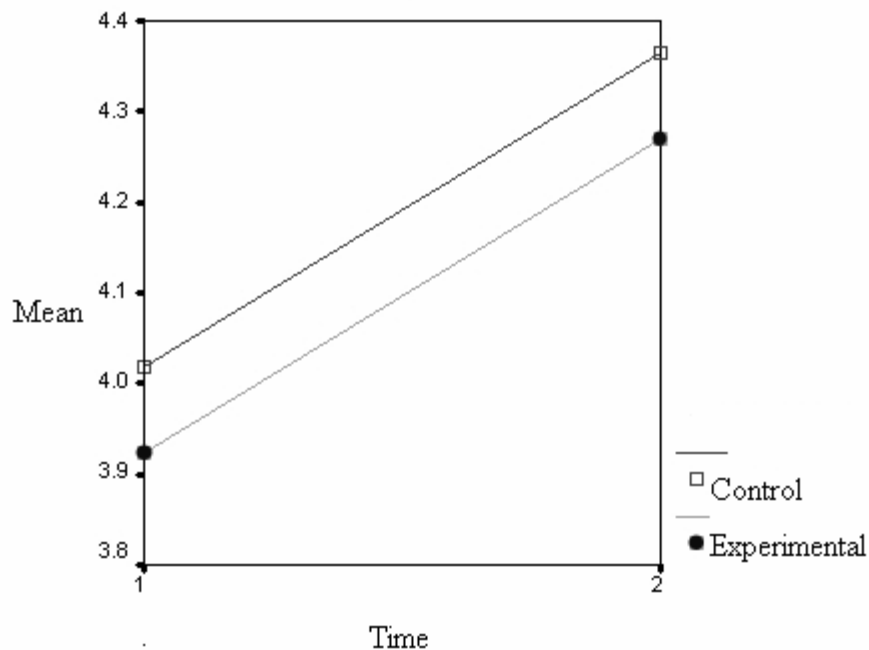
Mixed Two Factor Analysis of Variance for Mechanics Subscale

Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between subjects					
Group	1	0.24	0.24	1.16	.29
Error	50	10.35	0.21		
Within subjects					
Time	1	3.12	3.12	19.15	.00
Time X Group	1	0.00	0.00	0.00	1.00
Error	50	8.14	0.16		

There was a statistically significant difference between the Mechanics subscale score for Composition 1 and Composition 3 with all participants in the study,  $F(1,50) = 19.15, p < .01$ . When examining the interaction of effects between the control and experimental groups, there was no statistically significant difference,  $F(1,50) = 1.16, p = .29$ .

Figure 8

Plot of Means for Mechanics Subscale



As seen in Figure 8, the differences in gains for the Mechanics subscale score were not statistically significant and show a more parallel growth pattern for the two groups.

The researcher hypothesized that students with grammar and vocabulary practice would produce better quality compositions on the total composition score as well as the Vocabulary and Grammar/Language Use subscales. Stated in the null:

H<sub>0</sub> There is no significant difference in the total composition score of students who have computer grammar practice and those who do not. Data shows that there was no statistically significant difference in the total composition score between the control and experimental groups; therefore, the researcher was not able to reject the null hypothesis.

H<sub>0</sub> There is no significant difference in the Vocabulary subscale score of students who have computer grammar practice and those who do not. Data shows that there was no statistically significant difference in the Vocabulary subscale score between the control and experimental groups; therefore, the researcher was not able to reject the null hypothesis.

H<sub>0</sub> There is a significant difference in the Grammar/Language Use subscale score of students who have computer grammar practice and those who do not. Data shows that there was no statistically significant difference in the Grammar/Language Use subscale score between the control and experimental groups; therefore, the researcher was not able to reject the null hypothesis.

Research question 3: What composition elements available through the writing assistant program (*Atajo*) do students access most?

The *Atajo* writing assistant logging feature provided unobtrusive observation of students' use of the software. Logs and compositions were compared and types of uses of the databases counted. Vocabulary-related usage is a count of the inquiries that resulted in incorporation of a meaningful Spanish word in the composition. Grammar Reference, Phrases Reference, and Vocabulary Reference indicate usage of the corresponding databases. General Inquiries encompassed misspellings, inappropriate searching of the Spanish dictionary for an English word and vice-versa, repeat inquiries, scrolling in the dictionary, and words not in the dictionaries.

Table 19

Student Usage of *Atajo* Databases for Composition 1\*

Type of Use	Group	<i>M</i>	<i>SD</i>	Range
Vocabulary-related	Control	8.46	10.97	0 – 41
	Experimental	17.64	14.57	0 – 58
Grammar Reference	Control	0.16	0.82	0 – 4
	Experimental	0.00	0.00	0
Naïve Grammar	Control	0.00	0.00	0
	Experimental	0.00	0.00	0
Phrases Reference	Control	0.00	0.00	0
	Experimental	0.16	0.00	0 – 4
Vocabulary Reference	Control	0.00	0.00	0
	Experimental	0.16	0.00	0 – 4
General Inquiries	Control	19.13	19.27	0 – 79
	Experimental	28.20	19.79	0 – 64
Total	Control	27.83	29.72	0 – 121
	Experimental	46.36	31.33	0 – 123

\*Control *n* = 26; Experimental *n* = 26

For Composition 1 (Table 19), students in both the control and experimental groups relied primarily on the dictionary feature of *Atajo*. Only one student in the control group and two students in the experimental group consulted the databases for Grammar, Phrases, and Vocabulary. The experimental group carried out more General Inquiries ( $M = 28.20$  versus  $M = 19.13$ ) and Vocabulary-related inquiries ( $M = 17.64$  versus  $M = 8.46$ ) than the control group. The

experimental group also had the overall higher usage of the databases ( $M = 46.36$  versus  $M = 27.83$ ).

Table 20

Student Usage of *Atajo* Databases for Composition 3\*

Type of Use	Group	$M$	$SD$	Range
Vocabulary-related	Control	12.87	10.71	0 – 39
	Experimental	11.10	10.68	0 – 36
Grammar Reference	Control	0.09	0.42	0 – 2
	Experimental	0.00	0.00	0
Naïve Grammar	Control	0.35	0.71	0 – 2
	Experimental	0.86	2.00	0 – 8
Phrases Reference	Control	0.00	0.00	0
	Experimental	0.14	0.48	0 – 2
Vocabulary Reference	Control	0.00	0.00	0
	Experimental	0.00	0.00	0
General Inquiries	Control	18.65	13.90	2 – 56
	Experimental	13.90	9.86	0 – 37
Total	Control	31.96	23.08	3 – 81
	Experimental	26.00	19.58	0 – 67

\*Control  $n = 26$ ; Experimental  $n = 26$

For Composition 3 (Table 20), usage of the *Atajo* databases increased for the control group ( $M = 31.96$  versus  $M = 27.83$ ) and declined for the experimental group ( $M = 26.00$  versus  $M = 46.36$ ).

Students in both the control and experimental groups continued to rely primarily on the

dictionary feature of *Atajo* with Vocabulary-related usage and General Inquiries having the largest means. Only one student in the control group and two students in the experimental group consulted the databases for Grammar, Phrases, and Vocabulary. In Composition 3, the control group made more General Inquiries ( $M = 18.65$  versus  $M = 13.90$ ) and Vocabulary-related inquiries ( $M = 12.87$  versus  $M = 11.10$ ) than the experimental group as well as total overall usage.

For use in repeated measures ANOVA, the change in usage was calculated for the three categories of Total usage of *Atajo* (Table 21), Vocabulary-related (Table 22), and General Inquiries (Table 23). There was a statistically significant difference in all three measures: they were  $F(1, 50) = 13.06, p < .01$ ;  $F(1, 50) = 18.44, p < .01$ ; and  $F(1, 50) = 8.06, p < .01$ , respectively .

Table 21

Analysis of Variance of Change in Total Inquiries by Group

Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between	1	7754.33	7754.33	13.06	.001
Within	50	29678.50	593.57		
Total	51	37432.83			

Table 22

Analysis of Variance of Change in Vocabulary-related Usage by Group

Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between	1	1560.16	1560.16	18.44	.000
Within	50	4230.67	84.61		
Total	51	5790.83			

Table 23

Analysis of Variance of Change in General Inquiries by Group

Source	<i>df</i>	Sum of Squares	Mean Squares	<i>F</i>	<i>p</i>
Between	1	2483.87	2483.87	8.06	.01
Within	50	15417.56	308.35		
Total	51	17901.43			

The researcher hypothesized that students would make use of all databases with the dictionary and grammar being the most frequently consulted and this pattern decreasing over time. The researcher also hypothesized that the students that had regular grammar and vocabulary practice on *Spanish Partner* would make fewer grammar inquiries to *Atajo* than the control group. Stated in the null:

H<sub>0</sub> There is no significant difference over time in the use of composition reference aids in *Atajo*. Data shows that there was a statistically significant difference over time in the number



of total inquiries to the composition reference aids in *Atajo* between the control and experimental groups; therefore, the researcher was able to reject the null hypothesis. Additionally, the difference between the control and experimental groups in the number of Vocabulary-related inquiries and General Inquiries was also statistically significant.

Research question 4: What is the relationship between the number and type of help requests to *Atajo* and composition quality and quantity?

Correlation analyses were conducted to analyze the relationship between the type of help request to the *Atajo* databases and composition performance. One set of calculations was used to predict quality using a comparison between the change in total overall score on compositions, the total number of inquiries, Vocabulary-related inquiries, and General Inquiries. The second set of calculations addressed quantity measured in total words per minute and the total number of inquiries, Vocabulary-related inquiries, and General Inquiries. There was no statistically significant correlation between the change in database usage and the change in total composition score (control:  $r = -.27, p = .18$ ; experimental:  $r = -.14, p = .50$ ).

Table 24

Correlations between Composition Quantity, Quality, and *Atajo* Usage<sup>\*</sup>

		Control		Experimental	
		<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Composition 1					
Total score	Total Inquiries	.09	.66	-.21	.30
	Vocabulary-related	.08	.71	-.03	.87
	General Inquiries	.08	.70	-.29	.16
Words per minute	Total Inquiries	.25	.22	.02	.93
	Vocabulary-related	.35	.08	.20	.34
	General Inquiries	.15	.46	-.10	.62
Composition 3					
Total score	Total Inquiries	-.02	.93	.24	.24
	Vocabulary-related	.20	.34	.16	.42
	General Inquiries	-.15	.46	.30	.14
Words per minute	Total Inquiries	-.22	.29	.12	.55
	Vocabulary-related	-.09	.65	.17	.41
	General Inquiries	-.28	.17	.02	.93

<sup>\*</sup>Control *n* = 26; Experimental *n* = 26

Research question 5: What are students' opinions of utilizing technology to learning to compose in L2?

Both the Student Information Form and the Core Assessment Questionnaire (Cronbach's alpha = .88) contain Likert-scale items and open-ended questions that probed the students'

opinions of utilizing technology to learn to compose. In a first step to determine participants' experience and attitudes with technology, students were asked to rate their computer skill level at the beginning of the semester, indicating the level as *No prior experience*, *Beginner*, *Intermediate* or *Expert*. In the control group, one student (3.8%) was self-identified as a beginner while 19 (73.1%) identified themselves as intermediate and six (23.1%) claimed to be experts. In the experimental group, one student (3.8%) was self-identified as a beginner while 23 (88.5%) identified themselves as intermediate and only two (7.7%) stated they were experts.

When asked whether or not students had ever used technology to learn language, 88.5% of the control indicated that they had used technology as compared to 84.6% of the experimental. It was discovered that four students in the experimental group said they had never experienced technology-enhanced language learning. Three students in the control group said that they had not used technology to learn language with an additional student not responding to the question. Those students that had used technology to learn language indicated that they had used technology to learn language in a variety of ways.

#### *Types of Technology Usage*

Examining the participants as a whole, 22 students cited the use of the *Puntos de Partida* textbook CD, eight confirmed prior use of *Spanish Partner* and 18 of *Atajo*. Only five students named video or television as a technology tool to learn language. The Internet was mentioned by seven students with an additional student stating having taken advantage of an online translator and one student who had taken a first-year, second-semester course online at another institution. Four students referred generically to “programs in the computer lab downstairs” or non-specified vocabulary and grammar lessons.

On the first day of class, both groups were asked their opinion of technology-enhanced language learning. The question was open-ended in order to elicit a range of commentaries. Comments were evaluated and tabulated as negative, somewhat negative, neutral, somewhat positive, and positive. Table 25 provides an overview of the responses.

Table 25

Student Opinions of Technology-Enhanced Language Learning

	NR N/A	Negative	Somewhat negative	Neutral	Somewhat positive	Positive
Control ( <i>n</i> = 26)	4 15%	1 4%	1 4%	3 12%	2 8%	15 58%
Experimental ( <i>n</i> = 26)	4 15%	1 4%	0 0%	4 15%	5 19%	12 46%

An example of a negative comment was “I don’t like it; I don’t remember anything.” A somewhat negative comment was “It can be helpful, but it often takes more time than reading the book for almost the same help.” Somewhat positive comments were considered the type of “It helped a little but not a lot” while fully positive responses included “It helps very much.” In each class there were four students whose responses indicated they had never used technology in language learning.

Many students used the word “help” or “helpful” in some form. Seventeen students in each class (or 65% of participants) were positive or somewhat positive regarding technology-enhanced language learning. Students seemed aware of some of the benefits of technology-enhanced language learning, and had positive attitudes. The control group member comments included:

It helps to look at grammar and conjugation procedures when there is no one to help you at the time.

It is nice because you can go at your own pace & not the pace of 30 other ppl (ibid.).

It's a great opportunity for us to have and use. I'm more of a visual learner.

I like using it. I believe it is more beneficial than workbook exercises and writing papers.

The experimental group members shared:

I believe it helps to solidify what you can learn in class.

I think technology is a good study aide for learning a foreign language.

It can make learning easier.

It was evident that students' opinions were colored by their experiences and familiarity with various programs, something that may account for some of the contradictions regarding the usefulness of technology for learning certain skills. One student in the control group asserted that "It is helpful, especially in helping with pronunciation" while another student in the control group stated that "It's helpful reading, writing, & listening...But it doesn't really help speaking." Yet another student in the experimental group aptly stressed, "In my few experiences using technology to learn Spanish, I think it depends on the program. I've used one program that is really good and another that's really bad."

A few students expressed some reservations regarding the use of TELL. One student who admitted never having used technology to learn language stated, "I learn much better through other means. Technology doesn't seem efficient enough." One student who said they used *Spanish Partner* in the lab previous to the study said that "It helps me a little, however I learn more with help from a teacher showing me hands on how to write it and the correct way to speak." Both of these students were in the experimental group.

The Core Assessment Questionnaire (Appendix M) was developed by the language coordinators of the Spanish, French, and German first and second-year programs in the department of foreign languages and literatures and is utilized by the department to solicit student feedback regarding core communication objectives as defined and required by the Higher Education Coordinating Board. The questionnaire was also modified for this study (Appendix N) to inquire about to what extent had the technology-enhanced language learning activities with *Atajo* and *Spanish Partner* in the course helped the student with a variety of skills and activities.

Students in both the experimental and control groups were asked to what extent the course helped them to accomplish a variety of skills, using a scale from 1 (*Not at all helpful*) to 5 (*Very helpful*). Written comments were also elicited from the experimental and control groups. The University requires only a sample of students enrolled in foreign language classes in order to assess the core curriculum; thus, a sample of  $n = 108$  students of the total enrollment of  $N = 392$  for SPAN 2040 was provided as a comparison (Table 26).

Table 26

## Mean Scores on Core Assessment Questionnaire

	Control ( <i>n</i> = 26)	Experimental ( <i>n</i> = 26)	Departmental Sample ( <i>n</i> = 108)
Write more effectively	3.92	3.92	3.65
Improve speaking ability	4.08	4.00	3.85
Understand grammar	4.08	4.00	3.89
Apply grammar to speaking	3.77	3.65	3.23
Apply grammar to writing	3.81	3.85	3.59
Understand culture	3.35	3.31	3.08
Participate effectively in groups	3.54	3.77	3.14
Listen effectively	3.77	3.62	3.42
Organize thoughts	3.96	3.73	3.41
Choose appropriate examples	3.69	3.58	3.28

The five items most applicable to the research questions are writing more effectively, understanding grammar, applying grammar to writing, organizing thoughts, and choosing appropriate language examples. Both the control and experimental groups rated the course a mean of  $M = 3.92$  in helping them to write more effectively. Understanding grammar was also almost equal between groups as was applying grammar to writing. The questions regarding organizing thoughts and choosing appropriate language examples inquired about both oral and written presentations. The experimental group scored both of these questions lower than the control.

The experimental group was probed further as to the extent that the technology-enhanced activities of *Spanish Partner* and *Atajo* helped them on the same skills.

Table 27

Experimental Group Mean Scores on Core Assessment Questionnaire and Technology-Modified Questionnaire

	Course in general	Technology specific
Write more effectively	3.92	3.62
Improve speaking ability	4.00	3.15
Understand grammar	4.00	3.73
Apply grammar to speaking	3.65	3.35
Apply grammar to writing	3.85	3.92
Understand culture	3.31	3.12
Participate effectively in groups	3.77	2.73
Listen effectively	3.62	2.69
Organize thoughts	3.73	3.88
Choose appropriate examples	3.58	3.38

The experimental group rated technology lower than the course in general for helping them to write more effectively ( $M = 3.62$  versus  $M = 3.92$ ) as well as helping them to understand grammar ( $M = 3.73$  versus  $M = 4.00$ ). Choosing appropriate language examples and visual aids for oral/written presentations was also scored lower for the technology applications ( $M = 3.38$



versus  $M = 3.58$ ). The experimental group rated the technology applications more favorably than the course in general in two areas. The first of the two was applying grammar to writing, revealing a difference of a slight margin ( $M = 3.92$  versus  $M = 3.85$ ). Organizing thoughts for oral/written presentations was the second area favored by the students in the technology evaluation ( $M = 3.88$  versus  $M = 3.73$ ).

This chapter provided a detailed explanation of the data analysis. The final chapter of this dissertation provides a summary of the entire study and discussions of study results. Implications of this study for foreign language instruction will be outlined. Finally, recommendations for further research and applications of this study to the foreign language curriculum will be made.

## CHAPTER 5

### DISCUSSION, IMPLICATIONS AND RECOMMENDATIONS

#### Summary of Results

The purpose of this research was to identify and to describe the possible benefits of weekly/structured, in-class, computer-assisted grammar drill and practice on the writing performance of intermediate university Spanish learners, to determine whether students accessed a writing assistant program differently based upon their grammatical practice experience, and to examine whether technology-enhanced language learning (TELL) may aid in composition abilities. There were no statistically significant differences between the experimental group and the control group on composition quantity and quality. However, results of this study indicate that there were improvements over time in composition performance for both the experimental and the control groups. The treatment of grammar practice with *Spanish Partner* showed a small to moderate effect from pretest to posttest, and the experimental group showed greater mean gains in composition quality than the control group. Students in the experimental group accessed the databases of the *Atajo* writing assistant less on the final composition than the control group with a statistically significant difference.

Practice with a computer based grammar instruction software program (in this case *Spanish Partner*) may enhance written communicative competence in the second language learning environment. It is important to remember that a composition “test” is an imperfect measure of the construct of composition ability, which provides only a sample of writing or language behavior (Jacobs et al., 1981), and that a small sample size can be less sensitive to

revealing statistically significant results. In addition, improving writing performance is a lengthy process and often a measurable change does not occur in one course (Greenia, 1992b).

## Discussion of Findings

### *Fluency*

Previous research has often defined fluency simply as the number of words, clauses or sentences written in a given period of time (Chandler, 2003; Chenowith & Hayes, 2001; Paulson, 1993). As ACTFL defines it, fluency is “a flow in the written language as perceived by the reader, made possible by clarity of expression, the acceptable ordering of ideas, use of vocabulary and syntax appropriate to the context, with words, phrases, and idiomatic expressions that go together by common lexical convention” (ACTFL, 2001, p. 14). This latter definition is more in line with the National Standards and curriculum guidelines and supports the essential assumption that writing is an act of communication. Thus, greater proficiency in grammar and vocabulary should yield increased fluency in L2 written composition.

The first two research questions in this study sought to measure the effects of grammar and vocabulary practice on students’ fluency, specifically composition quantity and quality. How would scaffolding provided by the use of a grammar and vocabulary practice software program (*Spanish Partner*) affect quantity in L2 students’ compositions as measured by the total number of words per composition? The researcher hypothesized that students with grammar and vocabulary practice would produce a greater number of words during composition after grammar and vocabulary practice. The results of the analyses were not statistically significant to reject the null hypothesis. The overall words per minute from Composition 1 to Composition 3 showed minimal changes for both groups. The control group’s increase was slightly greater, yet less than

one word per minute. One reason for the control group's increase in number of words per minute from Composition 1 to Composition 3 may have been increased familiarity with and efficiency in using the *Atajo* software.

The decrease in the experimental group's words per minute was negligible. At the same time, however, data analysis revealed that the total usage of *Atajo* by the experimental group declined by almost 50% from Composition 1 to Composition 3. While fluency remained static in terms of number of words produced, composition quality increased. Thus, it is possible that the practice with *Spanish Partner* increased students' facility in accessing their own personal lexicons, which in turn increased automaticity in the production of the vocabulary and grammatical structures needed for their compositions. This concept of technology integration to promote fluency of automaticity of prerequisite skills is supported by Roblyer (2003). Usage of *Atajo* increased slightly from Composition 1 to Composition 3 for the control group.

The second part of the fluency issue was how will the systematic use of a grammar practice software program (*Spanish Partner*) affect the quality of L2 learners' compositions as measured by total composition score, and the subscale areas of Content, Organization, Vocabulary, Grammar/Language Use, and Mechanics (spelling, accentuation, and punctuation)? The researcher hypothesized that students with grammar and vocabulary practice would produce better quality compositions on the total composition score as well as the Vocabulary and Grammar/Language Use subscales. There were no statistically significant differences between the two groups on any of the variables related to quality, reflecting that changes in writing improvement are often not seen at the end of only one course of study (Greenia, 1992b). However, the percentage of positive change on the mean scores between Composition 1 and Composition 3 (including the subscale areas) is greater for the experimental group on all

subscales except for Mechanics, which was equal for the experimental and the control groups. Vocabulary and Grammar/Language Use subscales showed the highest percentage gains in mean scores. The visible trends in the data in the mean plots (Figures 3-8) between Composition 1 and Composition 3 also indicate that *Spanish Partner* did have a small to moderate effect overall and especially on grammar and vocabulary. Krashen (1999) indicates that the successful application of consciously learned rules of grammar involves knowledge of the rule; concern with correctness, or focus on form; and sufficient time. The behavior exhibited by the experimental group may, therefore, be an indication of their formal rule knowledge of grammar gained by computer practice. Findings by Liou, Wang, and Hung-Yeh (1992) showed that instruction plus CALL impacted writing more than instruction plus homework. Results suggest that classroom instruction combined with grammatical CALL is helpful to writing, parallel to the present study.

Additionally, examination of the standard deviation changes in total composition score from Composition 1 (Table 10) to Composition 3 (Table 11) reveals a noteworthy finding. The standard deviation decreased by 4.02 for the experimental group from Composition 1 to Composition 3, while the change for the control group was only 0.56. In interpreting these results, the decreased standard deviation for the experimental group illustrates less variability in total composition score on Composition 3. Greatly improved performance for some students on the final composition may indicate that the treatment of grammar practice was beneficial to the students who scored lowest on Composition 1. This is supported by Frantzen's (1995) intervention study of an intermediate Spanish content course, where the results suggested that grammar review is a beneficial addition in spite of there being no significant differences between groups in terms of their scores on writing samples.

### *Use of Atajo*

The third research question (What composition elements available through the writing assistant program (*Atajo*) do students access most?) was exploratory in nature. How do students access the databases of the *Atajo* as revealed by the log? The purpose of this question was to determine whether or not the students in the experimental group (who had more consistent grammar and vocabulary practice with *Spanish Partner*) would make fewer grammar or total inquiries to *Atajo*. When accessing *Atajo*, students can choose between four reference databases: dictionary, grammar, vocabulary and phrases. The researcher hypothesized that students would make use of all databases with the dictionary and grammar being the most frequently consulted and this pattern decreasing over time. The researcher also hypothesized that the students that had regular grammar and vocabulary practice on *Spanish Partner* would make fewer grammar inquiries to *Atajo* than the control group.

Writing is a highly recursive and complex act (Bereiter & Scardamalia, 1987). When authors write they draft, revise, edit, redraft, make semantic and syntactic changes and so on. This is a time-consuming and nonlinear process (Atwell, 2001; Calkins, 1999). When composing on a word processor this process is facilitated for many writers by the ability to cut, paste and move text as desired. Student may write the title of their composition at the end of a writing session or cut and paste entire paragraphs or sentences. The *Atajo* logs give insight into this process since some of the steps taken by the writers are obvious when examining the logs from the *Atajo* writing assistant. For example, the time spent planning might be indicated in the time lapse between the time a student logs into *Atajo* and the student raises the editor and dictionary to compose. Comparing the order of the words in a composition and their appearance in the log suggests rereading, revision or editing. The *Atajo* log can give insight as well to a student's

assumptions (or misconceptions) about language. Analysis of the *Atajo* logs revealed that the students did not use the reference databases to their full potential, relying almost exclusively on the dictionary feature. For example, students who look up the word “would” in the dictionary when they actually need to conjugate the verb “will” in the conditional do not understand that this is actually a grammar query versus a vocabulary query.

Bland et al. (1990) termed this type of learner behavior the “naïve lexical hypothesis” to describe when a student learning a foreign language makes the assumption that there is an L2 lexical match for the desired element or category in the L1. In this study, this behavior was observed repeatedly in spite of orientation to and practice sessions with *Atajo*, as well as implicit encouragement to consult the references. Subjects were provided guidance on the composition tasks that was designed to prompt them to look up different references under their corresponding categories of Grammar, Phrases, and Vocabulary. Other researchers have encountered similar learner behavior. In New’s (1994/1995) study of revision strategies, students were informed that half of the points for their composition evaluation were related to the use of *Système-D* (the French-language parallel to *Spanish Partner*) yet they very rarely used the specific reference databases. Baily (1992/1993) conducted four introductory sessions over a two-month period of time with adult learners yet these students overwhelmingly used only the dictionary feature as well. This may indicate that students do not view writing in a foreign language so much in terms of expressing their ideas as an exercise in translation.

Some inquiries to the dictionary are not naïve on the part of the student: the words simply do not have a translation from English to Spanish. For example, the English verb to volunteer is commonly constructed in Spanish as to do volunteer work (*hacer de voluntario*). In other cases the students were simply following logical patterns of inquiry: A student found England, Italy,

Germany, and Russia in the database and also searched for (but did not find) Austria. This would be an example of a limitation of the database. In addition, the logging feature cannot track the scrolling that students do within the dictionary.

Since the emphasis of this study was to examine the effects of grammar and vocabulary practice, it was appropriate to analyze the *Atajo* logs to determine whether the students' inquiries were either grammar-type inquiries or vocabulary related. Work by Baily (1992/1993) on learner compensation strategies observable from *Système-D* logs provided an initial point of departure for a more detailed framework for the coding of *Atajo* logs. The strategies she taught and observed were Adjusting the Message, Circumlocution, Synonym, and New Words. All of these strategies are vocabulary related (adjusting the message to fit terms that students could look up, using synonyms, or creating words that might be literal translations or using English words in a new term); thus, any such inquiries were coded as vocabulary. In a similar fashion, dictionary inquiries intended to find grammar (such as the previous example of looking up "would" in the dictionary for the conditional tense) were counted as naïve grammar. Such inquiries were inefficient and fruitless in that they did not produce the desired construction. Thus, Vocabulary-related usage is a count of the inquiries that resulted in incorporation of a meaningful Spanish word in the composition. Grammar Reference, Phrases Reference, and Vocabulary Reference are usage of the corresponding databases. General Inquiries encompassed misspellings, inappropriate searching of the Spanish dictionary for an English word and vice-versa, repeat inquiries, scrolling in the dictionary, and words not in the dictionaries.

Data analysis revealed that the total usage of *Atajo* by the experimental group declined by almost 50% from Composition 1 to Composition 3 while it increased slightly for the control group. Increased familiarity with *Atajo* by the experimental group may have attributed to some



decline in inquiries. A student, for example, may have learned to check the appropriate (i.e., English or Spanish) language dictionary in *Atajo* or learned to look up conjugations under the Grammar Reference instead of the dictionary. Another possibility may have been related to maturation effects over the course of the semester with expected increases in vocabulary and grammar knowledge. That is to say that the number of inquiries that a student made to the databases could have been affected by changes in their interlanguage. Students further along the interlanguage continuum may only make a few inquiries in contrast to less advanced learners. Some students might use the system to check their theories and have fewer inquiries (Appendix O); others have a high number of inquiries due to translation of almost every word in their composition (Appendix O). Some multiple inquiries may be due to the initial incorrect spelling of the word requiring additional queries, while in other cases a student may simply be probing to find the best word. Whatever the reason, the relative differences between the control and experimental groups are dramatic. The fact remains that the experimental group reliance on the writing assistant *Atajo* decreased over the study, and this could reflect an increase in language abilities due to the treatment.

In addition to grammar practice or grammar knowledge, differences in the usage of *Atajo* databases may be attributable to other dimensions or learner characteristics. An observation by one reviewer of the writing assistant *Atajo* notes that the program

favors a highly autonomous and motivated user, one who enjoys “learning by doing” and who is already comfortable using a PC and therefore values the speed at which the program renders the desired information more than the security of the printed page.”

(Martin, 1999)

Finally, it is important to note that the *Atajo* logs only provide part of the picture of the help a student received during composition. Other sources available included consulting with a classmate, the teacher, a paper dictionary or their textbook. While a lack of understanding or lack of familiarity with the software might have hindered the use of the writing assistant, it can help some students produce better compositions.

Research question 4: Following on the use of *Atajo* databases, the researcher was interested in the relationship between the number and type of help requests to *Atajo* and composition quality and quantity. There were no statistically significant correlations between the number of inquiries made to the *Atajo* databases and composition quantity and quality. Examining the whole picture of the data from the composition scores does reveal that even with fewer total inquiries to the databases, the mean gain for the experimental group on the Grammar subscale was higher than the control group. It seems this could be attributable to the experimental group's grammar practice on *Spanish Partner*. Swain (1985) confirms that students may strengthen their language acquisition by exercising their expressive language: in this study the acquisition and strengthening of grammar knowledge through writing.

#### *Student Opinions of Using Technology to Compose*

Research question 5 dealt with students' opinions of the usefulness of technology for composing in L2. Overall, the students from both the experimental and the control groups were positive in their opinions of the usefulness of technology (specifically *Atajo*) for writing compositions in L2. This enthusiasm was somewhat mitigated by the requirement to write compositions in the lab with time restrictions. In general, the students in the foreign language program in this research setting are accustomed to writing assignments being take-home with

unlimited time. Even with that in mind, the consensus from students in the control group was quite positive regarding writing with technology:

My writing and communications skills in this language have vastly improved.

The technology was really helpful w/grammar, writing and organizing my thoughts in Spanish.

This course helped me write & listen in Spanish more proficiently. The labs when we type Spanish compositions really helped a lot.

Doing all the writing in the computer lab helped tremendously in learning how to use the language.

The experimental group appeared somehow more reserved than the control group in their responses to the questions. Possibly they were disenchanted with going to lab every week (the researcher, for instance, overheard a couple of students groaning under their breath about “having” to go to lab). Some were positive about the technology experience but missed the connection between knowing grammar and improving writing:

The focus on technology in this course through intense lab time has helped on writing the foreign language but not so helpful in grammar.

Furthermore, the class had more of a writing slant, which allowed students to focus on applying what we learned from style and grammar (sic) to papers and compositions.

Main focus on grammar and especially verb conjugation. Did not look holistically at the language and therefore did not help to think and write in the language, only translating.

The comments by the last student reflect the language acquisition-learning distinction proposed by Krashen (1982) that states that adult language acquisition is similar to the way children develop language versus language learning which emphasizes the conscious knowing

and application of grammar and grammar rules. Yet, it is important to note that Terrell (1991) stated that explicit grammar instruction may positively affect language acquisition.

The positive attitude of students regarding the use of technology to write is of great consequence. Gillespie and McKee (1999) defined the successful integration of CALL into the curriculum at their institution by the quality of the student work produced and the degree of acceptance by students. These benchmarks certainly seem reasonable, especially at the university level, since access to technology can often be restricted and time to incorporate into the curriculum can also be limited. In this study, the students' quality of composition improved across both groups, and they held very positive attitudes with regard to technology-enhanced language learning. This echoes the previous work of Scott (1996) who affirms that computer-aided writing enhances the foreign language experience. Additionally, Pennington (2003) draws from her extensive research on the writing of English language learners and presents models of positive and negative paths in computer writing effects. While her models address characteristics of the ESL population, the concepts can apply to learners in a foreign language context who face writing with computers. Pennington outlined cognitive-affective responses of awareness and attitudes that interact with behavioral responses of quantity, quality, and manner. On the positive path, students have an awareness of computer capabilities for the writing process as well as a positive attitude to computer and writing. The behavioral response observed could be writing at length with high levels of content coverage and a physical and cognitive ease in writing seen in recursive patterns. On the negative path, students are unaware or have low awareness of computer potentials for writing. Students also have negative attitudes to computer and writing. The behavioral response can be limited writing in quantity and quality as well as a physical and

cognitive strain with writing. In the present study, a combination of these effects may be influencing the outcomes of quantity, quality and use of the *Atajo* databases.

### Implications

The effects of technology-enhanced grammar and vocabulary practice on the composition of students in a university-level Spanish course were the focus of this study, which also sought to address the dearth of writing research studies specific to the foreign language context. The treatment of grammar practice with *Spanish Partner* showed a small to moderate effect although with no statistically significant differences between the experimental and control groups. Certainly the grammar practice was not detrimental to the students' composition abilities. The implications of this study on foreign language instruction are many.

In terms of implications for foreign language writing, TELL in the form of computer-based grammar and vocabulary practice can be important for the development of composition skills, especially for weaker students. Students that struggle with a grammatical concept often ask teachers what they can do to improve, and teachers often suggest time in the lab for additional practice. The treatment in this study was for a minimum of 30 minutes per week and showed some promise. Whereas Terrell (1991) supports that explicit grammar instruction may help to speed up the language acquisition process that is hampered by the low number of hours of instruction in the university classroom. This limits the amount of input and interaction that a language learner experiences, and additional independent computer-based grammar practice could provide a one-to-one tutorial that would be otherwise unavailable and perhaps prohibitive in cost.

Teachers often focus on mechanics (spelling, accentuation and punctuation) in foreign language writing in addition to grammatical accuracy, yet perhaps this attention is unwarranted. Polio (2001) questions whether mechanics is a construct at all and whether it is important to writing researchers. In the few writing studies which have included mechanics (typically a secondary focus of these investigations), change over time in learners' ability to correctly apply mechanics was not statistically significant (Hedgcock & Lefkowitz, 1992; Pennington & So, 1993; Tsang, 1996). This study did not focus on mechanics, but it is clear that students do not effectively use the available technology tools, such as spell checkers, and should be encouraged to do so.

With improvements in both the experimental and control groups on the total composition score as well as the students' positive remarks regarding writing with technology in the lab, support is evident for the integration of computer writing assistants in the foreign language curriculum. Using *Atajo* for writing facilitates the writing experience by allowing time for reflection, rereading, and cut-and-paste editing techniques. Previous research by Pennington (2003) bears out the need for such and the usefulness of computers for second language writers.

Another observation during this study with implications for technology integration is that in spite of repeated practice, some students will continue to "misuse" technology. Several researchers have found that students did not use technology as instructed (Baily, 1992/1993; New 1994/1995), and the implication is that in some cases students require more guidance to use technology than might be expected (Burston, 1991; Scott, 1990). This need to provide more explicit directions and monitoring of students is critical if they are to reap the benefits of the activity.

Finally, the composition subscale score gains for Grammar/Language Use and Vocabulary for those who experienced the computer grammar and vocabulary practice were higher than for those of the control group. Therefore, while there may not have been a statistically significant difference, the data does suggest that it may be important for teachers and curriculum planners to integrate specific technology tools and activities in order to better nurture specific abilities in second language acquisition.

## Recommendations

### *Further Research*

More research on the effectiveness of technology-enhanced grammar practice should be conducted. Whereas the experimental group with grammar and vocabulary on *Spanish Partner* showed some positive gains compared to the control, the effects of other software packages and online programs provided with textbooks could be measured. The growth patterns exhibited by the experimental group suggest a longitudinal or cross sectional study of the use of TELL, including software other than *Atajo* and *Spanish Partner* would be helpful. Another possible variable would be to increase the time spent on the grammar and practice program to determine whether that would make a statistically significant difference. In addition to the areas of grammar and vocabulary practice, examining software packages' effects on different elements of writing process and product would provide another avenue of investigation.

Although there are numerous language novices at the university level, many colleges and universities presently have foreign language admission requirements, and more students than expected do arrive at the university classroom with language experiences, as evidenced in this study with 86.54% having more than 3 years prior study of Spanish. How do these typical

intermediate-level students, who have prior L2 study, compare as writers with truly novice learners at the university? In addition, examining writers at the high school level and the skills they bring to the university setting would be beneficial to building the foreign language writing curriculum. This type of study would assist in building much needed articulation in the curriculum between public schools and colleges and universities.

From a constructivist perspective, further research would do well to bring the learner more into the focus; that is, how does the technology increase the students' metacognition about selves as writers and types of scaffolding? To get feedback from students about writing, language learning, and technology use throughout the semester in order to individualize the intervention, how do the various software programs meet their individual needs?

### *Integrating TELL into the Curriculum*

This researcher supports the use of TELL programs and puts forward the idea that computer programs, specifically *Spanish Partner* and *Atajo*, can serve as the more knowledgeable other in efforts to produce improved written communication. The computer-based grammar and vocabulary practice that the experimental group had was at very least not detrimental to any of the students and had substantial benefit for vocabulary development and grammar improvement, at least for some students. Yet it is true that the integration of technology into the curriculum must be a coordinated effort with sufficient training with programs to be effective in language learning and writing instruction. Additionally, Pan and Zbikowski (1997) state that to effectively integrate technology into writing instruction that software should be utilized to enhance each stage of the writing process and that no one tool may contain all of the elements that a teacher might want to include.



### *Foreign Language Educators and Teacher Preparation*

Many language teachers do not consider composition instruction a primary part of their responsibility (Kassen, 1995), and teaching and improving writing are time-intensive endeavors. Writing instruction for teachers in foreign language education is a much-needed area of teacher preparation. Currently, much of the emphasis in teacher training is on language, culture and even literature but contains little emphasis on the teaching of writing and integrating technology into such training. Teachers need to understand the interrelationship amongst the language skills so they will view writing as a tool itself but also as a way of enhancing the other language skills of listening, speaking and reading. Teachers should be encouraged to use technology to facilitate teaching and learning of the writing process. New teachers of second language education should have greater access to methods of teaching writing and related skills. As well, the *Atajo* log is a useful teacher diagnostic tool of the language writing process. In documenting any cognitive process, however, external observations can only provide insight into a part of the process or one perspective. Teachers should be aware of their students' attitudes and prior experience with writing and their impact on composition quantity and quality.

### Final Comments

If foreign language educators hope to make learning another language a meaningful, life-long endeavor then students must feel successful in addressing using language in a variety of contexts, including written expression. When students write, their words must convey the entirety of their message. Teachers skilled in “interpreting” the discourse of second language learners will not always be the sympathetic audience of their writing. Students must have the practice in writing and the tools that facilitate the writing process as well as the grammar

knowledge necessary to convey their message accurately. Technology in the form of the practice software program *Spanish Partner* and the writing assistant *Atajo* are two such vehicles for carrying students forward on the journey of language acquisition.

APPENDIX A  
SYLLABUS FOR SPAN2040

**SPAN 2040.006 Intermediate Spanish  
Spring 2003**

Profesora Raquel Oxford

Office: LANG 403A

Phone: 565-4740

Office Hours: 3:30-5:00 p.m. Tuesday and by appointment

E-mail: raquel@unt.edu

Class meets Tuesdays and Thursdays 9:30-10:50 a.m. LANG 104.

Class will also meet in LANG 106 promptly at designated times (see Course Calendar).

Final Exam is Thursday, May 8th from 8:00-10:00 a.m. LANG 104. Please note that the University specifically prohibits any deviation from the announced Final Exam Schedule.

**Required Texts:** Knorre et al., *Puntos de partida* 6<sup>th</sup> ed. McGraw-Hill, 2001  
Arana and Arana, *Workbook to Accompany Puntos de partida*  
Bilingual dictionary

**\*\*\*U.N.T. Proof of Prerequisite Policy\*\*\***

All lower level foreign language courses above 1010 now require proof of prerequisites. Each student is required to show proof to the instructor before the 10<sup>th</sup> class day. If you do not have proof, you must drop yourself to receive a refund. If after Friday, January 24<sup>th</sup> you have not shown proof, nor dropped yourself, you will be administratively dropped *without* a refund. If you took SPAN 1020 at UNT, documentation showing that you successfully completed 1020 will suffice (transcript, grade report, etc.).

The Department of Foreign Languages, in cooperation with the Office of Disability Accommodation, complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request to your instructor on or before the 4<sup>th</sup> class day.

**Course Description/Objectives:** Grammar, composition, oral-aural practice and readings. Prerequisite(s): SPAN 1020 or equivalent. The student will achieve an intermediate knowledge of Spanish in listening, speaking, reading and writing as well as Hispanic cultures. Spanish will be used in class as much as possible. Satisfies the Communication requirement of the University Core Curriculum.

**Assessment/Grading System**

**Participation/Attendance:** In order to gain mastery of Spanish, consistent, active participation and study are essential. Spanish will be spoken as much as possible, and regular practice is critical to improving communicative proficiency. We will be working on developing all skills—listening, speaking, reading, writing as well as an understanding of Spanish-speaking cultures. Coming to class well prepared by reading, completing homework and other assignments will impact your ability to participate fully in all activities.

Disruptions of the learning environment are unacceptable, including late arrivals and leaving before class is dismissed. There is no make-up work allowed, and there are no drops. An excused

absence is given only with a documented medical emergency, university-sponsored activities and the observance of certain religious holidays, provided the student notifies the instructor in writing within the first fifteen days of the semester.

**Homework 15%:** All assignments should be prepared prior to coming to class. Homework checks will be random and regular.

**Quizzes 15%:** Brief checks of vocabulary, reading, grammar comprehension or other topics in the chapter. Quizzes may be announced or unannounced.

**Composition 10%:** Writing is a very important skill to develop as you study Spanish. Although you will write often, three formal compositions, composed of one full page, double spaced Arial or Times New Roman 12 pt will be taken as evaluation in this area. Topics will be discussed at least one week prior to the due date (see Course Calendar for “Entrega de composición”.

**Oral Presentation 10%:** Students will research and present a topic related to Hispanic culture. A minimum of three sources other than the text should be utilized and documented. Topics must be instructor-approved at least one week prior to presentations. Presentations should be five minutes and include visuals or other multimedia aids as no reading will be allowed. Other students will be expected to respond orally or in writing to the presentations.

**Group Presentation 10%:** An objective of the communication component of the core curriculum is to participate effectively in groups. You will work often in groups but for this activity you will be assigned in groups of three or four persons a topic related to the content covered in the chapters (or another topic proposed by the group and approved by the instructor). The group will prepare a script for a simulation that will be presented to the class.

**Mid-term Exam 20%:** The mid-term exam will cover chapters 13-15.

**Final Exam 20%:** The final exam is comprehensive in nature but will focus on chapters 16-18.

Grading Scale: A=90-100    B=80-89    C=70-79    D=60-69    F=59 or below

Course Calendar: The course calendar is tentative and subject to change. All assignments/readings are due on the day they appear on the schedule.

Enero	14	Introducción al curso/Repaso
	16	Repaso
	21	Lab orientation; Cap. 13 El arte y la cultura p. 396-402
	23	Cap. 13 El arte y la cultura p. 402-411
	28	Cap. 13 El arte y la cultura p. 411-418
	30	<i>Atajo</i> familiarization; Cap. 13 El arte y la cultura p.419-423
Febrero	4	Cap. 14 El medio ambiente p. 424-431
	6	LANG 106 9:30-10; Cap. 14 El medio ambiente p. 432-439

	11	Cap. 14 El medio ambiente p. 439-444
	13	LANG 106 9:30-10; Cap. 14 El ambiente p.445-449; Entrega de composición
	18	Cap. 15 La vida social y la vida afectiva p. 450-455
	20	LANG 106 9:30-10:50; Cap. 15 La vida social y la vida afectiva p. 455-459
	25	Cap. 15 La vida social y la vida afectiva p. 460-466
	27	LANG 106 9:30-10; Cap. 15 La vida social y la vida afectiva p. 467-471
Marzo	4	Repaso para el examen
	6	Examen
	11	Presentaciones orales
	13	Presentaciones orales
	18 & 20	No hay clase: Descanso de primavera
	25	Cap. 16 ¿Trabajar para vivir o vivir para trabajar? p. 472-479
	27	LANG 106 9:30-10; Cap. 16 ¿Trabajar para vivir o vivir para trabajar? p. 480-485
Abril	1	¿Trabajar para vivir o vivir para trabajar? p. 486-493
	3	LANG 106 9:30-10:50; Cap. 16 ¿Trabajar para vivir o vivir para trabajar? p. 494-499; Entrega de composición
	8	Cap. 17 En la actualidad p. 500-509
	10	LANG 106 9:30-10; Cap. 17 En la actualidad p. 510-519
	15	LANG 106 9:30-10:50; Cap. 17 En la actualidad p. 520-523
	17	Presentaciones de grupos
	22	Cap. 18 En el extranjero p. 524-530
	24	LANG 106 9:30-10; Cap. 18 En el extranjero p. 530-537
	29	LANG 106 9:30-10; Cap. 18 En el extranjero p. 538-541
Mayo	1	Cap. 18 En el extranjero p. 542-545 Repaso para el examen; Entrega de composición
	6	No hay clase
	8	Examen final

APPENDIX B

*SPANISH PARTNER DIRECTORIES*

### *Spanish Partner Volumes*

Adjectives	Possessives
Articles	Present Tense (Irregular)
Commands	Present Tense (Regular)
Comparisons	Present Tense (Stem-Changing)
Conditional	Preterite
Demonstratives	Preterite and Imperfect
Direct Object Pronouns	Reflexive Verbs
Double Object Pronouns	Relative Pronouns
Future	Ser and Estar
Gustar	Subjunctive I
Imperfect	Subjunctive II
Indirect Object Pronouns	Subjunctive III
Interrogatives	Un poco de todo
Perfect Tenses	Verb Review Charts
Por and Para	Vocabulary

### *Spanish Partner Directory for Vocabulary Volume*

El cine	Los colores
El coche	Los días de la semana
El cuerpo	Los muebles
El dinero	Los órganos internos
El medico	Los vehículos
El tennis	
En el hotel	
En el restaurante	
En la clase	
En la librería	
La cara	
La casa	
La ciudad	
La computadora	
La familia I	
La familia II	
La naturaleza	
La playa	
La ropa I	
La ropa II	
Las bebidas	
Las estaciones del año	
Los animales	



## APPENDIX C

### *ATAJO* REFERENCES: GRAMMAR, PHRASES, AND VOCABULARY

## Grammar

Accents: General Rules	Personal Pronoun mismo, misma
Accents on Demonstratives	Personal Pronoun Reciprocal se, nos
Accents on Diphthongs	Personal Pronoun tú, vosotros, vosotras
Accents on Interrogatives	Personal Pronoun usted, ustedes
Accents on Monosyllables	Personal Pronoun yo, nosotros, nosotras
Adjective Agreement	Possession with de
Adjective Position	Possessive Adjective mi(s), tu(s)
Adverbs	Possessive Adjective nuestro, vuestro
Adverb Types	Possessive Adjective sus
Adverbs ending in –mente	Possessive Adjective: Emphatic Forms
Article: Contractions al, del	Possessive Pronouns
Article: Definite el, la, los, las	Prepositions a
Article: Indefinite un, una	Prepositions: Personal a
Article: Neuter lo	Prepositions de
But: pero, sino (que), nada más que	Prepositions para
Comparisons: Adjectives	Prepositions por
Comparisons: Equality	Relatives cuyo, cuya
Comparisons: Inequality	Relatives el cual, la cual
Comparisons: Irregular	Relatives el que, la que
Conjunction que	Relatives lo cual
Demonstrative Adjectives este, ese, aquel	Relatives lo que
Demonstrative Neuter esto, eso, aquello	Relatives que
Demonstrative Pronoun éste, ése, áquel	Relatives quien
Interrogative Adverb ¿cómo?	Relatives: Antecedent Suffixes
Interrogative Adverb ¿cuándo?	Verbs conocer and saber
Interrogative Adverb ¿de dónde?	Verbs dar
Interrogative Adverb ¿dónde? ¿adónde?	Verbs estar
Interrogative Adverb ¿por dónde?	Verbs haber
Interrogative Adverb ¿por qué?	Verbs pasar
Interrogatives ¿cuál?	Verbs poder
Interrogatives ¿cuánto?	Verbs seguir
Interrogatives ¿de quién?	Verbs ser
Interrogatives ¿qué?	Verbs ser and estar
Interrogatives ¿quién?	Verbs tener
Negation no, nadie, nada	Verbs: Compound Tenses
Next: siguiente, que viene, próximo	Verbs: Compound Tense Usage
Nouns: Irregular Gender	Verbs: Conditional
Nouns: Orthographic Changes z → ces	Verbs: Future
Personal Neuter Pronoun ello	Verbs: Future with ir
Personal Pronoun Direct	Verbs: Gerund
Personal Pronoun él, ella, ellos, ellas	Verbs: If-clauses si
Personal Pronoun Indirect	Verbs: Imperative
Personal Pronoun Indirect le, les	Verbs: Imperative tú
Personal Pronoun Indirect/Direct	Verbs: Imperative usted(es)

Verbs: Imperative vosotros  
Verbs: Imperfect  
Verbs: Impersonals  
Verbs: Indirect Commands with que  
Verbs: Infinitive  
Verbs: Irregular Preterite  
Verbs: Passive  
Verbs: Passive with se  
Verbs: Past Participle  
Verbs: Past Participle Agreement  
Verbs: Preterite  
Verbs: Preterite and Imperfect  
Verbs: Progressive Tenses  
Verbs: Reflexives  
Verbs: Subjunctive Agreement  
Verbs: Subjunctive with a Relative  
Verbs: Subjunctive with como si  
Verbs: Subjunctive with ojalá  
Verbs: Subjunctive with que  
Verbs: Transitive and Intransitive

## Phrases

Agreeing and disagreeing  
Apologizing  
Appreciating food  
Asking and giving advice  
Asking and telling time  
Asking for and giving directions  
Asking for help  
Asking in a store  
Asking information  
Asking permission  
Asking the price  
Asserting and insisting  
Attracting attention  
Comparing and contrasting  
Comparing and distinguishing  
Comgratulating  
Denying  
Describing health  
Describing objects  
Describing people  
Describing the past  
Describing weather  
Disapproving  
Encouraging  
Expressing a need  
Expressing an opinion  
Expressing compulsion  
Expressing conditions  
Expressing distance  
Expressing indecision  
Expressing intention  
Expressing irritation  
Expressing location  
Expressing time relationships  
Greeting  
Holiday greetings  
Hypothesizing  
Introducing  
Inviting, accepting and declining  
Linking ideas  
Making an appointment  
Making something work  
Making transitions  
Offering

Persuading  
Planning a vacation  
Pointing out an object  
Pointing out a person  
Pointing to a person or object  
Reassuring  
Repeating  
Requesting or ordering  
Saying good-bye  
Self-reproach  
Sequencing events  
Stating a preference  
Talking about daily routines  
Talking about films  
Talking about habitual actions  
Talking about past events  
Talking about the date  
Talking about the present  
Talking about the recent past  
Talking on the phone  
Thanking  
Warning  
Weighing alternatives  
Weighing the evidence  
Welcoming  
Writing a conclusion  
Writing a letter (formal)  
Writing a letter (informal)  
Writing a news item  
Writing about an author/narrator  
Writing about characters  
Writing about the structure  
Writing about theme, plot, or scene  
Writing an essay  
Writing and introduction

## Vocabulary

Abbreviations  
Animals: Birds  
Animals: Domestic  
Animals: Fish  
Animals: Insects  
Animals: Wild  
Arts  
Automobile  
Banking  
Beach  
Board games  
Body  
Calendar  
Camping  
City  
Classroom  
Clothing  
Colors  
Computers  
Continents  
Countries  
Cultural periods and movements  
Days of the week  
Direction and distance  
Dreams and aspirations  
Fabrics  
Face  
Fairy tales and legends  
Family members  
Food  
Food: Bread  
Food: Cereals  
Food: Cheeses  
Food: Cooking  
Food: Drinks  
Food: Fish and seafood  
Food: Fruits  
Food: Legumes and vegetables  
Food: Meals  
Food: Meat  
Food: Nuts and dried fruit  
Food: Pastry  
Food: Place setting  
Food: Restaurant

Food: Spices, seasoning  
Food: Tapas  
Game cards  
Geography  
Gestures  
Hair  
House  
House: Bathroom  
House: Bedroom  
House: Furniture  
House: Household chores  
House: Kitchen  
House: Living room  
Languages  
Leisure  
Mail  
Materials  
Means of transportation  
Media: Newsprint  
Media: Photography and video  
Media: Telephone and telegraph  
Media: Television and radio  
Medicine  
Metric system and measurements  
Months  
Monument  
Musical instruments  
Nationality  
Numbers: 0-20  
Numbers: 21-31  
Numbers: 32-99  
Numbers: 100-999  
Numbers: 1,000-  
Numbers: Collectives  
Numbers: Computing  
Numbers: Even and uneven  
Numbers: Fractions  
Numbers: Ordinals 1st-10th  
Numbers: Ordinals 11th-21st  
Numbers: Ordinals 30th-1000th  
Office  
People  
Personality  
Planets

Plants: Flowers  
Plants: Gardens  
Plants: Trees  
Poetry  
Postures  
Professions  
Prose  
Punctuation marks  
Quantity  
Religions  
Religious holidays  
Seasons  
Senses  
Sickness  
Sports  
Sports equipment  
Stores  
Stores and products  
Studies  
Telephone  
Time expressions

Time of day  
Toilette  
Trades  
Traveling  
University  
Upbringing  
Working conditions

APPENDIX D

APPROVAL BY THE UNIVERSITY COMMITTEE FOR THE  
PROTECTION OF HUMAN SUBJECTS

# UNIVERSITY of NORTH TEXAS

*Office of Research Services*

March 31, 2003

Raquel Oxford  
3610 Kings Court  
Denton, TX 76209

Re: Human Subjects Application No. 03-016

Dear Ms. Oxford,

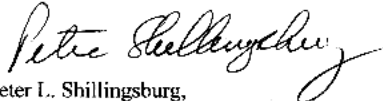
As permitted by federal law and regulations governing the use of human subjects in research projects (45 CFR 46), the UNT Institutional Review Board has reviewed your proposed project titled "Effects of Technology Enhanced Language Learning on Core Curriculum Communication Assessments of Intermediate Level Spanish Students." The risks inherent in this research are minimal, and the potential benefits to the subject outweigh those risks. The submitted protocol and informed consent form is hereby approved for the use of human subjects.

Enclosed is the information document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

**U.S. Department of Health and Human Services regulations require that you submit annual and terminal progress reports to the UNT Institutional Review Board.** The Board must review this project annually and/or prior to any modifications made in the approved project. **Federal policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only.**

Please contact me if you wish to make changes or need additional information.

Sincerely,



Peter L. Shillingsburg,  
Chair  
Institutional Review Board

PS:sb

P.O. Box 305250 • Denton, Texas 76203-5250 • (940) 565-3940  
Fax (940) 565-4277 • TTY (800) RELAY TX • [www.unt.edu](http://www.unt.edu)



APPENDIX E

STUDENT INFORMED CONSENT FORM

Revised Student Informed Consent Form: Oxford 03-016

Dear Student,

You are currently enrolled in a Spanish course which may fulfill the university requirement for the communication core. Learning to communicate in Spanish is an important goal for the course and your life-long learning, and I am interested in how my instruction affects your success. As part of my doctoral research I am conducting a study of the effects of technology-enhanced language learning on composition and oral production. What you have to do does not go beyond the scope of the normal course requirements.

This project is beneficial to your learning and program improvement and poses no foreseeable risks. Your involvement takes place only during the semester in which you are enrolled in SPAN 2040. You may withdraw from participation in the study at any time without penalty, prejudice or loss of benefits, and your decision whether or not to participate will in no way affect your grade. If you decide not to participate or withdraw from the study your records will not be included in the research data. At the conclusion of the study, a summary of findings will be made available to all interested participants. At no time when reporting results will your confidentiality be violated since pseudonyms will be used or data will be reported in aggregated groups. Data will be destroyed following completion of data analysis. Should you have any questions or desire further information, please feel free to call me at (940) 565-4740 or the faculty sponsor for this project Dr. Alexandra Leavell at (940) 565-2826. Thank you in advance for your cooperation and support.

Sincerely,

Raquel Oxford, M.A.  
Diversity Scholar, Doctoral Candidate  
Department of Teacher Education and Administration  
University of North Texas

THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY THE UNIVERSITY OF  
NORTH TEXAS COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS (940)  
565-3940

---

I, \_\_\_\_\_, understand that I do not have to participate in the study and that if I do, I can change my mind at any time. Since there are no added activities involved in participating, withdrawing or not participating merely means that my records will not be included in the research data.

Student Signature: \_\_\_\_\_ Date: \_\_\_\_\_

APPENDIX F  
STUDENT INFORMATION SHEET

SPAN 2040 Spring 2003

Name \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_ E-mail \_\_\_\_\_

Major/Minor \_\_\_\_\_

Grade/instructor for SPAN1010 \_\_\_\_\_ SPAN1020 \_\_\_\_\_

1. What is your ability level in Spanish for listening, speaking, reading and writing?

(You should have only one checkmark per column)

	Listen	Speak	Read	Write
<b>Novice High:</b> Communication with simple, learned phrases; Satisfy immediate needs with learned utterances; mainly short, incomplete sentences				
<b>Intermediate Low:</b> Basic survival needs and minimum courtesy; short messages with mostly learned vocabulary				
<b>Intermediate Mid:</b> Some survival needs and some limited social demands with simple sentences (mostly in present tense)				
<b>Intermediate High:</b> Satisfy most survival needs and limited social demands such as simple summaries and uncomplicated topics of general interest				
<b>Advanced Low:</b> Narrate, describe facts or summarize in simple sentences and some compound/complex sentences with a variety of topics				
<b>Advanced Mid:</b> Narrate or describe using all tenses, especially when the subject is a current event or of personal interest.				
<b>Advanced High:</b> Narrating or describing a variety of topics with significant precision and detail, but inability to sustain arguments and construct more than simple hypotheses.				
<b>Superior:</b> The ability to explain complex matters with smooth transitions between subtopics, along with subtlety and nuance.				

2. How comfortable are you with **speaking in Spanish**? (please circle one)

Not at all comfortable    0            1            2            3            4            Extremely comfortable

3. How comfortable are you with **writing in English**? (please circle one)

Not at all comfortable    0            1            2            3            4            Extremely comfortable

4. How comfortable are you with **writing in Spanish**? (please circle one)

Not at all comfortable    0            1            2            3            4            Extremely comfortable

5. How would you rate your computer skills level? (please circle one)

No prior experience            Beginner            Intermediate            Expert

6. Have you used technology to learn language?            Yes            No

7. How have you used technology to learn language? (Puntos CD, drills such as *Spanish Partner*, Internet, video, writing assistants such as Atajo, etc.)

8. What is your opinion of technology enhanced language learning?

APPENDIX G  
COMPOSITION 1

## Composition 1

### 2/13 Instruction for *Atajo* Login

1. Open Spanish, then *Atajo*.
2. From the File Menu choose Options.
3. Check 'Turn Logging on'
4. Click OK
5. Type in a pseudonym of up to 8 characters
6. Click OK
7. Click OK again
8. Choose the 'S' drive by scrolling down to it
9. Double click on the 'FORL' file
10. Double click on 'FLLC'
11. Double click on 'Oxford6' for 9:30 class/'Oxford9' for 11 class
12. Name your file using your pseudonym and 1 (for example, 'oboe1')
13. Choose OK
14. Start typing your *Atajo* document by putting your pseudonym only at the top left hand side. DO NOT PUT A HEADING OR YOUR REAL NAME IN YOUR DOCUMENT.

Today's topic:

As we brainstormed in our pre-writing exercise on Tuesday, you will be writing about a problem or situation that impacts your environment. This could be a social or environmental issue, such as recycling, racism, excess noise or pollution.

1. Be sure to give your work a title.
2. Describe the problem or situation.
3. Tell what you do about it (primarily present indicative).
4. Tell what you want to or will do (ir + a + infinitive is how we talk about the future).
5. Tell what you want others to do or what they want you to do (subjunctive).

APPENDIX H  
COMPOSITION 2

## Composition 2

### 4/3 Instructions for *Atajo* Login and Composition 2

1. Open Spanish, then *Atajo*.
2. From the File Menu choose Options.
3. Check 'Turn Logging on'
4. Click OK
5. Type in a pseudonym as before
6. Click OK
7. Click OK again
8. Choose the 'S' drive by scrolling down to it
9. Double click on the 'FORL' file
10. Double click on 'FLLC'
11. Double click on 'Oxford6' for 9:30 class/'Oxford9' for 11 class
12. Name your file using 2 and your pseudonym (for example, '2oboe')
13. Choose OK
14. Start typing your *Atajo* document by putting your pseudonym only at the top left hand side. DO NOT PUT A HEADING OR YOUR REAL NAME IN YOUR DOCUMENT.
15. Be sure to double space your final document and set 1-inch margins.

Today's topic: Discuss your professional goals. This should include what you are studying now and what type of work you want to do. Talk about what your job will be like.

1. Be sure to give your paper a title.
2. Tell what you are studying now (primarily present indicative).
3. Tell what you want to or will do (primarily future).

*Atajo* has some references that may help you. Look under Phrases for Expressing desires, Expressing hopes and aspirations, Expressing intentions and under Vocabulary for Professions, Dreams and aspirations, Trades, Working conditions



APPENDIX I  
COMPOSITION 3

## Composition 3

### 4/29 Instructions for *Atajo* Login and Composition 3

1. Open Spanish, then *Atajo*.
2. From the File Menu choose Options.
3. Check 'Turn Logging on'
4. Click OK
5. Type in your pseudonym as before
6. Click OK
7. Click OK again
8. Choose the 'S' drive by scrolling down to it
9. Double click on the 'FORL' file
10. Double click on 'FLLC'
11. Double click on 'Oxford6' for 9:30 class/'Oxford9' for 11 class
12. Name your file using 3 and your pseudonym (for example, '3oboe')
13. Choose OK
14. Start typing your *Atajo* document by putting your pseudonym only at the top left hand side. DO NOT PUT A HEADING OR YOUR REAL NAME IN YOUR DOCUMENT.
15. Be sure to give your composition a title. Double space your final document and set 1-inch margins. Print 2 copies of your composition and return this sheet.

***Atajo* has some references that may help you.**

Today's topic: Imagine that you are one of the "rich and famous" and would like to take a trip. Plan your trip including:

1. where you would go (Vocabulary: Beach, Traveling; Phrases: Describing places)
2. who you would invite (Vocabulary: Family members)
3. how you would travel (Vocabulary: Means of transportation)
4. where you would stay
5. the clothes you would wear (Vocabulary: Clothing)
6. the things that you would do in that place (Vocabulary: Leisure, Monuments)

APPENDIX J  
COMPOSITION RUBRIC

## Composition Rubric for SPAN 2040

### **CONTENT:**

- 30-27 Knowledgeable; substantive; thorough development of thesis; relevant to topic.
- 26-22 Some knowledge of subject; adequate range; limited development of thesis; mostly relevant to topic, but lacks detail.
- 21-17 Limited knowledge of subject; little substance; inadequate development of topic.
- 16-13 Does not show knowledge of subject; non-substantive; not pertinent, or not enough to rate.

### **ORGANIZATION:**

- 20-18 Fluent expression; ideas clearly stated/supported; succinct and well-organized; logical and cohesive sequencing.
- 17-14 Somewhat choppy; loosely organized but main ideas stand out; limited support; logical but incomplete sequencing.
- 13-10 Non-fluent; ideas confused or disconnected; lacks logical sequencing and development.
- 9-7 Does not communicate ideas; no organization, or not enough to rate.

### **VOCABULARY:**

- 20-18 Sophisticated range; effective word/idiom choice and usage; mastery of word forms; appropriate register.
- 17-14 Adequate range; occasional errors of word/idiom form, choice, usage but meaning not obscured.
- 13-10 Limited range; frequent errors of word/idiom form, choice, usage; meaning confused.
- 9-7 Essentially translation; little knowledge of target language vocabulary, or not enough to rate.

### **GRAMMAR/LANGUAGE USE:**

- 25-22 Effective complex constructions; few errors of agreement, number, tense, word order/function, articles, pronouns, prepositions.
- 21-18 Effective but simple constructions; minor problems in complex constructions; several errors of agreement, tense, number, word order/function, articles, pronouns, prepositions but meaning seldom obscured.
- 17-11 Major problems in simple/complex constructions; frequent errors of negation, agreement, tense, number, word order/function, articles, pronouns, prepositions and/or fragments, run-ons, deletions; meaning confused or obscured.
- 10-5 Virtually no mastery of sentence construction rules; dominated by errors; does not communicate, or not enough to rate.

### **MECHANICS:**

- 5 Demonstrates mastery of conventions, few errors of spelling, punctuation, capitalization, paragraphing.
- 4 Occasional errors in spelling, punctuation, capitalization, paragraphing but meaning not obscured.
- 3 Frequent spelling, punctuation, capitalization, paragraphing error; meaning confused or obscured.
- 2 No mastery of conventions; dominated by errors of spelling, punctuation, capitalization, paragraphing or not enough to rate.

Adapted from the ESL Composition Profile (Jacobs, et.al., 1981)

APPENDIX K  
SAMPLE *ATAJO* LOG

### Sample *Atajo* Log

- 1) 09:25:04 BEGS (BeginSession) 7/7/2004 "Test" S:\FORL\FLLC\TEST.RTF
- 2) 09:25:13 RSDI (RaiseDict) Spanish "atajo" "shortcut"
- 3) 09:25:51 SRDI (SearchDict) "estudiante" SpanishWM Items found:1 "estudiante" "student"
- 4) 09:26:18 SLDH (SelectDictSearchHit) "estudiante" "student"
- 5) 09:27:17 SLNI (SelectNoteFromIndex) "VERBS: SUBJUNCTIVE AGREEMENT"
- 6) 09:27:18 RSNT (RaiseNote) "VERBS: SUBJUNCTIVE AGREEMENT"
- 7) 09:27:53 SLNI (SelectNoteFromIndex) "asking & giving advice"
- 8) 09:27:53 RSNT (RaiseNote) "asking & giving advice"
- 9) 09:28:18 SLNI (SelectNoteFromIndex) "means of transportation"
- 10) 09:28:18 RSNT (RaiseNote) "means of transportation"
- 11) 09:29:30 SRNT (SearchNote) "university" GPV 1 "school: university"
- 12) 09:29:41 SLNI (SelectNoteFromIndex) "school: university"
- 13) 09:29:41 RSNT (RaiseNote) "school: university"
- 14) 09:32:34 SRDI (SearchDict) "teacher" EnglishWM Items found:2 "teacher, expert, master"  
"maestro,-a"
- 15) 09:32:48 SLDH (SelectDictSearchHit) "teacher, professor" "profesor,-a"
- 16) 09:33:12 RSED (RaiseEditFile) S:\FORL\FLLC\TEST.RTF
- 17) 09:35:46 SVED (SaveEditFile) S:\FORL\FLLC\TEST.RTF S:\FORL\FLLC\TEST.RTF
- 18) 09:36:04 ENDS (EndSession) 7/7/2004

- 1) Open *Atajo* and begin logging session
- 2) Click and open Dictionary
- 3) Enter keyword "estudiante"
- 4) Search results "estudiante, student"
- 5) Click and open Reference (in task bar), Go to Grammar and select Verbs: Subjunctive Agreement
- 6) Display topic Verbs: Subjunctive Agreement
- 7) Click and open Reference (in task bar), Go to Phrases and select Asking & giving advice
- 8) Display topic Asking & giving advice
- 9) Click and open Reference (in task bar), Go to Vocabulary and select Means of transportation
- 10) Display topic Means of transportation
- 11) Enter keyword "university"
- 12) Search, "school university"
- 13) Display topic, "La universidad"
- 14) Search in English, "teacher, maestro, teacher, professor"
- 15) Click on "professor" ---screen at bottom goes to "teacher, professor"
- 16) Student returns to Editor to enter/revise text
- 17) Saved file
- 18) End session

APPENDIX L  
DEMOGRAPHIC DATA FORM

SPAN 2040 Spring 2003 Demographic Data

Please do not put your name on this form.

1. Gender (check one):      Male \_\_\_\_\_  
   Female \_\_\_\_\_

2. Age (check one):    16-20 \_\_\_\_\_  
                                 21-25 \_\_\_\_\_  
                                 26-30 \_\_\_\_\_  
                                 31-35 \_\_\_\_\_  
                                 36-40 \_\_\_\_\_  
                                 41-45 \_\_\_\_\_  
                                 Over 46 \_\_\_\_\_ (please specify)

3. Race (check one):  
Asian \_\_\_\_\_ Black \_\_\_\_\_ Hispanic \_\_\_\_\_ White \_\_\_\_\_ Other \_\_\_\_\_

4. Major: \_\_\_\_\_

5. Minor: \_\_\_\_\_

6. Classification (check one):  
Freshman \_\_\_\_\_ Sophomore \_\_\_\_\_ Junior \_\_\_\_\_ Senior \_\_\_\_\_ Graduate \_\_\_\_\_

7. Did you study Spanish in grades K-12? (check one)    Yes \_\_\_\_\_    No \_\_\_\_\_

If yes, in which grades? \_\_\_\_\_

8. Have you had any instruction in technology (computers, keyboarding, PowerPoint, etc.) in grades K-12, at the university or other setting?    Yes \_\_\_\_\_    No \_\_\_\_\_

If yes, please specify.



APPENDIX M

CORE ASSESSMENT QUESTIONNAIRE

# CORE ASSESSMENT QUESTIONNAIRE: Communication

The University of North Texas is very interested in your opinions about our university core courses. Please answer the questions below, so that we can assess how well this course helped you meet the learning objectives in Communication identified by the Texas Higher Education Coordinating Board.

COURSE TITLE AND NUMBER: \_\_\_\_\_ SEMESTER: \_\_\_\_\_

To what extent has this course helped you...?

	Not at all helpful	A little helpful	Somewhat helpful	Helpful	Very helpful	N/A
1. to write more effectively in this foreign language?	1	2	3	4	5	N/A
2. to improve your ability to speak in this foreign language?	1	2	3	4	5	N/A
3. to extend your understanding of the grammatical structure of this language?	1	2	3	4	5	N/A
4. to apply this grammatical structure to express your ideas, opinions, and needs orally?	1	2	3	4	5	N/A
5. to apply this grammatical structure to express your ideas, opinions, and needs in writing?	1	2	3	4	5	N/A
6. to understand the cultural context of this language to better express yourself with cultural appropriateness?	1	2	3	4	5	N/A
7. to participate effectively in groups?	1	2	3	4	5	N/A
8. to listen effectively to others?	1	2	3	4	5	N/A
9. to organize your thoughts for oral/written presentations?	1	2	3	4	5	N/A
10. to choose appropriate language examples and visual aids for oral/written presentations?	1	2	3	4	5	N/A

APPENDIX N

CORE ASSESSMENT QUESTIONNAIRE WITH TECHNOLOGY

# CORE ASSESSMENT QUESTIONNAIRE: Communication

The University of North Texas is very interested in your opinions about our university core courses. Please answer the questions below, so that we can assess how well this course helped you meet the learning objectives in Communication identified by the Texas Higher Education Coordinating Board.

COURSE TITLE AND NUMBER: \_\_\_\_\_ SEMESTER: \_\_\_\_\_

To what extent have the technology enhanced activities (*Atajo, Spanish Partner*) in this course helped you...?....?

	Not at all helpful	A little helpful	Somewhat helpful	Helpful	Very helpful	N/A
1. to write more effectively in this foreign language?	1	2	3	4	5	N/A
2. to improve your ability to speak in this foreign language?	1	2	3	4	5	N/A
3. to extend your understanding of the grammatical structure of this language?	1	2	3	4	5	N/A
4. to apply this grammatical structure to express your ideas, opinions, and needs orally?	1	2	3	4	5	N/A
5. to apply this grammatical structure to express your ideas, opinions, and needs in writing?	1	2	3	4	5	N/A
6. to understand the cultural context of this language to better express yourself with cultural appropriateness?	1	2	3	4	5	N/A
7. to participate effectively in groups?	1	2	3	4	5	N/A
8. to listen effectively to others?	1	2	3	4	5	N/A
9. to organize your thoughts for oral/written presentations?	1	2	3	4	5	N/A
10. to choose appropriate language examples and visual aids for oral/written presentations?	1	2	3	4	5	N/A

APPENDIX O

SAMPLE COMPOSITIONS

## Example of Lower Inquiries/Testing Theories

Draft

### Mi vacacion ideal

Sí yo soy un de los "ricos y famosos," me gustaría viajar a Destin, FL. Destin es la ciudad adonde yo y mis familia viajamos en los veranos pasados. Es un ciudad espacial a mi, y es un ciudad perfecto por vacaciones. Las playas son magnificas, y yo tengo muchos recuerdos de Destin. Viviría en Destin.

Porque lo es Destin, me gustaría mi familia venir. Destin es un lugar especial a nosotros, y nos gustaríamos viajar a Desntin con mi.

Nosotros viajaríamos para avión porque lo es mucho rápido y mucho desahogado. No viaje por avión en tres años, y lo extaño.

Nosotros permaneceríamos a la Holiday Beach Resort. Es el lugar adonde nos permanecemos en los veranos pasados, y es un lugar espacial por nosotros.

Me gustaría llevar las camisetas y los trajes de baños todos los días, porque los son desahogados.

Sí viaje a Destin, no haría mucho. Dormiría mucho, y muy tarde en los mañanas. En las tardes, miraría televisión y iría a la piscina. En los noches, comería mucho y miraría películas.

## Example of Higher Inquiries/Translation

Dylan3

### Vacación

Sí fuera famosa que iría la playa. Blanco arena y azul agua en el horizonte es mí idea de paraíso. Reservaciones es necesario porque desearía dormir en la playa. Me gustaría ir a solo. Mi comida estaría exótico y delicioso. Viajaría en mí coche y después por avión. El avión quitaría el paraíso. A medida que estaría la playa me gustaría comprar muchas cosas para me. También compraría muchas cosa para mí familia y mis amigos. También iría muchas cervecerías haber algunas cervezas y margaritas. Próximo estaría papelería para papeles escribiría mi novia. En mí última día en la playa me gustaría acostaría en el sol y beber muchas bebidos alcohólicos. Esto excursión iría mí idea de paraíso y cielo.

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