

Using Technology in an English as a Second Language Course to Accommodate Visual,
Kinesthetic, and Auditory Learners to Affect Students' Self-Efficacy About Learning the
Language

by
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Approval Page

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Abstract

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This applied dissertation was designed to provide an answer to the research question, In what ways can technology in an English as a Second Language (ESL) course accommodate visual, kinesthetic, and auditory learners to increase students' self-efficacy about learning the language?

By accommodating for students' differing learning styles and by using the Self-Efficacy Questionnaire (SEQ), it intended to (a) augment students' aspirations in learning ESL, (b) augment students' persistence in ESL, and (c) augment students' positive perception of activities related to learning ESL. Additionally, it was planned that it would also shed light on students' perceived ability to perform and their persistence in learning ESL before and after the instructional activities and relationship between students' aspirations and perceptions of ESL instruction.

Participants were enrolled in the first semester of Basic 1st Year English. The control group had 18 students. The experimental group had 30 students. Of the 26 students who answered both pre- and post-SEQ, 19 completed the Productivity Environmental Preference Survey (PEPS; G. Price, 1996), identifying their learning style preferences.

The SEQ developed by L. Mikulecky, P. Lloyd, & C. H. Shenghui, (1996) was administered to all students to identify their attitudes and perceptions toward learning ESL. At the beginning of the semester, the experimental group was also administered the PEPS and their preferred learning styles were identified and discussed with students. The course was taught incorporating technology-rich activities developed according to the content and the learning styles. Students in the experimental group used the activities according to the learning styles identified in the PEPS. After each activity, reaction information was collected. At the end of the treatment period, all students completed the same SEQ they completed at the beginning of the course. The results indicated that students in the experimental group had significantly higher self-efficacy than the control group at the end of the treatment.

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Chapter 1: Introduction

Research has shown that every human being has his or her own way of learning and that students do not learn as well when that style is thwarted. Although many teachers are aware that their students favor different learning styles, lecture tends to be the main form of teaching. Some faculty simply decide to use a wide variety of teaching activities, hoping that they will cover most student learning preferences along the way. This method, though convenient, may not be the most effective way to address student learning preferences. Caudil (1998) stated that planning for multiple modalities within each lesson is important because once a teacher focuses on one modality, “students who learn best in one of the other . . . ways may lose interest or have difficulty staying focused” (p. 11).

Recently, education has encountered the new challenge of restructuring under the rapid development of information technology (Ehrmann, 1995; Guskin, 1994; Handy, 1998; Owston, 1997). In many institutions, administrators have high expectations that the potential of instructional technology can be realized to serve better educational clientele (Duchastel, 1997). Implementing the use of technology in teaching and learning and planning for students’ diverse learning styles requires fundamental changes in many areas of an institution.

Background of the Study

The research site, Universidad del Este (formerly Colegio Universitario del Este), is one of three private, nonprofit institutions of Ana G. Mendez University System located in Puerto Rico. The academic programs lead to master’s, baccalaureate, or associate degrees in liberal arts, education, business administration, office systems, science, and tourism. The institution has a main campus and six university centers spread

out in different towns. In August 2001, the university employed 72 full-time and 143 part-time faculty on the main campus and 193 part-time faculty at the university centers. The student body is composed of youths and adults who have recently graduated from high school as well as adults who having entered the job market need to improve skills in a technical profession or desire an opportunity for self-improvement. Table 1 shows the amount of students in the university's main campus as well as the university centers.

Table 1

Colegio Universitario del Este Student Profile (Amounts)

Place	1st year	2nd year	3rd year	4th year	Total
Main campus	2,186	717	430	315	3,648
University centers	1,487	409	255	147	2,298
Totals	3,673	1,126	685	462	5,946

Bean (1982) and Van Tilburg and Dubois (1989) documented that having negative feelings toward past experiences in language learning will affect the levels of achievement in that subject area. Most Universidad del Este students postpone taking the required English courses until their senior year.

They tend to say they do not like learning English, they feel apprehensive of the language, and they doubt their abilities to learn the language. The subject is certainly familiar to them; they have taken 12 years of English in elementary, junior high, and high school. Yet, most students need remedial or basic English skills as determined by the

university's classification and interpretation of College Board Entrance Examinations (CEEB). At this research site there are four levels of English courses available to 1st year students. Students' scores on CEEB are taken into consideration in order to be placed in each course. Upon examination of curricula and course syllabi for the different courses, the levels and scores are as shown in Table 2.

Table 2

English Levels and College Board Entrance Examinations Scores

Level	Score (maximum and minimum accepted for each course)
English 100--Remedial	0-351
English 101—Basic First Year English	352-425
English 103—Intermediate First Year English	426-525
English 105—Advanced First Year English	526 or higher

Note. Levels are defined by Universidad del Este, School of Liberal Arts and Languages, English faculty, and syllabi standards.

For the fall term of the 2001-2002 academic year, 712 students were enrolled in the 1st-year English courses. Of these, 106 were enrolled in remedial English, 523 in Basic First Year English, 39 in Intermediate First Year English (English 103), and 44 in Advanced First Year English (English 105).

Statement of Purpose and Rationale

The university has been slow in adopting new technologies. It has also been slow in planning for students' diverse learning styles. At the departmental level, review of

curriculum design and teaching approaches seems to have halted as well. It seems that lack of time and lack of instructors who are actively engaged in the revision process are the reasons for this stagnation.

At the university, there is a recent tendency to include technology; yet, instructors are typically trained in only the basic operation of software. Instructors are not conscious of the conceptual underpinnings of the use of technology and how it can accommodate learning styles and enhance students' perceptions of the content being presented. Some colleagues use PowerPoint, for example, because they have a new computer program that allows them to present information in this way, and they just want to try something different.

Questioning how a particular type of technology influences the learning styles of students and using that information in designing a course provide a theoretical justification for the method. Learning styles should be taken into account when teaching with technology. Students' performance when faced with technology is very much tied to their particular learning style preferences (Dille & Mezack, 1991; Gee, 1990). Moreover, teaching in a way that students feel comfortable with might have a change in their attitudes and perceptions toward learning English, which might, in turn, affect what they believe they can achieve in learning the language (self-efficacy).

Associated Topics, Hypothesis, and Theories Investigated

Topics and theories. The theories and topics discussed are learning styles theory, self-efficacy theory, and instructional technology. A detailed discussion of each is presented in the literature review section of this paper.

Hypothesis investigated. The study examined the following hypothesis: Does the inclusion of activities that use technology to accommodate for visual, kinesthetic, and

auditory learners increase students' self-efficacy about learning the language.

Research Question

This study answers the question; In what ways can technology in an English as a Second Language (ESL) course accommodate visual, kinesthetic, and auditory learners to increase students' self-efficacy about learning the language?

Objectives

By accommodating for students' differing learning styles, this study intends to

1. Augment students' judgments of their perceived abilities to perform in ESL courses as measured by the Self-Efficacy Questionnaire (SEQ), which was developed by Mikulecky, Lloyd, and Shenghui (1996; see Appendix A).

2. Augment students' aspirations in learning ESL as measured by the SEQ.

3. Augment students' persistence in ESL as measured by the SEQ.

4. Augment students' positive perceptions of activities related to learning English as measured by the SEQ.

In addition, this study shed some light upon

1. Students' perceived abilities to perform and their persistence in learning ESL before and after the instructional activities as measured by the SEQ.

2. The relationship between students' aspirations and perceptions of English instructional activities as measured by the SEQ.

If the research brings positive results, participants in the study should eventually enjoy the benefits and have the feeling that they can achieve more in English. This study is, therefore, aligned with the university's goal of improving student satisfaction and achievement in English courses. The research should improve current teaching practices with regard to technology-enriched environments and learning styles.

Limitations of the Study

The study presented limitations in variables that could not be controlled as well as in the methods followed. The instructor, the time of day the course was scheduled, and the course position in the university as the first English course students took was constant. Therefore, these elements should not affect outcomes in student participation although other variables such as study habits, outside commitments, jobs, family, differences in computer experience levels and knowledge, and emotional intelligence were not controlled for. The intervening variable was the redesign of the lessons in the course.

The study employed a one-group correlational, quasi-experimental, pretest-posttest design. There was no randomization as students were distributed to their 1st-year English course according to their CEEB scores.

This study was designed to gain insight into the manner that technology in an ESL course can assist visual, kinesthetic, and auditory learners to augment students' self-efficacy about learning the language. It examined if students' judgments of their perceived abilities to perform, their aspirations in learning, their persistence, and their positive perceptions of activities related to ESL courses as measured by the SEQ are increased after an intervention, which is comprised of lessons in ESL that use technology to accommodate for visual, auditory, and kinesthetic learners.

In addition, this study was designed to present students' perceived abilities to perform and their persistence in learning ESL before and after the instructional activities as measured by the SEQ as well as the relationship between students' aspirations and perceptions of English instructional activities as measured by the SEQ.

It is strictly a one time study of the effects that accommodating for learning styles using

technology may have on students' self-efficacy in learning ESL. It did not examine students' grades.

Overview of the Methodology

The course had approximately 35 to 40 undergraduate 1st-year college students. This study was completed during their first semester of English. A control group was used in this first semester course.

This research was conducted with an undergraduate faculty member who is teaching 1st-year basic English courses. At the university, only one professor was willing to teach a class using technology and accommodating learning styles. This instructor is an experienced ESL instructor and a doctoral student in an instructional technology and distance education program. He has the appropriate background and preparation.

Students' self-efficacy was identified before and after the intervention in the experimental group using a SEQ for the area of adult literacy and ESL. The control group also received the same SEQ at the beginning of the semester. Prior to the intervention, students in the experimental group were administered the Productivity Environmental Preference Survey (PEPS; Price, 1996) in their native language (Spanish; see Appendix B), and their preferred learning styles were identified. Learning style results were discussed individually with each student. Some students were not present when the PEPS was administered. Yet, as one of the most researched learning style models is the sensory learning style (Morrison & Lowther, 2002), many students, especially adults, are cognizant of this dimension (Ehrman, 1996). For this reason the learning styles were described and explained in detail to all students, and those who did not take the PEPS self-identified themselves in one of the learning styles.

Students in the treatment group participated in the activities within the lessons according to the learning style identified in the PEPS. If students showed natural proclivities in more than one area, they could participate in several learning style activities in two or all areas. After each activity, basic reaction information was collected by using different instruments to collect immediate feedback on each activity. At the end of the treatment, students completed the same SEQ they completed at the beginning of the course, and results were reported quantitatively. Students in the control group were given the SEQ at the end of the 4 weeks.

Definitions of Terms

Some important concepts needed to be discussed to clarify the usage of each term and what it means throughout the study.

Self-efficacy constructs. The five self-efficacy constructs are ability, persistence, locus of control, aspiration, and activity perception. *Ability* is defined as a person's aptitude, skill, or knowledge (Weiner, 1990, 1992). Most of the literature on adult education defined *persistence* as the length of time an adult provides to a class or sessions (Beder, 1991; Comings, 1995; Quigley, 1997; Tracy-Mumford, 1994; Wikeland, Reder, & Hart-Landsberg, 1992; Young, Fleischman, Fitzgerald, & Morgan, 1994). In other words, it is the quality of continuing regularly, regardless of difficulties or impediments. *Locus of control* is a concept describing whether people feel that control of their lives rests in their own hands (internal locus of control) or in the hands of others (external locus of control; Rotter, 1966). Frank's study (as cited in Locke & Latham, 1990) defines *aspiration* as "the level of future performance in a familiar task which an individual, knowing his level of past performance in that task, explicitly undertakes to reach" (p. 119). *Perception* may be defined as the belief or opinion a person has about his or her

competence to organize and to execute actions necessary to perform a task (Bandura, 1977; Hofstetter, Hovell, & Sallis, 1990; Sallis, Pinski, Grossman, Patterson, & Nader 1988). It is the impression, attitude, or understanding based on what might be observed or thought.

Sensory preferences and visual, auditory, and kinesthetic learning styles.

Maggioli (1996) also classified learners into the following four sensory preferences:

1. Visual learners recall information by visualizing the source, tend to follow the teacher with their eyes while the teacher moves around the classroom, and always notice details or are very neat in the presentation of written work. They like to work with videotapes, flashcards, pictures, and/or diagrams.

2. Auditory learners know how to listen to others, can be bright at oral work, but their performance on tests is mediocre, and they cannot stop chattering. They like to work with audiocassettes, songs, poems, or rhymes.

3. Kinesthetic learners need hands-on activities in order to understand. They are familiar with everyone around them and have a short concentration span. They enjoy working with maps, slips of paper, or cards.

Field dependence and field independence. According to Witkin, Moore, Goodenough, and Cox (1977), *field independence* is “the extent to which a person perceives part of a field as discrete from the surrounding field as a whole, rather than embedded in the field; or . . . the extent to which the person perceives analytically” (p. 7). They found that bodily and visual cues usually coincide with each other, but when they do not, people tend to rely on either one of these two standards. Witkin et al. (1977) developed the Group Embedded Figures Test to examine field dependence and field independence. When completing the Group Embedded Figures Test, the person finds

simple, graphical figures that are embedded within more complex backgrounds (Ayersman & Minden, 1995). They described those who tend to rely on external cues and are less able to differentiate an embedded figure from an organized field as being field dependent and those who tend to rely on internal cues and are more able to differentiate an embedded figure from an organized field as being field independent (Witkin et al.). Degrees of field dependence or field independence can be defined as a continuum with field independent at one end and field dependent at the other end. In the middle of the continuum is the group termed as field mixed who do not have clear orientation like the group of field dependent or field independent. A field independent person tends to approach tasks analytically, whereas a field dependent person tends to approach tasks in a global way. Field independent people are likely to either analyze a field when the field is organized or impose structure on a field when the field lacks organization of its own. Field dependent people are more likely to go along with the field as it is without using process of analyzing and structuring. They are also more attentive to social cues and interested in interacting with other people, whereas field independent people are prone to be impersonal. Field dependent people would be more likely to require externally defined goals and reinforcement than field independent people who tend to have self-defined goals and reinforcements (Witkin et al., 1977).

Constructivist learning. Constructivist learning occurs when learners actively create their own knowledge by trying to make sense out of the material that is presented to them. It is active learning in which the learner possesses and uses a variety of cognitive processes during the learning process. Constructivist learning depends on the learner's cognitive activity rather than the learner's behavioral activity. Constructivists want to know both how much was learned and what was learned (Brooks & Brooks, 1999;

Fosnot, 1996; Green & Gredler, 2002; Skaalid, n.d.).

Summary

The research question of this study was, In what ways can technology in an ESL course accommodate visual, kinesthetic, and auditory learners to increase students' self-efficacy about learning the language? Four lessons from the 1st-year basic ESL course were redesigned by the writer using technology to accommodate for visual, kinesthetic, and auditory learners prior to implementation of the spring 2003 course. The study was completed to gain insight into the manner that technology in an ESL course can assist visual, kinesthetic, and auditory learners to augment students' self-efficacy about learning the language. It particularly examined if students' judgments of their perceived abilities to perform, their aspirations in learning, their persistence, and their positive perceptions of activities related to ESL courses as measured by the SEQ are increased after an intervention, which is comprised of lessons in ESL that use technology to accommodate for visual, auditory, and kinesthetic learners.

This research was a study of the effects that accommodating for learning styles using technology may have a positive effect on students' self-efficacy in learning ESL. In the following chapter, the topic of instructional technology is explored in relation to learning styles. It also includes a comprehensive view of the learning style and self-efficacy theory.

Chapter 2: Literature Review

This study discusses theories and topics related to learning styles theory, self-efficacy theory, and instructional technology. This literature review is comprised of these three sections.

Instructional Technology

Definition of instructional technology. Historically, *instructional* and *educational technology* are terms that are used interchangeably. For the purpose of this research, the term instructional technology will be utilized.

Various definitions of instructional technology have been published over the years, demonstrating the evolution of the area. Ely (1970) provided the first definition: Audiovisual communications is that branch of educational theory and practice primarily concerned with the design and use of messages which control the learning process. It undertakes (a) the study of the unique and relative strengths and weaknesses of both pictorial and nonrepresentational messages which may be employed in the learning process for any purpose and (b) the structuring and systematizing of messages by men and instruments in an educational environment. These undertakings include the planning, production, selection, management, and utilization of both components and entire instructional systems. (p. 18)

Ely stated (as cited in Seels & Richey, 1994) that this was a working definition, ultimately serving as a framework for future developments among which the National Education Association's Department of Audiovisual Instruction became the Association for Educational Communications and Technology (AECT).

The 1970s, three additional definitions surfaced. One of the definitions has been

cited in Seels and Richey (1994) as

a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives. (It is) based on research in human learning and communication and employing a combination of human and nonhuman resources to bring about more effective instruction. (p. 17)

Tickton's definition (as cited in Christopher, n.d.) was,

Instructional technology is a way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication and employing a combination of human and nonhuman resources to bring about more effective instruction. (p. 1)

Christopher (n.d.) also mentioned that Sibler in 1970 also provided a definition for instructional technology as "the development . . . of instructional systems components (messages, people, materials, devices, techniques, settings) and the management of the development . . . in a systematic manner with the goal of solving educational problems" (p. 1). Sibler later chaired the Committee on Definition and Terminology of the AECT.

In 1972, the AECT (as cited in Seels & Richey, 1994) presented a new definition of instructional technology as "a field involved in the facilitation of human learning through the systematic identification, development, organization, and utilization of a full range of learning resources and through the management of these processes" (p. 19). The definition that the AECT presented in 1994 carried over some of the ideas of the previous definitions. The definition presented instructional technology as "the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning" (Seels & Richey, p. 1).

According to the definitions of instructional technology, an instructional

technologist carries out several tasks. Cutshall (1999) stated that the Presidential Commission on Instructional Technology highlighted four areas in which instructional technologists perform: (a) design of instruction, (b) production of instructional products and services, (c) management of instruction, and (d) evaluation of instruction. Seels and Richey (1994) stated that an instructional designer aids teachers by (a) helping to design instructional materials using a variety of technologies; (b) employing different teaching strategies; (c) using educational theory in designing curriculum; and (d) assessing, evaluating, and revising materials.

The domains of instructional technology. The AECT 1994 definition of instructional technology specifies five interrelated domains in the field. The domains are design, development, utilization, management, and evaluation.

Evaluation is the process of determining and testing the criteria with which instruction and education are assessed. Evaluation also influences management and utilization because instructional designers should be required to do the best they can. If evaluation does not take place, failure prevails in all other domains. According to Seels and Richey (1994), evaluation included problem analysis, criterion-referenced measurements, and formative and summative evaluations.

Seels and Richey (1994) believed that design is the process of considering learning and specifying the conditions for learning to occur. In addition, Seels and Richey described the following four elements in design: (a) the learners, (b) the message, (c) the strategies, and (d) the chosen system. Furthermore, design is the first step in creating an instructional project and requires constant evaluation to consider how effective it can be. Development is the process of interpreting the design into a reality or giving it physical form according to specifications (Seels & Richey, 1994). The instructional developer

should consider several types of presentation methods: print, computer-assisted instruction, audiovisual methods, and integrated technologies. Developers should consider what the most effective methods of presentation are to ease learning. Developers also require constant evaluation of the process to ascertain its effectiveness.

Management is the process of controlling, monitoring, and planning the processes of instructional design, development, and utilization (Seels & Richey, 1994). This domain includes project, resource, delivery systems, and information management. The instructional manager helps the stakeholders in the process by experience and knowledge. The manager brings the many people in the process together to ensure a project's achievement. A manager uses evaluation to help guide the process by evaluating what is accomplished and what needs to be completed.

“Utilization is the act of using processes and resources for learning” (Seels & Richey, 1994, p. 46). Utilization includes media utilization, diffusion of innovations, implementation and institutionalization, and policies and regulations. Again, utilization also includes evaluation because people often judge how effective a resource is.

Based on all definitions and domains, instructional technology is the quest of understanding how people learn and uncovering the best way to teach the learner. Instructional technology includes objects such as tools, equipment, instruments, appliances, and physical devices of technical performance. Instructional technology is also knowledge; it is the expertise behind technological advance. Instructional technology includes activities such as what people do, including their skills, approaches, procedures and habitual activities. Instructional technology is a sociotechnical system: the assembly and utilization of objects linking people and other objects in different blends. Finally, instructional technology is a process that commences with a need and ends with a

solution. The solution may become a need, keeping the process in an eternal evolutionary state.

Instructional technology in the classroom. Faculty today can choose among a variety of technological options such as videotapes and DVDs to present an assortment of movies, instructional programs, and other visual materials when they are trying to reach their students and accommodate for their learning styles. The combination of flexible instructional technology that can meet the needs of individual learning styles is the best approach to use (Dille & Mezack, 1991; Gee, 1990; Grasha, 1996).

Computers present information and organize materials to introduce content as well as facilitate student testing. CD-ROMs can supplement traditional textbooks and reference books or can present instructional modules on a variety of topics. Web pages allow teachers to post lectures, assignments, and exams in electronic format; the World Wide Web and electronic libraries provide rich sources of information for almost any discipline. PowerPoint slides provide interesting, visual presentations. In addition, the telephone and television bring guests and working professionals in from distant locations into a classroom. Course information can be accessed from a distance using television, Web pages, e-mail, chat rooms, and electronic bulletin boards.

Educators try to treat students as individuals with varied backgrounds, aptitudes, and needs; but, in a system driven by a mass-production philosophy, this is a daunting task. Any instructional process has many implications. How and when it is used reflects assumptions about how people learn belief in empirically derived principles of learning, and views of human nature.

Reflecting on practices and their conceptual base may help educators make better choices about what is desired to be known now and in the future. Otherwise, those

committed to teaching and innovation risk are being criticized as “purveyors of pedagogy” (Grasha, 1996, p. 93) and as lacking intellectual substance. People outside of education will focus on whatever technique chosen and not see the technique as embedded in a complex, conceptual framework. Instead, they will simply assume that the knowledge “is less complex, less understandable, and less amenable to scientific study” (Berliner 1986, p. 13). What is forgotten is that expertise in teaching, as in anything else, involves domain-specific knowledge. Because it involves practical knowledge, it is placed lower in the hierarchy of importance by those pursuing so-called higher and more complex issues (Berliner).

Of course, some teachers only reinforce such views by emphasizing the technique rather than the conceptual underpinnings. By examining the example of the professor who uses PowerPoint just because he has a new computer, it can be noted that he is not aware that a PowerPoint slide show aids students with a visual learning style to process information better. It also provides visual novelty that students’ cognitive systems need to help them pay attention for extended periods. By highlighting important concepts, the slide show enables learners to capture important points easily. In effect, a PowerPoint slide show has much more conceptual depth than one would imagine. Yet, “only a small minority of faculty list conceptual issues or a systematic philosophy of teaching as a justification for their instructional processes” (Grasha, 1996, p. 92).

When the conceptual underpinnings of teaching processes are clearly stated, a distinction between teaching and scholarly methods begins to appear. Few scholars would select scholarly methods or procedures (technology-based or otherwise) simply because they are available. Rather, the choice of method allows a scholar to answer questions and to investigate issues that often have important philosophical and theoretical implications.

When such issues are clearly stated, they provide in the eyes of the scholarly and scientific community a sound rationale for employing certain methods and procedures. This elevates the enterprise of scholarship by making it serve higher order goals and objectives, ensuring that teaching serves higher learning by focusing on the conceptual context associated with the methods.

Questioning how a particular type of technology influences the learning styles of students and using that information in designing a course provide a theoretical justification for the method. As stated previously, learning styles should be taken into account when teaching with technology. Students' performances when faced with technology is very much tied to their particular learning style preferences (Dille & Mezack, 1991; Gee, 1990). Furthermore, a 2-phase study carried out with 298 students at the University of Nebraska showed that using multimedia instruction had a positive impact upon student attitudes because they could select multimedia according to their learning style (McDonald, 1996). In addition, technology can be used to make several senses pick up different stimuli of the same concept so that the connections within the students' brains can be strengthened (Diaz, Aedo, Torra, Miranda, & Martín, 1998).

It has been said that the World Wide Web, modern technologies, and other hypermedia-based systems are modeled on the way the brain processes information (Ayersman 1993; Small & Ferreira 1994). There are numerous ways that the technology is able to accommodate students with differing ways of processing sensory information. Emerging research findings demonstrate a relationship between learning styles and approaches to using technology (Kerka, 1998). The three primary ways that will be examined are visual, auditory, and kinesthetic. Visual learners often process information through sight and technology, which can reduce their frustration level through presenting

materials using animations, hypertext, diagrams, and videotapes (Ross & Schulz, 1999).

Auditory learners process information through listening to and internalizing content.

These students can benefit through the placement of audiotape recordings of classroom lectures o-line or, especially, in music classes, for example, where students have the ability to interact repeatedly with examples comparing and contrasting differing styles of composition (Sarasin, 1998). Finally, kinesthetic learners prefer hands-on manipulation in order to learn the material. Simulation programs provide this type of learner with the opportunity for such hands-on instruction, even in situations where a real learning situation would not be possible. In conclusion, the availability of diverse technology and its applicability to meeting individual learning styles seems beneficial for all students.

Learning Styles

Learning styles have developed from four dimensions: (a) cognitive, (b) affective, (c) physiological, and (d) psychological. The cognitive dimension refers to the different manners or ways students mentally perceive and order information and ideas. The affective domain refers to how students' social and emotional personality traits affect their learning. The physiological dimension involves the senses and the environment. This involves whether students learn better through auditory, visual, or kinesthetic means and how they are affected by such factors as light, temperature, and room design. The psychological dimension involves the students' inner strengths and individuality, refers to how they feel about themselves, and examines ways that can be used to build self-esteem. (Butler, 1988).

Swyter and Michael (1982) defined *styles* as reflecting "preferences for and attitudes toward a manner of performing intellectually-oriented tasks" (p. 87). Cognitive style reflects an individual's preferred way of actively processing and transforming

incoming information, categorizing new knowledge, and integrating it within the memory structure. It includes field dependence or field independence, scanning, categorizing, conceptualization, simplicity or complexity, reflectivity or impulsivity, risk taking or cautiousness, and visual or kinesthetic preferences, among other variables.

Students vary in the ways they can learn best and the way a student learns can be defined as his or her learning style. According to Pasch, Langer, Gardner, Starko, and Moody (1995), learning styles describe a student in terms of the educational conditions under which he or she is most likely to learn. Learning styles describe how a student learns not what he or she has learned. Learning styles are individual differences that affect classroom learning. There could be preferences for where, when, with whom, or with what lighting, food, or music one likes. Brown (1987) defined *style* as a “consistent and rather enduring tendency or preference within an individual.” (p. 50). Dunn and Dunn (1987b) defined *learning style* as the way each learner perceives and processes new information for storage and retrieval. It is the preferred way students have of using their abilities (Sternberg, 1994). There are several learning styles models, but one principle underlies them all; individuals do not all learn best in the same way.

Sensory learning styles. Perhaps the simplest variation in learning styles may be found along sensory channels. It is also one of the most researched learning style models (Morrison & Lowther, 2002) and many students, especially adults, are cognizant of this dimension (Ehrman, 1996). According to Wilson (n.d.), this variation is an outgrowth of the learning styles model developed in 1967 by Dunn. According to this theory each individual has a unique set of biological and developmental characteristics. The characteristics impact how a person learns and develops as well as produces new skills and knowledge (Good & Brophy, 1987). Initially the model was designed to be used

primarily at middle school and high school levels but has been used at all grade levels.

This model is comprised of several general principles or philosophical assumptions:

1. Most individuals are capable of learning.
2. The learning conditions in which different individuals learn best vary.
3. Individual learning preferences exist and can be measured with reliability.
4. Most students are self-motivated to learn when they have the option of using their learning style preference and experience success using it.
5. Most teachers can learn to use individual learning styles as a basis for instruction.
6. Students can be taught to teach themselves based on self-knowledge of learning styles.
7. Use of individual learning style strengths as the basis for instruction increases learning and productivity (Price, 1996).

Although this model addresses 20 different areas, for the purpose of this study, only the sensory (visual, auditory, and kinesthetic) areas were studied. Five senses have been recognized for making contact with the world by (a) seeing, (b) hearing, (c) feeling, (d) tasting, and (e) smelling. Human beings store experiences and make distinctions concerning the environment through these sensory representational systems, (Torres & Katz, 1983). Of the five senses, only three are widely used by individuals as major input channels. These are visual, auditory, and kinesthetic senses. People either see (visual) pictures or have images of their experiences, they hear (auditory) sounds and talk about their experiences, or they experience (kinesthetic) and have feelings about their experiences.

According to Ross (1991) and Eislzer (1983), there are three major learning

modalities: (a) visual, (b) auditory, and (c) kinesthetic. Alberghius (2001) presented not only a description of each of the three learning modalities but also included their strengths and instructional strategies an instructor can use to reach each student.

Some individuals learn best through visual information; they process information most efficiently if it comes to them through their eyes. The visual learner is better able to interpret information that is received through the sense of sight and is better able to recall concepts that are presented visually (Barbe & Swassing, 1979). They learn best from the visual images the eyes send to the brain for processing. These individuals are attentive and make direct contact with people when they are speaking. They tend to look up, as if looking at an imaginary book or picture, when trying to retrieve information (Ross, 1991). “For those people who rely on their visual systems, it may be as though they run movies in their heads when remembering or storing information” (Torres & Katz, 1983, p. 2). In the area of reading comprehension, Shelton (n.d.) mentioned that visual learners like to visualize what is read, see characters and scenes in stories, and use symbols to represent ideas or concepts. Shelton also mentioned characteristics of visual learners for spelling and writing and provided a series of strategies for reading comprehension, spelling, and writing for visual learners.

The auditory learner, on the other hand, receives data for brain processing through his or her sense of hearing. If people are primarily auditory learners, they take information in through sounds. They may actually hear original tones or dialogues in their heads when remembering. Auditory learners talk about what they do when they learn. They enjoy listening but need the chance to express themselves (Stronck, 1980). For many auditory learners, accessing information may be like listening to the replaying of a tape recorder (Torres & Katz, 1983). Many of these individuals seem indifferent or

inattentive when, in fact, they are fully engaged in what is said. They do not need to look at the source of information to comprehend and to learn, but rather, they need only to hear it. They respond well to lecture and discussion (Barbe & Swassing, 1979). Shelton (n.d.) presented reading comprehension, spelling, and writing characteristics as well as strategies for the auditory learner.

The kinesthetic learner receives information through the sense of touch. Kinesthetic learners rely on texture, temperature, and objects around to help the brain process an understanding of their surroundings. “For those people who are primarily kinesthetic (i.e., responding to whole body internal feelings or tactile sense), they may associate body sensations as a way to recall an experience” (Torres & Katz, 1983, p. 4). The kinesthetic learner needs to have the entire body involved in the collecting and processing of information for the brain. These individuals are usually “well coordinated and move with grace and ease” (Ross, 1991, p. 5). These individuals need whole-body activities such as dance, sport, and learning by doing (by acting and by getting involved) to assist them in learning. Tying them down to a desk may thwart their ability to learn. They need to explore and to move around. Stronck (1980) portrayed these learners as those who touch, manipulate, and try things out. Kinesthetic learners comprise about 30% of university students (Barbe & Swassing, 1979). Reiff (1992) conducted a study that identified that most students who were not doing well in school were kinesthetic learners. He also reported that instruction geared toward the other modalities could have caused these learners to fall behind. As this happened, students began to lose confidence in themselves and to dislike school because of recurring failure.

Not every learner has only one way of learning. All learners receive data from all three modalities, yet each individual has a preferred learning modality. “It is not

surprising that each student uses all three modalities, but the brain has selected one which will be the preferred way to input information” (Ross, 1991, p. 6).

According to Butler (1988),

Both (learners) and teachers combine aspects of all . . . styles, most people work naturally from strengths of one or two of them. Some (learners) show a dominant style at a very early age. Others reveal their style more slowly. And sometimes the expectations of teachers and parents can lead a child into a style that isn't right for him at all, or may even cause him to be mislabeled as 'Learning Disabled'. (p. 31)

Learning styles have received much attention and rightly so considering their influence on students' performances (Ross & Schulz, 1999). According to Farrington (1999), professors across the country are beginning to realize that one size does not fit all when it comes to teaching today's students. Farrington believed that it is intuitively illogical for educators to think that the lecture-recitation style of instruction is best for all subjects and all students. Despite the fact that research has shown that individual differences in the classroom affect learning, Fenstermacher (1983) stated that students vary widely in their styles, yet few teachers consider this variable when planning instruction. Sixteen years later, Farrington seemed to echo this dilemma when he wrote that “few, if any, classes are ever designed by first asking the question of how students might best learn” (p. 86).

Findings on brain research and how the brain processes information (learning styles) support teachers in their search for strategies that stimulate learning for a variety of students with marked or individual differences. These findings provide educators a clear idea about what works and what does not work in education and in educating a variety of students with different learning styles.

Teachers should understand how students capture and process information. Students have individual differences in how they input and process information. This individualized style of taking in and processing information has been referred to as a *learning modality*. As Butler (1988) noted, “understanding learning-style differences can open the way to teaching the whole (learner)- mind and heart, body and spirit” (p. 34).

Gunawardena and Boverie, (1993) and Franklin, Hodge, and Sasscer (1997) believed that varying teaching methods for maintaining students’ interests and meeting individual needs is essential. In addition, Mikulecky et al. (1996), Huang and Chang (1996), and Reiff (1992) found that creating an environment that positively affects students’ confidence in learning the language helps them think they can succeed. Furthermore, Allinson and Hammond (1990) and Barker (1993) believed that in order to produce a more positive student attitude, educational material should allow for diverse learning styles.

Lectures, informal discussions, group work activities, experiential learning opportunities, and directed study activities are all techniques the professor can employ to reach students in the traditional classroom (Kemp & Seagraves, 1995; Magnen, 1989; McKeachie, 1994; Sarasin, 1998). However, the lecture format, which is a technique of covering content that is preferred by students with sequential, auditory processing abilities only, continues to dominate as a preferred form of teaching in many classrooms (Farquharson, 1995).

According to Ross and Schulz (1999), instructors can avoid alienating a certain learning style group by incorporating a number of different teaching strategies into their lessons. Adults can sometimes become frustrated with the incompatibility of their learning style with that of other students in a class. They may be at odds with teaching

styles (Franklin et al., 1997). When severe mismatches of learning and teaching styles occur in a class, there might be unfortunate potential consequences (Felder & Silverman, 1988; Lawrence, 1993; Oxford, 1990; Schmeck, 1988). Students tend to be uninterested and negligent in class, do poorly on tests, become discouraged about the course, and may conclude that they do not have the capability to do well in a course and stop trying (Felder & Silverman; Godleski, 1984; Oxford; Smith & Renzulli, 1984).

Blackmore (1996) suggested that one of the first things teachers can do to aid the learning process is simply to be aware that there are diverse learning styles in the student population. There are probably as many ways to teach as there are to learn. It is important to be aware that people do not all see the world in the same way. They may have very different preferences than other students or the professor for how, when, where, and how often to learn.

The instructor should include teaching methods that attract a variety of styles. In the case of the adult learner, this will denote validating those techniques that appeal to their learning channel proclivity while creating other appropriate techniques for other students (Franklin et al., 1997). Instructional methodologies must be diverse enough to incorporate all learning style modalities (Reiff, 1992). Keefe (1987) also stated that educators must become skilled at basing programs on the differences that exist among students rather than on the assumption that everyone learns in a similar way.

Instructional technology and sensory learning styles. Computers offer students a multisensory smorgasbord. Sights, sounds, imagery, color, textures, lines, shapes, videotapes, changes in volume, pitch, and so forth can be an exhilarating way to learn something new. Technology-based art forms may have a tremendous appeal to students, encouraging artistic expression among a diverse student population. These tools are a

form of artistic communication for those who have been constrained by the traditional modes of written and verbal communication. For the visual student, learning with technology may increase motivation and may foster creative problem-solving skills as they evaluate the many possible ways of expressing ideas. When computer Web sites or software programs display content pictorially, the images force one to stop using linguistic intelligence.

Many learners begin to doodle or to sketch what they are seeing; thus, they tap into preverbal information that might never have surfaced if the visual learning had not been engaged. If color is added, an even stronger impact (brain connection) might be made. Mind mapping duplicates the way the brain works, (spatially, nonsequentially, randomly, and in branches). This may allow the information it represents to become part of our long-term memory more easily.

Visual learners prefer processing information primarily through sight, and they can become easily frustrated with a professor who mainly uses the auditory, lecture approach to teach course content (Sarasin, 1998). When used appropriately, the Web can enhance the visual student's learning experience.

On-line course animations, hypertext or clickable diagrams, and videotape clips can shed light on concepts that a static textbook image cannot. Hypertext diagrams are excellent resources to help increase user interactivity while on-line (Liu & Reed, 1994). Filmstrips, television, and videotape clips can elucidate movement patterns (Price, 1996). Other useful media could be pictures, computers, graphs, transparencies, diagrams, drawings, resources that require reading and seeing, and written assignments and evaluations (Price).

Learners who have difficulty processing auditory information in a lecture can

benefit greatly by having the professor's written lecture notes placed on-line. To aid the visual learner, the professor may also wish to convert and to archive overheads or slide presentations according to lecture dates. Students can use the resources as study guides to complement in-class notes and review material before examinations.

Visual students might feel comfortable when they are able to see how something works, to observe an interactive videotape that shows an active representation of the content under study, or to see their own art work displayed on the Internet for all to enjoy. Visual learners will continue to hold their attention to a topic, for their most desired method of learning is now activated. Subsequently, when the time comes to present what has been learned, they now "see" that their own artistic creations can provide purpose and meaning to the educational experiences of others.

Some learners prefer listening to course material as a way to internalize content. Students who learn best in this way will often refrain from taking notes during lectures, choosing instead to devote their full attention to the lecturer (Sarasin, 1998).

The auditory learner can also benefit from classrooms that are supported by Web instruction. It is becoming commonplace for professors to record their lectures or class discussions and place them on-line for their students (Ross, 1998). At a later time, material can be captured on the computer and placed on-line for students to download and listen.

Some professors, rather than recording their lectures, may choose to tape 15 to 20-minute class summaries for posting on their Web site. Lecture summaries can complement on-line lecture notes or provide learners with essential points made in the day's lecture.

In this way, auditory learners can use the archived material for study and further

review. According to Price (1996), an auditory learner should use videotapes, radio, television, and precise oral directions.

Kinesthetic learners find computers hard to resist because they realize that working at the terminal attunes their fine motor skills. The need for bodily-kinesthetic activities for many students has led several educational software companies to develop tools to help students who learn more effectively through that intelligence.

The kinesthetic learner prefers doing something in order to learn the material (Sarasin, 1998). These learners can become frustrated by professors who do not allow for opportunity to put theory into practice. Practicing problems, doing lab experiments, creating solutions, doing physical activities, engaging in manipulative exercises, and brainstorming ideas are all ways to involve this learner in the classroom.

It can be challenging to involve the kinesthetic learner because applications must often involve complex programming to reach this learning style. According to Price (1996), kinesthetic learners use manipulatives and three-dimensional materials; resources should be touchable and movable as well as readable.

Programming languages such as Java can help involve kinesthetic learners by engaging them in course-related learning activities. By using the mouse as an extension of the hand, students can assemble parts, and, in the process, they are able to learn how the pieces relate to each other (Liu & Reed, 1994).

Finally, Muir (2001) presented a review of learning styles and the instructional technology that can be used for each. The key is to identify the implications of one's favored learning style, know how to choose and use technological tools that match one's style, and develop the ability to create mental models and use metacognitive strategies and enhance learning (Kerka, 1998).

Self-Efficacy

The research in the area of attitudes and perceptions on learning led the author to explore information on Bandura's (1997) self-efficacy theory. Bandura (1997) delineated self-efficacy as a major element of student motivation in his studies of learning motivation. Specifically, self-efficacy is predictive of academic performance and course satisfaction in traditional face-to-face classrooms (Bandura, 1997) and on-line courses (Miltiadou, 2000; Wang & Newlin, in press). Additionally, an individual's self-efficacy has a significant impact on his or her (a) actual performance (Bandura & Schunk, 1981; Locke, Frederick, Lee, & Bobko, 1984); (b) emotions (Bandura, Adams, & Beyer, 1977; Stumpf, Brief, & Hartman, 1989); (c) selection of behavior (Betz & Hackett, 1981); and (d) amount of effort and perseverance expended on an activity (Brown & Inouye, 1978).

Self-efficacy, as defined by Bandura (1997) is, "the beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). According to Bandura (1997), four major sources contribute to an individual's self-efficacy: (a) enactive experiences, (b) vicarious experiences, (c) verbal persuasion, and (d) physiological indexes. Bandura (1982) reviewed a variety of self-efficacy studies in various settings and found that self-efficacy theory has significant explanatory potential. He found that perceived self-efficacy accounts for a wide variety of people's behaviors, including changes in coping behavior produced by different modes of influence, levels of physiological stress reactions, self-regulation, achievement strivings, growth of intrinsic interest, and choice of career pursuits.

Similarly, Multon, Brown, and Lent (1991), in a meta-analytic review of 39 educational studies, found that self-efficacy beliefs were positively related to student persistence and academic performance across a variety of subject areas, experimental

designs, and grade level. Bandura (1997) also found that self-efficacious students share similar characteristics: They participate more readily, work harder, persist longer, and have fewer adverse emotional reactions when they encounter difficulties than do those who doubt their capabilities. This led Bandura (1997) to conclude that it is one thing for an individual to possess the necessary knowledge and skills to perform a task and quite another to embody the self-beliefs in continuing with the task at hand while facing obstacles.

Self-efficacy has also been defined as beliefs about one's ability to perform any given task or behavior successfully (Bandura, 1977; Barnhardt, 1997; Huang & Chang, 1996; Knowles, Holton & Swanson, 1998). Self-efficacy is an expectancy component that when referred to students' concerns, the students' beliefs in their abilities to complete an assigned task is that of being able to do so (Pajares, 2001; Pintrich & Schunk, 1996). According to Bandura (1977), people's subjective level of motivation, affective states, and actions are based more on what they believe in than on what is impartially true. Results from numerous studies (Bandura & Adams, 1977; DiClemente, 1981; Moe & Zeiss, 1982) have generally suggested that a person's efficacy expectations are useful in predicting behavior change independently of the different treatment approaches used. The benefit of high self-efficacy for a student is that it can motivate an individual to improve his or her competence (Pintrich & Schunk). Self-efficacy can enhance human accomplishments and well-being in countless ways, and it can determine what they do with the knowledge and skills they have (Pajares). It is also important to note that self-efficacy beliefs are critical determinants of how well knowledge and skills are acquired in the first place (Pajares; Schunk, 1996; Bandura, 1977).

According to Bandura (1977), a student with a high sense of self-efficacy is

enabled to remain efficient in analytic thinking in complex situations and fosters cognitive constructions of effective actions, which, in turn, determines the level of performance accomplishments. In addition, the various processes of cognitive, affective, and motivational processes activated by efficacy intensify or reduce memory performance

As students engage in learning, they differ in efficacy based on past experiences, social supports, and personal qualities. Self-efficacy is also directly affected by the learning situation and by personal influences such as information processing, goal setting, and the situation itself. When given a new task, students take the information from the situation and monitor themselves by basing their perceptions on how well they are doing (Schunk, 1996; Pajares, 2001). An important point made by both Bandura (1977) and Pintrich and Schunk (1996) was that lack of success within a situation will not necessarily lower self-efficacy beliefs, but, rather, it is the students' self-efficacy beliefs themselves that will precipitate how well the students will react to the situation. For example, students with high self-efficacy will adjust their approach or work harder, whereas students with low self-efficacy may give up after failure.

Self-efficacy has an effect on anticipatory cognitive simulation, which is a student's anticipatory scenarios of a situation based on self-efficacy. People who visualize success scenarios and mentally rehearse self-imposed guides for performance and positive solutions to problems have high self-efficacy. On the other hand, students who view themselves as inefficacious would project failure scenarios and focus on the possible ways a situation could go awry and the adverse consequences then involved (Barnhardt, 1997; Knowles et al., 1998).

According to Nesler and Ellrott (1997), if a student has early academic success,

his or her self-confidence as a learner will be greater. Perry, Hechter, Menec, and Weinberg (1993) stated, “When success is low, one alternative that shows considerable promise for enhancing motivation and achievement is changing how students think about their success and failures” (p. 687). Other research showed that lack of self-confidence is among the factors found to be related to adult education retention, participation, performance, and achievement (Darkenwald & Valentine, 1985; Hayes & Darkenwald, 1988; McGowan & Nesler, 1999; Nesler & Hanner, 1998; Scanlan & Darkenwald, 1990; Valentine & Darkenwald, 1990).

A student’s self-efficacy further affects how he or she will be able to deal with stress and the manner in which he or she copes with a stressful situation. This is termed *affective arousal*. A student with a high self-efficacy encounters stressful situations but will be able to approach those situations with assurance and, therefore, lower his or her stress level and vulnerability to depression. Stressful situations in inefficacious students will produce high levels of subjective distress, giving them the feeling that they have little control over the situation. The student will then shy away from difficult tasks to avoid stressful situations (Bandura, 1977; Perry, et al., 1993).

According to Bandura (1977), self-beliefs affect people in their choice of behavior, on how much effort they will expend on an activity and how long they will persevere on the activity, on the individual’s thought patterns and emotional reactions, and on recognizing humans as producers of behavior. Self-efficacy beliefs influence the choices people make and the actions they perform; thus, individuals tend to opt for activities in which they feel proficient and confident and avoid those in which they do not (Albion, 2001; Pajares, 2001). An important statement made by Bandura (1977) is that persons with low self-efficacy do not tend to exert much cognitive effort in processing

information and lower their efforts by giving up quickly in the face of difficulties. Barnhardt (1997) restated that students with low self-efficacy, believing they have inherent low ability, choose less demanding tasks and do not try hard because they believe that any effort will reveal their own lack of ability. Collins (1982), Rokeach (1968), and Nisbett and Ross (1980) stated that self-efficacy beliefs shape thinking, that deeply held beliefs are very difficult to separate from self, and people become what they believe.

Finally, if students lack control, they believe they cannot perform (Perry et al., 1993). Based on the literature, it can be assumed that some of that control can come from learning styles. If students can select how they learn and select the activity by which they learn best, then they exercise some control over the learning environment. Thus, if students make use of strategies that promote their individual strengths, students' self-confidence as learners may increase, and they will be more ready to take on challenging learning tasks (Barnhardt, 1997).

Measuring self-efficacy. When self-efficacy is measured, it is required to follow theoretical guidelines regarding specificity of self-efficacy assessment and conformity with criterial tasks. In the case where no criterial tasks are identified, the results of the measures can lead to ambiguous findings. Self-efficacy judgments should be consistent with and tailored to the domain of functioning in order to afford the greatest prediction and to offer the best explanations for performance outcomes (Pajares, 1996). Studies need to be clear as to the constructs they will be examining when measuring self-efficacy (Kitchener, 1986; Nespor, 1987; Nisbett & Ross, 1980; Posner, Strike, Hewson, & Gertzog, 1982; Rokeach, 1968).

Studies look at the role of perceptions and attitudes and their effect on human

performance. Marjoribanks (1980) found that “students’ attitudes and perceptions of self-efficacy are linked to specific subjects and tasks, and self-efficacy and attitude measures linked to literacy and language study are needed” (p. 6). Instruments used for self-efficacy studies, typically measure five elements: ability (Sherer & Maddux, 1982; Zimmerman, Bandura, Martinez-Pons, 1992), persistence (Bandura, 1977; Lent, Brown, & Larkin, 1984; Zimmerman et al.), locus of control (Chambliss & Murray, 1979; Nowicki & Strickland, 1973), aspiration (Bandura, 1977; Marjoribanks), and activity perception (Marjoribanks; Sherer & Maddux). Barnhardt (1997) stated that people with low self-efficacy believe that they do not have the power and abilities to learn a language, thus, admitting failure from the start. People with high self-efficacy are more likely to succeed at language learning and also to be more motivated to seriously study the language. Ehrman (1996) noted that students may believe that a subject is difficult to learn or that only some people can learn that subject. They may also believe there is only one right way to learn. All of these beliefs have an effect on their ability to learn.

According to Bandura (1986), self-efficacy directly mediates the integration and application of existing skills; the influence of perceived self-efficacy on performance increases as component skills are mastered. Bandura (1977) also stated that investigating the treatment of various phobias and found that efficacy expectations determine people’s aspirations and persistence. Feltz (1982) found that performance strongly correlates with perceived senses of their own abilities. Lent et al. (1984) found a high correlation between subjects’ perceptions of self-efficacy and subjects’ persistence and success. Chambliss and Murray (1979), found that internal and external locus of control orientation influenced achievement. Marjoribanks (1980) found that children’s attitudes toward school related strongly to their academic achievement. These studies document

the role in human performance of a quantity of perceptions and attitudes that have tended to be described using self-efficacy, self-concept, and attitude as labels.

With the information known about learning styles and self-efficacy, a possible link may be made between the two. It has been documented that learners are more comfortable processing information by a particular learning style (Blackmore, 1996; Brown, 1987; Dunn & Dunn, 1978; Dunn & Dunn, 1987a; Emanuel & Potter, 1992; Gregorc & Butler, 1984; O'Brien, 1992; Pasch et al., 1995; Price, Dunn & Dunn, 1977; Ross, 1991; Swyter & Michael, 1982).

According to Matthews (1991),

Students have a more positive attitude towards school and achieve more knowledge and skills when taught, counseled or advised through their natural primary style rather than a style that is secondary or undeveloped, particularly when adjusting to a novel and new situation that creates stress such as beginning experiences in higher education. (p. 253)

This ease of learning may have a positive impact on the self-efficacy of students as well. If the teaching mode and learning style connect or address each other, then, ideally, the student will retain and will recall the information better. Based on the literature, it could be assumed that centering the students' learning environment on their preferred learning style will increase the students' self-efficacy or beliefs in their learning abilities.

Chapter 3: Methodology

This study was carried out as a pretest-posttest control group design. There was no randomization, as students were assigned to their 1st-year English course according to their CEEB scores.

This study was completed in order to gain insight into the ways that technology in ESL courses could accommodate visual, kinesthetic, and auditory learners to increase students' self-efficacy about learning the language. It specifically examined if students' judgments of their perceived abilities to perform, their aspirations in learning, their persistence, and their positive perceptions of activities related to ESL courses as measured by the SEQ was increased after an intervention that was comprised of lessons in ESL that used technology to accommodate for visual, auditory, and kinesthetic learners.

In addition, this study shed some light upon students' perceived abilities to perform and their persistence in learning ESL before and after the instructional activities as measured by the SEQ as well as the relationship between students' aspirations and perceptions of English instructional activities as measured by the SEQ. It was a study of the effects that accommodating for learning styles using technology may have had on students' self-efficacy in learning ESL. It did not examine achievement or students' grades.

Subject Characteristics and Sampling

The treatment group had approximately 35 to 40 undergraduate 1st-year college students. The control group had approximately the same amount of students, and they were English 101 students as well. In terms of similarity, both groups were taking the same English course and had been placed in the course because of their CEEB scores.

This study was completed during their first semester of English. First-year English students are assigned to the course according to their CEEB scores.

This research was conducted with a faculty member who was teaching 1st-year basic English courses. Two different instruments were administered by the researcher at the beginning of the course. A SEQ developed by Mikulecky et al. (1996) for the area of adult literacy and ESL was administered to both groups of students (control and experimental) to identify their attitudes and perceptions toward learning English at the beginning of the semester, both before and after the treatment. At the beginning of the semester, students in the experimental group were also given the PEPS (Price, 1996) in their native language, and their preferred learning styles were identified.

Instruments

SEQ. Mikulecky et al. (1996) found the SEQ tested for both reliability and face validity; it provides results that are reliable for assessing self-efficacy in both adults' literacy and ESL. This questionnaire matches the goal of this study because it deals with ESL adult literacy and ESL. It is a useful instrument to gather information about students' perceptions of their language-learning abilities. It also measures four of the five constructs mentioned in the literature review: (a) aspirations, (b) perceived abilities, (c) persistence, and (d) activity perceptions.

Mikulecky et al. (1996) created this questionnaire, which originally included all five constructs. The instrument was designed by adapting items from the self-efficacy measures used in a variety of earlier studies. Eighty-three questions were originally drawn and modified from the measurements used in these studies; 20 questions from Children's School Attitude Schedule (Marjoribanks, 1980), 26 from Nowicki-Strickland Locus of Control Scale (Nowicki & Strickland, 1973), 23 from Self-Efficacy Scales

(Sherer & Maddux, 1982), and 14 from Self-Efficacy for Academic Achievement Scale (Zimmerman et al., 1992). The initial items were supplemented by other items created by the creators of the instrument (Mikulecky et al.). This produced a questionnaire with 119 questions. Based on the five scales, 36 items were selected. Once question format was decided upon and the instrument reduced to 36 items, it was administered to two samples of adult learners. One of them was drawn from students attending an Intensive English Program (IEP) at Indiana University, and the other was from literacy learners at two Adult Basic Education (ABE) programs in Indiana. The study randomly selected four intermediate level IEP reading classes. This sample was comprised of students from different non-English-speaking countries who attended class to improve their English reading comprehension ability to pass the Test of English as a Foreign Language. Students were required to complete 30 hours of the program before completing the posttest. The other sample was from an ABE program in which 28 randomly selected learners completed the pretest and the posttest. Forty hours of attendance were required of students before taking the posttest.

Mikulecky et al., (1996) also examined the current scales' reliability, the standard deviations (SD) of individual question scores, and the correlation coefficient between pre- and posttests. Using these scores, decisions to eliminate items, to change the wording of some items, and to adjust the item format for some questions were made.

A Cronbach internal consistency reliability coefficient was identified (.7990 for ABE students and .9215 for IEP students) as high and very high. The same test was completed for the five subscales. Results showed high to moderately high reliability in each scale except locus of control. The researchers, Mikulecky et al. (1996), decided to eliminate this scale to ensure reliability. A copy of the SEQ can be found in Appendix A.

Also an item analysis showing the items and how they relate to each of the four scales is shown in Appendix C.

PEPS. PEPS, based on factor and content analysis, is a comprehensive approach to the identification of how adults prefer to function, to learn, to concentrate, and to perform in their occupational or educational activities. It examines immediate environmental, emotional, sociological, and physical needs. The PEPS instrument was developed by identifying the variables that describe the way individuals prefer to learn or to work. The following results for validity and reliability testing of the PEPS reported here were reported by Price (1996). Items were designed to assess individual preferences in each of the areas. The responses to the items were analyzed using a factor analysis. The instrument was then revised and administered to a non-random sample of 589 adults from several states and from various academic and industrial settings. The results were analyzed using components with unrelated factors as the basis for analysis. From the analysis, 31 factors were identified that had eigenvalues greater than 1.00 and explained 65% of the cumulative proportion of total variance on the PEPS. The total is the sum of the diagonal elements of the correlation (covariance) matrix, and the variance, explained by each factor, is the eigenvalue for that factor.

The factors and each of the items with its interitem correlations were submitted to Kaiser's normalization. The number of iterations for the rotation was 50, and the precision level was 1.00. The factors were rotated to identify factors that were independent and to minimize items loading on more than one scale. The 31 factors accounted for 65% of the total variance, and the eigenvalues associated with each factor ranged from 7.89 to 1.02. No factors were selected with less than 1.00 in their eigenvalues. Items that overlap are combined on a continuum in the instrument.

Ninety percent of the reliabilities are equal to or greater to .60. The areas with the highest reliabilities include visual, kinesthetic, auditory, structure, intake, noise level, and alone-peer oriented. The PEPS has been revised based on a careful review of each item. Analysis included a reevaluation of the items that could be interpreted in different ways and were not entirely clear in their assessments of the defined areas.

The Spanish version of PEPS was revised, with express permission and collaboration of the author of the instrument and tested with 100 Puerto Rican students. Cronbach's Alpha were run and reliability and validity scores were also high (.60 or more). The areas with the highest reliabilities include visual, kinesthetic, auditory, structure, intake, light, warmth, and afternoon. A copy of the Spanish version of PEPS can be found in Appendix B.

Methods

The English 101 curriculum was revised. Course revision included developing four lesson plans that included activities directed to the visual, kinesthetic, and auditory learners, including technology. Lesson plans can be found in Appendix D. These lesson plans provided for visual, kinesthetic, and auditory activities that carry the same content with different learning styles while integrating technology. Each activity was created according to the content and the learning style integrating the use of technology. Activities were labeled according to the learning style being addressed.

Auditory learners were presented with activities that included Web pages, PowerPoint presentations, and other media with sound bits. Through the four lessons, auditory learners could flip through PowerPoint presentations and could listen to selections or conversations being read to them. They could also listen to minilectures on the different topics covered in the four lessons; the minilectures were recorded on audio

CDs or embedded in a PowerPoint presentations or Web pages. Exercises were created with software such as Hot Potatoes™ or simply by creating audio files and adding them to a Web page. Vocabulary words were presented orally on a Web site and a PowerPoint presentation. Students completed an auditory bingo game that was created with Flash. Students could record their speech using tape recorders and/or could read to each other and could hear others read to them.

Visual students were presented with pictures and Web pages with many graphics. They were created with PowerPoint presentations that had selections and lectures with diagrams and moveable images with movement and color. Vocabulary items were presented with pictures and clipart in addition to the written word. PowerPoint was used in the grand majority of visual learners' activities. Visual organizers were presented throughout each lesson, on the Blackboard™ Web site, giving students the opportunity of seeing the order of the tasks they needed to complete.

Animations, hypertext, and clickable diagrams were presented in all kinesthetic activities. Kinesthetic learners controlled the information by clicking on hyperlinks and PowerPoint presentations in order to use the information. Students also completed games where they clicked on letters, pictures, or words in order to use the new information. These learners word processed their ideas and typed answers to interactive activities that were presented through a Web site or activities developed with Flash and Hot Potatoes™. Games included playing Hangman created with JavaScript and drag and drop exercises that were created with Flash.

Individual meetings with the faculty member teaching the course were held to discuss the data collection and intervention procedures as well as any doubts related to lesson plans. A meeting with the department chairperson was arranged during the first

semester of the 2002 school year to discuss the intent of the study and to coordinate physical facilities and resources. At the beginning of the 2003 spring term, all students in both the experimental and control groups were asked to complete the SEQ developed by Mikulecky et al. (1996). At the beginning of the semester, students in the experimental group were also administered the PEPS in their native language, and their preferred learning styles were identified. Results were discussed individually with students.

No intervention took place with the control group. Students in the experimental group participated in a series of events. Once students understood their learning styles and the strategies they could use to enhance their learning, they participated in the four lessons. On the 2nd through 5th week of class, participants encountered their four lessons, each presented in a different week and presented through a combination of Blackboard™ (an e-learning platform) and Web site links, and each taught accommodating each learning style. Students used the activities according to the learning styles identified in the PEPS. If students demonstrated natural proclivities in more than one area, they could participate in several learning style activities in either two or all areas. All lessons used technology to accommodate learning style preferences. The methods of instruction can be reviewed in the lesson plans found in Appendix D. The lessons to be covered lasted approximately 50 to 60 minutes in length. The participants were asked to complete a reaction information collection instrument (included at the end of each lesson plan) that collected information about the learning experience and their perceptions of each activity and how they thought it had helped them in learning ESL. It collected immediate feedback on each activity. The reaction collection instrument can be viewed in Appendix E.

After participating in the four activities, students completed the same SEQ they

completed at the beginning of the course. Students in the control group were requested to complete the SEQ at the end of the experimental group's treatment (4 weeks).

Analysis

Descriptive statistics, frequencies, and SDs were run on the pre- and posttests. These tests were examined on all the scores together as well as on scores that had been separated according to learning style groups. Statistics were run by scale: aspiration, perceived ability, persistence, and activity perception. A confirmatory factor analysis confirms or negates reasons for selecting each item as representative of the scale. This measured reliability and validity. After addressing the psychometric properties of the instrument, a secondary analysis was run.

T tests were run to test for significant differences between pre- and posttest on all the scores as well as on scores that were separated according to learning style groups and between both control and experimental groups. This test was run also by scale: aspiration, perceived ability, persistence, and activity perception. Further examination of statistical significant findings was completed based on the variables that produced the most interpretable data.

Assumptions

The following assumptions were made:

1. The participants in this study were intellectually representative of students in a Puerto Rican 1st-year basic ESL college course.
2. Learning styles can be measured through the PEPS.
3. Self-efficacy can be measured through the SEQ.
4. Participants truthfully participated in the study to the best of their ability.
5. The concepts taught during the study are assumed to be skills included in the

course syllabus and textbook.

6. Technology can be used to accommodate learning styles.

Projected Outcomes

The following predictions were made:

1. Students' self-efficacy about learning ESL will increase significantly if the course accommodates for visual, kinesthetic, and auditory learners.
2. Students' judgment of their perceived ability to perform in ESL courses will augment as measured by the SEQ.
3. Students' aspirations in learning ESL will increase as measured by the SEQ.
4. Students' persistence in ESL will increase as measured by the SEQ.
5. Students' positive perception of activities related to learning English will augment as measured by the SEQ.
6. Students' perceived abilities to perform and their persistence in learning ESL before and after the instructional activities as measured by the SEQ will show a significant increase.
7. Relationship between students' aspirations and perceptions of English instructional activities as measured by the SEQ will show a significant relationship.

Chapter 4: Results

The research hypothesis stated that the inclusion of activities that use technology to accommodate for visual, kinesthetic, and auditory learners will increase students' self-efficacy about learning ESL. The primary purpose of this study was to answer to the question, In what ways can technology in an ESL course accommodate visual, kinesthetic, and auditory learners to increase students' self-efficacy about learning the language? It intended to demonstrate this by looking at students' judgments, aspirations, persistence, and activity perceptions related to learning ESL by looking at the corresponding scales of the SEQ. It also intended to shed light upon the relationship, if any, between students' persistence and perceived abilities as well as the relationship between aspirations and perceptions in learning ESL. To do this, the results of the pre- and posttest SEQ for both control and experimental groups were examined and presented. After preliminary data analyses, scales could not be identified, which, therefore, necessitated a further examination of previously identified scales. An explanation of the results of the examination of the previously examined scales is discussed below. A factor analysis was conducted, and the detailed analysis follows.

The results of this study have been arranged in the following manner:

1. Justification of analysis procedures followed that includes introductory and preliminary data analysis of variables, a factor analysis to test validity of the SEQ instrument and its purported scales, restatement of purposes of the study, choice of method, sample size and power, and factors that influence power in relation to the results.
2. Preliminary screening of data, which includes decisions made about missing data, information about the PEPS, screening for data entry errors or out-of-range values, and changes made to the scoring of the SEQ.

3. Demographics.
4. Descriptive statistics.
5. Inferential statistics that include an examination of the SEQ pre- and posttest by experimental and control group as well as by learning style.
6. Qualitative feedback collected via the Internet from the participants.

Justification of Analysis Procedures Followed

Introductory and preliminary data analysis--variables. The dependent variables in this study were SEQ pretest total, SEQ posttest total, SEQ ability pretest, SEQ ability pretest, SEQ ability posttest, SEQ activity perception pretest, SEQ activity perception posttest, SEQ persistence pretest, SEQ persistence posttest, SEQ aspiration pretest, and SEQ aspiration posttest. Each of the dependent variables represents a continuous scale (a high score means more; a low score means less). This research assumes that a high score on a given variable represents more and a lower score represents less.

The independent variables in this study were group (control and experimental) and learning style. Group was a categorical independent variable. The categories were the experimental group and the control group. Learning style was a categorical independent variable. The PEPS was used to identify learning styles. As explained in chapter 3, the Spanish version of PEPS was revised for this study with permission and collaboration of the author of the instrument and pilot tested with 100 Puerto Rican students at the university. Cronbach's Alpha were run and reliability and scores were also high (.60 or more). The areas with the highest reliabilities included visual, kinesthetic, auditory, structure, intake, light, warmth, and afternoon, among others. A copy of the Spanish version of PEPS can be found in Appendix B. Once learning styles were identified, it was found that students were also "mixed"; that is, they had more than one preferred learning

style. The groups for this particular sample were auditory, auditory-kinesthetic, visual, visual-kinesthetic, and kinesthetic.

Factor analysis (validity of instruments and scales). According to Mikulecky et al. (1996), the SEQ purportedly measures four of the five constructs mentioned in the literature review: aspirations, perceived abilities, persistence, and activity perceptions. However, there was no information available about the constructs and how the items loaded on each of the scales. In the methodology (see chapter 3), items were matched to the four respective scales.

To measure internal consistency among the preliminarily identified related items, a coefficient alpha was completed. This included an item analysis demonstrating the items and how they related to each of the four scales. To do so, all cases were used in the pretest ($n = 42$). Initial reliabilities showed inadequate alpha levels (less than .70). Table 3 shows the coefficient alpha by preliminarily identified scales.

As the results suggested that the scales had poor internal consistency, exploratory factor analysis utilizing Principal Axis Factoring Extraction Method and a Varimax with Kaiser Normalization rotation method was carried out. The results revealed that the items did not load consistently with the theoretical loadings proposed in Table 3.

Because of this, no clear scales could be identified. An internal consistency test was run using the averages utilized in the descriptive statistics. Although this did not provide the consistencies by scale, it did provide an overall view of the complete SEQ; in other words, it would form a composite scale, utilizing all of the instrument items, which is theorized to reflect a global self-efficacy regarding use of the English language construct. In order to do this, averages for pretests in both control and experimental groups were compared. This test studies if every item is related to each other and if, in

general, they all measure the same thing: in this case, self-efficacy. Internal consistency reliability was calculated for this composite scale and was .81, which was deemed acceptable (Streiner, 1993).

Table 3

Coefficient Alpha Results per Scale

Scale	Reliability	Number of Cases	Number of Items
Ability	.5030	40	13
Activity Perception	.2524	40	5
Persistence	.5895	36	9
Aspiration	.5822	41	3

Because of the results of the factor analysis, research questions based on the different scales could not be answered. Yet, the SEQ was tested for both reliability and face validity. In addition, the results depict that it is “suitable for assessing the self-efficacy of both adult literacy and English as Second language learners” (Mikulecky et al., 1996, p. 4). Mikulecky et al. identified Cronbach internal consistency reliability coefficients (.799 for ABE students and .9215 for IEP students) as high and very high. The effect the treatment has had on participants across learning styles and across both experimental and control groups are presented as there are still several results that can be discussed.

First, the SEQ total by group was examined. This included examining if there was a significant change from pretest to posttest on SEQ total scores. It also examined if there was a significant difference among the experimental and control groups overall (SEQ

pretest total and SEQ posttest total taken together). It also examined if there was a significant difference between the experimental and control groups at SEQ posttest total that did not exist at SEQ pretest total.

Second, results were used to examine if there were significant differences between the learning style groups on the SEQ total pretests and posttests. It also examined if there was a significant difference between SEQ total pretest and SEQ total posttest. Finally, it also examined if there were larger differences between the learning style groups at one point in time when compared to another. In other words, it seems to be directly analogous to the previous hypotheses. Rather than the various scales by group, they involve comparisons of learning styles.

Choice of statistical tests. A revision of methods, after the initial findings on the scales, makes a difference in the type of statistical tests that need to be carried out. The research completed an analysis of variance (ANOVA). A repeated measures ANOVA is appropriate because the goal is to examine change from one variable to another by determining whether the difference between the mean scores of two or more groups on a dependent variable is statistically significant (Gall, Borg, & Gall, 1996). The dependent variables represent repeated measures over time (for example, SEQ pretest total and SEQ posttest total). "Repeated measures is also the natural design to use when the concern is with performance trends over time" (Stevens, 1996, p. 451). Clearly, this describes this study. This method also examined overall differences between groups of a categorical independent variable group on each pair of repeated measures. In addition, this method examined if there were any significant differences between groups that occurred at one level of the repeated measure (SEQ posttest total, for example) but not at another level of the repeated measure (SEQ pretest total, for example). Repeated measures ANOVA

provides F tests that can be used to decide if a hypothesis is supported or not supported by the data. For repeated measures ANOVA to be appropriate, the dependent variables must approximate a normal distribution and meet several other assumptions such as equal variances.

When compared to a traditional between-groups ANOVA, repeated measures ANOVA uses qualitatively different F tests for each main effect and interaction. These include sphericity assumed, Greenhouse-Geisser, Huynh-Feldt, and lower bound (Keppel, 1991; Stevens, 1996; Winer, Brown, & Michels, 1991).

The difference between these tests and ordinary F tests is that they adjust the error term to account for variability among the subjects due to individual differences. A traditional ANOVA accounts only for the variability between groups. A repeated measures ANOVA approach accounts for variability between groups and variability between subjects. This increased sensitivity (all other factors being equal) results in a more powerful analysis than a traditional ANOVA. A two-tailed independent t test can be thought of as an ANOVA with only two groups (Gall et al., 1996).

There are two reasons for not using t tests to answer the research questions. First, they cannot measure groups by repeated measures interactions (research questions such as, Were there any significant differences between groups that occurred at one level of the repeated measure (SEQ posttest total) but not at another level of the repeated measure (SEQ pretest total)? Second, they are far less sensitive in a design such as this for the reasons stated above.

A researcher may be tempted to use a MANOVA design, which is appropriate when there is more than one continuous dependent variable and one or more categorical independent variables (Gall et al., 1996). On the surface, this seems to describe this

design. However, MANOVA models assume that the dependent variables have little or no correlation among them (the technical term for this is low multicollinearity). Because the dependent variables in this design are all measures of the same overall construct, it is likely that they have at least a moderate (or perhaps strong) correlation among them. In the case of this instrument, correlation was .81. In this case, the high multicollinearity may become a problem because this sometimes makes the results from MANOVA difficult or impossible to interpret. For example, an overall test may indicate that there are significant differences between groups when all the dependent variables are considered. When each dependent variable is examined in isolation, there are no indications of significance. Because this is a problem, the repeated measures approach is suggested and MANOVA is not recommended. ANOVA models become multivariate MANOVA models when more than one continuous dependent variable is included in the model.

Sample size and power. With respect to sample size, more is usually better. Power is the probability of rejecting the null hypothesis when it should be rejected. Power ranges from zero to 1. Zero means that there is no chance of rejecting the null hypothesis, whereas a score of 1 indicates that it will be rejected every time. In many research situations, power of at least .8 is desired. This means that there is at least an 80% chance of rejecting the null hypothesis when it should be rejected. Statistical methods cannot overcome small sample sizes (low power); thus, larger samples are preferred. The important point is that inadequate power (low sample size) may result in a high probability of Type 2 error, the probability of failing to reject the null hypothesis when it should be rejected. Putting it another way, the hypotheses may be supported by the data, but there may not be a large enough sample size to detect it.

Factors that influence power. There are three factors that influence power: alpha, effect size and sample size (Gall et al., 1996; Trochim, 2002). Alpha is the probability of Type 1 error. A Type 1 error can be thought of as a false positive. A practical example of a Type 1 error is when a researcher mistakenly concludes that a treatment had an effect when in fact it did not. As alpha increases, power increases. As alpha decreases, power decreases. A Type 1 error occurs when the researcher falsely rejects a null hypothesis. The researcher chooses the alpha value (a common choice of alpha is .05 or a 5% chance of Type 1 error).

It would be unwise to increase the level of alpha (beyond .05, for example) for the sake of increasing power. The increased power would result because of a greater risk of Type 1 error. Effect size is an estimate of the strength of the link between the independent and dependent variables (Gall et al., 1996). Effect size is a measure that takes into account the standard deviations of the scales so that variables with different scales can be compared. This estimate can be a standardized estimate of the difference among means (as in ANOVA-like models). When all other factors are constant, small effect sizes are associated with lower power, moderate effect sizes are associated with moderate power, and large effect sizes are associated with larger power.

Unfortunately, the researcher has no control over the effect size in a given study. Effect size for a given study can be estimated from similar studies in the same area; from preliminary pilot data, if that is possible; or by making an estimate using a conventional rule of thumb. For example, Cohen (1977) suggested the following rule of thumb for an ordinary *t* test (a univariate method of analysis): small = .2, medium = .5, large = .8. Rules of thumb are somewhat arbitrary and change from author to author. Cohen also noted that small and medium effect sizes are common in social and behavioral research.

The third factor is sample size. As sample size increases, power increases. Sample size is the only factor that influences power over which a researcher has direct control (Gall et al., 1996).

It is possible to have too much power. With very large sample sizes (for example, more than 100 per group in a between-groups design), it is possible that researchers end up finding statistical significance that is substantively meaningless. Statistically, this is usually because the standard error of most statistics becomes very small (near zero in some cases) when sample size is very large. The standard error of a given statistic estimates the amount of error when inferring a population value from the sample value. The ideal situation is to strike a balance between the probability of Type 1 error, effect size, and sample size that leads to acceptable levels of power. The traditional methods of estimating power for repeated measures designs are somewhat suspect because they do not do a good job accounting for the additional dependent variables that are included in the analysis. Power is influenced by the ratio of N/p , or the sample size divided by the number of variables. An N/p ratio of 20:1 or higher is recommended as a minimum for most designs (20 subjects for each variable). Because there were two dependent variables, a sample of at least 40 (or more) would be ideal. One can use information about alpha and effect size to estimate the number of subjects who would be required to achieve a power level of .8 (or higher). Following is a rough estimate of power according to Erdfelder, Faul, and Buchner (1996). The rule of thumb regarding effect size was used because there was no empirical effect size estimate to use. Assuming a choice of alpha of .05 and an effect size of .5 (moderate), the observed sample size of 48, with two repeated measures, gives a power estimate of .92, which is acceptable for most social science research. This implies that a sample size of 48 will give a 92% chance of rejecting the

null hypothesis when it should be rejected. This is a crude estimate because the effect size is a guess. In any event, this is consistent with the rule of thumb, so the observed sample size should be adequate.

Preliminary screening of data. A preliminary screening of data was run and the following details should be described. First, there were six missing data points on each of the posttest variables. The default option within most statistics packages is to omit rows that have missing data and run a given analysis on the remaining subset. This may not have an impact on an analysis with a large sample size, but six represents about 12% of the total sample. Original data, if available, should be used. If not, a common approach is to replace the missing values with the mean (which is the best guess estimate) prior to running the analysis (Cohen & Cohen, 1983; Insightful Corporation, 2001; LoPresti, 1998). This allows the analysis to be run using the full sample size. Although not generally desirable, replacing missing data with the mean rather than running the analysis on a relatively small subset is suggested. Second, the PEPS was administered at the beginning of the course to the experimental group, and 19 students completed it. The results show that 16 students have a clear, preferred learning style. "It is not surprising that each student uses all three modalities, but the brain has selected one which will be the preferred way to input information" (Ross, 1991, p. 6). According to Butler (1988), learners and teachers merge all learning styles, but most students work naturally with a blend of one or two styles that suit them. There were 3 students who showed natural proclivities in two learning styles. The results are presented in the Table 4. The students who presented mixed learning styles, auditory-kinesthetic ($n = 2$) and visual-kinesthetic ($n = 1$) decided to carry out kinesthetic activities as it is theorized that many students, especially adults, are cognizant of their learning style (Ehrman, 1996) so they can make

that decision for themselves. When screening the data, no out-of-range values or obvious data entry errors were found. However, the learning style variable is problematic.

Following is the frequency distribution by learning style (see Table 4). The small sample size in some of the categories (visual, visual-kinesthetic, etc.) limits the ability to test differences between groups because certain groups have no variance (only one score), whereas others have such a low sampling (auditory-kinesthetic) that it is highly unlikely that they will yield results that can be trusted.

Table 4

Frequency Distribution by Learning Style

Learning style	Frequency	%	Valid %	Cumulative %
Auditory	8	16.7	42.1	42.1
Auditory-kinesthetic	2	4.2	10.5	52.6
Visual	1	2.1	5.3	57.9
Visual-kinesthetic	1	2.1	5.3	63.2
Kinesthetic	7	14.6	36.8	100.0
Total	19	39.6	100.0	
System	29	60.4		
Total	48	100.0		

Third, the SEQ had a total of 14 questions phrased in the negative (see Table 5), whereas 16 were phrased in the positive (see Table 6). A high score in the negative questions would mean low self-efficacy, whereas a high score in the positive questions

would mean a high self-efficacy. The 14 negative questions were rephrased in the positive before completing any statistical tests. This means that the negatively phrased questions now would show that a high score would mean a high self-efficacy.

Table 5

Negatively Phrased Self-Efficacy Questionnaire Questions

Question number	Question
3	I am not very good at learning writing skills.
7	I cannot get down to reading and writing when I should.
8	Sometimes I think I am no good at writing.
10	Doing well in learning is not one of my main goals in life.
12	I avoid trying to read new articles when they look difficult.
16	I feel insecure about my ability to write clearly.
20	My writing work worries me.
21	I find a lot of readings hard to understand.
22	It is difficult for me to concentrate on my learning task.
23	I am useless at school work.
27	My reading assignments worry me.
28	Reading is boring.
30	Sometimes I think that I am no good at reading.

Demographics

The study was carried out with students enrolled in the first semester of Basic

First-Year English. As mentioned in previous chapters, students are assigned to this course according to their CEEB English scores. In order to be placed in this course, students' scores must be between 352 and 445. Both control and experimental groups had these characteristics in common. A detailed description follows.

Control group. The control group had a total of 24 students enrolled. Of those 24 students, 18 completed the SEQ pretest, but only 16 answered the SEQ posttest. As explained previously, missing data were replaced with the mean (which is the best guess estimate) prior to running the analysis. This allowed the analysis to be run using the full sample size ($n = 18$).

Experimental group. The experimental group had a total of 42 students enrolled. Of those 42 students, 30 students answered the SEQ pretest, but only 26 answered the SEQ posttest. Furthermore, of the 26 students who answered both SEQ pre- and posttests, only 19 completed the PEPS, identifying their learning style preference.

As one of the most researched learning style models is the sensory learning style (Morrison & Lowther, 2002) many students, especially adults, are cognizant of this dimension (Ehrman, 1996). For this reason, the learning styles were described and explained in detail to all students, and those who did not take the PEPS self-identified themselves in one of the learning styles. This was done so they could focus on the specific learning style model used in this research.

Missing data were replaced with the mean (which is the best guess estimate) prior to running the analysis. This allowed the analysis to be run using the full sample size ($n = 30$).

This sample will be used for the presentation and analysis of results related to pre- and posttest SEQ ($n=30$). Presentation and analysis of results related to or organized by

learning style will include only the students who answered both the SEQ pre- and posttests and completed the PEPS ($n = 17$).

Table 6

Positively Phrased Self-Efficacy Questionnaire Questions

Question number	Question
1	I do a good job of participating in class discussions.
2	I enjoy learning.
4	I am able to keep reading when there are other interesting things to do.
5	One of my main goals is to be much better at writing by next year.
6	I have no problem learning reading skills.
9	When I decide to write something, I go ahead and do it.
14	When I decide to read something, I go ahead and do it.
15	I remember the important points in reading very well.
17	One of my main goals is to be much better at reading next year.
18	I think I am pretty good at my writing work.
19	I can motivate myself to read.
24	I enjoy writing.
25	I learn new words easily.
26	If I can't understand a reading the first time, I keep trying until I can.
29	I can study well when here are other interesting things to do.

Descriptive Statistics Inferential Statistics--ANOVA Pre- and Posttest Control and Experimental Groups

Table 7, showing descriptive statistics for each dependent variable by learning style, has been arranged such that the pretest and posttest scores are next to one another for comparison. It should be noted that certain categories had a sample size of 1 participant (visual, visual-kinesthetic; $n = 1$).

The lack of a standard deviation score is not a typographical error. These categories have no variance (with only one score, they do not vary), so the SD (which is a measure of the spread of scores) cannot be calculated. Also, the value for the mean for these categories (and others) is suspect due to low sampling. Nonetheless, this table can be discussed by comparing the pretest and posttest scores for each variable.

Additional data would be required to conduct formal hypothesis testing. The visual learner had the highest improvement from the SEQ pretest total (84.00) to SEQ posttest total (130.00). The data on the visual learner, though, should be taken with caution because of the number of students ($n = 1$). The same happens with the visual-kinesthetic learner ($n = 1$). The auditory learner also demonstrated increase in the improvement from the SEQ pretest total (104.00) to the SEQ posttest total (109.50). The auditory-kinesthetic learner also showed improvement from the SEQ pretest total (108.00) to the SEQ posttest total (115.00). The kinesthetic learners remained virtually unchanged on the pre- and posttest measure of the SEQ total (pretest = 107.00 and posttest = 107.67). In general, all groups showed an increase from pretest to posttest on the SEQ.

Inferential Statistics--ANOVA Pre- and Posttest Control and Experimental Groups

The following analysis was a repeated measures analysis of variance (ANOVA)

for the data. This analysis was appropriate because the research had at least one group of repeated measure variables and one grouping (independent) variable. The repeated measures approach differs from a traditional ANOVA because it accounts for multiple measures of at least one construct.

Table 7

Descriptive Statistics by Learning Style

Learning style	Mean	Standard deviation	N
Pretest total			
Auditory	104.00	12.04	8
Auditory-kinesthetic	108.00	14.14	2
Visual	84.00		1
Visual-kinesthetic	93.00		1
Kinesthetic	107.00	12.95	7
Posttest total			
Auditory	109.50	12.50	8
Auditory-kinesthetic	115.00	15.56	2
Visual	130.00		1
Visual-kinesthetic	110.00		1
Kinesthetic	107.67	8.13	19

Repeated measures analysis answers two questions:

1. Were there significant differences among the groups of the independent variable (experimental and control groups) ignoring the repeated measure (SEQ pretest total and SEQ posttest total)? Researchers may call this the main effect of the independent variable.

2. Was there a statistically significant difference on the repeated measures (SEQ pretest total to SEQ posttest total, for example) ignoring the independent variable (experimental and control groups)? Researchers may refer to this as the main effect of the repeated measure.

Repeated measures analyses make several assumptions about the data. It is assumed that the variables representing the repeated measure are scale variables. This means that a higher score on a given variable means more of the given construct, whereas lower scores on a given variable means less of a given construct. Another assumption is sphericity. This is somewhat complex, especially because the variables in this type of design are transformed as part of the analysis. The technical description of sphericity is that the transformed covariance matrix is a diagonal matrix with equal variances on the diagonal and zeros for all off-diagonal elements (covariances).

Another way to describe the sphericity assumption is that it assumes that the variances of the transformed variables were all equal and the covariances of the transformed variables were all zero. The Mauchly test can be used to test the assumption of sphericity (to be exact, Mauchly tests if the elements of the transformed matrix were proportional to an identity matrix). When significant, the Mauchly test suggests that the sphericity assumption was violated. (Stevens, 1996). The researcher can use the sphericity-assumed F test when there is no evidence that this assumption was violated. If the sphericity assumption is questionable, alternate F tests are available. The Greenhouse

Geisser statistic is a very conservative adjustment to the F test when the sphericity assumption is questionable. The Huynh and Feldt statistic is a less conservative adjustment to the F test when the sphericity assumption is questionable. Repeated measures ANOVA assume that the variances within groups were approximately equal (this is sometimes referred to as the assumption of homogeneity of variance). A Box's M test can be used to test this assumption. When nonsignificant, it implies that the variances among the groups of an independent variable were not statistically different from one another.

It is important to note that the F test from repeated measures ANOVA is robust to violation of the assumption of equal variances when the sample sizes within groups were approximately equal. In such cases, a significant Box's M test could be ignored. Repeated measures ANOVA also produces univariate homogeneity of variance tests on each grouping (independent) variable in isolation (usually a Levene's test).

When significant, the Levene's test suggests that unequal variances were present on a single variable. Like the Box's M test, a significant Levene's test can be ignored when sample size within groups is equal (the corresponding F tests are robust in that situation). Repeated measures ANOVA assumes that the scores on the dependent variable follow a distribution that was approximately normal (like a bell-shaped curve).

This is sometimes referred to as the assumption of normality. F tests are robust to violation of the assumption of normality when the sample size within groups was large (usually defined as 30 or more per group). A final assumption of repeated measures ANOVA models is that the groups of the independent variables are independent of one another (for example, an individual cannot be in experimental group and control group at the same time).

When compared to a traditional between-groups ANOVA, fundamentally different F tests (including sphericity assumed, Greenhouse-Geisser, Huynh-Feldt, and lower bound) are used for effects involving the repeated measures. These tests account for variability between groups and variability between subjects. This leads to increased sensitivity. When all other factors are equal, the repeated measures tests are more powerful than traditional F tests for a design like this. A traditional ANOVA only accounts for the variability between groups. As indicated previously, the repeated measures test statistics also differ from the traditional F tests from ANOVA in that they are based on transformed variables, rather than the original scores.

Tests of between-subjects effects can be used to answer the first question, Were there significant differences among the groups of the independent variables ignoring the repeated measure? This question can be answered by comparing the difference between groups based on the average of all the dependent variables. Table 8 shows the descriptive statistics as calculated within the ANOVA.

The experimental group had a higher average than the control group at both pretest and posttest (experimental pretest and posttest = 103.53/111.95; control pretest and posttest = 99.94/102.37). The overall mean at posttest was higher than the overall mean at pretest (pretest = 102.19; posttest = 108.36). The SD between groups, though, seems to be very similar, meaning that in general terms, they were similarly distributed (SD ranges = 14.00 to 17.87).

Recall that one of the assumptions of repeated measures ANOVA is equal variance among the groups of the independent variable. In the context of this research, it means that the variance of the experimental group and control groups were approximately equal. Because the Box's M test was nonsignificant ($F = .82$; $df1 = 3$; $df2 = 244300.38$; p

= .49), this suggests that the assumption of equal variances had not been violated.

A univariate approach to testing the assumption of equal variances involves the Levene's test. Note in Table 9 that the Levene's test was nonsignificant for SEQ pretest total and SEQ posttest total (.19 and .79, respectively). This suggests that the assumption of equal variances was not violated for each variable listed.

Table 8

Descriptive Statistics Self-Efficacy Questionnaire Pre- and Posttests

Group	Mean	Standard deviation	<i>N</i>
Pretest total			
Experimental	103.53	14.23	30
Control	99.94	17.87	18
Total	102.19	15.60	48
Posttest total			
Experimental	111.95	13.03	30
Control	102.37	13.83	18
Total	108.36	14.00	48

Note. This analysis was done on the SEQ total rather than the variable that was averaged by the number of items. In terms of the substantive conclusions, it makes no difference which variable was used, as the *F* tests and significance levels that follow would not change. The means change, but none of the substantive parts that follow change.

Another assumption of repeated measures ANOVA is sphericity. The researcher can use the sphericity-assumed *F* test when there is no evidence that this assumption was

violated. This can be tested with either a Mauchley or Bartlett's test. If the sphericity assumption is questionable, alternate F tests are available.

These data reveal that the Mauchley test was nonsignificant (1.00; the significance value cannot be calculated when the value of chi-square is exactly zero). This suggests that the assumption of sphericity was not violated.

Table 9

Levene's Test of Equality of Error Variances

Self-efficacy questionnaire	F	$df1$	$df2$	Significance
Pretest total	1.780	1.000	46.000	.190
Posttest total	.072	1.000	46.000	.790

Table 10 demonstrates the tests for the main effect of the independent variable on the average of all the dependent variables. This answers the question about significant differences among the groups of the independent variable (experimental vs. control) ignoring the repeated measure (SEQ pretest total and SEQ posttest total).

The multivariate tests for group was nonsignificant (.070). This means that there were not significant differences between the experimental and control groups on the average of the repeated measures variables.

The following F test examines differences on the repeated measure and the interaction of the independent variable(s) with the repeated measure (see Table 11). Note that the F test for the repeated measure was significant (.04). This means that there was a significant difference between SEQ pretest total and SEQ posttest total, ignoring group.

Table 10

Tests of Between-Subjects Effects

Source	Type III sum of squares	<i>df</i>	Mean square	<i>F</i>	Significance
Group	974.686	1	974.686	3.441	0.70
Error	13031.149	46	283.286		

Figure 1 shows means for the SEQ total score. This figure represents SEQ pre- and posttest scores. In both SEQ pre- and posttests, the experimental group showed evidence of higher SEQ scores. Experimental group scored higher overall in both pre- and posttest SEQ.

The hypothesis that there would be a significant difference between the SEQ pretest and SEQ posttest was supported by these data (.04). Significance means in this context that it is not due to chance. Overall, the posttest scores were higher.

Inferential Statistics--ANOVA Pre- and Posttest Learning Style

SEQ total by the two learning style groups. As mentioned previously, there is a very small sample size in some of the categories (visual, visual-kinesthetic, etc.). The small sample size limits the ability to test differences between groups because certain groups presented no variance (there is only one score; see Table 12).

Other learning style groups have such a low sampling (auditory-kinesthetic) that it is highly unlikely that it will yield results that can be trusted ($n = 2$). In Table 12, note that the mean for the auditory group was lower at pretest (104.00) but higher at posttest (109.50).

Also note that, in general, the total for SEQ Pretest (105.40) was lower than the general total for SEQ Posttest (108.65). This indicates that all learning styles had some type of gain.

Table 11

Tests of Within-Subjects Effects

Test	Type III sum of squares	<i>df</i>	<i>MS</i>	<i>F</i>	Significance
SEQTL					
Sphericity assumed	661.32	1.00	661.32	4.72	.04
Greenhouse-Geiser	661.32	1.00	661.32	4.72	.04
Huynh-Feldt	661.32	1.00	661.32	4.72	.04
Lower bound	661.32	1.00	661.32	4.72	.04

Note. SEQTL = Self-efficacy questionnaire total.

The Box's *M* test was nonsignificant ($F = .48$; $df_1 = 3$; $df_2 = 121191.45$; $p = .70$), which suggests that the equal variances assumption was not violated. This means that the variance of the experimental group and control groups were approximately equal.

Note that in Table 13, the Levene's tests for SEQ pre- and posttest were nonsignificant. This suggests that the equal variances assumption was not violated (.77 and .22, respectively).

Again, the Mauchly test was nonsignificant (1.000). The researcher can use the sphericity-assumed *F* test when there is no evidence that this assumption was violated. If the sphericity assumption is questionable, alternate *F* tests are available. This suggests

that the assumption of sphericity was not violated.

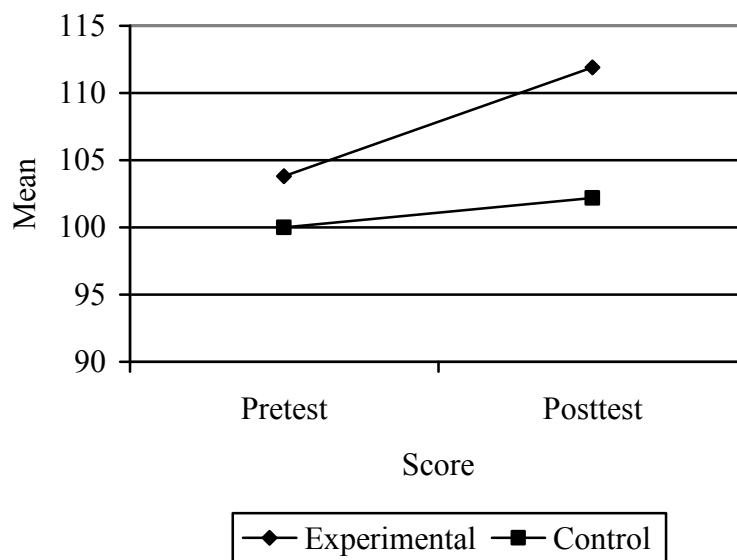


Figure 1. SEQ total score.

The tests of between-subjects effects show that the overall difference between learning style groups on the average of the SEQ total scores was nonsignificant (.91). The hypothesis that there would be a significant difference between the learning style groups on the SEQ total pretest and posttest was not supported by the data (.91; see Table 14).

The tests of within-subjects effects demonstrate the overall change from pretest to posttest was nonsignificant (.40; see Table 15). There were not larger differences between learning style groups at one point in time when compared to the other (.51).

Figure 2 shows the means before and after the treatment of both auditory and kinesthetic students. Auditory students showed a slight gain over kinesthetic students, although the gain was nonsignificant.

The hypothesis that there would be a significant difference between the SEQ pretest total and SEQ posttest total by learning style was not supported by these data (.40). The nonsignificant scores between-subjects tests and nonsignificant scores within-

subjects effects tests are not surprising due to low power (specifically, small sample size). At this point, determining if a larger sample size would lead to significant differences between the auditory and kinesthetic groups cannot be studied, and no generalizable data could be found.

Table 12

Descriptive Statistics by Learning Style

Learning style	<i>M</i>	<i>SD</i>	<i>N</i>
SEQ pretest total			
Auditory	104.00	12.04	8
Kinesthetic	107.00	12.95	7
Total	105.40	12.11	15
SEQ posttest			
Auditory	109.50	12.50	8
Kinesthetic	107.67	8.13	7
Total	108.65	10.36	15

Note. SEQ = Self-efficacy questionnaire.

The hypothesis that there would be larger difference between the learning style groups at one point in time when compared to another was not supported by these data (.51). The findings show nonsignificant differences between learning style groups when compared to other groups. Although all groups experienced some change in the level of

self-efficacy, the statistical differences in the changes between each group were negligible.

Table 13

Levene's Test of Equality of Error Variances

Self-efficacy questionnaire	<i>F</i>	<i>df1</i>	<i>df2</i>	Significance
Pretest total	.088	1	13	.770
Posttest total	1.670	1	13	.220

Qualitative Feedback From Participants Collected via the Internet

After every lesson was completed, all students completed a reaction information collection instrument (see Appendix E). The questions were identical each time the instrument was administered. The instrument collected students' self-reported information on various questions that identified their learning styles as well as collected information about how they felt after the lesson. A summary of results of the instrument in each lesson follows.

Lesson 1--reaction information collection instrument. This instrument was administered to students after they completed the first lesson. The instrument was used to collect information about how students felt after each lesson and how they reacted to the activities.

A total of 31 students responded to this survey. On the question about students' identifying their learning styles, 57.14% identified themselves as being kinesthetic learners, 40.00% as visual learners, and 2.86% as auditory learners. Four students

selected more than one category, and that was possible because they could have been identified as having the two balanced learning styles. Figure 3 shows the results for this question.

Table 14

Tests of Between-Subjects Effects

Source	Type III sum of squares	<i>df</i>	<i>MS</i>	<i>F</i>	Significance
Learning style	2.57	1	2.57	.01	.91
Error	2304.83	13	177.29		

In the second question, students were asked to comment on the lesson. A total of 21 comments centered on how students perceived the lesson and its activities. Most comments indicated that students perceive the activities and the lesson as a whole as useful. Eleven comments mentioned enhanced understanding of English and losing fear of learning the language. Two comments focused on the use of technology as a good tool to be used, and 5 comments mentioned that being able to use their learning styles was a plus. One of the comments on the use of technology was that a student believed that he or she needed more help with technology usage. In general, students perceived that the activities were worthwhile, aspired to use the skills in the future, and perceived that their abilities in learning the language were enhanced. The following are some comments from the students:

1. "I have been able to be less afraid of learning English. Being able to use my preferred learning style and being able to reflect on my answers has helped me lose my

fear of learning English.”

Table 15

Tests of Within-Subjects Effects

Test	Type III sum of squares	<i>df</i>	<i>MS</i>	<i>F</i>	Significance
SEQTL					
Sphericity assumed	71.14	1.00	71.14	.77	.40
Greenhouse-Geiger	71.14	1.00	71.14	.77	.40
Huynh-Feldt	71.14	1.00	71.14	.77	.40
Lower bound	71.14	1.00	71.14	.77	.40
SEQTL learning style					
Sphericity assumed	43.49	1.00	43.49	.47	.51
Greenhouse-Geiger	43.49	1.00	43.49	.47	.51
Huynh-Feldt	43.49	1.00	43.49	.47	.51
Lower bound	43.49	1.00	43.49	.47	.51
Error (SEQTL)					
Sphericity assumed	1205.68	13.00	92.75		
Greenhouse-Geiger	1205.68	13.00	92.75		
Huynh-Feldt	1205.68	13.00	92.75		
Lower bound	1205.68	13.00	92.75		

2. “I loved it because it addressed the way I like to learn. I love being able to use my style of learning.”

3. “I liked the lesson, and I think I am learning a lot. This will help me in my future professional life. Thank you.”

4. “I have difficulty with computers, but being able to learn using my favorite learning style gives me confidence that I can do it.”

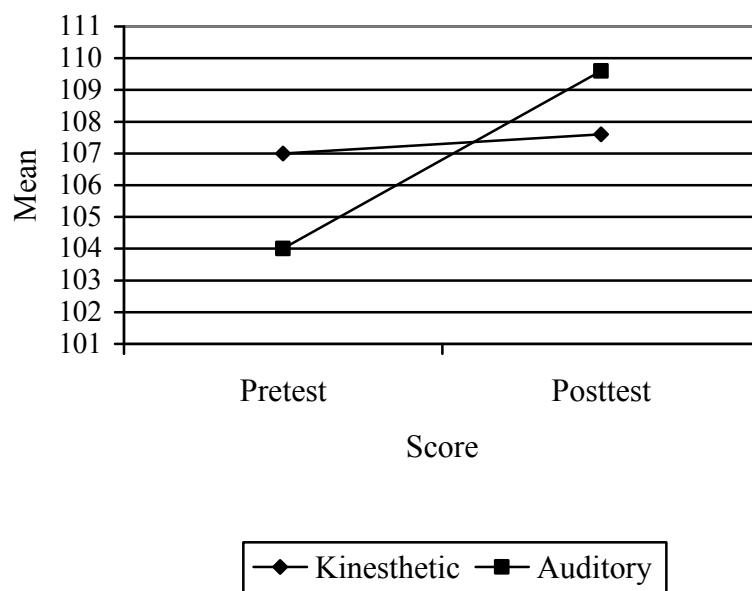


Figure 2. SEQ means before and after treatment for kinesthetic and auditory students.

The third question required students to select the alternative that best described the activities they completed in the order they completed them. Figure 4 shows that students either completed one activity or all three of them. Ten students (32.26%) completed visual activities; whereas 7 students (22.58%) completed kinesthetic activities. None of the students completed auditory activities alone. Eight students (45.17%) completed all three learning style activities.

The next question asked students to identify the activity from their learning style lesson that they enjoyed the most and why. Comments in this section show that students

enjoyed the activities they completed (18 positive comments). Kinesthetic (8) and visual (6) activities received the highest praise from the students. Several students mentioned specific exercises such as fill in the blank as something they enjoyed.

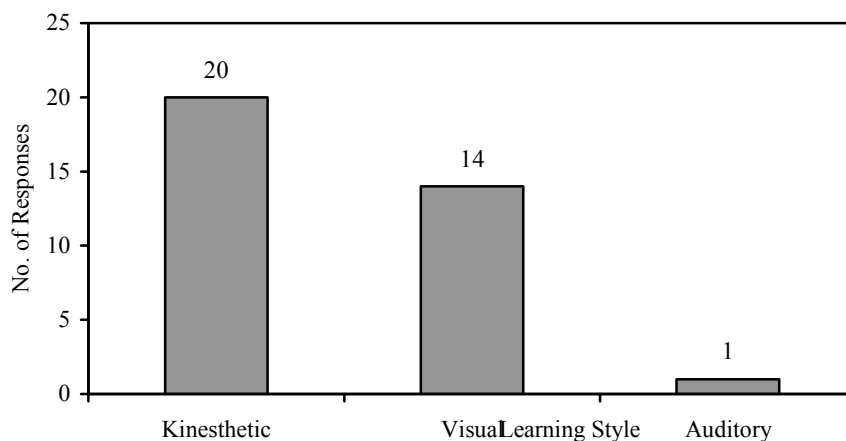


Figure 3. Lesson 1--students' learning styles.

One question that had interesting results asked students to respond if they believed they were better prepared after having taken part in this lesson. All participants answered they did, in fact, believe they were better prepared.

Students were asked to provide their recommendations. The main recommendations were focused on the need for more computers in the lab (2) and more individualized attention (2). Some other areas that were mentioned were the need for providing more practice and that some instructions did not seem clear. The following are some of the students' recommendations:

1. "I think each student should have their own computer. This way the experience would be individualized."
2. "It seems that learning with technology and using my learning style makes learning easier. It helps me use my time better, too."
3. "We should have more computers so we would be more comfortable."

4. “I think we need more time, especially for those of us who have a lot of difficulty with English. Yet, the assignments and activities really are helping me to understand English better. I am glad I did well in the first lesson. Maybe, just maybe, I can do better next time as well.”

5. “More individualized help.”

6. “Understanding instructions seem difficult, but the tasks were very good.”

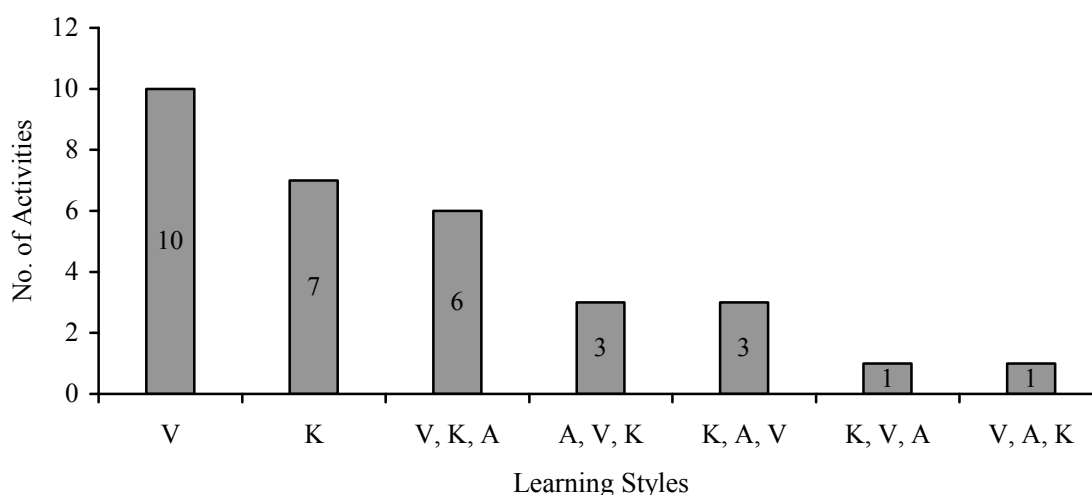


Figure 4. Lesson 1--activities completed by students. Note. V = Visual; A = Auditory; K = Kinesthetic.

Lesson 2--reaction information collection instrument. This instrument was administered to students after they completed Lesson 2. Eleven students responded to this survey. On the question about students’ identifying their learning style, 7 students (63.64%) identified themselves as being kinesthetic learners and 4 students (36.66%) as visual learners. Figure 5 shows the results for this question.

In the second question, students were asked to comment on the lesson. Students commented that they believed they learned new vocabulary and used the comparative form better. Some students commented that the visual activities helped them understand better. In general, students liked the activities and found them interesting. The following

comments were made:

1. “The lesson helped me review words that I had forgotten how to say in English. I learned how to use new words and how to use comparative forms.”
2. “This lesson was very interesting. I am able to understand things I didn’t understand before.”
3. “Visual activities helped me understand better.”

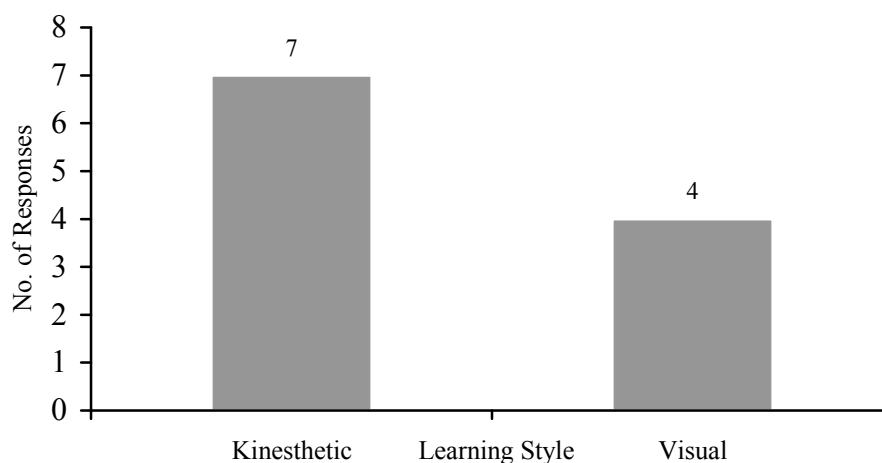


Figure 5. Lesson 2--learning style.

The third question asked students to select the alternative that best described the activities they completed in the order they completed them. Figure 6 shows that again, students either completed one activity or all three of them.

Four students (36.36%) completed visual activities, whereas three students (27.27%) completed kinesthetic activities. None of the students completed auditory activities alone. Four students (36.36%) completed all three learning style activities.

The next question asked students to identify the activity from their learning style lesson that they enjoyed the most and why. Among the activities ranked as the ones students liked the best were all the visual activities (5 comments). Some students

mentioned that playing the games was what they liked the most, especially the Crossword Puzzle. The following comments were made:

1. “Crosswords. I like the style of using games.”
2. “All the visual activities; that way I understand what is said and done in class and it is easier for me to understand.”

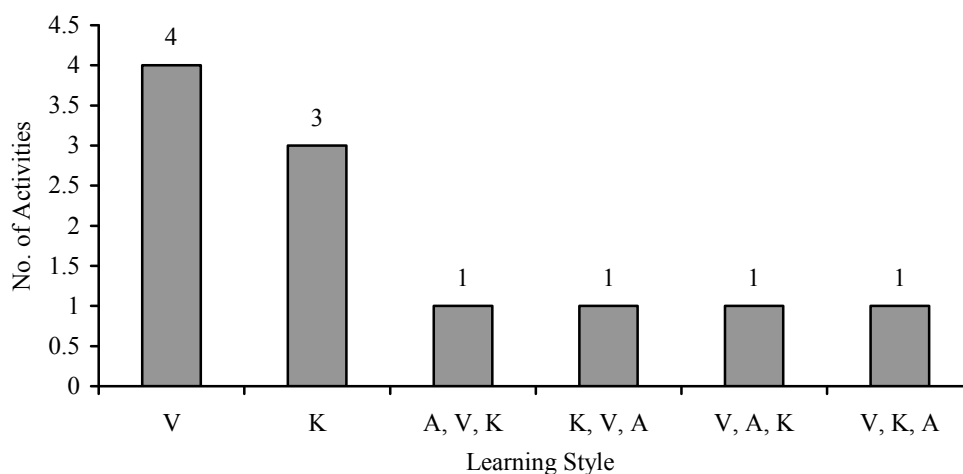


Figure 6. Lesson 2--activities completed by students. Note. V = Visual; K = Kinesthetic; A = Auditory.

Again, the question that had interesting results was the question that asked students to respond if they believed they were better prepared after having taken part in this lesson. All participants answered they did, in fact, believe they were better prepared.

Students were asked to provide their recommendations. Recommendations were minimal. Students mentioned that they needed to have more computers so that they could work individually. One student mentioned that he would like to be able to write down important details.

Lesson 3--reaction information collection instrument. This instrument was administered to students after they completed Lesson 3. A total of 21 students responded to this survey. On the question about students' identifying their learning style, 18 students

(85.71%) identified themselves as being kinesthetic learners and 3 students (14.29%) as visual learners. Figure 7 shows the results for this question.

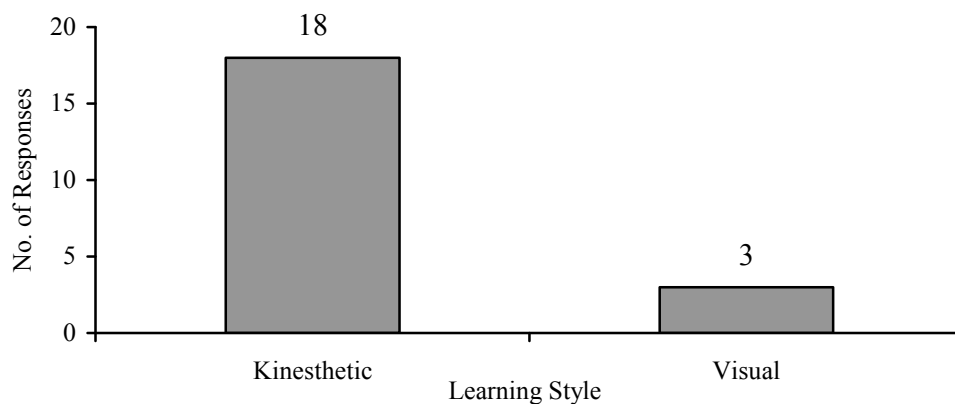


Figure 7. Lesson 3--learning style.

In the second question, students were asked to comment on the lesson. Students' comments show that they perceived the activities as useful and interesting. Some students commented that the lesson helped them understand their reading better.

1. "This lesson helped me understand the story better."
2. "I liked it, and I can't believe that I actually understood."
3. "I loved being able to practice with the vocabulary."

The third question in the Reaction Information Collection Instrument asked students to select the alternative that best described the activities in which they participated. It also requested students to report on the order in which they completed each activity. Figure 8 summarizes this information.

Figure 8 demonstrates that students either completed one activity or all three of them. From all the students who answered this survey, 2 students (9.52%) completed visual activities, 5 students (23.81%) completed kinesthetic activities, and 1 student (4.76%) completed auditory activities. Although not all students completed all the

activities in the same order, 13 students (61.90%) completed all three learning style activities. Also, although none of the students classified themselves as auditory learners in the first question, 14 students (66.66%) completed auditory learning activities.

The fourth question asked students to identify the activity from their learning style lesson that they enjoyed the most and why. Students seem to enjoy kinesthetic activities (7 comments). Comments also show a preference for the visual activities (5 comments).

Multiple choice exercises were also rated as one of the preferred activities (5 comments).

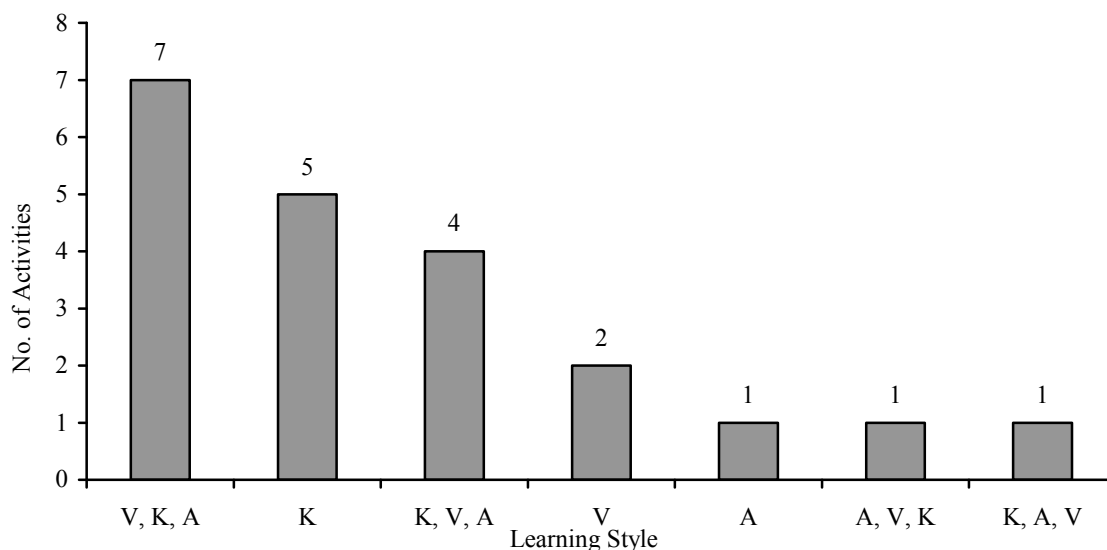


Figure 8. Lesson 3--activities completed by students. Note. V = Visual; K = Kinesthetic; A = Auditory.

The following comments were made:

1. "I liked doing the multiple choice exercises."
2. "All the kinesthetic activities."
3. "All the visual activities."
4. "I liked doing the puzzle."

Again, the question that had interesting results was the one asking students to respond if they believed they were better prepared after having taken part in this lesson.

All participants answered that they did, in fact, believe they were better prepared.

Students were asked to provide their recommendations. Only two recommendations were provided for this unit. Students recommended the need for more individualized attention and the need to be more organized. Their comments were

1. "It's an interesting course. I understand what is going on!"
2. "I hope we continue having classes where I can use my preferred learning style and using technology. I am actually learning something."

Lesson 4--reaction information collection instrument. This instrument was administered to students after they completed Lesson 4. A total of 19 students responded to the Reaction Information Collection Instrument for Lesson 4. On the question where students needed to identify their learning style, 63.16% ($n = 12$) identified themselves as being kinesthetic learners, 31.58% ($n = 6$) identified themselves as being visual learners, and 5.26% ($n = 1$) identified themselves as being auditory learners. Figure 9 shows the results for this question.

In the second question, students were asked to comment on the lesson. Seventeen students commented positively on the lesson. Among the comments there was one that seems to sum up what others had mentioned: "This new way of teaching helped me learn effectively. It seems faster, and it is helping me retain what I have learned. I believe I can use English more after participating in this lesson."

The third question asked students to select the alternative that best described the activities they completed in the order they completed them. Figure 10 shows that students either completed one activity or all three of them. Five students (26.32%) completed visual activities, and 3 students (15.79%) completed kinesthetic activities. None of the students completed auditory activities alone. Eleven students (57.90%) completed all three learning style activities. The fourth question asked students to identify the activity

from their learning style lesson that they enjoyed the most and why. Students' comments show a preference of kinesthetic activities over other activities. Specific activities that were shown to be favorites were the use of PowerPoint and the summarizing exercises.

Some comments were

1. "I liked looking for sentences that summarized the story."
2. "I enjoyed summarizing."
3. "All visual activities. I actually feel I am learning faster once I can see what is happening."
4. "All kinesthetic activities. This way I learned better."

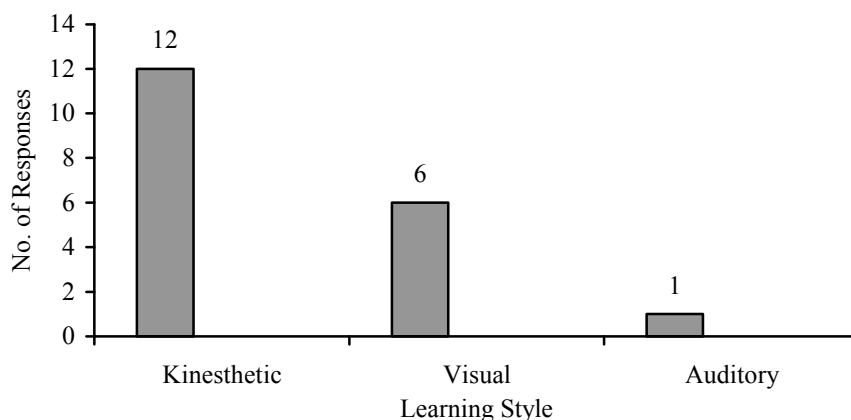


Figure 9. Lesson 4--learning style.

Once again, the question that continuously presented interesting results was the question that asked students to respond if they believed they were better prepared after having taken part in this lesson. All participants responded they did, in fact, believe they were better prepared after participating in the lesson.

Students were asked to provide their recommendations. Recommendations in this last lesson show that students seem to not only be asking for organization, but are more specific when mentioning the need for a calendar. One student mentioned that the

Blackboard server (cetedvirtual.suagm.edu) needed to be faster and more reliable.

This chapter presented statistical methods and measurements as well as qualitative data to show if the inclusion of activities that use technology to accommodate for visual, kinesthetic, and auditory learners will increase students' self-efficacy about learning ESL. It presented the variables and protocols as well as the confounding factors and limitations of the SEQ and how the initial results modified the other tests that had been planned initially. Both qualitative and quantitative data show interesting findings that will be discussed in chapter 5.

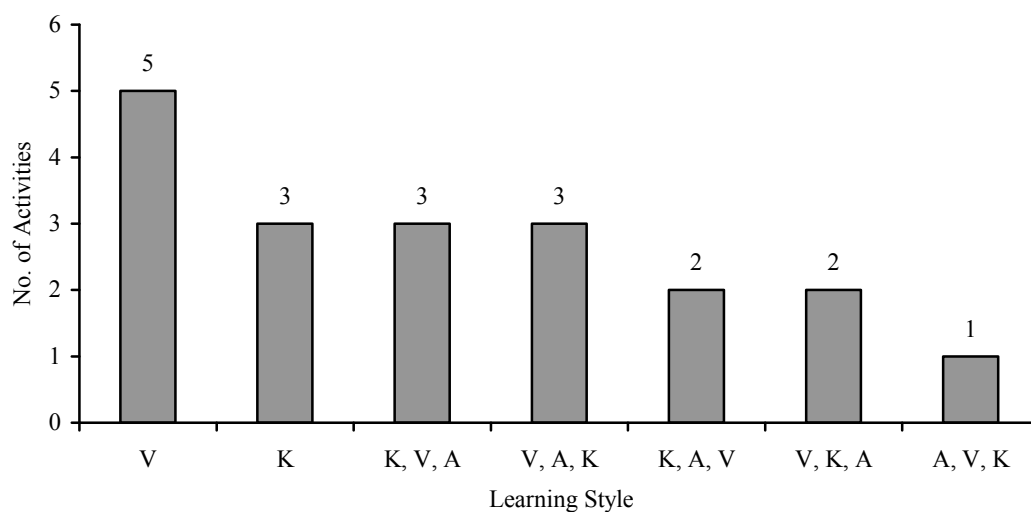


Figure 10. Lesson 4--activities completed by students. Note. V = Visual; K = Kinesthetic; A = Auditory.

Chapter 5: Discussion

The purpose of this study was to investigate the impact of technology used to address learning styles on self-efficacy. Descriptive and inferential statistics were used to quantitatively explicate students' self-efficacy before and after instruction where technology was used to address students' learning styles. In addition, information was also collected qualitatively through an Internet-based survey. It was predicted that students' self-efficacy about learning ESL would increase significantly if the course accommodated their learning styles using technology. It also intended to study students' perceived ability, aspirations, persistence, and perceptions towards learning ESL. Finally, it meant to study the relationships between perceived abilities and persistence and their aspirations and perceptions toward learning ESL.

Results Summary

Learning styles. In regards to students' learning style preference, most of the students' scores on the PEPS show a clear distinctive learning style, whereas a minority of students favor more than one learning style. This was not a surprising finding because "each student (can) use all three modalities, but the brain has selected one which will be the preferred way to input information" (Ross, 1991, p. 6). In-class interaction seemed to show that students who were identified as having more than one preferred learning style decided to complete kinesthetic activities. Again, this is possible because it is theorized that many students, especially adults, are aware of their learning style and can make decisions about them (Ehrman, 1996).

When qualitative data about learning styles were analyzed in Lesson 1, students

who understood they had more than one preferred learning style identified themselves in both categories, but as the lessons progressed, students moved their identification with a particular learning style to one or the other. Results show students shifting into specific styles and not identifying themselves with two or more styles. Surprisingly, in all the qualitative results, students show a natural proclivity or tendency towards the kinesthetic learning style.

Quantitative results of inferential statistics by learning style are problematic in relation to some findings. The small sample size in some of the learning style groups limits the ability to test or to generalize data. It is unlikely that results can be trusted. Visual, visual-kinesthetic, and auditory-kinesthetic groups had one or two students per category. This limits the ability to run tests on these groups. For this reason, tests could only be run for auditory and kinesthetic groups. In general, students scored higher on the posttest SEQ than the pretest SEQ. This supports that all learning style groups scored a higher self-efficacy score in their posttest SEQ. Students rated their self-efficacy higher after going through the activities designed for them by learning style. Also results show that no students of any one learning style scored or benefited more over another. There was change in all groups. The differences in the benefits between one learning style and another were not significant. The majority of students also mentioned that they had completed activities from all three learning styles.

Self-efficacy. In relation to self-efficacy, quantitative data indicate diverse findings. The instrument's reliability to measure the self-efficacy constructs were high. This means that the instrument reliably measures the same construct, in this case, self-efficacy.

The results, on the other hand, demonstrate that the four scales--ability,

persistence, aspiration, and activity perception--that purportedly were present in the SEQ could not be identified. This means that questions based on the individual scales could not be answered. Yet, the instrument did reliably provide valuable information on the overall view of students' complete self-efficacy regarding ESL.

Quantitative data show that students in the experimental group had higher self-efficacy than the control group at the end of the treatment when all scores were examined together. The findings were significant, meaning that this difference was not due to chance, but that this change was due to the treatment.

Regarding the qualitative information, all of the students mentioned they believed they were better prepared in English after participating in the activities. This was a constant finding throughout all the lessons. Comments provided by the students support that they actually perceived the activities and lessons as useful, they aspired to use the skills in the future feeling secure that they could, and they perceived their abilities in learning the language being enriched.

Implications

Although the small sample size per learning style limited the capability of carrying out generalizations, some implications should be discussed. Addressing learning styles seemed to help students have a higher sense of self-efficacy. As the classroom activities were tailored to meet students learning styles, each student had the opportunity of learning in the way that he or she learned best. This could be the reason why no particular learning style group scored significant higher self-efficacy over the others. The fact that many students completed activities for all learning styles should be considered for further research because it may have skewed results.

As described in the first chapter, research has documented that having negative

feelings toward past experiences in language learning will affect the levels of achievement in that subject area (Bean, 1982; Van Tilburg & Dubois 1989). At the research site, most students postpone taking the required English courses until their senior year. They say they do not like learning English, they feel apprehensive of the language, and they doubt their abilities to learn the language. The subject is certainly familiar to them; they have taken 12 years of English in elementary, junior high, and high school, yet most students need to be placed at the basic English level.

This study's findings suggest that students who participate in a classroom where their self-efficacy is enhanced will have the feeling that they can achieve more in English. This study is therefore aligned with the university's goal of improving student satisfaction and achievement in English courses. An indication of students' self-efficacy enhancement can be seen in their comments about how useful the language activities have been as well as the perceived ability to succeed in class and in the world. Students also mentioned carrying out activities from all learning styles, which could be an indication that students spent more time studying the materials and practicing the language.

The use of technology to address learning styles seemed transparent as students mentioned its use and provided recommendations, but they were focused on the contents and on the activities more than on the technology. Results of this study suggest that questioning how a particular kind of technology affects the learning styles of students and using that information in designing a course provide a sound model for practice and that learning styles should be taken into account when teaching with technology. Students' performance when faced with technology is very much tied to their particular learning style preferences (Dille & Mezack, 1991; Gee, 1990).

Echoing the findings of other researchers (Franklin et al., 1997; Gunawardena & Boverie, 1993), this study's results support that the variation in the lessons is essential to maintain students' interests and meet their individual needs. It also echoes researchers in the area of self-efficacy (Huang & Chang, 1996; Mikulecky et al, 1996; Reiff, 1992) that this is an environment that addresses students' learning styles and positively affects students' confidence in learning the language. As Allinson and Hammond (1990) and Barker (1993) noted, educational material that is presented allowing for diverse learning styles produces positive student attitudes.

This study also supported the findings of Ross and Schulz (1999) that stressed that instructors should avoid alienating a certain learning style group by incorporating a number of different teaching strategies into their lessons. The fact that students completed several activities from different learning styles also demonstrates students learning how to use different strategies for learning. This study also supported findings from other researchers by showing that students who are allowed to identify and to work through their preferred learning styles will not be uninterested and negligent in class (Felder & Silverman, 1988; Godleski, 1984; Oxford, 1990; Smith & Renzulli, 1984). They will not do poorly on tests nor get discouraged about the course. They will conclude, on the other hand, that they are good at the subject of the course and keep trying.

This study also supported other research on the role of self-efficacy in second language learning (Barnhardt, 1997). Students seem highly motivated to learn and dedicated more time to study (carrying out many of the learning activities). Students seem to perceive that learning the language is less difficult than they had believed and that they may be able to actually comprehend and to use the language further.

With the results from this study about learning styles and self-efficacy, a possible link may be made between the two. It has been documented that learners are more comfortable processing information by a particular learning style (Blackmore, 1996; Brown, 1987; Dunn & Dunn, 1978; Dunn & Dunn, 1987a; Emanuel & Potter, 1992; Gregorc & Butler, 1984; O'Brien, 1992; Pasch et al., 1995; Price et al., 1977; Ross, 1991; Swyter & Michael, 1982).

According to Matthews (1991),

Students have a more positive attitude towards school and achieve more knowledge and skills when taught, counseled, or advised through their natural or primary style rather than a style that is secondary or undeveloped, particularly when adjusting to a novel and new situation that creates stress such as beginning experiences in higher education. (p. 253)

This ease of learning seems to have had a positive impact on the self-efficacy of the participating students. The results tend to support the tentative assumption, based on the literature, that having centered the students' learning environment on their preferred learning style increases the students' self-efficacy or their beliefs in their learning abilities.

Recommendations

The number of students enrolled in the experimental group (42) severely exceeded the number of computers available (16). A request for 25 working computers had been entered, and the universities' representatives had, in fact, notified the researcher that the lab had exactly 25 computers. Yet, when classes began, 9 computers were out of service. In addition, other students who were not enrolled in the course also used the computer lab while the experimental group was in class. No organizational process was

put in place for these students to come in at a different time. The number of computers that students from other courses were using averaged out to 2 to 3 additional computers. This meant that, on any given day, the students had only 14 or 15 computers available. Students had to share computers according to their learning style. Because the composition of the group was comprised of fewer visual students compared with the number of kinesthetic and auditory students, it was difficult to have an equal number of students per computer. The situation provided more for a collaborative environment, a variable that was not accounted for in the planning of the research study. Although as many times as possible, students were requested to complete some of the tasks individually, most tasks were completed in groups. The collaborative nature of the classroom environment could have accounted also for the phenomenon of students carrying out activities from different learning styles. Further research should look at this question, either accounting for the unexpected variable of collaborative work or avoiding this by controlling the number of students per computer.

The research questions were based on several questions related to the self-efficacy scales that the SEQ purportedly identified. However, as a result of inadequate alpha levels, information was not available about which items belonged to the four respective scales; thus, no clear scales could be identified. Due to the results of the factor analysis, research questions based on the different scales could not be answered. This could have been identified and/or avoided if the SEQ had been piloted before the research began.

Summary

Research has shown that human beings have their own way of learning. Students do not learn as well when that style is thwarted, and teaching in a way that students feel comfortable with might have them change their attitudes and perceptions toward learning

ESL. This method, in turn, affects what they believe they can achieve in learning the language (self-efficacy). This research intended to answer the question, In what ways can technology in an ESL course accommodate visual, kinesthetic, and auditory learners to increase students' self-efficacy about learning the language?

By accommodating for students' differing learning styles, and using the SEQ, it intended to augment students' aspirations in learning ESL, students' persistence in ESL, and students' positive perceptions of activities related to learning ESL. Additionally, it was planned that it would also shed light on students' perceived abilities to perform and their persistence in learning ESL before and after the instructional activities and relationship between students' aspiration and perceptions of ESL instruction.

An SEQ developed by Mikulecky et al. (1996) for the area of adult literacy and ESL was administered to all students to identify their attitudes and perceptions toward learning ESL. It is an instrument used to gather information about students' perceptions of their language learning abilities. At the beginning of the semester, the experimental group was also administered the PEPS (Price, 1996) in their native language. Their preferred learning styles were identified, and results were discussed individually with students. PEPS is a comprehensive approach to the identification of how adults prefer to function, to learn, to concentrate, and to perform in their occupational or educational activities. It looks at immediate environment, emotionality, and sociological and physical needs. The instructor taught the course incorporating the activities developed; varied activities were created according to the content and the learning style integrating the use of technology. Students in the experimental group used the activities according to the learning style identified in the PEPS. If students showed natural proclivities in more than one area, they could participate in several learning style activities in two or all areas.

After each activity, basic reaction information was collected. At the end of the treatment period, all students completed the same SEQ they completed at the beginning of the course. Results were reported quantitatively. Statistical analysis of the SEQ pre- and posttest were completed to identify significant differences.

In regard to students' learning style preference, most of the students' scores on the PEPS showed a clear distinctive learning style, whereas a minority of students showed to favor more than one learning style equally. In-class interaction seemed to show that students who were identified as having more than one preferred learning style decided to complete kinesthetic activities. When qualitative data about learning styles were analyzed in Lesson 1, students who understood they had more than one preferred learning style identified themselves in both categories, but as the lessons progressed, students moved their identification with a particular learning style to one or the other. Results showed students shifting into specific styles and not identifying themselves with two or more styles. In all the qualitative results, students showed a natural proclivity or tendency towards the kinesthetic learning style.

Quantitative results of inferential statistics by learning style is problematic in relation to some findings. Visual, visual-kinesthetic, and auditory-kinesthetic groups had one or two students per category. This supports the idea that all learning style groups scored a higher self-efficacy score in their SEQ posttest. Students seemed to rate their self-efficacy higher after going through the activities designed for them by learning style. Also, results showed that no one learning style scored or benefited more over another. The majority of students also mentioned that they had completed activities from all three learning styles.

Having students' learning styles addressed seemed to help students have a higher

sense of self-efficacy. As the classroom activities were tailored to meet students learning styles, each student had the opportunity of learning in the way that he or she learned best. This could be the reason why no particular learning style group scored significant higher self-efficacy over the others. Students also mentioned carrying out activities from all learning styles, which could be an indication that students spent more time studying the materials and practicing the language.

The study supports that learning styles should be taken into account when teaching with technology. The fact that students completed several activities from different learning styles also demonstrates students learning how to use different strategies to learn. Students seemed highly motivated to learn and provided more time to study (carrying out many of the learning activities). This ease of learning seemed to have had a positive impact on the self-efficacy of the participating students. The results tend to support the tentative assumption, based on the literature, that having centered the students' learning environment on their preferred learning style increased the students' self-efficacy or their beliefs in their learning abilities.

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Appendix A
Self-Efficacy Questionnaire

Self-Efficacy Questionnaire

	Disagree a lot 1	Disagree a little 2	Not sure 3	Agree a little 4	Agree a lot 5
1. I do a good job of participating in class discussion					
2. I enjoy learning					
3. I am not very good at learning wrting skills.					
4. I am able to keep reading even when there are other interesting things to do.					
5. One of my main goaks is to be much better at writing by next year.					
6. I have no problem learning reading skills.					
7. My problem is that I cannot get down to reading and writing when I should.					
8. Sometimes I think I am no good at writing.					
9. When I decide to write something. I go ahead and do it.					
10. Doing well in learning is not one of my main goals in life.					
11. I think that I am pretty good at reading.					
12. I avoid trying to read new articles when they look difficult for me.					
13. I find a lot of writing assignments hard to do.					
14. When I decide to read something, I go ahead and do it.					
15. I remember the important points in reading very well.					
16. I feel insecure about my ability to write clearly.					
17. One of my main goals is to be much better at reading next year.					
18. I think I am pretty good at my writing work.					
19. I can motivate myself to					

	Disagree a lot 1	Disagree a little 2	Not sure 3	Agree a little 4	Agree a lot 5
read.					
20. My writing work worries me.					
21. I find a lot of readings hard to understand.					
22. It is difficult for me to concentrate on my learning task.					
23. I am useless at school work.					
24. I enjoy writing.					
25. I learn new words easily.					
26. If I can't understand a reading the first time, I keep trying until I can.					
27. My reading assignments worry me.					
28. Reading is boring.					
29. I can study well when there are other interesting things to do.					
30. Sometimes I think that I am no good at reading.					

Appendix B

SEQ Scales

SEQ Scales

Scale	Item Numbers
Ability	1,3,6,8,11,13,15,16,18,21,23,25, 30
Activity Perception	2,20,24,27,28
Persistence	4,7,9,12,14,19,22,26,29
Aspiration	5,10,17

Appendix C

Productive Environmental Preferences Survey

Productive Environmental Preferences Survey

Inventario de Estilos De Aprendizaje

Versión al español de

(Spanish Version)

Instrucciones

Este inventario contiene varias oraciones acerca de cómo le gusta aprender a las personas. Lee cada una y aplícalas a ti mismo (a). Decide si la mayoría de las veces estás de acuerdo o no con lo que dice la oración. Si estás de acuerdo contesta 5. Si no estás de acuerdo contesta 1.

Tu respuesta debe ser inmediata, es decir, contesta lo primero que se te ocurra al leer la oración. No escribas en este folleto. Tu respuesta debe ir en la hoja de contestaciones. Recuerda que debes contestar cada oración con Cierto o Falso según se aplique a tu caso.

Antes de comenzar a contestar el inventario escribe tu nombre y la información adicional requerida en la hoja de contestaciones.

1	2	3	4	5
☹		☺		☺
Totalmente en desacuerdo	En desacuerdo	Neutral	De acuerdo	Totalmente de acuerdo

		1	2	3	4	5
		☹		☺		☺
1.	Prefiero estudiar con mucha luz.	1	2	3	4	5
2.	Me gusta estudiar solo (sola.)	1	2	3	4	5
3.	Resulta más fácil para mí concentrarme cuando estudio tarde en la noche.	1	2	3	4	5
4.	Me gusta dibujar o hacer diagramas mientras estudio.	1	2	3	4	5
5.	Con frecuencia tienen que recordarme ciertas tareas o asignaciones que debo completar.	1	2	3	4	5
6.	La tarea que más me gusta hacer, prefiero hacerla con un experto en el área.	1	2	3	4	5
7.	Puedo pensar mejor acostado que sentado.	1	2	3	4	5
8.	Prefiero temperaturas frescas cuando necesito concentrarme.	1	2	3	4	5
9.	Puedo ignorar los ruidos cuando estoy estudiando.	1	2	3	4	5
10.	La gente se pasa recordándome las cosas que debo hacer.	1	2	3	4	5
11.	Resulta difícil concentrarme cuando tengo calor.	1	2	3	4	5
12.	La tarea que más me gusta hacer, prefiero hacerla con dos o más personas.	1	2	3	4	5
13.	Prefiero estudiar en áreas donde hay poca luz.	1	2	3	4	5
14.	Cuando me concentro me gusta sentarme en una silla cómoda o en un sofá.	1	2	3	4	5
15.	Generalmente termino lo que comienzo.	1	2	3	4	5
16.	Las cosas que mejor recuerdo son aquellas que escucho.	1	2	3	4	5

		1	2	3	4	5
		☹		☺		☺
17.	Disfruto las tareas que me permiten tomar descansos.	1	2	3	4	5
18.	Puedo trabajar con más efectividad en la tarde que en la mañana.	1	2	3	4	5
19.	Me gusta tomar meriendas mientras estoy concentrándome.	1	2	3	4	5
20.	Cuando tengo mucho trabajo que hacer me gusta realizarlo con varios colegas.	1	2	3	4	5
21.	Generalmente los ruidos y los sonidos extraños no me permiten concentrarme.	1	2	3	4	5
22.	A menudo olvido tareas que dije iba a realizar.	1	2	3	4	5
23.	Tomo muchas notas cuando asisto a una conferencia, para ayudarme a recordar.	1	2	3	4	5
24.	Me gusta trabajar o analizar una asignación con otra persona.	1	2	3	4	5
25.	Prefiero las temperaturas frescas cuando estoy estudiando.	1	2	3	4	5
26.	El trabajo que más me gusta hacer, me gusta hacerlo con varias personas.	1	2	3	4	5
27.	Me concentro mejor después de las 4:00 PM.	1	2	3	4	5
28.	Las cosas que mejor recuerdo son aquellas que leo.	1	2	3	4	5
29.	Generalmente completo las tareas que comienzo.	1	2	3	4	5
30.	Puedo concentrarme mejor cuando estoy sentado que cuando estoy acostado.	1	2	3	4	5
31.	Me gusta estudiar o trabajar con una persona con autoridad.	1	2	3	4	5

		1	2	3	4	5
		☹		☺		☺
32.	Estudio mejor temprano en la mañana.	1	2	3	4	5
33.	Puedo hacer mucho, cuando estudio por mi cuenta.	1	2	3	4	5
34.	Cuando estudio, enciendo todas las luces.	1	2	3	4	5
35.	Prefiero que otros compartan conmigo las responsabilidades de las tareas que realizamos.	1	2	3	4	5
36.	Realmente disfruto la televisión.	1	2	3	4	5
37.	Me gusta que un maestro o un supervisor delimite las tareas que debo completar.	1	2	3	4	5
38.	Cuando me concentro, me gusta sentarme en una silla con espaldar recto.	1	2	3	4	5
39.	Estudio mejor cuando lo hago por mi cuenta.	1	2	3	4	5
40.	Puedo recordar las cosas mejor cuando las estudio por la noche.	1	2	3	4	5
41.	Recuerdo mejor las cosas que leo de un libro o una revista.	1	2	3	4	5
42.	Siempre termino las tareas que comienzo.	1	2	3	4	5
43.	Si tengo que aprender algo nuevo prefiero aprenderlo escuchándolo de un disco, cassette o de una conferencia.	1	2	3	4	5
44.	Estoy más alerta(a) al anochecer (entre las 6:00 y 7:00 PM)	1	2	3	4	5
45.	El trabajo que más me gusta hacer, me gusta realizarlo con un grupo de personas.	1	2	3	4	5
46.	Me siento incómodo(a) cuando trabajo o trato de estudiar en	1	2	3	4	5

		1	2	3	4	5
		☹		☺		☺
	un cuarto caluroso.					
47.	Prefiero que los maestros o supervisores fijen fechas límites para mi trabajo.	1	2	3	4	5
48.	Cuando estoy concentrándome me gusta comer.	1	2	3	4	5
49.	Prefiero completar una tarea antes de comenzar otra nueva.	1	2	3	4	5
50.	Me resulta difícil iniciar una nueva tarea sin haber terminado la anterior.	1	2	3	4	5
51.	Realmente disfruto las películas.	1	2	3	4	5
52.	Deben recordarme el hacer cosas que dije que iba a hacer.	1	2	3	4	5
53.	Estudio mejor bajo luces tenues.	1	2	3	4	5
54.	Prefiero que los maestros o supervisores se mantengan alejados hasta que termine mi trabajo.	1	2	3	4	5
55.	Continúo esforzándome por completar una tarea aunque parezca que no voy a tener éxito.	1	2	3	4	5
56.	Me gusta aprender algo nuevo oyendo una grabación o asistiendo a una conferencia.	1	2	3	4	5
57.	Siento que puedo auto-motivarme.	1	2	3	4	5
58.	El trabajo que más me gusta hacer, prefiero hacerlo solo.	1	2	3	4	5
59.	El comer algo me distraería cuando estoy estudiando.	1	2	3	4	5
60.	Mi labor mejora cuando sé que mis asignaciones van a ser corregidas.	1	2	3	4	5

		1	2	3	4	5
		☹		☺		☺
61.	Prefiero escuchar música mientras trabajo.	1	2	3	4	5
62.	Me mantengo realizando una tarea hasta que la termino, aunque me disguste lo que tengo que hacer.	1	2	3	4	5
63.	Aprendo mejor cuando estoy involucrado directamente con lo que estoy haciendo.	1	2	3	4	5
64.	Siempre hago lo mejor posible.	1	2	3	4	5
65.	Prefiero aprender una nueva tarea realizándola.	1	2	3	4	5
66.	A menudo leo bajo luz tenue.	1	2	3	4	5
67.	Si tengo que aprender algo nuevo me gusta aprenderlo leyendo.	1	2	3	4	5
68.	Prefiero que alguien me provea un bosquejo sobre como realizar una tarea.	1	2	3	4	5
69.	Prefiero comenzar a estudiar en la mañana antes que en el atardecer.	1	2	3	4	5
70.	Continuamente cambio de posición en mi silla.	1	2	3	4	5
71.	Las cosas que mejor recuerdo son aquellas que oigo.	1	2	3	4	5
72.	Me gusta que los instructores o supervisores me den reconocimiento por los esfuerzos que realizo.	1	2	3	4	5
73.	Aprendo mejor cuando leo que cuando escucho a alguien.	1	2	3	4	5
74.	Puedo hacer más cosas en la tarde que en la mañana.	1	2	3	4	5
75.	Puedo ignorar la mayor parte del ruido cuando trabajo.	1	2	3	4	5

		1	2	3	4	5
		☹		☺		☺
76.	Realmente me gusta construir cosas.	1	2	3	4	5
77.	Prefiero trabajar bajo una lámpara con el resto del salón con luz tenue.	1	2	3	4	5
78.	Si como, bebo o fumo, lo hago luego de terminar la tarea.	1	2	3	4	5
79.	Recuerdo mejor las cosas cuando las estudio al atardecer (entre 5:00 ó 6:00 PM.)	1	2	3	4	5
80.	Si tengo que aprender algo nuevo, me gusta aprenderlo de una película.	1	2	3	4	5
81.	Me siento mejor cuando mi esposo (o esposa), compañero (a), o profesor me elogian por haber hecho bien mi trabajo.	1	2	3	4	5
82.	Prefiero un ambiente fresco cuando trato de estudiar.	1	2	3	4	5
83.	Me resulta difícil ignorar los sonidos (música, televisión, conversación), mientras estudio.	1	2	3	4	5
84.	Prefiero aprender por experiencia que mediante lectura.	1	2	3	4	5
85.	Me gusta que me elogien por una tarea bien hecha.	1	2	3	4	5
86.	Me resulta difícil mantenerme sentado en un mismo lugar por largo tiempo.	1	2	3	4	5
87.	Me gusta beber líquidos mientras trabajo.	1	2	3	4	5
88.	Disfruto cuando hago experimentos.	1	2	3	4	5
89.	Si una tarea me resulta difícil, tiendo a perder el interés en ella.	1	2	3	4	5

		1	2	3	4	5
		☹		☺		☺
90.	Disfruto aprendiendo cosas nuevas.	1	2	3	4	5
91.	Puedo estar sentado en un mismo sitio por largo tiempo.	1	2	3	4	5
92.	Puedo concentrarme mejor durante la tarde.	1	2	3	4	5
93.	Prefiero estudiar con alguien que realmente conozca el material.	1	2	3	4	5
94.	A menudo cambio de posición mientras estoy trabajando.	1	2	3	4	5
95.	Trabajaría mejor, si pudiera comer mientras estudio.	1	2	3	4	5
96.	Si puedo ir paso por paso en el desarrollo de una tarea, recuerdo lo que he aprendido.	1	2	3	4	5
97.	Aprendo mejor cuando leo las instrucciones, que cuando alguien me dice lo que debo hacer.	1	2	3	4	5
98.	Empiezo a sentirme bien despierto después de las diez de la mañana.	1	2	3	4	5
99.	A menudo finalizo mis tareas escolares en la cama o en el sofá.	1	2	3	4	5
100	A menudo me abrigo cuando estudio en casa.	1	2	3	4	5

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Appendix D

Lesson Plans

Lesson Plans

Using technology in an ESL course to accommodate visual, kinesthetic and auditory learners to affect students self-efficacy about learning the language

Lesson # 1

VERB BE

Course Time: 90 minutes each class up to 2 classes PER WEEK Date: _____

Course Number and Title: English 101- Basic English

Level: Basic First Year College ESL

Lesson Created by: Carmen L. Lamboy

a) Unit Title/Skill or Chapter:

“Please Call me Chuck” – Verb Be

b) Learning Objectives:

a. English

- i. First Year Basic ESL College Students will write the verb “Be” completing sentences within a conversation.
- ii. Given model sentences, the students will re-write sentences using the correct form of the verb "Be".
- iii. Supplied pronouns and nouns, students will write a short paragraph about their family using the verb be.

c) Overview of Featured Technology and Materials:

a. Technology and Learning Style

- i. Use appropriate technology according to their learning style.
 1. Visual learner – Pictures on computers. Text on computer screen. Listening to selection being read (optional). PowerPoint Presentation with animation or video clip on

the verb “Be”. Type using keyboard. Using the mouse. Word Processor or pre-arranged form where students write a paragraph and submit electronically to professor or e-mail.

2. Auditory learner – Pictures on computers. Text on computer screen. Listening to selection being read. (Pictures are optional). Listen to mini lecture on the verb be accompanied with text where verb be and contraction are in different colors. Use the mouse to complete an auditory matching exercise where they listen to verb be and match it with another sentence that uses contractions of verb be. Listen to conversation and type or drag and drop, cloze exercises to complete conversations using the verb “Be”. Word Processor or pre-arranged form where students write a paragraph and submit electronically to professor or e-mail.

3. Kinesthetic Learner – Listen to a conversation and see text which they control by clicking and moving pictures around. Use a mouse to click on diagrams that students will follow as explanations are shown of verb "Be" and how the contractions are formed. Use the mouse to complete matching exercises using the verb "Be"; sentences show up and students click on answers or type. Use a mouse to access drop down menus to fill in blanks of a dialog. Word Processor or pre-arranged form where students write a paragraph and submit electronically to professor or e-mail.

d) Instructional Activities:

a. Introducing the Activity or Exploration: (This activity is low-tech, but directed towards all learners: auditory, kinesthetic, and visual)

- i. Have students sit or stand in a circle.
- ii. Use a tennis ball or paper ball. Explain that you are going to say your name and a word that describes you and then you are going to throw the ball at someone else, who in turn will say his/her name and then something interesting about him or herself or a word

that describes him or her. (This is good for kinesthetic learners.) Check comprehension and make sure everyone understands what is going to be done. (Good for auditory learners.)

- iii. When you say your name use the phrase: “**My name is _____ . I am _____.**” (You might want to write the phrase on the board, or have it up on a slide so everyone can see. This is good for visual learners.)
- iv. Say your name and your description and throw the ball to a student.
- v. This student will in turn do the same and throw the ball to another student. Elicit and help students to use the phrase you used.
- vi. Continue until all students have participated.
- vii. Once everyone has participated, play the game again. This time explain that you are going to say the name of the student you are throwing the ball to. Throw the ball to a student and say his/her name. Use the phrase: “**His name is _____.**” (You might want to write the phrase on the board, or have it up on a slide so everyone can see.)
- viii. Go around the classroom until all students participate.
- ix. Tell students that the phrases: “**My name is _____ . I am _____.**” “**His name is _____.**” Use the present tense of the verb “Be” and that we are going to study this in today’s class.
- x. Direct students to the computers and to the appropriate program/URL to be used.
(Have computers ready on the first page beforehand)

b. Conceptualization or Learning Activity:

Learner	Activity
Visual	1. Students log in with their unique username and password into the Blackboard Web site.
	2. Students select the Unit on the Verb “Be”.
	3. Students will select visual lesson.
	4. Students will be presented with a written dialog/ conversation that uses verb “Be”. Verb “Be” can be in blue or another color. Transcript of dialog can be seen on T-1A
	5. On the top of the conversation students will have pictures of the people who are talking.
	6. Text will be presented slowly, but students can control how slow, fast or stable they want the text to presented.
	7. Students may have the option of turning sound on or off and listening to the conversation being read. If students select the sound option to be on, text shall be synchronized as the text is read to them.
	8. Students will be presented a PowerPoint presentation with video clip or animation about the verb “Be”. Material in the presentation will consist of contents in sheet T-1B.
	9. Students will be asked to go back to the dialog they had read and click on all the verb “be” they can find in the conversation
	10. Students will be presented with sentences without contractions in the verb “Be” and vice-versa and they will be asked to re-write them correctly. Exercises can be examined on Sheet T-1C
	11. Students will be presented with a selection where the verb “Be” is completely missing and they will fill in the blanks. (Cloze passage) Selection can be examined in T-1D.
11. If time permits and students complete less than half of the exercises correctly, they can re-do exercise or go back and review lesson using same lesson activities or another preferred modality.	
Auditory	1. Students log in with their unique username and password into the Blackboard Web site.
	2. Students select the Unit on the Verb “Be”.
	3. Students will select auditory lesson.
	4. Students will be presented with a dialog/ conversation. They listen to the conversation. Transcript of dialog can be seen on T-1A

	5. On the top of the conversation students will have pictures of the people who are talking.
	6. Students can have the option of seeing the text be presented slowly, or students can control how slow, fast or stable they want the text to be presented. They can also select not to see the text.
	7. Students may have the option of turning text on or off as they listen to the conversation being read. If students select the text option to be on, text shall be synchronized as the text is read to them.
	8. Students will be presented a PowerPoint presentation with audio clip, or mini “lecture” about the verb “Be”. Material in the presentation will consist of contents in sheet T-1B.
	9. Students will be asked to go back to the dialog they had read and click on all the verb “Be” they can find in the conversation
	10. Students will be presented with blank boxes in two columns. Students click on one box, and they listen to the sentences being read. They will listen to sentences from Column A. If the sentence does not have a Verb “BE” contraction, they need to click on sentences on column B that uses the same Verb “Be” but with a contraction. Both pronouns and verb “Be” must match. Same exercises can be provided vice-versa. Exercises can be examined on Sheet T-1C
	11. Students will be presented with a selection where the verb “Be” is completely missing. They will listen to the selection being read. Sentence by sentence, students listen and they will fill in the blanks. (Cloze passage) Selection can be examined in T-1D.
	12. If time permits and students complete less than half of the exercises correctly, they can re-do exercise or go back and review lesson using same lesson activities or another preferred modality.
Kinesthetic	1. Students log in with their unique username and password into the Blackboard Web site.
	2. Students select the Unit on the Verb “Be”.
	3. Students will select kinesthetic lesson.
	4. Students will be presented with a written dialog/ conversation. Transcript of dialog can be seen on T-1A

	5. On the top of the conversation students will have pictures of the people who are talking.
	6. Students click on icons or arrows or pictures to go through the conversation and to control the pace of how the text shows up. Text will show up and students can listen to it be read. Have color of words change as words are pronounced.
	7. Students may have the option of turning sound on or off and listening to the conversation being read. If students select the sound option to be on, text shall be synchronized as the text is read to them.
	8. Students will be presented a PowerPoint presentation with clickable diagrams about the verb “Be”. Material in the presentation will consist of contents in sheet T-1B.
	9. Students will be asked to go back to the dialog they had read and click on all the verb “be” they can find in the conversation
	10. Students will be presented with a table showing the verb “BE”. Sentences come up and students complete them by typing in the correct answers. If the student writes the contraction and it is correct a box pops up that says it is correct and also shows the version without the contraction. If the student writes the verb “Be” without the contraction and it is correct but can be written using a contraction also, then a pop up box should say it is correct and prompt him/her to write it with the contraction by asking: What other way can we write this? Exercises can be examined on Sheet T-1C.
	11. Students will be presented with a selection where the verb “Be” is completely missing and they will fill in the blanks. (Cloze passage) Selection can be examined in T-1D.
	12. If time permits and students complete less than half of the exercises correctly, they can re-do exercise or go back and review lesson using same lesson activities or another preferred modality.

b. Closure:

- i. Teacher supplies students with pronouns and nouns and asks them to write a short paragraph where they talk about their family using the verb “BE”. The teacher will provide 10 words and the student should use at least seven of them.

1. Topic: My Family

a. Nouns and Pronouns

i. He

ii. She

iii. They

iv. I

v. We

vi. My Family

vii. Brother/Sister(optional)

viii. Father

ix. Mother

x. Grandfather/Grandmother

ii. Ask them to write it on a page and submit directly to the teacher through e-mail. Be sure to provide a form where they can include their name, learning style, and student number.

e) Evaluation or Assessment:

a. Have students complete a Reaction Information Collection Instrument at the end of the lesson. (See T-1E)

**T-1A
Transcript for Dialog
Lesson 1 Step 4
Verb BE**

It is Sunday afternoon. It's the first day of the new semester. Timothy Smith, an American student from California is in his dormitory room. His new roommate, Pedro Rivera a Puerto Rican student walks in. They're meeting for the first time.

- Timothy: Hi! Are you Pedro Rivera? I'm your roommate Timothy.
- Pedro: Yes, I'm Pedro. Pleased to meet you.
- Timothy: I'm pleased to meet you too. We're the first ones in the dorm. I'm so glad you're here.
- Pedro: I'm so tired! Is that my bed?
- Timothy: Yes. That's your bed and that's your desk. These shelves are for your books.
- Pedro: Thanks. Wow! This room is big. I thought it would be smaller.
- Timothy: So, where are you from?
- Pedro: I'm from Carolina, Puerto Rico.
- Timothy: Wow a tropical island! Is all your family there?
- Pedro: My parents, grandparents and two brothers are in Puerto Rico. My sister's in Texas.
- Timothy: You have a very big family. I am an only child. I'm from California.
- Pedro: It has to be lonely sometimes. Is this your first trip away from home?
- Timothy: Yes. I miss my parents already.
- Pedro: Well, we'll have fun and learn a lot; we are in a great school!

T-1B

Material for visual presentation (PP)

(Material included here comprises the content of the software for Lesson 1)

Verb BE

Review of pronouns:

A pronoun takes the place of the noun. Remember that subject pronouns usually take the place of names.

Example: Ana = she; Tommy = he
 Andrea is from Peru. = She is from Peru.

Carlos is a doctor. = He is a doctor.

Here is the Simple Present of the verb "Be":

To be	Verb be Present Tense
I (First Person)	am
You (Second Person)	are
She, He It (Third Person)	is
We (First Person Plural)	are
You (Second Person Plural)	are
They(Third Person Plural)	are

The Verb Be

The verb "Be" is irregular and it is often contracted. We use it to talk about age, nationality, job and status.

I'm (I am) Italian.
You're (You are) my boss.
He's (He is) fifty.

She's (She is) married.
They're (They are) Americans.
We're (We are) both students.

T-1C Exercises Lesson 1 Step 9 Verb BE

Item	Reply
1. I am strong.	I'm strong.
2. They're nice.	They are nice.
3. I am tired.	I'm tired.

4.	She is very busy.	She's very busy.
5.	It's ten o'clock.	It is ten o'clock.
6.	I am very happy.	I'm very happy.
7.	The book is on the shelf.	The book's on the shelf.
8.	Patrick and his girlfriend are together again.	They're together again.
9.	I'm a lawyer.	I am a lawyer.
10.	She is here now.	She's here now.
11.	We're near now.	We are near now.
12.	It's empty.	It is empty.
13.	You are tall.	You're tall.
14.	He's my friend.	He is my friend.
15.	They are going to the theater.	They're going to the theater.
16.	It is Saturday morning.	It's Saturday morning.
17.	My sister's in New York.	My sister is in New York.
18.	You're a student at the same university I am.	You are a student at the same university I am.
19.	My parents are in Peru.	They're in Peru.
20.	She is single.	She's single.

Am	is	are
'm	's	're

For Kinesthetic learners the above table will be shown and the sentence will be incomplete.

I _____ a lawyer.

If they write: **I am a lawyer**. It will prompt the student to write it using the contraction:

I'm a lawyer. If they write it with the contraction next exercise will appear. This only if it can be completed with contraction!!!

T-1D
Selection for Cloze Passage
Lesson 1 Step 10
Verb BE

Carmen Rivera is Pedro's sister. She is from Puerto Rico. Right now, she is at the door of an American family in Texas, Mr. and Mrs. Bucker. She has just arrived from the airport and the taxi driver is leaving her at the house. Carmen will be staying for a year at the Bucker's house in order to learn more English. They are meeting for the first time outside the house. Carmen is excited and a little scared.

Mrs. Bucker: Hello! You must be Carmen. I am Maryellen Bucker and this is my husband Mike.

Carmen: Hello, Mrs. Bucker. Pleased to meet you Mr. Bucker.

Mr. Bucker: Pleased to meet you too! Welcome to Texas!

Carmen: Thank you. (To the driver) Thank you for your help.

Driver: You're welcome. Enjoy your stay in Texas

Mrs. Bucker: Come on in. You should be tired and hungry. Would you like a soda?

Carmen: Yes, please. Your house is beautiful.

Mrs. Bucker: Thank you. Come this way. Your bedroom is upstairs.

Carmen: May I please call my parents first. My family is probably worried about me. They are not used to having me stay away from home. They're always concerned.

Mrs. Bucker: Of course. The telephone is in the living room.

Carmen: Thank you. How will I pay for the call?

Mr. Bucker: Oh, don't worry about that. When we get the phone bill, we will let you know. Just make your call.

Carmen: I do not know what time it is in Puerto Rico right now. You're about two hours ahead, right?

Mr. Bucker: Yes we are.

T-1E
Reaction Information Collection Instrument
Verb "BE"(Used for all four lessons)

Username _____

Check your learning style according to the PEPS Test

_____Auditory _____Kinesthetic _____ Visual

1. Please use this space to comment on the lesson.

2. Please list in order completed (1,2,3) those activities you completed.
 - a. _____ Auditory
 - b. _____ Kinesthetic
 - c. _____ Visual

3. What activity from your learning style lesson did you enjoy the most? Why?

4. Do you believe you are better prepared now that you have taken part in this lesson? _____Yes _____No

5. Please provide recommendations in the space provided.

Using technology in an ESL course to accommodate visual, kinesthetic and auditory learners to affect students self-efficacy about learning the language

Lesson # 2

COMPARISON WITH ADJECTIVES VOCABULARY DEVELOPMENT

Course Time: 90 minutes each class up to 2 classes PER WEEK Date: _____

Course Number and Title: English 101- Basic English

Created by: Carmen L. Lamboy

Level: Basic First Year College ESL

Learning Objectives:

I. Unit Title/Skill or Chapter: Comparison with Adjectives –Vocabulary Development

II. Learning Objectives:

a. English

- i. First year Basic ESL College Students will practice spelling and meaning of clothing and jewelry related articles as vocabulary items.
- ii. Students will express preferences and make comparisons using the comparative form of adjectives.
- iii. Given dialogs, the student will answer questions by using the correct comparative form of the adjective.
- iv. Students will read a selection and answer questions using the comparative form of adjectives and vocabulary terms.

III. Overview of Featured Technology and Materials:

A. Technology and Learning Style

i. Use appropriate technology according to their learning style.

1. Visual learner – Pictures on computer. Text on computer screen. Listening to vocabulary. PowerPoint Presentation with animation or video clip on comparison of adjectives. Pictures on vocabulary items (articles of clothing and jewelry). Seeing “flashcards” Playing “Hangman” Type using the keyboard. Using the mouse.
2. Auditory learner – Pictures on computer. Text on computer screen. Listening to vocabulary. (Pictures are optional). Pictures on vocabulary items (articles of clothing and jewelry), using the mouse they click on the article and they listen to the vocabulary term being pronounce as the word comes up and also the Spanish translation. Listen to mini “lecture” on comparison of adjectives accompanied by text where they can see the way the comparative of adjectives are formed. Use the mouse to mark words they hear in a Bingo card game. Listen to conversation. Use the keyboard and listen to conversations they hear. Have students look at visuals and listen to questions asked. Have them complete sentences by typing the correct form of the adjective.
3. Kinesthetic learner – Pictures on computer. Text on computer screen. Listening to vocabulary. (Pictures are optional). Pictures on vocabulary items (articles of clothing and jewelry), using the mouse they click on the article and they listen to the vocabulary term being pronounce as the word comes up and also the Spanish translation. Students complete a crossword puzzle on the computer, using mouse and keyboard. Use mouse to complete drag and drop exercises. Type on keyboard to complete sentences or answer questions.

IV. Instructional Activities

a. Introducing the activity or Exploration: (this activity is controlled by the teacher)

- i. Students will be divided into three groups.
- ii. Tell them they need to decide the order in which they are to participate, but that they must all participate.
- iii. If groups are not even, teacher may select a student to control the game board (preferably a kinesthetic student) or to keep score (auditory student)
- iv. Tell students they are going to play Jeopardy. Go over the instructions of the game with the students and make sure they understand them. (auditory learner) You can have the instructions available on an overhead transparency and/or handout. (Visual learners)
 - i. Tell them they will be given the answer, and they must guess the correct question. After a player has selected a tile, the board will clear and an answer for that tile will appear. Once a student reads the answer, he or she has 20 seconds to provide the question. If he or she does not answer the next team will have the chance to respond. This team must be ready to respond immediately after the first team's no-response. The question that is not guessed correctly after two opportunities will be eliminated from the game.
 - ii. The timer begins counting down as soon as answer is read once by the teacher.
 - iii. If the response is incorrect the team will be deducted the dollar value from their score. (Negative scores are possible.)
 - iv. A player may PASS a question to the other team. Passing a question allows the team NOT to lose dollar value. There is no score or penalty for passing.
 - v. LOSING CONTROL OF THE BOARD – If a team responds incorrectly, or does not respond in the allotted time, the team loses control of the board. If the other team answers correctly, control of the board will pass to them. If the other team answers incorrectly, the third team receives control of the board. A team can regain

control of the board by answering a question correctly.

vi. The categories for this game are related to articles of clothing. This game will help the teacher explore how much vocabulary students have about articles of clothing, jewelry and accessories.

vi. It is a great game to be played at the end of the unit as well. (Changing the answers and questions)

viii. Using the PowerPoint Jeopardy template go through the game.

ix. Make sure all students participate. Once finished, have students go to their computers and to the appropriate program/lesson/URL (Have computers ready on the first page before hand.)

b. Conceptualization or Learning Activity:

Learner	Activity
Visual	1. Students log in with their unique username and password into the Blackboard Web site.
	2. Students select the Unit on Comparison with Adjectives.
	3. Students will select Visual lesson.
	4. Presenting Vocabulary a. Have flashcards show up where the vocabulary item and a picture of the item show up. (List of vocabulary words can be in T-2A). b. When presenting the fabrics and materials, show the pictures (articles made out of the material) and have the complete phrase pronounced. (T-2E)
	5. Next, have students write the words. Show students the pictures of the items and have them type the vocabulary word. Mix articles and the materials they are made of.

	<p>6. Present students with adjectives and their translation in Spanish. (List of vocabulary words can be examined in T-2A). Use same flashcard technique. Present the adjective in a sentence. Have the adjective in another color and have them click on the adjective and the Spanish translation will show up.</p>
	<p>7. Students Play Hangman using the vocabulary terms presented. (items and adjectives) (For samples of phrases and sentences see T-2H)</p>
	<p>8. With the vocabulary items, present students with sentences and pictures where items are compared using comparative adjectives. Have pictures show the difference between the two. Illustrating the differences. Include explanations of how to form the comparative. (See T-2H for contents and sentences)</p>
	<p>9. Present students with dialogs and pictures. Have students complete the sentences using the correct pattern of the comparative form or use the adjective in its positive form. (Content of exercises can be examined in T-2C)</p>
	<p>10. If time permits and students complete less than half of the exercises correctly, they can re-do exercise or go back and review lesson using the same lesson activities or another preferred modality.</p>
Auditory	<p>1. Students log in with their unique username and password into the Blackboard Web site.</p>
	<p>2. Students select the Unit on Comparison with Adjectives</p>
	<p>3. Students will select auditory lesson.</p>
	<p>4. Presenting Vocabulary-</p> <p>a. Have flashcards show up where the vocabulary item and a picture of the item show up. (List of vocabulary words can be in T-2A).</p> <p>b. When presenting the fabric and materials show the pictures of the articles (as made out of the material) and have the phrases be pronounced. (Contents can be examined in T-2E).</p>
	<p>5. Next, have students write the words. Have students listen to the word and have them type the vocabulary word. Mix articles and the materials they are made of.</p>

	<p>6. Present students with adjectives and their translation in Spanish. (List of vocabulary words can be examined in T-2A). Use auditory flashcard technique. Present the adjective in a sentence. Have the sentence read to them. Have the adjective in another color and have them click on the adjective, as they click on it they can listen to the adjective being pronounced as well as see the Spanish translation show up.</p>
	<p>7. Students Play “Bingo” using the vocabulary terms presented. (items and adjectives) See T-2F for Sample Bingo Cards)</p>
	<p>8. With the vocabulary items, present students with sentences (which are read to them) and pictures where items are compared using comparative adjectives. Have pictures show the difference between the two. Illustrating the differences. (Contents and sentences can be examined in T-2B)</p>
	<p>9. Present students with dialogs and pictures. Have students complete the sentences using the correct pattern of the comparative form or use the adjective in its positive form. Have the dialogs read to them. (Content of exercises can be examined at T-2C)</p>
	<p>10. If time permits and students complete less than half of the exercises correctly, they can re-do exercise or go back and review lesson using the same lesson activities or another preferred modality.</p>
Kinesthetic	<p>1. Students log in with their unique username and password into the Blackboard Web site.</p> <p>2. Students select the Unit on Comparison with Adjectives</p> <p>3. Students will select kinesthetic lesson.</p> <p>4. Presenting Vocabulary –</p> <p>a. Have articles of clothing and jewelry on a page. Have students click on the items and as they do have the word show up, be pronounce and the Spanish translation show up. (List of vocabulary words can be in T-2A).</p> <p>b. When presenting the fabric and materials, show the pictures of the articles (as made out of the material) and have the phrase be pronounced) (Contents can be examined in T-2E).</p>

	<p>5. Next, show students pictures of the items and have them type the vocabulary word. Mix articles and the materials they are made of.</p>
	<p>6. Present students with adjectives and their translation in Spanish. (List of vocabulary words can be examined in T-2A). Use flashcard technique. Present the adjective in a sentence. Students can click on the adjectives, which are in another color and the word will be pronounced and the Spanish translation provided Have the adjective in another color and have them click on the adjective, as they click on it they can listen to the adjective being pronounced as well as see the Spanish translation show up</p>
	<p>7. Students complete a “crossword puzzle. Clues are the words in Spanish or sometimes pictures of the items. Students type in the answer. (items and adjectives) (See T-2G to examine Crossword Sample)</p>
	<p>8. With the vocabulary items, present students with sentences and pictures where items are compared using comparative adjectives. Have students be able to control by clicking on diagrams, arrows, and/or pictures the control of information. Have pictures show the difference between the two. Illustrating the differences. (See T-2B for contents and sentence)</p>
	<p>9. Present students with dialogs and pictures. Have students complete the sentences using the correct pattern of the comparative form or use the adjective in its positive form. Have the dialogs available in meaningful chunks. Have students complete the sentences and be able to click and check answers one by one. (Content of exercises can be examined at T-2C)</p>
	<p>10. If time permits and students complete less than half the exercises correctly , they can re-do exercise or go back and review lesson using the same lesson activities or another preferred modality.</p>

c. Closure

- i. Teacher supplies students with a page/selection students read. Students will be asked to answer questions about the selection. The questions are guided toward the correct use of comparative adjectives. Topic and questions can be examined in T-2D.
- ii. Students will read from the computer screen and they will answer questions. Auditory learners will have the option of having the selection read to them. Kinesthetic learners can click on the pictures and icons to control the flow of information (sound option on or off) Visual learners will have the text, pictures and sound option on or off.
- iii. Be sure they can provide their name, learning style and student number.

V. Evaluation or Assessment:

- a. Have students complete a Reaction Information Collection Instrument at the end of the lesson (See T-1E)

T-2A
Vocabulary Items
Comparison with Adjectives

Clothes and jewelry

English	Spanish
backpack	mochila
bag	bolso
boots	botas
bracelet	pulsera/brazalete
cap	gorra
earrings	aretes/pantallas
gloves	guantes

jacket	abrigo/chaqueta (pesado)
(pair of) jeans	pantalones de mezclilla/mahones
necklace	collar
pants	pantalones
ring	sortija
rollerblades	patines
scarf	bufanda
shirt	camisa
(athletic)shoes – sneakers	zapatillas
sunglasses	gafas de sol
sweater	abrigo
tie	corbata
watch	reloj

Materials

English	Spanish
cotton	algodón
gold	oro
leather	cuero
plastic	plástico
polyester	poliéster
rubber	goma
silk	seda
silver	plata
wool	lana

Adjectives

English	Spanish	Sentences
attractive	atractivo	Many people think that being blond is attractive
bad	malo	The bread tasted bad. I think it was old.
big	grande	The house has four bedrooms. It is very big.
cheap	barato	This cost me only \$1. It is cheap.
dark	oscuro	We need more light. It is too dark in here.
each	cada uno	Each one cost us a dollar.
different	diferente	We are not the same. We are all different.
expensive	costoso	This is worth \$1,000. It is expensive.

T-2B
Material for PP Presentation (Visual)
Comparison with Adjectives

There are two different patterns to make comparisons with adjectives.

Pattern # 1: The leather jacket is prettier than the wool one.

Pattern #2: The leather jacket is more expensive than the wool one.

pretty

The first pattern: The leather jacket is prettier *than* the wool one.

adjective + *er* + *than* + noun/pronoun

The second pattern: The leather jacket is *more* expensive *than* the wool one.

more + adjective + *than* + noun/pronoun

Never use both patterns together!

The leather jacket is more prettier then the wool one. (MAKE SURE THIS IS CROSSED OUT)

Let's see some guidelines to form the comparative form of adjectives. You will see the sentences, and pictures that will show you the meaning of the sentence. It will also show on the top of the page the pattern it follows. These are the guidelines:

1. For one-syllable adjectives, add *-er* (or just *-r* if the adjective ends in e):
 - a. The blue shirt is \$10.00. The white shirt is \$15.00
 - i. The blue shirt is cheaper than the white shirt.
 - b. Janice thinks the white shirt is nice. She doesn't like the blue shirt.
 - i. She thinks the white shirt is nicer than the blue shirt.
2. For one- or two-syllable adjectives ending in *-y*, change the *y* to *i* and add *-er*
 - a. Maria likes the blue scarf. Maria doesn't think that the green scarf is pretty.
 - i. Maria thinks the blue scarf is prettier than the green one.
3. For adjectives ending in a single vowel + consonant, double the final consonant and add *-er*:
 - a. I had a twelve ounce soda. She had a 16 ounce soda.
 - i. Her soda was bigger than mine.
4. For other adjectives of two or more syllables, add *more*:
 - a. John bought \$50 jeans. Joan bought \$100 jeans. I think they are both expensive.
 - i. Joan's jeans are more expensive than John's.
5. There are irregular forms:

Adjective	Comparative
good	better
bad	worse

T-2C
Dialog Step 9 (Auditory/Visual)
Comparison with Adjectives

Carmen and Mrs. Bucker are out shopping. Carmen needs to get a few articles of clothing and Mrs. Bucker is helping her do some comparison shopping.

Carmen: I really appreciate your coming with me shopping.

Mrs. Bucker: Oh, don't mention it. I need to get a few things myself. My husband, Mike, never wants to go shopping with me. It is better to go with someone who likes shopping as much as I do.

Carmen: I love shopping! Oh, let's go in here.

Mrs. Bucker: They usually have excellent prices here and there is a big sale going on. So prices should be even lower.

Carmen: OK. WOW, look at this red shirt. My brother's birthday is next week. I would like to send him a gift.

Mrs. Bucker: It is nice. But don't you think this blue one is nicer?

Carmen: Yes, it is. How much is it?

Mrs. Bucker: It's \$25.

Carmen: That's not bad. But look at this white shirt. It is only \$18 it is nice too.

Mrs. Bucker: You are right. It is nicer than the blue one. It is cheaper than the blue one too.

Carmen: Look, Mrs. Bucker that shirt looks like Mr. Bucker.

Mrs. Bucker: Yes it does. It has two pockets but it doesn't look too warm. Winter is coming up now.

Carmen: Yes. That is true. How about this one? It is made out of wool. Wool is warmer

than cotton.

Mrs. Bucker: Let me see how much it is worth? It's \$30. That is expensive!

Carmen: That is more expensive than the shirt I choose for Pedro.

Mrs. Bucker: Let's look at women's clothing.

Carmen: Yes, I need to get a sweater, a pair of boots and a scarf.

Mrs. Bucker: Ok. But first look at this black dress. It is made out of silk.

Carmen: Yes, here is another one. This one is made out of cotton.

Mrs. Bucker: The silk dress is more expensive than the cotton one.

Carmen: True, but the silk dress is also prettier than the cotton one.

Mrs. Bucker: Here is this adorable scarf. It has black and white polka dots on it.

Carmen: That would be difficult to match with my clothes. I prefer this dark blue one.

Mrs. Bucker: That is true. The blue one is prettier than the black and white one. I have a lot of black clothes. I think I am taking the black and white scarf for myself. I think it will make my black dress look more attractive.

Carmen: Look at this sweater. It matches perfectly with my dark blue scarf.

Mrs. Bucker: Yes, dear it is pretty and it has a reasonable price.

Carmen: Ok, I think I'll get it then. Maybe we can go to the shoe store next and get my boots.

Mrs. Bucker: Ok, let's pay for our purchases. I know a store just across the street with great prices.

T-2D
Selection and Questions for Closure Activity
Comparison for Adjectives

Pedro is telling Timothy about life in Puerto Rico. He is comparing the cost of life in

Puerto Rico with the United States.

Timothy: Is life in Puerto Rico more expensive than the United States?

Pedro: Well, some things are more expensive, others are cheaper. For example one thing we don't have is sales tax.

Timothy: How about gasoline?

Pedro: Gasoline here sells by the gallon. Right?

Timothy: Yes. We pay about \$1.39 a gallon.

Pedro: Well in Puerto Rico gasoline is sold by the liter. It is about .50 a liter. We end up paying about \$1.89 a gallon.

Timothy: That is very expensive. How about compact disc and cassettes? We can get compact discs here for about \$12.99.

Pedro: We might be able to purchase some compact discs for \$12.99. But if the music is really hot, then we end up paying about \$16.99

Timothy: Haircuts can't be as costly in Puerto Rico?

Pedro: You are right. I was surprised when I went to have my hair cut and it cost me \$23.00. In Puerto Rico I can get a haircut for \$10.00.

Timothy: How about clothes? I paid \$34.00 for these jeans. Can I get them over there for this price?

Pedro: You might be able to get them. I have bought jeans for \$20.00. But they are not very good quality. If I want to buy quality jeans, I usually end up paying about \$80.00.

Timothy: California is expensive too. We have similar prices to Puerto Rico plus we have the sales tax too.

Pedro: That's life. Let's get some lunch.

Timothy: Ok.

Questions:

1. Pedro is from _____
 - a. **Puerto Rico**
 - b. United States
 - c. California
 - d. None of the above

2. Timothy is from
 - a. Puerto Rico
 - b. Boston
 - c. **California**
 - d. None of the above

3. One difference that Puerto Rico and the United States have is _____.
 - a. That the United States does not have sales tax.
 - b. People who live in California do not pay sales tax.
 - c. California prices are identical to prices in Puerto Rico.
 - d. **People in Puerto Rico do not pay sales tax.**

4. Gasoline in United States is _____.
 - a. cheaper than gasoline in California
 - b. more expensive than in Puerto Rico
 - c. **cheaper than gasoline in Puerto Rico**
 - d. more cheaper than gasoline in Puerto Rico.

5. Compact discs in Puerto Rico are _____.
 - a. more cheaper than in United States
 - b. **more expensive than in the United States**

- c. more expensive than in the United States
 - d. more cheap than in the United States
6. Pedro was surprised when he went to get a haircut because_____.
- a. it was cheaper than in Puerto Rico.
 - b. it was more expensive than in Puerto Rico**
 - c. it was more expensive than in Puerto Rico
 - d. it was more cheaper than in Puerto Rico
7. Pedro mentions that he usually pays \$80 for jeans. Timothy said he can get jeans for \$34.
- a. Timothy's jeans are cheaper than Pedro's.**
 - b. Pedro's jeans are cheaper than Timothy's.
 - c. Pedro's jeans are more expensive than Timothy's.
 - d. Timothy's jeans are more cheaper than Pedro's.

Read the following and answer the question:

8. Marie is 5 feet 2 inches tall. Carmen is 5 feet 6 inches tall. Looking at the information provided, which would be the correct sentence comparing them both.
- a. Marie is taller than Carmen.
 - b. Carmen is taller than Marie.**
 - c. Marie is more tall than Carmen.
 - d. Carmen is more tall than Marie.
9. John got an A on the Literature test. Alex got a B on the Literature test. Compare their grades.
- a. Alex did better on the test than John.
 - b. Alex did gooder on the test than John

c. **John did better on the test than Alex.**

d. John did gooder on the test than Alex.

10. Magda usually wears a Large size. Susan usually wears an X-Large size. Compare them.

a. Susan wears smaller sizes than Magda.

b. Magda wears more smaller sizes than Susan.

c. Susan wears more smaller sizes than Magda.

d. **Magda wears smaller sizes than Susan.**

T-2E

Flashcards for phrases and sentences Step 4b

Sample Phrases for articles of clothing with material they are made out of: Just an example of some phrases shown here

cotton shirt

polyester shirt

leather jacket

plastic bracelet

silk scarf

wool pants

gold earring

rubber boots

silver necklace

gold watch

silver watch

leather boots

silver ring

gold ring

T-2F
Sample Bingo Cards
Step 7 Auditory Learner

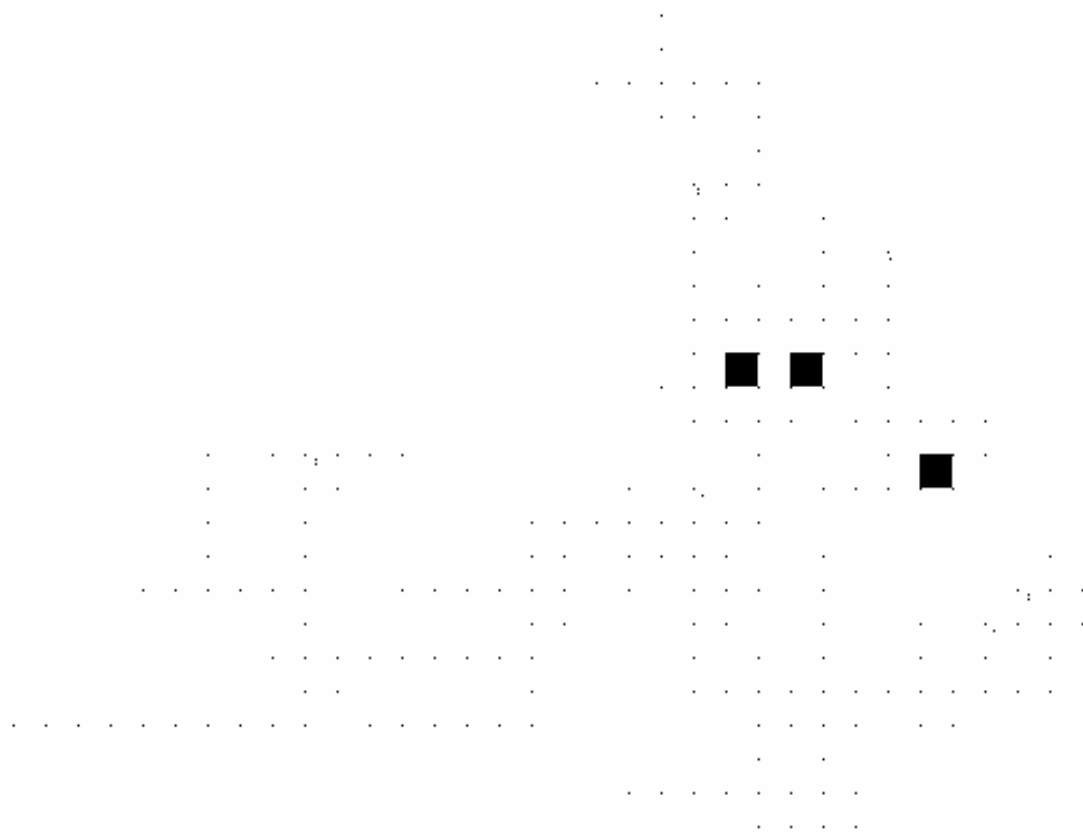
backpack	cap	bracelet	earrings	boots
cotton	gold	leather	plastic	polyester
attractive	bad	FREE	big	cheap
rubber boots	silver ring	cotton pants	silk tie	plastic bracelet
cheap pants	expensive tie	attractive gloves	dark sunglasses	different shirts

silver watch	cotton pants	silk tie	plastic earrings	rubber boots
backpack	bracelet	earrings	boots	cap
gold	attractive shirt	FREE	different shirts	cotton
expensive tie	leather	dark sunglasses	polyester	cheap pants
bad	big	plastic	cheap	attractive

T-2G

Adjectives, Clothing and Materials

Across	Down
2. plata	1. oro
4. grande	3. sortija
8. plástico	4. mochila
9. bufanda	5. botas
10. reloj	6. collar
13. mahones	7. pantallas
17. barato	11. gorra
18. zapatillas	12. camisa
21. algodón	14. costoso
22. chaqueta	15. oscuro
23. corbata	16. cuero
24. bolso	18. abrigo
27. diferente	19. poliéster
29. patines	20. pantalones
30. atractivo	25. seda
31. goma	26. malo
32. pulsera	28. guantes



Using technology in an ESL course to accommodate visual, kinesthetic and auditory learners to affect students self-efficacy about learning the language

Lesson # 3

THE BABY EXCHANGE

VOCABULARY DEVELOPMENT + CAUSE AND EFFECT

Course Time: 90 minutes each class up to 2 classes PER WEEK **Date:** _____

Course Number and Title: English 101- Basic English

Level: Basic First Year College ESL

Created by: Carmen L. Lamboy

I. Unit Title/Skill or Chapter:

“The Baby Exchange” - Vocabulary Development + Cause and Effect

II. Learning Objectives:

a. English

- i. First year Basic ESL College Students will practice spelling and meaning of words related to the selection “The Baby Exchange”
- ii. Students will read a selection and answer questions about the selection.
- iii. Students will identify cause and effect in different selections.
- iv. Students will summarize the selection using the vocabulary terms studied in class.

III. Overview of Featured Technology and Materials:

a. Technology and Learning Style:

- i. Use appropriate technology according to their learning style:
 1. Visual learner – Pictures on computer. Text on computer. Listening to vocabulary.

PowerPoint Presentation with animation or video clip on Cause and Effect. Seeing “flashcards” Type using the keyboard. Using the mouse.

2. Auditory learner - Pictures on computer. Text on computer. Listening to vocabulary. (Pictures are optional). Pictures on vocabulary items. Using the mouse, they click on words and they listen to the vocabulary term being pronounced as the word comes up and also the Spanish translation. Listen to mini “lecture” on cause and effect accompanied by text where they can see the way the cause and effect works. Type words to complete sentences that are read orally. Listen to a selection being read. Use the keyboard. Have students listen to questions and answer them. Have them complete sentences that have cause and effect relationships.
3. Kinesthetic Learner - Pictures on computer. Text on computer. Listening to vocabulary. (Pictures are optional). Using the mouse, they click on the words and they listen to the vocabulary term being pronounced as the word comes up and also the Spanish translation. Students complete a word find on the computer. Use mouse to complete drag and drop exercises. Type on keyboard to complete sentences or answer questions related to cause and effect relationships.

IV. Instructional Activities:

a. Introducing the activity or Exploration:

- i. Have students play a version of “Physical Trait Bingo”. Students will be given a Bingo card (each card should be different). Have students go around trying to locate people that fit the description given in the space. They are supposed to either complete a line horizontally, vertically or diagonally. Questions will be intended for students to either look for people who have similar traits that they

have, or answer questions about how alike they are to other people and get their signatures. For example: Look for someone that has the same color of hair as you do and get their signature. or Find someone who has curly hair. or Find someone who has a picture of their mother or father in their wallet and he/she thinks they look alike. The student who first completes the line will yell out bingo and win the game. Discuss the findings: similarities between students, similarities between parents and children and physical traits. Write down on the board, words that describe physical traits like curly, green, light, dark, etc... (Sample of Bingo cards can be examined in T-3A)

ii. Tell students they are going to read a story where the mother has doubts about if her child is truly hers. Before reading the story they need to review some vocabulary. Direct students to their computer stations and to the appropriate program/URL to be used. (Have computers ready on the first page beforehand).

b. Conceptualization or Learning Activity:

Learner	Activity
Visual	1. Students log in with their unique username and password into the Blackboard Web site.
	2. Students select the Unit titled: "The Baby Exchange" – Skill Cause and Effect
	3. Students will select Visual lesson.
	4. Presenting Vocabulary - Have baby silhouettes come up (crawl) bringing up the vocabulary terms. Maybe a cradle silhouette could come up and show the Spanish meaning. (The baby goes inside the cradle) When it goes inside both words should show and the word should be pronounced. If possible show pictures. (List of vocabulary words can be examined in T-3B).

	<p>5. The Spelling Billboard –Students will be asked to repeatedly write each word three times. The first time, they will be shown the word for a long period of time. (Long blink) The word will disappear and they will be prompted to type the word. The next time the word will blink quickly (short blink), and once again they will be prompted to write it once it disappears. Finally they will be prompted to write it without seeing it. Pronounce the word when they write it correctly.</p>
	<p>6. Direct students to read the selection “The Baby Exchange” in their Textbooks. Heyer, S. (1997) More True Stories: A High-Beginner Reader. White Plains, NY: Longman Publishers Page 27. They can read in groups or individually. They can use sound.</p>
	<p>7. Have students go back to their computers and answer questions about the selection. (See T-3C for Questions)</p>
	<p>8. Have PowerPoint presentation available on Identifying Cause and Effect Relationships. Have students go through the PowerPoint Presentation. Have visuals, animation when possible, showing cause and effect relationships. (For content see T-3D). Give them examples, as well as provide some sort of practice exercises.</p>
	<p>9. Cause and Effect Contraption – Tell students they will be presented with events from the selection “The Baby Exchange” They will be requested to identify the cause and effect relationships between the events provided. In other words, they will identify which one of the events is the cause and which one is the event. Students will drag and drop into the appropriate box. If the relationship is correct, the contraption will work. If it is incorrect it will tell you there is a malfunction! To revise Operation Procedure... (For exercises see T – 3E)</p>
	<p>10. If time permits and scores are lower than half, students can re-do exercise or go back and review lesson using the same lesson activities or another preferred modality.</p>
Auditory	<p>1. Students log in with their unique username and password into the Blackboard Web site.</p> <p>2. Students select the Unit on Comparison with Adjectives</p> <p>3. Students will select auditory lesson.</p>

	<p>4. Presenting Vocabulary – Have baby silhouettes come up (Crawl) bringing up the vocabulary terms in different colors. Maybe cradle silhouettes could have the Spanish meaning. (The baby goes inside the cradle) when it goes inside, both words should show and the English word is pronounced. If possible show pictures. (List of words can be examined in T-3B)</p>
	<p>5. AUDIOMATCH – Students will be presented with the words. They will listen to the words and click on the appropriate word. This can be done as a multiple exercise activity where students are provided with three words and they listen and select the appropriate one. As a review, when students select the correct one, provide the Spanish translation of the word. (Exercises can be examined in T-3F).</p>
	<p>6. Direct students to read the selection “The Baby Exchange” in their textbooks. Heyer, S. (1997) More True Stories: A High-Beginner Reader. White Plains, NY: Longman Publishers Page 27. They can read in groups or individually. They will use a CD-Rom where the selection will be read to them as they follow along. They could also read aloud into a microphone and listen to themselves.</p>
	<p>7. Have students go back to their computers and answer questions about the selection. Questions are read to them. (See T-3C for Questions)</p>
	<p>8. Have a PowerPoint presentation with “lecture” available about Identifying Cause and Effect Relationships. Have students go through the PowerPoint Presentation. Have visuals/animation with AUDIO showing the cause and effect relationship. (For content see T-3D). Give them examples, as well as provide some sort of practice exercise.</p>
	<p>9. Cause and Effect Contraption – Tell students they will be presented with events from the selection “The Baby Exchange” They will be requested to identify the cause and the effect relationships between the events provided. In other words, they will identify which one of the events is the cause and which one is the event. Present blank boxes, as students click on them, have the events read to them. By listening to the events they drag and drop in the appropriate side (cause or effect). If the relationship is correct the contraption works and makes a sound. If it doesn’t a malfunction shows up. (For exercises see T-3E).</p>

	10. If time permits and scores are lower than half, students can re-do exercise or go back and review lesson using the same lesson activities or another preferred modality.
Kinesthetic	1. Students log in with their unique username and password into the Blackboard Web site.
	2. Students select the Unit on Comparison with Adjectives
	3. Students will select kinesthetic lesson.
	4. Presenting Vocabulary – Vocabulary words are presented in sentences. Vocabulary words are in different colors. Direct students with visual, text clues to click on the blue words. As they click on them the word is pronounced and the Spanish translation is shown in a box. (Vocabulary and sentences can be examined in T-3G)
	5. Word Find – The clue is in Spanish and they find the English word. Ask students to look at the Spanish translation and first type the English word. Then they should look up the words in the word find. (Sample of word find can be examined in T-3H).
	6. Direct students to read the selection “The Baby Exchange” in their textbooks. Heyer, S. (1997) More True Stories: A High-Beginner Reader. White Plains, NY: Longman Publishers Page 27. They can read in groups or individually. They will use a CD-Rom where the selection will be read to them as they follow along. They could also read aloud into a microphone and listen to themselves. They can sit at their desk, move around in a certain area or lay down to read on bean bags.
	7. Have students go back to their computers and answer questions about the selection. (See T-3C for Questions)
	8. Have a PowerPoint presentation with “lecture” available about Identifying Cause and Effect Relationships. Have students go through the PowerPoint Presentation. Have visuals/animation with AUDIO showing the cause and effect relationship. (For content see T-3D). Give them examples, as well as provide some sort of practice exercise. Students should be able to control the flow of information.

	<p>9. Cause and Effect Contraption – Tell students they will be presented with events from the selection “The Baby Exchange” They will be requested to identify the cause and the effect relationships between the events provided. In other words, they will identify which one of the events is the cause and which one is the event. Present the events. (List out of order) They drag and drop in the appropriate side (cause or effect). If the relationship is correct the contraption works. If it doesn’t a malfunction shows up. (For exercises see T-3E).</p>
	<p>10. If time permits and scores are lower than half, students can re-do exercise or go back and review lesson using the same lesson activities or another preferred modality.</p>

c. Closure

- i. Students complete a cloze exercise summarizing the selection by using the vocabulary words. Using the mouse and a drag and drop menu students will complete a summary of the selection. (See T-3I for contents of exercise)
- ii. Students complete and submit it directly to the instructor. Be sure to provide a form where they can include their name, learning style, and student number)

V. Evaluation or Assessment:

- a. Have students complete a reaction Information Collection Instrument at the end of the lesson (See T-1E).

T-3A
Physical Traits Sample Bingo Cards
“The Baby Exchange”
Vocabulary Development and Cause and Effect

1

B	I	N	G	O
Find someone with green eyes	Find someone who has curly hair	Find someone with straight hair	Find someone with brown eyes	Find someone with light brown hair
Find someone who has a picture of his/her mother and looks a lot like her.	Find someone who is taller than you.	FREE	Find someone who is shorter than you.	Find someone who has light skin
Find someone who is as tall as you are.	Find someone who has big eyes	Find someone who has the same color of hair as you do	Find someone who has a picture of his/her father and looks a lot like her.	Find someone who has medium skin
Find someone with dark skin	Find someone with dark hair.	Find someone with blue eyes.	Find someone who has a small nose.	Find someone who has blonde hair.

2

B	I	N	G	O
Find someone who is taller than you	Find someone who is shorter than you.	Find someone with straight hair	Find someone with brown eyes	Find someone with light brown hair
Find someone who has the same color of hair you do	Find someone with green eyes	FREE	Find someone who has curly hair	Find someone who has a picture of his/her mother and looks a lot like her.
Find someone who has medium skin	Find someone who has a picture of his/her father and looks a lot like her.	Find someone with blue eyes	Find someone who has big eyes	Find someone who is as tall as you are.
Find someone who has a small nose.	Find someone with dark hair.	Find someone who has light skin.	Find someone with dark skin	Find someone who has blonde hair.

T-3B
Vocabulary Words
Step 4 Visual and Auditory

“The Baby Exchange”

Vocabulary Development and Cause and Effect

1. Bracelets	pulseras
2. Couple	pareja
3. Curly	rizado
4. Dark	oscuro
5. Exchange	intercambio
6. Faint	desmayar
7. Few	pocos
8. Habits	hábitos
9. Knock	golpear
10. Later	más adelante/más tarde
11. Light	claro
12. Mistake	error
13. Relatives	parientes
14. Skin	piel
15. Smile	sonrisa
16. Straight	lacio
17. Tears	lágrimas
18. Wonder	pensar/especular/ponderar

T-3C
Reading Comprehension Questions

“The Baby Exchange”

Vocabulary Development and Cause and Effect

1. Selma was worried because
 - a. she loved her baby very much.
 - b. she loved her baby but wasn't sure her baby was really hers.**
 - c. she didn't love her baby.
 - d. She loved her baby but wasn't sure if she should keep her.
2. Selma lived in

- a. **Brazil**
 - b. United States
 - c. New York
 - d. The selection doesn't say
3. When friends saw Selma's baby how did they react?
- a. They were happy.
 - b. They were sad.
 - c. **They were surprised.**
 - d. They were disappointed.
4. How long did Selma wait before she went back to the hospital?
- a. Nine years
 - b. Nine days
 - c. Nine weeks
 - d. **Nine months**
5. In the hospital where Selma's baby was born, when babies are born they get a
- a. **A bracelet with a number**
 - b. Identification tag on their foot
 - c. A picture taken and given to the parents
 - d. A t-shirt with their name
6. Selma and Paulo's baby
- a. Was living with them all the time.
 - b. **Was living with another family.**
 - c. Was living in the hospital
 - d. Was living on 51st street

7. Selma and Paulo thought the baby they brought home from the hospital was not theirs because
- a. She looked too much like them
 - b. She had curly hair and dark skin**
 - c. She had straight hair and light skin
 - d. She had dark eyes and light hair.
8. The baby Luiz and Maria brought back home from the hospital
- a. Had curly hair and dark skin
 - b. Looked a lot like them
 - c. Had straight hair and light skin**
 - d. Had dark eyes and light hair.

T-3D

Content for Cause and Effect

“The Baby Exchange”

Vocabulary Development and Cause and Effect

A **cause** makes something happen. It answers the question “Why?” It is defined as a reason for an effect or result. An **effect** is what happens as result of the cause. It is defined as a development or a consequence

Cause and effect relationships are concerned with why things happen (causes) and what happens as a result (effects). Cause and effect is a common method of organizing and discussing ideas.

To determine causes, ask, "Why did this happen?" To identify effects, ask, "What happened because of this?" The following is an example of one cause producing one effect:

Cause	Effect
You are out of gas.	Your car won't start.

Sometimes, many causes contribute to a single effect or many effects may result from a single cause. The following are examples:

Causes	Effect
liked using computers in high school	choose to major in computer
salaries in the field are high	
have an aunt who is a computer programmer	
am good with typing	
Cause	Effects
reduce work hours	less income
	employer is irritated
	more time to study
	more time for family and friends

However, most situations are more complicated. The following is an example of a chain reaction:

Thinking about friend...forgot to buy gas...car wouldn't start...missed math exam...failed math course.

T-3E

Exercises for Contraption Step 9

Events already placed in their cause/effect relationship. (Some events are repeated)

Cause	Effect
1. Selma wasn't sure if her baby was hers or not.	Selma Began to cry.
2. The baby didn't look like Selma and Paulo.	Selma's friends were surprised when they saw the baby.
3. She knew the baby in Selma's arms was her baby.	Maria fainted
4. Selma and Paulo thought they had the wrong baby.	Selma and Paulo went back to the hospital
5. Sao Paulo is a big city.	It was difficult for Selma and Paulo to

		find their baby.
6.	The hospital gave each baby a number.	The hospital director said that a mistake was impossible
7.	Both babies were given the number 51	Each couple took the wrong baby home.

T-3F

Auditory Exercise Step 5

Select the word that is pronounced. Make sure the word you select is spelled correctly.

1. basset **bracelets** bassinet bubble
2. cobble topple **couple** capable
3. early curley girly **curly**
4. **dark** ark hark drag
5. eschange change **exchange** strange
6. saint **faint** paint chained
7. **few** two flu flew
8. inhabits abbots rapids **habits**
9. nag tock **knock** fog
10. legator **later** locator slater
11. **light** lide lied kite
12. pancake milkshake **mistake** missteak
13. derivatives executives negatives **relatives**
14. singe **skin** swing spin
15. spilled style **smile** miles
16. slate **straight** traits state
17. **tears** stairs ears stares
18. wanda under **wonder** yonder

T-3G

Vocabulary Sentences for Kinesthetic Learner Step 4

Bracelets	Maria is wearing a diamond bracelet on her arm.
Couple	Jose and Susan are a couple. They have been married 20 years.
Curly	Donna's hair is straight, but her son's hair is curly.
Dark	Mario has dark skin.
Exchange	This toaster doesn't work. I come to exchange it for another one.
Faint	She had no energy left in her, so she fainted.
Few	Many were invited, but few people came to the party.
Habits	Healthy eating and exercise habits are important.
Knock	Marsha knocked on the door and Ruth opened the door.
Later	I can't talk to you right now. Can you come back later?
Light	Estevan has light skin and blue eyes.
Mistake	I answered that exercise wrong. I made a mistake on the test.
Relatives	Sue's parents and other relatives are coming to her wedding.
Skin	The skin on her arms was dry, so she put some lotion on them.
Smile	The baby was happy to see her mother. She smiled at her mother.
Straight	Carmen has very straight hair; it is difficult to wavy or curl it.
Tears	She was crying; tears were coming down her eyes.
Wonder	I wonder if he received my message.

T-3H

Sample Word Find
Kinesthetic Step 5

K B R A C E L E T S D
 C F E Z C U R L Y H T
 O K X N S R U M F A E
 U N C M T E F E W B A
 P O H I R L L U L I R
 L C A S A A A S F T S
 E K N T I T T M A S F
 S E G A G I E I I K D
 A P E K H V R L N K A
 V F S E T E C E T E R
 L I G H T S S K I N K

bracelets	later
couple	light
curly	mistake
dark	relatives
exchange	skin
faint	smile
few	straight
habits	tears
knock	

T-3I

Cloze Exercise (Closure Activities for all Modalities)

This story took place in Sao Paulo, Brazil. Even though Selma's baby was born in a hospital where babies were given _____ with numbers, the hospital made a terrible _____ by exchanging Selma's and Maria's babies. Each _____ took the wrong baby home! The babies did not look like their parents and Selma many times began to cry whenever doubts came into her mind about her baby. The baby Selma brought home had _____ hair and _____ skin. The baby Maria brought home had _____ hair and light _____.

Nine months later, Selma decided to go back to the hospital and find out the truth. They found their real baby living with Maria and Luiz. When Maria saw Selma she _____. Two weeks after they met, and after exchanging information about the babies _____, with _____ in their eyes, but smiling they carried out the baby _____.

Word List

Couple	Straight
Bracelets	Tears
Curly	
Dark	
Exchange	
Fainted	
Habits	
Mistake	
Skin	

Using technology in an ESL course to accommodate visual, kinesthetic and auditory learners to affect students self-efficacy about learning the language

Lesson # 4

“SURPRISE! IT’S YOUR WEDDING!”

VOCABULARY, MAIN IDEA, DETAILS AND CHARACTERS, SUMMARIZING

Course Time: 90 minutes each class up to 2 classes PER WEEK **Date:** _____

Course Number and Title: English 101- Basic English

Level: Basic First Year College ESL

Lesson Created by: Carmen L. Lamboy

I. Unit Title/Skill or Chapter:

“Surprise! It’s your Wedding!” – Vocabulary, Main Idea, Details and Characters,

Summarizing

II. Learning Objectives:

- a. English
 - i. First Year Basic ESL College Students will practice spelling and meaning of words related to the selection “Surprise! It’s your Wedding!” by using them in sentences.
 - ii. Students will read a selection and answer questions about the selection.
 - iii. Students will identify details and main idea of selection.
 - iv. Students will describe character using their traits as shown from the story.

III. Overview of Featured Technology and Materials:

- b. Technology and Learning Style
 - i. Use appropriate technology according to their learning style.
 - 1. Visual learner – Seeing and reading “flashcards”. Pictures on computers. Text on computer screen. Listening to selection being read (optional). Type notes using keyboard.

Using the mouse. Word Processor or pre-arranged form where students write a paragraph and submit electronically to professor or e-mail. Use visual organizer on computer.

2. Auditory learner – Seeing and reading “flashcards”. Pictures on computers. Text, pictures and listening from the computer. (Pictures are optional). Listen to selection being read to them as they follow in the book. Use the mouse to complete an auditory matching exercise where they listen to vocabulary words and match their spelling. Listen to sentences and write them. Type notes. Use organizers. Record their oral speech. Word Processor or pre-arranged form where students write a paragraph and submit electronically to professor or e-mail.

3. Kinesthetic Learner – Seeing and reading “flashcards”. Pictures on computers. Text, pictures and listening from the computer. (Pictures are optional. Control by clicking on the pictures, icons, or arrows). Use the keyboard to type vocabulary words presented out of order (scrambled letters). Type notes. Use organizers. Word Processor or pre-arranged form where students write a paragraph and submit electronically to professor or e-mail.

IV. Instructional Activities:

a. Introducing the Activity or Exploration: (This activity is low-tech, but directed towards all learners: auditory, kinesthetic, and visual)

- i. Tell students they will be asked to complete a chart comparing the advantages or disadvantages of being married and single.
- ii. Teacher hands out chart. (See T-4A).
- iii. Provide students with 10 to 15 minutes to complete the charts with their thoughts.
- iv. Elicit discussion about students’ answers with their classmates.
- v. Teacher might have the chart in a transparency or on the board and write what students mention.

b. Conceptualization or Learning Activity:

Learner	Activity
Visual	1. Students log in with their unique username and password into the Blackboard Web site.
	2. Students select the Unit titled: “Surprise! It’s Your Wedding!” – Vocabulary Development, Main Idea, Details, Characters
	3. Students will select Visual lesson.
	4. Presenting Vocabulary - Have heart, flower, bouquet, wedding decoration or bell silhouettes come up bringing up the vocabulary terms. Matching silhouettes also pop up with the Spanish translation. When words are matched, both words should show and the English word should be pronounced. If possible show pictures. (List of vocabulary words can be examined in T-4B).
	5. The Spelling Billboard – Tell students that the words they will be asked to repeatedly write each word three times. The first time, they will be shown the word for a long period of time. (Long blink) The word will disappear and they will be prompted to type the word. The next time the word will blink quickly (short blink), and once again they will be prompted to write it once it disappears. Finally they will be prompted to write it without seeing it. Pronounce the word when they write it correctly.
	6. Direct students to read the selection “Surprise! It’s your Wedding!” in their Textbooks. Heyer, S. (1997) More True Stories: A High-Beginner Reader. White Plains, NY: Longman Publishers Page 7. They can read in groups or individually. They can use sound.
	7. Have students go back to their computers and answer questions about the selection. (See T-4C for Questions)

	<p>8. Students will be directed to re-read the selection from their textbooks.</p> <p>a. Using the sentences provided the student will select up to 8 sentences in order take notes on the reading. (Do not let them use more than 8 sentences of those indicated).</p> <p>b. Students will then using their initial “notes” from step 8a, they will select less sentences and choose the most important facts from their notes limiting the amount of sentences to 3. This is a timed exercise and they have only 90 seconds.</p> <p>c. They will then repeat step 8b, and write one sentence the most important facts from 8B. (Timed again – 90 seconds)</p> <p>d. When they finish, give them the standardized answer and/or similar answers they could have achieved and have them compare their results. How close were they?</p> <p>e. Have a PowerPoint presentation (in text) explaining that if they actually have one sentence that sums up what the selection was about they have identified the Main Idea. Also show them that the process used to use less and less words to take notes and recall information is a way of Summarizing a selection. (Contents for this activity can be examined in T-4 D)</p>
	<p>9. Story Pyramid – Students use the information from their “notes” and Summary and complete the Story Pyramid. (Contents for this exercise can be examined in T-4E) Students will type their answers, completing a visual organizer. When they finish, have a screen showing possible answers and have students be able to compare how similar their answers were. Also mention to them (in the screen) that this is another way of summarizing information.</p>
	<p>10. Show another screen that mentions there is a third way of summarizing a selection; and that that way is by looking at the characters.</p> <p>(Contents can be examined in T-4E)</p>
	<p>11. Students will complete a table where they will actually provide specific information about the characters in the story. (See T-4F). (When they finish this activity the second part will be used as a closure activity).</p>

	12. If time permits and scores are lower than half, students can re-do exercise or go back and review lesson using the same lesson activities or another preferred modality.
Learner	Activity
Auditory	1. Students log in with their unique username and password into the Blackboard Web site.
	2. Students select the Unit titled: “Surprise! It’s Your Wedding!” – Vocabulary Development, Main Idea, Details, Characters
	3. Students will select Auditory lesson.
	4. Presenting Vocabulary - Have heart, flower, bouquet, wedding decoration or bell silhouettes come up bringing up the vocabulary terms. Matching silhouettes also pop up with the Spanish translation. When words are matched, both words should show and the English word should be pronounced. If possible show pictures. (List of vocabulary words can be examined in T-4B).
	5. AUDIOMATCH – Students will be presented with the words. He will listen to the words and click on the appropriate word. This can be done as a multiple exercise activity where students are provided with three words and they listen and select the appropriate one. As a review, when students select the correct one, provide the Spanish translation of the word. (Exercise can be examined in T-4G).
	6. Direct students to read the selection “Surprise! It’s your Wedding!” in their Textbooks. Heyer, S. (1997) More True Stories: A High-Beginner Reader. White Plains, NY: Longman Publishers Page 7. They can read in groups or individually. They can use sound.
	7. Have students go back to their computers and answer questions about the selection. (See T-4C for Questions) Questions can be read to them.

	<p>8. Students will be directed to re-read the selection from their textbooks. They can use the sound option and listen to it, instead of re-reading it.</p> <p>a. Using the sentences provided the student will select up to 8 sentences in order take notes on the reading. (Do not let them use more than 8 sentences of those indicated).</p> <p>b. Students will then using their initial “notes” from step 8a, they will select less sentences and choose the most important facts from their notes limiting the amount of sentences to 3. This is a timed exercise and they have only 90 seconds.</p> <p>c. They will then repeat step 8b, and write one sentence the most important facts from 8B. (Timed again – 90 seconds)</p> <p>d. When they finish, give them the standardized answer and/or similar answers they could have achieved and have them compare their results. How close were they?</p> <p>e. Have a PowerPoint presentation (in text) explaining that if they actually have one sentence that sums up what the selection was about they have identified the Main Idea. Also show them that the process used to use less and less words to take notes and recall information is a way of Summarizing a selection. (Contents for this activity can be examined in T-4 D)</p>
	<p>9. Story Pyramid – Students use the information from their “notes” and Summary and complete the Story Pyramid. (Contents for this exercise can be examined in T-4E) Students will type their answers, completing a visual organizer. When they finish, have a screen showing possible answers and have students be able to compare how similar their answers were. Also mention to them (in the screen) that this is another way of summarizing information.</p>
	<p>10. Show another screen that mentions there is a third way of summarizing a selection; and that that way is by looking at the characters.</p> <p>(Contents can be examined in T-4E)</p>
	<p>11. Students will complete a table where they will actually provide specific information about the characters in the story. (See T-4F). (When they finish this activity the second part will be used as a closure activity).</p>

	12. If time permits and scores are lower than half, students can re-do exercise or go back and review lesson using the same lesson activities or another preferred modality.
Kinesthetic	1. Students log in with their unique username and password into the Blackboard Web site.
	2. Students select the Unit titled: “Surprise! It’s Your Wedding!” – Vocabulary Development, Main Idea, Details, Characters
	3. Students will select Kinesthetic lesson.
	4. Presenting Vocabulary – Vocabulary words are presented in sentences. Vocabulary words are in different colors. Direct students with visual, text clues to click on the blue words. As they click on them the word is pronounced and the Spanish translation is shown in a box. (Vocabulary and sentences can be examined in T-4H)
	5. Scrambled Letters – Words are presented out of order and the student types them in the correct order. Timed exercise. 2 minutes and see how many he/she can spell correctly. When they click “enter” or “ok” or hit the “enter” key they can hear the word being pronounced. (Sample Scrambled letters can be examined in T-4I)
	6. Direct students to read the selection “Surprise! It’s your Wedding!” in their Textbooks. Heyer, S. (1997) More True Stories: A High-Beginner Reader. White Plains, NY: Longman Publishers Page 7. They can read in groups or individually. They can use sound. They can sit at their desk; move around in a certain area or lay down to read on bean bags.
	7. Have students go back to their computers and answer questions about the selection. (See T-4C for Questions)

	<p>8. Students will be directed to re-read the selection from their textbooks. (They could also use the recorded version and just listen to it)</p> <p>a. Using the sentences provided the student will select up to 8 sentences in order take notes on the reading. (Do not let them use more than 8 sentences of those indicated).</p> <p>b. Students will then using their initial “notes” from step 8a, they will select less sentences and choose the most important facts from their notes limiting the amount of sentences to 3. This is a timed exercise and they have only 90 seconds.</p> <p>c. They will then repeat step 8b, and write one sentence the most important facts from 8B. (Timed again – 90 seconds)</p> <p>d. When they finish, give them the standardized answer and/or similar answers they could have achieved and have them compare their results. How close were they?</p> <p>e. Have a PowerPoint presentation (in text) explaining that if they actually have one sentence that sums up what the selection was about they have identified the Main Idea. Also show them that the process used to use less and less words to take notes and recall information is a way of Summarizing a selection. (Contents for this activity can be examined in T-4 D)</p>
	<p>9. Story Pyramid – Students use the information from their “notes” and Summary and complete the Story Pyramid. (Contents for this exercise can be examined in T-4E) Students will type their answers, completing a visual organizer. When they finish, have a screen showing possible answers and have students be able to compare how similar their answers were. Also mention to them (in the screen) that this is another way of summarizing information.</p>
	<p>10. Show another screen that mentions there is a third way of summarizing a selection; and that that way is by looking at the characters. (Contents can be examined in T-4E)</p>
	<p>11. Students will complete a table where they will actually provide specific information about the characters in the story. (See T-4F). (When they finish this activity the second part will be used as a closure activity).</p>

	12. If time permits and scores are lower than half, students can re-do exercise or go back and review lesson using the same lesson activities or another preferred modality.
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c. Closure:

- i. Once students complete Step 11, they will be prompted to complete a paragraph, summarizing the story's main points.
- ii. They will submit it directly to the teacher via e-mail. Be sure to provide a form where they can include their name, learning style, and student ID number.

V. Evaluation or Assessment:

- a. Have students complete a Reaction Information Collection Instrument at the end of the lesson (See T-1E).

T-4A

Advantages and Disadvantages of Being Married and/or Single

Is it better to be married or single? Fill in the chart below. Then be ready to discuss your answers with your classmates.

It is better to be married. Why?	It is better to be single. Why?
1.	1.
2.	2.
3.	3.

T-4B
Vocabulary Words

English	Spanish
Drove	Guió
Quiet	Callado(a)
Wedding	Boda
Patient	Paciente
Afraid	Asustado
Trick	Truco
Suit	Ropa masculina formal (Gabán, corbata y Pantalón)
Courthouse	Tribunal/Palacio de Justicia
Relatives	Parientes
Shake	Sacudir
Husband	Marido
Wife	Esposa
Pretending	Pretendiendo
Punch	Golpear

T-4C

Surprise! It's your Wedding! Reading Comprehension Questions

1. Lynn waited and waited. She was very _____.
 - a. Punch
 - b. Patient
 - c. Wife
 - d. Afraid

2. John's best friend, Bob, told him, "I'm getting married on Saturday." That wasn't true; Bob wasn't really getting married. It was a _____.
 - a. Trick
 - b. Wedding
 - c. Punch
 - d. Courthouse

3. John and Lynn live in England. In England, people get married at a church or at a _____.
 - a. Wedding
 - b. trick party
 - c. courthouse
 - d. church

4. Why did Lynn surprise John with the wedding?
 - a. She knew he would not say no because they loved each other.
 - b. She knew he would like having a surprise wedding.
 - c. She knew he was afraid of getting married, so she planned it all out for him.
 - d. **She was tired of waiting, and she knew he loved her but just afraid to get married.**

5. Why did Bob begin to shake?
 - a. He realized it was Bob's wedding.
 - b. **He realized he had been tricked into his own wedding.**
 - c. He was very angry about being tricked into his own wedding.
 - d. We can't tell from the selection why he was shaking.

6. What was Lynn's problem?
 - a. John's parents didn't like her.
 - b. Lynn loved John's best friend.
 - c. Lynn loved Bob.
 - d. **John was afraid to get married.**

7. John and Lynn's wedding was different because _____.
 - a. Lynn didn't wear a white dress.
 - b. They didn't get married in a church.
 - c. **John didn't know about the wedding.**
 - d. The wedding was in a courthouse.

T-4D
Contents for Step 8

WORD CHOICES

Initial word choices

1. This story is about Lynn Millington and John Biggin.
2. John and Lynn love each other very much.
3. John is afraid of getting married.
4. Lynn, tired of waiting for John, decides to plan their wedding and surprise John.
5. Lynn calls relatives, parents, and friends and plans for the wedding.
6. She gets John's best friend, Bob, to help her to get John to the courthouse.
7. Bob tells John he is getting married.
8. When Bob arrives to the courthouse he realizes he has been tricked.
9. He gets nervous and starts to shake.
10. John does not run away.
11. They get married.
12. Afterwards the photographer takes pictures.
13. At the end of the story, John is pretending to punch Lynn while he is smiling.
14. John is not really angry.
15. They are both very happy.

Step 8A (Up to 8 sentences)

1. John and Lynn love each other very much.
2. John is afraid of getting married.
3. Lynn, tired of waiting for John, decides to plan their wedding and surprise John.
4. Lynn calls relatives, parents, and friends and plans for the wedding.
5. Bob tells John he is getting married.
6. When Bob arrives to the courthouse he realizes he has been tricked
7. They get married.
8. They are both very happy.

Step 8B (Up to 3 Sentences)

1. John is afraid of getting married.
2. Lynn, tired of waiting for John, decides to plan their wedding and surprise John.
3. They are both very happy.

Possible / Standardized Answer for Step 8C

John is afraid of getting married so Lynn plans the wedding and surprises him.

PowerPoint Presentation or Text/Audio "lecture" notes:

"This one sentence, if it sums up what the selection was about they have identified the Main Idea."

(“Si tu oración resume la selección has identificado la Idea Central”)

“The process used to use less and less words to take notes and recall information is a way of summarizing a selection.”

(“El proceso de utilizar menos palabras cada vez para tomar notas sobre los detalles de la selección, es una buena manera de resumir una selección.”)

T-4E

Story Pyramid with Sample Answers- Steps 9-10

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

On line #

1. write the name of the main person in this selection.
 - a. Lynn
2. write two words describing the main person or character
 - a. loving, patient
3. write three words describing someone else in the story
 - a. John, her boyfriend
4. write four words naming other people in the story
 - a. relatives, friends, parents, Bob

5. write five words stating the problem
 - a. She wants to get married.
6. write six words describing an event
 - a. Lynn called parents, friends, and relatives.
7. write seven words describing a second event
 - a. Bob and John went to the courthouse
8. write eight words describing a third event
 - a. John was surprised but did not run away.
9. write nine words describing the solution to the problem
 - a. John was afraid but got married to Lynn anyway.

PowerPoint Presentation or Text/Audio “lecture” notes:
 “Using the Story Pyramid is another way of summarizing a selection.”
 (“Utilizar la pirámide es otra manera de resumir una selección”)

For Step 10:

PowerPoint Presentation or Text/Audio “lecture” notes:

“There is a third way of summarizing a selection. That is focusing on the characters: who they are and what they do.”
 (“Existe una tercera manera de resumir una selección. Esta es enfocándose en los personajes: quiénes son y qué hacen.”)

T-4F

Table for Character Descriptions as a way of Summarizing

Step 11

Item	Answer 1	Answer 2
First name	Lynn	John
Traits		
Relates		
Wants		
Feels		
An action		

Sample Answer Key

Item	Answer 1	Answer 2
First name	Lynn	John
Two Traits	Patient, loving	loving, afraid
Relates (use three words)	John, her boyfriend	Lynn, her girlfriend
Wants	To get married	To get married
Feels	Ready to get married	Afraid to get married
An action	Plans a surprise wedding	Does not run away

The paragraph to be completed in the Closure activity will be something like this:
(Sample Paragraph)

Lynn is John's girlfriend. They both love each other, and though Lynn has been very patient, John is afraid to get married. Lynn plans a surprise wedding and John does not run away.

T-4G

Exercise for Step 5 Auditory Learner

- | | | | | |
|-----|---------------|--------------|-----------------|-----------------|
| 1. | a. arcade | b. affreight | c. airfreight | d. afraid |
| 2. | a. courthouse | b. clubhouse | c. coffeehouse | d. chapterhouse |
| 3. | a. dove | b. drove | c. grove | d. trove |
| 4. | a. abscond | b. headhunt | c. husband | d. oughtn't |
| 5. | a. vacationed | b. patient | c. stationed | d. rationed |
| 6. | a. pretending | b. appending | c. portending | d. presenting |
| 7. | a. bunch | b. lunch | c. punch | d. plunge |
| 8. | a. diet | b. quiet | c. riot | d. disquiet |
| 9. | a. relatives | b. negatives | c. cooperatives | d. restoratives |
| 10. | a. steak | b. stake | c. shake | d. strake |
| 11. | a. spruit | b. sluit | c. sued | d. suit |
| 12. | a. thick | b. trick | c. trig | d. tick |
| 13. | a. wetting | b. sweating | c. wedding | d. treading |
| 14. | a. wive | b. rife | c. thrive | d. wife |

T-4H
Vocabulary and Sentences Kinesthetic Learner step 4

English	Sentence
drove	I drove my car to work today.
quiet	He didn't make any noises. He was very quiet
wedding	Daisy and Michael are planning a small wedding. They are getting married in June.
patient	I can wait for a long time. I am very patient.
afraid	The little boy was afraid of the monsters in his dreams.
trick	It was a surprise birthday party. We tricked him into thinking we had forgotten.
suit	"It's a formal event. Ted, please wear your dark suit."
courthouse	The judge is at the courthouse.
relatives	All our cousins, nephews, uncles and aunts were invited. All the relatives were at the wedding.
shake	I was so nervous I could feel my knees shake.
husband	The priest pronounced them husband and wife at the end of the ceremony.
wife	The priest pronounced them husband and wife at the end of the ceremony.
pretending	We were pretending we had forgotten his birthday to surprise later on in the day.
punch	The boxer punched the other one and won the fight by knockout.

T-4I
Scrambled Letters
Kinesthetic Learner Step 5

English	Scrambled
drove	DREVO
quiet	UEIQT
wedding	NEIGDWD
patient	NAPTIET
afraid	FADIAR
trick	TRIKC
suit	IUTS
courthouse	SOOCTURHUE
relatives	SEALEITRV
shake	SKHEA
husband	SUABHDN
wife	WFIE
pretending	IERPNGDENT
punch	PHNCU

Appendix E

Lessons 1-4 Reaction Information Collection Instrument

Lessons 1-4 Reaction Information Collection Instrument

1. What is your username?
2. Check your learning style according to the PEPS Test
 - a. Auditory
 - b. Visual
 - c. Kinesthetic
 - d. Auditory-Visual
 - e. Visual-Kinesthetic
 - f. Auditory - Kinesthetic
3. Please use this space to comment on the lesson.
4. Select the alternative that best describes the activities you completed in the order you completed them. (Seleccione la alternativa que mejor describa las actividades que realizó en el orden que las realizó).
 - a. Auditory only
 - b. Kinesthetic only
 - c. Visual only
 - d. Auditory, Kinesthetic
 - e. Kinesthetic, Auditory
 - f. Visual, Kinesthetic
 - g. Kinesthetic, Visual
 - h. Auditory, Visual
 - i. Visual, Auditory
 - j. Auditory, Kinesthetic, Visual
 - k. Auditory, Visual, Kinesthetic

- l. Kinesthetic, Auditory, Visual
 - m. Kinesthetic, Visual, Auditory
 - n. Visual, Auditory, Kinesthetic
 - o. Visual, Kinesthetic, Auditory
5. What activity from your learning style lesson did you enjoy the most? Why?
 6. Do you believe you are better prepared now that you have taken part in this lesson?
 - a. No
 - b. Yes
 7. Please provide recommendations in the space provided.

Auditory learners tend to benefit most from traditional teaching techniques. Many teachers use a lecture-style forum, presenting information by talking to their students. Regulating voice tone, inflection and body language will help all students maintain interest and attention. Auditory learners succeed when directions are read aloud, speeches are required, or information is presented and requested verbally. Visual Learners. Some students rely upon a visual learning style: "Show me and I'll understand." Visual learners benefit from diagrams, charts, pictures, films and written d A visual learner is a person who learns best by using books with pictures, slides, posters, diagrams, flow charts, graphs, using different colors and Premium. 775 Words | 2 Pages. There are several different types of learning styles including visual, auditory and kinaesthetic. In fact, these are the three main ways of learning styles. Students should understand their own personal styles of