

Contrasting Technology to Traditional Methodology in Adult ESL Instruction  
Contrasting Technology Integration and Traditional Methodology in Adult ESL Instruction

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by

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## Contrasting Technology to Traditional Methodology in Adult ESL Instruction

### ABSTRACT

The usage of technology in adult ESL classrooms needs to be examined as it is creating new opportunities and added challenges. The purpose of the study was to explore how technology was being used in such environment and what factors contributed as supports or hindrances to technology use. Interviews, questionnaires, and observations were used to collect data in two schools. Participant groups included administrators, teachers, and students. Results of the qualitative analysis indicated that most respondents were universally familiar with using technology, but professional development seemed to be needed for teachers to feel comfortable applying their interests and knowledge about using technology into the curriculum. Administrators' support was identified as an important factor in teacher and student use of technology in their schools; their role in terms of funding and training was instrumental. Time appeared as an issue in technology integration; all participants wanted more. Teachers' attitudes and teaching approaches affected their integration of technology into the curriculum.

CHAPTER 1

INTRODUCTION TO THE STUDY

In the age of electricity and automation, the globe becomes a community of continuous learning, a single campus in which everybody irrespective of age, is involved in learning a living.

(Marshall McLuhan, *Understanding Media*, 1964, p. 5)

Background

The national Center for Education Statistics (NCES) and the Division of Adult Education and Literacy took a nationally representative household survey to assess the literacy skills of the adult population in the United States. The national Adult Literacy Survey was the third and largest assessment of adult literacy funded by the federal government. The survey was designed to measure the nature and extent of literacy among the adult population, age 16 and older (National Center for Education Statistics [NCES], 2001). The 1994-98 International Adult Literacy Survey (IALS) assessment showed that the average literacy score of foreign-born adults in the U.S. was 210. Scores were used to designate levels, with Level 1 (0-225), Level 2 (226-275), Level 3 (276-325), Level 4 (326-375) and Level 5 (376-500). Level 1 represents the lowest level and Level 5 the highest proficiency (Kirsch, Jungeblut, Jenkins, Kolstad. 2002).

The United States ranked 16th out of 17 countries on the IALS assessment. (Statistics Canada, 2005). In Adult Literacy and Lifeskills Survey (ALLS), which was conducted in seven

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The 1992, National Adult Literacy Survey (NCES, 2001) compared the average prose literacy levels of the native U.S. population and the foreign-born population and found that the older a person was when he/she arrived in the U.S., the lower his/her average English language literacy level. For the study, over 26,000 randomly selected U.S. individuals aged 16 were interviewed and 1,000 adults were surveyed. Of the 21 to 23% scored at the lowest level of literacy proficiency (Level 1). According to NALS, the National Education Goals Panel (NEGP) considers the percentage of adults at or above Level 3 on the NALS prose scale as an indicator of recommended standard to achieve results (Sites. 2000). Of the 23% participants in this level were immigrants who were learning English.

The non-native English speaking adult residents in the U.S. are from diverse educational backgrounds, ranging from no education at all to advanced degrees. The foreign-born population comes from all over the world, mainly from Mexico (twenty-five percent), Latin America (more than 50%), and from Asia and other countries. (Capps. Fix, Paseel, & Perez-Lopez, 2002; U.S. Census Bureau [USCB], 2002).

An adult school program has a significant role in providing English as a Second Language for learners with very broad backgrounds and needs. Any person who is sixteen or older and is not enrolled in a K-12 program can enroll in adult education classes. Adult learners may range in age from teenagers to adults of more than eighty. The learner can be one who has arrived in the U.S. recently or a permanent resident, naturalized citizen, legal immigrant, refugee, and a person under protection. Adults who are English as a second language learners are a large

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portion of adult education programs. More than 35 million adults in the United States have a first language other than English (U. S. Census Bureau, 2001). In 2002-2003, 43% of participants in state-administered adult education programs were enrolled in ESL classes (U.S Department of Education [USDOE], 2004). This did not include those served within other segments of the educational system—in adult basic education (ABE) and adult secondary education (ASE) classes, private language schools and academic institutions, as well as volunteer literacy services and other community-based programs (National Center for Family Literacy, 2004).

In 2001–2002, of the English language learners enrolled in state run adult education programs, more than half were enrolled in beginning levels courses (USDOE, 2003). Many had limited literacy in their native language. The National Adult Literacy Survey (NALS) found that over half of the American population surveyed at random had low English literacy skills and that a higher percentage of non-native English speakers than native English speakers read English at the lowest levels (Kirsch et. al. 1993). Spanish (60%), Chinese, French, German, Tagalog, Vietnamese, Italian, Korean, and Polish were the order of dominant languages of adult ESL spoken at home (U.S. Census Bureau, 2003).

In 2000, 68% of the nation’s foreign-born population lived in California, Florida, Illinois, New Jersey, New York, and Texas (Capps et. al., 2002). In the 1990s, half of all workers entering the workforce were immigrants. Many had strong academic credentials and skills. (Capps et. al. 2003). Limited English skills are associated with low wage jobs; nearly two-thirds of low-wage immigrants have limited English proficiency. English and literacy skills above an IALS Level 3 are needed to get naturalized, get a job, and fit into the

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U.S. mainstream as suggested in the Final Report of the International Adult Literacy Survey 1994-1998 (Organization for Economic Co-operation and Development, 2000). Generally, demonstration of Basic English (reading, writing, and speaking) is the one of five requirements of the naturalization process in the U. S (U.S.CIS. 2005). Nearly 40% of the foreign-born people lack necessary language skills (Kirsch et. al., 2002) though some studies indicate that these immigrants have a positive effect on the overall U.S. economy (Capps. et. al., 2003).

### Statement of the Problem

The U.S. Census Bureau released the fact sheet supported by the American Community Survey in 2004. This fact sheet stated that the California population whose non-English at-home language was 13,385,483, which is 41.3% of California population spoke a language other than English at home compared to 18.7% of the national population. A language other than English was spoken at home by about 144,000 people (51%) in Stockton and 19,000 (37%) of the population in Turlock. In Stanislaus County, CA 26.6% of the population did not have a high school diploma, which it was similar to the 22.6% rate in San Joaquin County where 22.6% of the population did not have a high school diploma (U. S. Census Bureau, 2004).

High and low end media, including internet, software, computer applications, TV/video/DVD, audio equipment, and projectors have become popular tools for teaching in public schools. In fact, teachers have been using projectors since the Lumière brothers first displayed photographs in Paris at the turn of the century. Why? They are extremely effective (Cox, Rhodes, & Hall, 1988). Projection allows material to be seen more clearly and by larger groups of people. According to National Center for Educational Statistics' Fast Response Survey System (FRSS) conducted in 1999-2003 published in fall 2003, 93% of public school

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instructional rooms had Internet access, compared with 3% in 1994. Public schools have made consistent progress in expanding Internet access in instructional rooms (Parsad & Jones, 2005). Teachers commonly taught students the use of technologies for word processing or making spreadsheets (about 61 %), followed by Internet research (51 %), exercising drills (50 %), and solving problems and analyzing data (50 %). Moreover, many teachers used computers or the Internet to conduct a number of preparatory and administrative tasks (e.g., creating instructional materials, gathering information for planning lessons) and communicative tasks (e.g., communication with colleagues) (Smerdon, Cronen, Lannahan, Anderson, Jannotti, & Angeles, 2000).

The abundance of information available on the Web provides teachers and learners access to innumerable language learning resources. Online journals, tutorials, newspapers, and dictionaries offer compelling material for language learners. Teachers can find lesson plans, ideas, exercises, assessment tools, and other materials for use in their classes. In addition, an MCI nationwide poll in 1998 found that nearly 60% of the public answered "a great amount" when asked "How much do you think computers have helped improve student learning?" (Anderson & Ronkvist, 1999). However, some adult ESL instructors still employ only teacher directed lessons, using lecture and conversations. Migliacchi (2002) states, "Good language teaching is good language teaching, with or without technology" (p.1). Other teachers use strategies with media assisted lessons which attempt to introduce values of the current society to newcomers in the United States.

### Purpose of the Study

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The purpose of this study was to explore teachers' contrasting approaches towards technology use in adult ESL classrooms. Are there different approaches, and if any, what types of personal factors including attitudes, confidence, years of technology use, and training experience influence the use of technology? And if there are other environment factors involved, what types of factors affect integrating technology into the classroom? Two classes using multimedia that included software, video/DVD, graphics, music, and Internet activities, and two other classes which were not using multimedia were explored.

### Significance of the Study

By exploring the above questions and examining what is happening in the different adult ESL classrooms, the study will benefit teachers by promoting awareness of effective tools and practical methodology. It will exhibit whether technology use increases the students' academic performance and raises their confidence towards English acquisition, it will help inform administrators of factors for promotion of technology use when they consider the cost effectiveness of integrating technology into their classrooms.

### Research Questions

The research questions for administrators, teachers, and students using questionnaire, interview, and observations for this study were:

*Research Question 1:* How is technology being served in local adult ESL classrooms?

*Research Question 2:* What examples, can be found as enhancements or obstacles to use of technology?

### Theory



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Recent theories in the fields of educational psychology and language acquisition provide a supportive basis for the effectiveness of multimedia instruction. The leading theories relevant to this study in the zone of educational psychology are Multiple Intelligence Theory, Cognitive Flexibility Theory, Dual Coding Theory, Cognitive Load Theory, and Second Language Acquisition Theory.

Gardner (1983, p 390) describes how computers can provide alternatives that facilitates multiple approaches for teachers to address each individual student.

...Computers offer a useful way to think about the marshalling of intelligences to master educational goals, the potential utility of computers in the process of matching individuals to modes of instruction is substantial. While affecting a match between a student's intellectual profile and the instructional goals can be a highly demanding task for even the most gifted instructor, the relevant kind of information could be readily handled by a computer that can, in a fraction of a second, suggest alternative pedagogical programs or routes. More important, the computer can be a vital facilitator in the actual process of instruction, helping individuals to negotiate sequences at their preferred pace by using a variety of educational techniques (p 391)

Gardner's Multiple Intelligence Theory (1983) suggests that many intelligences exist in humans, but only linguistic and logical-mathematical are ones that have typically been valued in school. In his view, musical intelligence is similar to linguistic intelligence and is not a talent. Body-kinesthetic intelligence, spatial intelligence, personal intelligence as well as intrapersonal

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intelligence need to be noticed by a teacher. Gardner added other intelligences that were not mentioned in the prior books (1999). A naturalist intelligence, a spiritual intelligence, and an existential intelligence show different performances of human intellects. The idea of using multimedia that addresses different intelligences provides many ways of understanding diverse students. Teachers then can use Multiple Intelligence Theory to channel the students' different aptitude to learn a learning concept by creating classroom activities that address multiple ways of learning and knowing (Christon, 1999b).

Cognitive Flexibility Theory (Spiro, Feltovitch, Coulson, & Anderson, 1988) focuses on the nature of learning in complex and ill-structured domains. Spiro & Jehng (1990, p. 165) stated:

By cognitive flexibility, we mean the ability to spontaneously restructure one's knowledge, in many ways, in adaptive response to radically changing situational demands...This is a function of both the way knowledge is represented (e.g., along multiple rather than single conceptual dimensions) and the processes that operate on those mental representations (e.g., processes of schema assembly rather than intact schema retrieval) (p. 165).

The principle of the theory suggests that multiple representation of content to learning activities and highly interconnected knowledge is preferable to compartmentalized knowledge (need author 1988). Focusing on the production of information from multiple perspectives and use of many study strategies concurs a requirement of diverse aides for students similar to Gardner's Multiple Intelligence. Therefore, according to this theory, adult ESL learners must be

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given an opportunity to develop their own representations of information using various types of media to integrate their prior knowledge and experiences into learning.

Howard Gardner, pointed out that some second language students may benefit from multiple representations (auditory, visual, kinesthetic, etc.) of new concepts (Gardner, 1993; 2000). A number of second language acquisition theories also provide a solid rationale and basis for incorporating multimedia presentations in the classroom. For instance, Stephen Krashen, in his theory of comprehensible input, emphasized the importance of making second language concepts as visual as possible (1985).

Dual Coding Theory asserts that humans process information in their short-term or working memory in two distinct modes: verbal and visual (Paivio, 1986). The verbal mode includes auditory and textual comprehension of information, whereas the definition of the visual mode includes mental capacity for images and animations. Dual coding theory posits that information presented in one of the two modes is processed separately; however, if both verbal and visual information are presented contiguously, the mind of a learner will naturally connect both systems, and this kind of processing will result in a stronger mental representation of a particular concept. In other words, information that is presented in both modes allows learners to more solidly encode ideas in their minds resulting in greater comprehension and recall than information presented in only one mode (Clark & Paivio, 1991; Paivio, 1986). In regard to the application of Dual Coding Theory in instruction, Mayer (2005) stated, "... words and pictures, while qualitatively different, can complement one another and that human understanding is enhanced when learners are able to mentally integrate visual and verbal representations" (p. 4).

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Numerous studies have been conducted to test and provide sustaining evidence for the tenets and merits of Dual Coding Theory and its application to instructional design (Alty, 2002; Ardac & Akaygun, 2004; Beacham, Elliott, Alty, & Al-Sharrah, 2002; Gellevij, Van Der Meij, De Jong, & Pieters, 2002; Mayer & Anderson, 1991; Mayer & Anderson, 1992; Sadoski, Goetz, & Fritz, 1993). This research provides a solid basis upon which to anchor the benefits of incorporating multimedia tools in education.

Cognitive Load Theory claims that one's short-term, or working memory, is limited in its ability to assimilate information. To enhance a learner's comprehension, the theory contends that the reduction of points being presented and the complete elimination of any extraneous or irrelevant information will increase a learner's ability to focus on pertinent material (Cooper, 1990). Mayer, a prominent educational psychologist, suggested that cognitive load also takes into account a learner's schemata. Reducing cognitive load in multimedia presentations requires, "...active processing, that is, people understand the presented material when they pay attention to the relevant material, organize it into a coherent mental structure and integrate with their prior knowledge" (as cited in Atkinson, 2004, p. 3). Research in the field of educational psychology has strongly asserted that the ideas inherent in cognitive load have significant implications in education (Pollock, Chandler, & Sweller, 2002; Moreno, 2002; Moreno & Mayer, 2000). The Dual Coding and Cognitive Load Theories present relevant information to the current study due to the ability of multimedia to easily and contiguously incorporate visual and verbal elements into the presentation of cognitively complex information in an instructional setting (Clark. & Paivio (1991).

According to Brookfield, three trends in the study of adult learning that have emerged during the 1990's, and that appear to exercise some influence in the new millennium, are (1) the

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cross-cultural dimensions of adult learning (distance education), (2) adults' engagement in practical theorizing (computer assisted instruction), and (3) the ways in which adults learn within the systems of education (open learning systems). These trends are linked to recent technological advances (Stephen Brookfield, 1995).

In addition, theories on the importance of motivation (Brown, 1994) and lowering the affective filter (i.e. stress levels) of students (Krashen, 1985) within the second language classroom would also support the use of multi media instruction. Through the use of a variety of graphics, sound, and animation, teachers are more easily able to embed rather abstract concepts within very specific visual contexts which can lead to more meaningful versus rote understanding of the context (Ausubel, 1963). The impact of contextualizing material and allowing students to connect concepts to previous knowledge through the use of thematic or content-based information have also been well-supported in the field of second language pedagogy (Porter, 2005). This applies to the use of multimedia instruction in that the integration of graphics and visuals can easily lend itself to the creation of theme-based and context-rich presentations of language constructs.

Knowles' theory of andragogy (1984) for adult learning supports the postulate that adults are self-directed and expect to take responsibility for decisions. Adult learning programs must accommodate this fundamental aspect. According to Knowles, one must assume about the design of learning: (1) Adults need to know why they need to learn something. (2) Adults need to learn experientially. (3) Adults approach learning as problem-solving, and (4) Adults learn best when the topic is of immediate value.

### Summary

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This chapter provided a background of significant issues in addition to a theoretical basis for the effectiveness of integrating technology in adult ESL classrooms. A review of the research in the next chapter is devoted to technology practices and prospects, teachers' attitudes and other supportive and hindering factors affecting technology use provided further information related to the current study.

## CHAPTER II

### REVIEW OF LITERATURE

This chapter is divided into three main sections which provide a review of the literature regarding the teacher's decision making on using technology. The first section examines adult and ESL learning practices and current trends towards using technology. The second section explores the teachers' attitude towards using technology. The third section illustrates many other factors affecting the teacher use of technology.

#### Technology practices and prospects

Integrating technology in classrooms is visibly increasing in most areas in our schools. Cummins and Sayers wrote in *Brave New Schools* (1995) that as the infrastructure of the information superhighway is being erected, educators have the opportunity to ensure that all North American students have freedom of access to explore forms of learning and thinking that have the potential to transform their lives. Access to the Internet by itself is not sufficient to increase students' learning opportunities. But if communities of learning are combined with genuine forms of teacher-student interaction that are very different from those that exist in most schools today, there are immense possibilities for expanding students' intellectual, cultural, and political horizons (Cummins & Sayers, 1995).

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In addition, in the Visions 2020 Report, Secretary of Education Dr. Rod Paige stated “Indeed, education is the only business still debating the usefulness of technology. Schools remain unchanged for the most part despite numerous reforms and increased investments in computers and networks” (U.S. Dept. of Education, 2004). According to the plan, all schools, districts, and states would be required to meet seven major action steps and recommendations to raise standards, retrain educators, reapportion budgets, exploit new technologies and provide students with the technological and individual support they need. The seven steps include strengthening leadership, considering innovative budgeting, improving teacher training, supporting E-learning and virtual schools, encouraging broadband access, moving toward digital content, and integrating data systems (U.S. Dept. of Education, 2004). The plan concluded (USDOE 2004):

There is no dispute over the need for America’s students to have the knowledge and competence to compete in an increasingly technology-driven world economy. This need demands new models of education facilitated by educational technology. In the realm of technology, the educational community is playing catch-up. Industry is far ahead of education. Tech-savvy high school students often are far ahead of their teachers. This ‘digital disconnect’ is a major cause of frustration among today’s students. Public schools that do not adapt to the technology needs of students risk becoming increasingly irrelevant. Students will seek other options. Some of the most promising new educational approaches are being developed outside the traditional educational system through e-learning and virtual schools (p. 45).

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The plan (USDOE, 2004) exhibited that this requisite claims new representations of education assisted by educational technology. In the area of technology, the instructive community is following industry. Reforms within the system will require strong leadership and a willingness to restructure the learning environment in fundamental ways.

Educational media managers continue to struggle to support low end media such as audio and video cassettes, slides, and overhead transparencies that are still preferred by many instructors, and the high end digital media, which are seen as the technological future. The trend seems to be to gradually reduce support for analog media and increase support for digital. The challenge is to try to achieve a level of productivity with digital media that was never possible with the analog media (Orey, Fitzgerald, Branch, 2004). In the Yearbook 2002 annual review (Molenda and Sullivan, 2002), it reports that the pace of faculty adoption of computer-based media appeared to be slowing. According to the annual surveys of the Campus Computing Project between 1997 and 2000, faculty adoption of certain computer-based teaching applications—such as use of Internet resources—grew each year during that period. However, the percentage increase was smaller in each succeeding year, indicating plateau of the adoption rate (Distributed Education Committee, 2002).

Furthermore, although computers have become commonplace in most schools in the past 30 years, but computers have not been well-integrated into the curriculum (Ognibene & Skeele, 1990). Instructional technology in schools functions as an add-on, rather than an integral part of the curriculum (Ocheltree, 1998). Research has found that most teachers want to use computers, but their use has been limited to fairly narrow applications. Some teachers who are exposed to passive learning software believe that extensive use of computers will have a negative effect on student-teacher roles. Teachers fear that computer use will take time away from their required



Contrasting Technology to Traditional Methodology in Adult ESL Instruction work, but that they will remain responsible for accountability measures created before the emergence of computers (Dan Ocheltree, 1998). The educational community continues to find resistance to computers among educators, which has led to its underutilization in the classrooms (Hawk, 1989; Mahmodd & Medewits, 1989).

Classroom teachers find themselves with the primary responsibility for the implementation of computers. Many teachers may be eager to learn about computers and use them, but often they are presented with new technologies and expectations without being given the time and support they need to master them and incorporate them into instruction (Kinnaman, 1993). Furthermore, less than one-third of education majors surveyed considered themselves prepared to teach with technology. As a result, the expensive equipment does little to improve student learning (Moffitt, Friesema, & Brady, 1994). A number of interpretations can be translated from these findings. First, they indicate that teacher adoption of computer media in their teaching can be viewed as a wide spectrum of adoption decisions, not just a single one (Orey, Fitzgerald, Branch, 2004).

### Teachers' Attitudes

Hanks' study on teachers' utilization of technology found that not only environmental factors, but also personal factors, such as skill self-rating, and teacher beliefs were related to the focus, frequency, and time spent using multimedia. Also, the years of teacher experience in technology was a factor (Hanks, 2002). Blankenship also found that attitude was a common predictor with other factors, such as training, support, access, and age of teacher (1998).

Research supports the idea that teachers teach in a manner reflective of their own learning experience (Niederhauser & Stoddart, 1994). Technology related learning environments require

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many skills. Teachers would be expected to recurrently assess student progress and create learning opportunities with appropriate activities relevant to the school's educational goals. Comparatively few teachers have been prepared to perform these functions (Cummings, 1988). Many students outperform the teacher's ability using technology (A National Education Technology Plan, 2004). Successful implementation of technology into schools depends upon the capability to help existing teachers, as well as new entrants to the profession, to develop the skills required to perform these functions effectively (Ocheltree, 1998).

Attitude towards computer technology are complex. Francis and Evans (1995) reported studies examining anxiety, stress, feelings of stupidity, fear of the unfamiliar and of dehumanizing effects, active resistance and sabotage, the pathological extremes of computer phobia and computer addiction, "cyberphobia," and microcomputer mania as examples of the wide array of responses invoked by computer technologies. Therefore, it is difficult to classify a single variable called attitude and to quantify elements of attitude. (Ocheltree, 1998). Physical barriers and other dilemmas frequently affect attitudes. According to Becker (2000), inconvenient access to clusters of computers, problems of overly-scheduled schools, problems related to having a large amount of curriculum to "cover," and teachers' limited skill and expertise in using computers are obstacles to using computers regularly with their students.

Many instruments profess to measure attitudes toward computers. Francis and Evans (1995) compared six different scales purporting to measure attitude. They found that four of them had reliability coefficients greater than .90. One of these scales further divided the attitude measure into three subscales: anxiety, confidence, and liking, each of which had a reliability of over .90 (Delcourt & Kinzie (1993); Violato, Marini, & Hunter, 1989). Both used factor analysis to identify and confirm subscales of attitude. Violato et al. identified four factors associated with

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attitude: sex differences, comfort, liking, and value. Delcourt and Kinzie identified three factors, one dealing with comfort and anxiety, and the other two dealing with usefulness.

Violato et. Al (1989), and Francis and Evans (1995) identified teacher attitude and expertise as major factors in the successful integration of computers into the classroom. Eagly and Chaikin (1992) also argued that attitude is a key predictor of future behavior, motivation to continue learning, and academic achievement. Delcourt & Kinzie (1993) found that teachers with knowledge and experience with computers have a more positive attitude toward the potential of computers in education than teachers inexperienced in computer use.

According to Chen, level of experience correlated to teachers' attitudes, comfort level, computer liking, computer value, and tendency to utilize technology media in the classroom (1986). In a study of high school students, he researched the relationship between computer experience level and computer interest, confidence, and anxiety. Both male and female students had a high correlation between all areas of matters in computers and computer experience. Sheingold and Hadley (1990)' s survey also resulted in 73% of the interviewees who used computers for their instructions had more than five years of experience of computer utilization.

Teachers' attitude towards administration policy plays a role in the teachers' decision making on utilizing technology in the classroom. For example, Jones (1994) argued that teachers may not have a choice in the applications they use because administrators and technology decision-makers select the software. Furthermore, school administrators tend to invest funds in applications to solve teachers' information and performance needs when it is hard to determine if these applications are chosen strategically. As a result, teachers may have to adjust their work

Contrasting Technology to Traditional Methodology in Adult ESL Instruction processes to the capabilities of the application created for the general population and not for the unique complexities and specific variables encountered in each school setting.

Similarly, leaving teachers out of decision-making in the technology design makes it difficult for the adoption process as well. Research indicates that teachers participate more eagerly in the technology change and adoption process if they have an active involvement in the development or selection of the intended change (Berry & Ginsberg, 1991).

### Other Factors Affecting Technology Use

One factor among many others affecting teachers' use is student demographics (NCES, 2001). Many more than half the teachers in schools with students of a low poverty level and an equally low minority enrollment were likely to use computers or the Internet for instruction. Far less than half the teachers in schools with enrollment of high poverty and high minority reported computer use within the class (Parsad & Jones, 2005; Smerdon, Cronen, Anderson, Jannotti & Angeles, 2000).

According to the National Education Association (1996), our nation's schools are unsuccessful in presenting effective professional development for teachers. Today's teachers are expected to adopt new knowledge, interact with a diverse population of students, help students attain high standards, establish new technologies into the classroom, become specialists in student development, help manage the school, and make contact with parents and the community. America's teachers are determined to do all this and more, but they find themselves pressured for time and ideas to learn. Teachers should work together. Yet, all day, they are isolated from other adults. Neither the time nor the efficient interaction tools are available to communicate with other professionals in or outside the school.

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Internet connectivity is another factor in the use of technology in the classroom. In 2003, 95% of public schools with Internet access used broadband connections (Parsad & Jones, 2005). This study also found that in 2000 and 2001, 80% and 85% of the schools respectively, were using broadband connections. The proportion of public schools with wireless Internet connections increased with school size but decreased as poverty concentration increased. For example, 36% of schools with the lowest poverty concentration had wireless connections, compared with 25% of schools with the highest poverty concentration.

Another important factor is technical assistance for teachers. The assistance with major responsibility for computer hardware, software, and Internet support varied widely across schools. For example, a higher percentage of secondary schools (44%) had a fulltime, paid technology director or coordinator as the person primarily responsible for computer hardware, software, and Internet support at the school (35%) than elementary schools (35%) (Parsad & Jones, Feb. 2005). A full-time computer coordinator may help teachers to use computer software and hardware or with integrating technology into their curriculum. However, computer coordinators, in practice, teach more students than teach teachers (Becker, 1998).

The ratio of students per instructional computer with Internet access can be a factor as well. The ratio was higher in schools with the highest poverty concentration (19.5 to 1) than in schools with the lower poverty concentration (4.2 to 1) (Parsad & Jones. 2005). The proportion of public schools allowing students to access the Internet before school was lower in schools with the highest minority enrollment (60%) than in schools with the two lowest categories of minority enrollment (80% each). A similar pattern occurred by school poverty concentration (percent of students eligible for free or reduced-price lunch). Of the schools with the highest poverty concentration, 54% had computers with Internet access available before school,

Contrasting Technology to Traditional Methodology in Adult ESL Instruction compared with 82% and 80% of schools with the two lowest categories of poverty concentration (National Center for Family Literacy, 2004).

Past research regarding how to integrate the Internet into the curriculum indicates that approximately 50% of public school teachers in 1999 reported that they used computers for instruction during class time (Smerdon et al. 2000). Approximately 33% were confident to use computers and the Internet for instruction.

Parsad and Jones (2005) Classroom-level access to the Internet and teacher training for using the Internet were factors influencing teachers' use of computer. Each of these availabilities was related to the tendency that teachers also reported using the Internet for instruction. For example, 65% of teachers who reported available classroom Internet access reported using computers for instruction during class time, compared with 38% of teachers reporting no classroom access. Likewise, 56% of teachers whose training in the use of Internet were available from their state, district, or school reported using computers during class, compared with 43% of teachers whose training was unavailable and 34% of those who did not know. 63% of teachers reporting availability of technical assistance for using the Internet reported using computers for instruction in class, compared with 42% of teachers whose assistance was unavailable.

In addition, according to Anderson & Ronkvist (1999), current technology equipment in schools is old with limited processing power, little capacity and small storage capability for linking electronically that have a number of deficiencies. The variety of multimedia software installation and access to graphic information is therefore limited.

Byrom (1998) points out that principal leadership is one of the most important factors influencing the effective use of technology in classrooms. In all levels including state, district,

Contrasting Technology to Traditional Methodology in Adult ESL Instruction and school, the most successful technology programs are those that have had leaders who are entrusted with the implementation and use of technology for teaching and learning. They identify how technology can be adopted into instruction and assessment of equipment and offer guidance of its use for teachers. These principals provide professional development related to educational technology for teachers to learn how to use resources. A current trend shows, however, many teachers often receive little administrative and pedagogical guidance.

According to The President's Committee of Advisors on Science and Technology (2003), current teacher education and training in the methods of using technology and its potential are insufficient. Current teacher education is inadequate for the promotion of methods that integrate technology in the classroom. Also, due to current teacher shortages, school districts neither require new teachers to be competent towards using technology, nor do certification authorities sufficiently measure technology capability and adequate performance measures in their criteria.

Moreover, education and learning research and development are noticeably underfunded. Research and Development (R & D) in education is funded at only 0.03 percent of total expenditures (\$100 million out of \$300 billion expended). (PCAST, 2003). The total expenditure for education and training R&D is difficult to determine due to the highly distributed nature of the funding and effort, but the numbers we were able to find seem alarmingly low. For example, in 1995, the U. S. spent about \$300 billion on public education, but invested less than 0.1 percent of that amount to determine what educational techniques actually work, and to find ways to improve them (PCAST, 2003)

## Summary

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Adult and ESL learning practices and current trends towards using technology are complex. As more teachers embrace the current trend of integrating technology in classrooms, use of technology into teaching and learning is visibly increasing in many areas of our schools. However, some teachers' approaches towards using technology are sluggish and reluctant. Personal and environmental factors, such as fear, experience, access, administrative support, technical assistance, and professional development, affect the use of technology by teachers in their instruction. The description of the methodology used in this study is provided in the next chapter.



CHAPTER III

METHODOLOGY

This study is an exploration of teachers' contrasting approaches towards technology use in adult ESL classrooms at the Stockton School of Adults in San Joaquin County and the Turlock Adult School in Stanislaus County to see what types of personal and environmental factors are involved that influence the use of technology. This chapter gives details on the sample population; data collection methods including interviews, observations, and questionnaires; data analysis; and ethical considerations with regard to participants.

Sample

The sample population for this study consists of teachers, administrators, and immigrant ESL students. The students are enrolled in noncredit courses at the beginning and intermediate levels of Adult ESL.

Approximately eighty randomly selected students who are enrolled in one of four Adult ESL classes, four teachers, and four administrators were participants in the study. Teacher participants were selected by their status as lead teachers, and administrative participants were principals and vice principals of the school sites. The teachers and students were engaged in the study as part of their daily class activities at their respective course levels. Standard procedures for the administration, distribution and organization of all written documents in the study will be coordinated with participating teachers' lesson schedules. To increase validity of the study, honesty of the respondent was encouraged and emphasized by the researcher's explanation about the meaning of the research before the distribution of the documents took place. Also, the

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researcher had built rapport by observing and assisting students to familiarize them with the classroom environment a few weeks before conducting the study.

### Methodology

The methodologies are closely designed to the researcher's questions and hypotheses introduced in Chapter I. The researcher examined how technology was being used in adult ESL classes at the two sites and the factors contributing to the utilization of technology to the classes. To find patterns of what is happening in the use of technology in classrooms, interviews, observations, and questionnaires were analyzed qualitatively. The researcher's assumption here was that all the participants' perceptions and practices influence current and future use of technology.

Each classroom taught by a different teacher was examined over a ten-week period. Each teacher participating in the research project has at least twenty years of experience in teaching ESL and is qualified to teach Adult ESL as evidenced by the researcher's pre-interview. Two of the four classes of the study were taught by teachers familiar with using technology in the classroom with support from the principal, and two of the classes will be taught by teachers with limited experience and support in using technology. The researcher did not participate as a teacher during the study.

### Instrument

To enhance reliability and validity of the instruments, Teacher's Survey (Becker & Anderson, 1998) was integrated and revised into two instruments, questionnaire and interviews for three different groups.

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### Data Collection

The qualitative study was designed to describe phenomena in adult ESL classrooms. In order to investigate factors involved in using instructional technology, all of the data collection techniques were designed to perspectives on the use of technology from administrators, teachers, and students' points of view.

There were ten observations of each of the four classes. Data in the forms of field notes were collected during observations of participants and teachers, both in the technology labs and the classroom.

The observations, interviews, and questionnaires started at the beginning of the semester and continued throughout the study. Interviews of administrators, teachers, and selected students were focused on what factors promoted or prevented using technology. The researcher's assumption here was that interviews would allow more open responses and the ability to gather more detailed information. The four steps for the interviews were a designed procedure. The first step of the interview was to select the target population to initiate interviews. The second step was to interview two or three participants to identify the questions that may need to be modification. Step three is to interview the remainder of the sample and make field notes. Step four was to analyze the interviews and interpret the data. Interviews were tape recorded and additional pictures were taken to support potential findings.

The questionnaires were read aloud to beginning students who could not read on their own to find out about their computer usage and about other technology the teacher employed in class. The responses were recorded in writing by the researcher and via a tape recorder. The administrator's questionnaire was used to examine the current technology setting, history of

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technology use, budgeting, and the degree of technical assistance provided at the site. The teacher's version of the in-depth interview was more specific than the administrator's questionnaire with shorter answer types of questions. Questionnaires were read to students by the researcher, and responses were recorded. Data were collected throughout the study period. The three data collection methods were designed to triangulate and to construct validity of the study conclusions more objectively.

### Data Analysis

Categories of the data were specified qualitatively to help identify themes in response to the study's research questions. The data from interviews and questionnaires were examined to determine the existing utilization of technology as well as factors contributed or restrained using technology. The field notes from ten observations were analyzed to find similar patterns.

### Ethical Considerations

All students in adult ESL classes will be assumed to be enrolled in the school. At the beginning of each semester, all students in the courses will be made aware of the research in progress, the guidelines for potential involvement, and will give their consent to participate. The students will participate in the study as part of their regular class activities at their respective levels.

In addition, all statements and responses on the survey and questionnaire will be strictly confidential. There will be no penalty for any students who wish to decline participation in the study at any time before or during the research project. Furthermore, all aspects of the study will be described to the participants prior to data collection. Finally, permission and approval to

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conduct the study will be sought and received from the participating ESL administrators, teachers, and the students.

### Summary

This study sought to look at teachers' contrasting approaches towards technology use in adult ESL classrooms from three participating groups in each of two schools. Types of personal and environmental factors were measured including attitudes, confidence, years of technology use, and training experience as hindrances to integrating technology into the ESL classroom.

A total of eighty seven participants from three groups from tow school sites in central California participated in the study. Participants' demographics as well as the diverse factors involving the use of technology were identified through questionnaires, interviews, and observations. The analysis and results are presented in the next chapter.

CHAPTER IV

RESULTS

The purpose of the study was to qualitatively examine how technology was utilized in adult ESL classrooms, and what factors weighed as obstacles or enhancements to use technology. The intent of this chapter is to report the findings as a result of data collected through questionnaires, interviews (See Appendices B & E), and observations.

As data collection progressed, themes emerged regarding research question 1: prospects for technology integration; comfort levels and practice, expectation for technology integration, the classroom/school technology environment, and instructional use of technology; and use of technology. The themes related to research question 2, factors involved using technology, included administrative support, time, teacher characteristics, teachers' attitudes, beliefs, and approaches to ESL, and the instructional environment.

Interviews with three administrators and four teachers from two schools were conducted (See Appendices B & C). In addition, an administrator from a third adult school responded to the interview questions by e-mail due to time restrictions. Interviews with the administrators took approximately thirty minutes to an hour, and those with the teachers took 15 to 45. The interview questions were designed to elicit information that might not have been forthcoming from the questionnaire which contained closed-ended questions. All the interviews were tape-recorded.

The questionnaires were administered to four teachers and seventy-nine students. The questionnaire format included short, simple, and mostly closed questions. Included questions

Contrasting Technology to Traditional Methodology in Adult ESL Instruction sought information about comfort levels, planning for technology utilization, technology environment, and instructional practice of technology (See Appendices D & E).

Seven observations in each classroom in the two schools were also conducted. The purpose of these observations was to better understand the participants' behaviors and statements as they reinforced or conflicted with the other collected data. The classroom observations were scheduled events as the schools were in session from late January to March.

### Participants

The participants of this study consisted of four administrators, four teachers, and seventy-nine ESL students. The administrative participants were principals and vice principals of a total of three school sites. Four administrator participants from three schools are represented with the pseudonyms of Ann, Laura, Tracie, and Carla. Four teacher participants from two schools are represented with the pseudonyms of John, Alejandro, Aida, and Bill. The 79 immigrant ESL student participants were enrolled taking noncredit courses at the beginning and intermediate levels of adult ESL at two school sites.

The Stockton Adult School principal, Ann, had been working as a principal at this school for more than 10 years. She was very enthusiastic about integrating technology. Using a computer lab setting as well as computers and technology equipment in the regular classroom, she had high expectations regarding the English performance of recent immigrant adult ESL students who relied heavily on the school for a basic understanding of English. Because she believed technology is such an efficient learning tool for ESL learners, she tried, as much as funding sources would allow, providing the school with the latest equipment and software.

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Discussing with and listening to ESL teachers, encouraging them to learn more about technology was one of her priorities.

The Stockton Adult School vice principal, Laura, had been in the position for more than eight years. Regardless of her heavy schedule, she tried to keep her technology ability up to date by taking workshops after school that gave lessons and details in various types of technology. She was a devoted educator who presented various types of reading programs throughout the Stockton area. She also created her own on-line tutoring program and posted it on the school web-site.

The Turlock Adult School vice principal, Tracie, had been in her position for more than ten years. She started using computers by attending workshops while she was teaching at another school before she became the assistant principal. She did not use a computer at home. She believed using computers at school was sufficient to manage her professional work. She firmly believed that the ESL teachers needed to acquire technology integration skills in order to relate necessary language skills easily and meaningfully. However, she also believed that there was no unmet technology needs in her school to support teachers for technology implementation. Her lack of a perception of ideal use of instructional technology resulted in using lab hours ineffectively and inconsistently rather than integrating them into the classroom ESL instruction. It appeared that she depended on the lab assistant's unreliable initiative rather than planning for and giving them an assignment with guidance.

The Merced Adult School administrator, Carla, had held the position for more than five years. She had used various types of software and had upgraded the school technology system several times. She also took technology courses at the university level. She believed there is no



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doubt that for ESL students, technology is necessary for further learning since there is so much information available on the Internet. However, she believed that students' cognitive development must be advanced enough for the technology to be successfully integrated into the ESL curriculum.

John, a teacher at the Stockton Adult School, was a well-trusted ESL teacher and a technology mentor. He had been teaching ESL about eight years. Technology elements commonly existed in his teaching for the last six years. He also encouraged his students to learn computer skills, recommending that they go to the computer lab before the class and during the lunch hour. Because only five computers were available in the class, he could not let all the students use computers at the same time; as a result he used the computer hours as a reward system when someone completed tasks faster than others. When there were individual tasks and some students completed their tasks early, they comfortably asked the teacher to use the Internet or other software programs, and the teacher was very responsive to these requests.

John's students were very enthusiastic and positive about using technology for learning ESL. Some students said that using electronic devices tended to hide the students' awkwardness when they tried to talk in English with heavy accents. Other students favored working on the computer because they could repeat the content exercises as many times as they wanted and slow down or speed up the learning rate until they practiced enough. Many Hispanic students had been living in Stockton more than ten years, but did not have any difficulties living without learning English. According to them, there were Spanish communities all over in Stockton and they didn't need to speak English when they were within the boundary of these. When they tried to get a job or when their children went to a mainstream school, it became a serious issue to read, write, and communicate in English. This was similar to what Turlock students reported.

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Most students were comfortable completing the questionnaire. The levels of the students were intermediate-high according to the teacher's assessments. Some students who used the computer stations tended to use various ESL software installed on the computer for additional reading and writing purposes. Other students checked e-mails and the Internet to find information about the topics they were learning.

Alejandro, a teacher in the Stockton Adult School, was a Spanish speaking immigrant 20 years ago, and his thoughtful and experienced care for ESL students was well known around the school. Holding a multi-level ESL course using a computer lab, he was at an almost expert level of using technology. He had been teaching ESL students more than ten years. His overall attitude toward technology integration with ESL students was dominantly optimistic and positive. Most students showed authentic respect for his ability to teach computer skills and English at the same time.

Many students in Alejandro's class who were in the multi-level computer ESL lab preferred to use technology as their ESL learning tool. They were enthusiastic about improving their English skills using technology combining their reading, writing, speaking, and listening. They were reaching their goals at their own speed by determining the software they wanted to master, and practicing until they assessed themselves to be proficient enough. When the students had difficulties understanding the English content they were learning, the teacher switched his language to Spanish to explain the meaning of the words or sentences during their conversational language learning period. The teacher's authentic care and sincerity was quite contagious. Students seemed very focused and attentive.

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ELLIS, Rosetta Stone, Oxford Picture Dictionary, Typing software, ESL software, PLATO, and the Internet were commonly used by students. Students were allowed to check e-mail for short periods of time, or the Internet to find information about the topics they were learning. The teacher monitored the class members to see if they were using proper software programs other than chatting, e-mailing, or searching entertainment websites.

Aida, a teacher in the Turlock Adult School, had been teaching at this school for two years and had used technology in her ESL teachers both years. It was only a part time job for her. Her full-time job was teaching ESL at a two-year college in a nearby city. She had not taken any technology courses. She learned programs on her own over the last ten years. For her, using technology was a type of requirement that an educator needs in order to access information faster. However, she believed that ESL students needed more exposure to reading various materials before learning computer skills. In addition, she felt that preparation took too much time for her to use technology in her classroom. Therefore, rather than preparing lessons infused with technology elements and ESL tasks on her own, Aida decided to let students use the Internet for thirty minutes a week to find information themselves related to discussions of a reading topic.

Many of her students expressed apprehensive feelings toward using and learning technology. The ESL levels of the students were intermediate. They said that they needed to master English first and they should be focused on reading and grammar skills. So, students' attention was more focused on the teacher's lecture rather than on conversation, pronunciation and grammar practice. The students were often told by the teacher that the content of the advanced class would become much harder, so students did not want to be distracted by other tasks, such as computer skill building. When they went to the computer lab for thirty minutes once a week on Fridays, however, many students seemed to enjoy using the Internet to search for

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information. For the students, it was an isolated time period to formulate their own criteria rather than listen to the teacher as to what they were supposed to retrieve and learn.

Internet searching for thirty minutes a week every Friday was the only time allocated for them to use computers. The schedule was not kept regularly, though. Over the seven observations, the computer lab visit occurred only four times. Due to having only thirteen working computers, the class had to divide into two or three groups if the number of students exceeded twenty-six.

Bill, the other teacher in Turlock, taught at a local high school during the day. He was a fourth year teacher whose teaching assignment was at the beginning ESL level. He had not taken any courses in technology, but he had shown his willingness and interest in its use. He used a lot more technology at the high school than at the adult school, suggesting that lack of time and equipment kept him from using it in his ESL classroom.

Many of Bill's beginning ESL students showed interest in learning more about technology. Using a word processor for forty-five minutes once a week was all the time available for them to use computers. However, the lack of time for planning and revising their writing seemed to negatively impact their ability to improve their writing. It appeared that they needed more time to organize and edit their writing. Their writing process was not being checked by the teacher, the instructional aide, or the computer lab assistant. Similarly, their first drafts were never revised by anyone. The teacher was not in the classroom during their computer lab hours, leaving the students to do what they wished, which was often not academic in nature. Students helped each other to find out how to use the computer in spelling and

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grammar. Students got acquainted with the computer learning environment and gained more confidence in being involved with technology.

### Research Question 1

The first research question examined how technology was being utilized in adult ESL classrooms.

Various themes related to this research question emerged from the data collection. These included: comfort levels and practice, expectation for technology integration, the classroom/school technology environment, and instructional use of technology.

#### Comfort levels and practice

Participants' comfort levels toward instructional technology were not substantially different based on their school. For administrators and teachers, computer usage was a common activity, an everyday task. They said that they were accustomed to using spreadsheets, word processing software, and the Internet both at work and at home. They all used e-mail for both professional and personal use. The Turlock administrator was comfortable using technology, but because she did not have a computer at home, she used it at school if she had work requiring its use. For the Stockton principal, using a computer was an essential tool to communicate as an educator, so she tried to make herself more confident by using it often. The Stockton vice principal said that tasks were easier to complete with technology than by hand. She made lesson plans using Word, PowerPoint or Publisher. The Merced vice principal showed even more expertise than the Turlock administrators. She was very confident about using technology. She took technology courses from California State University, and she was using computers in Master's level classes.

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All teachers responded that they were comfortable using computers. John felt comfortable using many types of technology equipment including computers, document cameras, digital cameras, video cameras, DVD players, and others. In his classroom, John was using the Toshiba multimedia projector, PowerPoint, ESL software, and the Internet several times a week. He said that his students used computers less than once a week due to not having classroom computers. However, according to him, his students go to the ESL computer lab and use the computers when time allows. When they complete tasks earlier than others, he let them go to the lab.

Alejandro, also a teacher at the Stockton School of Adults, was quite comfortable with computers, overheads, slides, and movie projectors. He said that his students use computers on a daily basis while he monitors them. He affirmed that his students could use computers at least three hours per week in their regular schedule plus lunch hours. Because his class was offered in a computer lab, it was natural to use computers, CD-ROMS, the Internet, and computer software programs from the school's main server. Both teachers in Stockton used e-mail several times a day and used Internet resources at least several times a week, spending four to five hours a week for planning to use technology for teaching.

Aida and Bill at Turlock also responded that they do not have problems using computers. 30% of Aida's Turlock students used the Internet for thirty minutes once a week and 70% of students who were in the Bill's class used computers once a week for forty-five minutes of word processing. Both teachers used Internet resources for teaching when the need arose. Aida spent thirty minutes weekly using technology to search for information and websites, and prepare for the class, while Bill did not spend any time planning for technology use.

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Of the Stockton students 77.3% felt comfortable using technology, 12.6% didn't feel comfortable, and 10.1% of the students felt they needed more help. On the other hand, 37.4% of Turlock students felt comfortable, 26.2% said they were not comfortable, and 36.4% felt they needed more help. 54.3% of Stockton students used computers during class for three hours everyday. 22.3% of these students used computers in the computer lab everyday before the class during lunch hours, and 23.4% of them could use computers during the class when they asked for permission to do so. Overall, it appeared that Stockton students were more comfortable with technology than the Turlock students; this might have been influenced by the amount of time spent using computers in class.

### Expectation for technology integration

Before the study, the researcher had assumed that the administrators who were at schools with high levels of technology integration would be satisfied with what they were presently doing, and the administrators who were at less involved schools would be likely pressured to adopt the practices of the high level schools. On the contrary, the responses from each administrator with regard to expectation for the integration of technology were in contrast with what the researcher anticipated. Stockton administrators stated that they needed to integrate technology more than the current practice, despite evidence that teachers and students were clearly using the technology in instruction. The Stockton principal said that she wanted much more, but she could improve things only so much at a time. The vice principal stated that they used a lot more technology than other schools in the district, but still she wanted to implement more technology in lessons. The Turlock and Merced administrators stated that their teachers were utilizing enough technology, though use fell far below that at the Stockton school. The Turlock vice principal stated that the computers were for grammar or information from the

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Internet, so the once a week class access was adequate. She stated that students' level of English was too elementary and they needed to spend class time focusing on grammar instead of using computer software. She also felt that it was important for students to learn proper computer skills before integrating technology into curriculum. She indicated that many students could not use an English keyboard due to the difference in the functions from the keyboards they were used to, and it took too much time to teach them the new skill. She felt that because many of the students were just new-comers into the country, learning English needed to come first. The Merced administrator was also satisfied with the daily or 2-3 times per week sessions in the computer lab for student use of software to supplement instruction. It appeared that the two administrators in Stockton were expecting full integration of technology into the ESL curriculum while the other two administrators were convinced that technology integration should be only supplemental.

### Classroom/School technology environment

The Stockton Adult School had 120 IBM compatible networked computers with Windows XP and CD-ROM drives. Also, they had 140 networked IBMs running Windows 95/98/00 with no CD-ROM. There were two Apple II series computers with neither CD-ROM nor Internet connection. Administrative offices had thirteen networked computers for administrative uses.

Networking at the school was a Local Area Network (LAN). The school owned overhead projectors, LCD projectors, TVs, audio cassette recorder/players, scanners, video recorder/players, video camcorders, digital cameras, a laserdisc player, personal digital assistants (such as Palm, Jornada, and Clie), laptops, wireless computer connections, CD player/burners,



Contrasting Technology to Traditional Methodology in Adult ESL Instruction and DVD player/burners in most classrooms. Also they had a plan to use television broadcast, digital video cameras, portable keyboard devices (such as AlphaSmart), mobile computer labs, interactive whiteboards (such as Smart Board), document cameras, and document readers.

The Turlock school had 26 district-networked Dell computers with Windows Professional 2000 and CD-ROM drives. Three computers were out of order and they were not repaired until the end of the study. Administrative offices had five computers including one each for the principal, assistant principal, and three other staff members in the office. According to the principal, there were three overhead projectors, three TVs with VHS players, four CD players, three printers, two copiers, one digital camera, and one multi purpose copier/fax/scanner/printer. It was difficult to ascertain the most prevalent uses of technology at this site.

The technology available in Stockton Adult School classrooms seemed well adjusted for its students. John had five computers for students in his room. He often used technology during the first 45 minutes of class when students were doing seat work while waiting for the others to arrive. In this setting, students went to the computers when a computer was unoccupied, and when students were either finished with their initial assignment or when they felt so inclined. When he used technology during a lesson, John often asked each group to send one person to the computers to retrieve information or perform some task. At other times, when it seemed appropriate, he had a small group of students use the computers while the rest of the class did oral work or some kind of seat work. The groups rotated between the computers and the other tasks. He wanted to have more computers, a document camera with a computer attached, a TV with VCR, DVD, boom box, video camera, digital camera, and he also wanted to have a whiteboard.

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Alejandro's classroom, which was a computer lab, was arranged in such a way that he could monitor students' activities at a glance. All students faced the computers while he taught conversational skills at a table close to the door. He was very content with the technology he currently had for his students.

Turlock teachers, Aida and Bill, used the same computer lab at different times while two or three groups of students rotated through in 30-45 minute shifts due to the limited number of computers. Aida wanted an overhead projector, television, and a computer in her classroom and Bill also wanted a computer, projector, and a TV.

Administrators had differing priorities for upgrading school technology and network systems. The Stockton principal indicated that the school networking system was upgraded by the district on a three to five year cycle. In 2003, she had funds from the district and installed the ESL computer lab containing 35 computers with Microsoft Windows 2000 professional. That gave her hope of improving the ESL students' performance in all areas of English skills. She asserted that they upgraded the system annually including hardware, and software, which was confirmed by the vice principal. The Turlock school had just purchased a brand new all in one machine (copier, fax, printer, and scanner) and changed the operating system from Windows 98 to Windows 2000 Professional a few months prior to the study. Considering that the study was carried out in spring, 2006, the operating system upgrade to only Windows 2000 suggested the low status of technology within the school. The Merced administrator said that upgrading was the previous year's main event. Her school upgraded the networking hardware, software, and Internet connection in summer, 2005.

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The availability of personnel for planning, implementation, and maintenance of technology differed by school regardless of the fact that both schools seemed to have common technical problems. CD driver errors or a paper jam in a printer seemed to cause anxiety in Turlock teachers, but appeared to be routine fixes to Stockton teachers. These issues seemed to be related to the teachers' level of competency and willingness to deal with small glitches on a daily basis while integrating technology in instruction.

According to both John and Alejandro, in the Stockton Adult School, all administrators and teachers tended to troubleshoot problems themselves first and as a team if things were more difficult. Both Stockton administrators regarded themselves as the planning and implementation crew. The school district stepped in if there was a big network change or repair involved affecting the entire district system since the school was part of the umbrella network. For maintenance, they said that self-repair among teachers is very common, and the secretary at the school worked also as a technician who fixed computers and peripherals. If the repair could not be completed by the teacher or secretary, the school office submitted a work requisition to the district's computer service department. The service department's responsibility also included upgrading and networking the entire system.

In Turlock a technician from the district performed maintenance on the computers. The school itself did not have a technician. There were two computer lab assistants working, one in the morning and one at night, though their skill levels were questionable and they became very indifferent when students had difficulties operating the computers. Unlike teachers in Stockton, the teachers in Turlock were not aware of upgrading due to their absence from the computer lab. If some computers were not working, teachers tended not to use them altogether instead of trying to solve the problems or relying on the district technician to repair them. Instead of assisting

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with technical issues, the computer assistants only loaded software programs or Websites teachers indicated their students would use. Their time for troubleshooting computers was limited because they worked only part time and were needed by students for just the basics of computer operation. Access to technical support for a specific teacher's requests for help was limited at the Turlock Adult School. Even simple repair tasks were postponed several weeks. The problems remained unresolved as demonstrated by the three non-operational computers that were not fixed until the end of this study.

The Merced administrator said that they had a resource teacher who organized a technology planning session once a year and there was a self-taught technician on staff and a district technician six hours per week. Simple problems were addressed immediately. The district technician was available on a same day basis for the more delicate or complex problems.

#### Instructional use of technology

ESL software and Internet resources were the most used instructional technology in the study's ESL classes. Stockton Adult School started using technology quite a while back, and tended to refine software annually by upgrading versions and sometimes buying new ones, accumulating quite a bit. All participants in Stockton gave ample examples of different ESL software for improving various English skills. ELLIS for beginning students, new vocabulary with Oxford Picture Dictionary, Tell Me More for intermediate level students, and sentence structure using Rosetta Stone were very common choices among students. Students also used ELLIS to learn conversational skills. The Internet was used often, too. Many students accessed dictionary websites to hear pronunciation and to read the meaning of the words they were learning. The Toshiba overhead projector and PowerPoint slides were both commonly used

Contrasting Technology to Traditional Methodology in Adult ESL Instruction features by teachers for presenting English grammar concepts. In addition, other software such as Microsoft Word, typing software, and Media Player were being used as each program facilitated understanding of advanced concepts such as grammar, vocabulary, reading, and/or computer skills. on-line dictionaries. MSN Encarta, AltaVista Babel Fish Translation Websites, ESL grammar sites and Test of English as a Foreign Language (TOEFL) sites were popularly encountered websites among Stockton students.

In Turlock ESL courses, computers were used mostly for grammar and spelling instruction. The programs they were using included Rosetta Stone, TOEFL Practice, and Focus on Grammar software, and a typing program, Micro Type. The Merced vice principal expressed that Rosetta Stone was the most used instructional tool in her school. They also used ELLIS, as well as A+LS, Language Solutions, and Learning library. Rosetta Stone and ELLIS seemed popular choices for all schools and overhead projectors, VCRs, and CD players for music were also commonly used in all schools.

## Research Question 2

The second research question explored the examples of obstacles or enhancements to the use of technology in adult ESL classrooms.

Multi-faceted factors appeared to be consistent across all the participants' responses. Factors involved as obstacles or enhancements include: administrative support; time; teacher characteristics; teachers' attitudes, beliefs, and approaches to ESL; and the instructional environment.

### Administrative Support

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The support from the administrators at the Stockton School of Adults was more substantial than that of Turlock administrators. The Stockton Unified School District conducted a survey concerning technology utilization in adult ESL classes in order to promote instructional technology use. It was apparent that the administrators of the Stockton Adult School had a clear vision regarding technology realization. The school had the written protocol, California standards, and a technology handbook to implement and to promote the use of technology. A school board policy was established regarding employee's appropriate and inappropriate uses of technology. On top of this, the school had a technology plan for the year, entitled *English Language and Civics Education Technology Plan*. According to the plan, the technology planning team was well organized with district and school-wide personnel represented. A particular technician, a school secretary, was assigned to help with office-wide technical difficulties, and a networking support technician was also available. To replace existing technology on a planned schedule, all of the hardware was on an inventory by specifications and date of purchase. As funds including grant applications became accessible, hardware/software/network connections were upgraded and replaced on a three to five year cycle. The school coordinated to resolve maintenance service needs with district information services and instructional technology technicians.

In the Turlock Adult School, the technology environment was insufficient due to a lack of funding sources. It was hard to locate documents that might help clarify how the school had been adopting technology. The school had no plan, needs assessment results, or survey results from the district in terms of technology use. It was clear that the school had not focused too much on integrating technology. Technicians coming to the school were unknown to the principal except for the fact that they were from the district office. There were two computer lab

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assistants, one in the morning and one in the evening. Other than that, there was no in-house technician holding responsibility for network maintenance.

The Turlock administrator was not utilizing other means of sources, such as OTAN, and other organizations for integrating technology into adult ESL except information distributed or transmitted by the district. All of the decisions made regarding technology were initiated and executed by the principal and the district. Software purchase depended on the principal's ideas rather than on specific requests made by teachers.

Pinpointing a full range of funding sources related to the planning, implementation, maintenance, and/or professional development was difficult for the administrators in the study. In Stockton Adult School, much of the funding support came from government organizations other than the district, but personal as well as physical support leading to computer integration in the teachers' instruction seemed to be provided by the administrators. The Turlock School was unaware of the additional available government funding and had made no effort to search for them. Without any doubt, funding affected the purchase of computers and software, the recruitment of the full-time teachers, and therefore the availability of technology per student in Stockton. The difference in terms of funding allocated to technology between the Turlock and Stockton sites did not stem from the state's funding to the adult program. According to the California Department of Education, Stockton Adult School and Turlock Adult School received exactly the same amount of funding, totaling \$3,458,232 dollars, from the state (California Department of Education, 2006). The Stockton school had sought other means of funding and grants opportunities to locate additional funds beyond the apportioned principal's budget.

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For professional development, there were more than two hundred training opportunities from the Outreach and Technical Assistance Network available to public ESL school teachers, and there were many websites the administrators and teachers could access to get information related to adult literacy. Despite this availability, acquiring the necessary skills to integrate technology into their curriculum seemed easy for Stockton teachers, but challenging for Turlock teachers.

The Stockton School of Adults was utilizing the resources provided by the OTAN system. Not only were Stockton teachers offered more opportunities from various sources, but they also had more available time after class to engage in learning opportunities than Turlock teachers. Two Stockton ESL teachers were assigned to control distance learning and OTAN (Outreach and Technical Assistance Network) affiliation. They utilized many external funding resources to support professional development, and the principal planned to pay for staff training on the technology the school was going to purchase. Another example of Stockton's support for professional development was John's involvement as a technology mentor in the national Technology Integration Mentor Academy (TIMAC). The academy was open to adult ESL teachers, and helped to promote a group of professional technology mentors who helped teachers in local agencies use technology effectively to benefit adult learners.

Software upgrades and replacement seem to be logical necessities in all schools. The Stockton Adult School, which had integrated computers into teaching longer than the Turlock school, had accumulated resources to locate effective software from different sources. For example, the Stockton Adult School administrator said that she usually decided on purchases based on recommendation from the OTAN staff and the teachers. The Turlock vice principal said that she buys software only when there was a decision made by the administrators. Stockton



Contrasting Technology to Traditional Methodology in Adult ESL Instruction had distinctively richer resources than those of Turlock on many different levels: funding sources, professional development sources, teaching materials, and knowledge of software and website addresses that teachers and students could use. Stockton Adult administrators and the teachers were actually using technology resources for many purposes, while the Turlock administrators and the teachers were aware of but not using many of them.

### Time

Lack of time was the common response from all participants for not integrating an adequate amount of technology into their curriculum. All participants were aware of the impact of technology in their curriculum. However, they all needed to learn more to develop better learning processes. Stockton administrators reported that they needed more time to assess how technology is being adopted among teachers. Turlock administrators needed more time to communicate with teachers and to train teachers for technology integration.

Teachers needed experimentation time using technology while implementing their objectives. They needed to know what program, approach, or websites work to enhance learning. Unless they actually tried it, many issues would not have appeared. Teachers' lack of time using technology, therefore, tended to aggravate the less knowledgeable. For one thing, allocating time to learning technology skills and gaining enough confidence to apply their skills to their lesson was a complex process. Creating lesson plans and developing projects that integrate technology elements into the curriculum take a considerable amount of time. Technology-inclined teachers felt technology gave them more control over student learning and practice and technology integration eventually saved the teachers' preparation time. .

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Stockton Adult teachers were eager and willing to spend extra time to learn more of the complex knowledge required to operate computers skillfully. Computer operating systems, individual software applications, networks, and peripheral equipment like a scanner or printer, CD player, and TV/DVD all required some knowledge and familiarity for effective use. In addition, small glitches take time to examine and to solve. Turlock Adult teachers were more pressed for time than Stockton Adult School teachers due to their part time work position.

All teachers agreed on how important technology integration is for ESL learning. They showed genuine interest in learning more and using more technology in their classrooms. When they needed to implement, however, Turlock teachers perceived there were too many English-related objectives that needed to be completed during their short block lesson hours. In order to combine language learning and technology components into one lesson, teachers felt they needed to spend more time for planning, implementing, and evaluation to be effective.

Time students spent on computers during school hours seemed to impact their success in learning English skills. Stockton Adult students were spending fifteen hours a week using computers, and their learning attitudes appeared to be enthusiastic. They covered most of reading, speaking, listening, and speaking skills of English, and they retained what they learned for a longer period of time than the students in Turlock Adult school. Turlock Adult students were spending less than forty-five minutes a week using the technology, which seemed insufficient to make a measurable difference in performance.

Teachers in Turlock did not have available time, resources, or determination to learn new skills. Stockton Adult teachers enjoyed learning by doing, and those in Turlock avoided extra activities other than regular classroom events. They recognized that time must be devoted to

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learn a program before feeling comfortable using it. They said that there were too many things to learn and master in technology. One of the Turlock teachers commented,

“I was never told about professional development offered from the district or from other sources this year. Last year and the year before were same thing. I don’t think it is just me. Maybe the principal did not tell me because he knew I could not take the session anyway. I don’t have a transparency overhead in my classroom yet. I have no idea when I can get a computer.”

For them, taking time to learn skills was arduous. They felt that having a technology helper around the school to teach, support, and troubleshoot might have made things easier.

### Teacher characteristics

The teachers’ characteristics appeared to be an influential element in the quality and amount of technology utilization. Teachers who worked as full-time faculty seemed to have more time to retrieve necessary information, build skills, and communicate with their administrators than those who worked part-time. They seemed to have a solid plan toward the learning, implementing, and upgrading their technology integration process rather than just thinking about such a plan. They worked with students not only in the class sessions, but they also engaged and interacted with their students more fully outside class to engage themselves and the students in technology related matters.

The difference in professionals’ preparation level was noticeable in the teachers at the two schools. For example, in Stockton, the average years of integrating technology in adult ESL was more than eight years as opposed to two years on average by the teachers in Turlock. Both Stockton teachers had taught ESL for more than ten years, with more than six years of

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integrating technology. On the other hand, both Turlock teachers were part-time faculty. This seemed to be a very important factor in promoting technology integration. For example, teachers' preparation time in Turlock was much shorter than that of Stockton teachers. They did not have time to be trained from professional development sessions due to their part-time status. They didn't communicate with administrators because of their lack of time and information. Also, the two Turlock paraprofessionals had not completed their Bachelor's degrees. One computer lab assistant, Sara, was a student at a university, and the other had dropped out of the college. This fact was important to identify in terms of the quality of paraprofessionals. Neither appeared to consider themselves as educators, nor did they value education or English acquisition as an important means for ESL student advancement.

#### Teachers' attitudes, beliefs, and approaches to Instruction

Throughout the study, it appeared that the teachers' attitudes, beliefs, and approaches influenced the integration of technology into their practices of ESL instruction. Teachers' engagement of the students in a process of implementing technology varied, affecting learning and teaching practices. Enhanced teachers' knowledge and teaching practices resulted in improved student learning, as well as strengthened professional contentment with their teaching roles.

John's ESL teaching beliefs were focused on community building within the classroom. His students' nationalities varied greatly and included Chinese, Hmong, Iranian, Spanish, Vietnamese, and other students. He capitalized upon this diversity in lessons. For example, the teacher let students divide into several homogeneous groups based on language, and let them prepare for the naturalization process. Also, a student who had lived in America for a lengthy

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period was paired with another who had lived here less time so they could exchange questions and answers to problems or tips for everyday life.

John seemed very eager to provide frequent technology usage. Not only did he plan, record, and exhibit his knowledge, he also shared his knowledge with his colleagues and administrators in various situations such as workshops, faculty meetings, and mentoring. Considering himself a Spanish learner, he was very interested in teaching and learning different languages using technology. The reflection on his own computer-based Spanish learning experience made him a more considerate language teacher to his students. Even with a small number of computers in the class, he was maximizing the usage for his students by utilizing his expertise in technology. He incorporated PowerPoint slides, research materials from the Internet, pictures, movies, and web pages that his students could appreciate during lessons. His willingness to use technology with students encouraged them to learn computer skills. He used a Toshiba multimedia projector with different software running on the screen as an effective tool for teaching English.

Alejandro's teaching style was communication-focused. With the belief that learning English must include communication skills, he provided many opportunities for students to have conversations with him while he guided syntax and pronunciation. His competency with technology provided a great model for students because whenever they had difficulty accessing the Internet, they could just ask and get support. His teaching approaches and belief system helped him develop classroom strategies that could be adopted for success in a limited computer-access environment. The teacher's classroom arrangement to create a conversational station utilized while students were working individually in front of the computer seemed very effective for ESL students. Students' individual usage of computer software allowed progress related to

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individual goals, speed, and degree of determination. This classroom setting allowed John to effectively manage students with many different ESL levels.

John's attitude toward dealing with small problems related to computers was excellent. For example, students repeated the same questions, such as, "How can I get on to the Internet?" "How can I save my work?" "Can you tell me where my document is again?" The teacher patiently responded as soon as time was available. He respected the student's self assessment to choose a level of software, though he had high expectations for them. His ability to translate words into Spanish, explaining the meanings and usages, was apparent. His attitude and belief toward technology integration within the ESL class was optimistic and explicit in nature. Most students seemed to be comfortable making mistakes when they tried new websites or new software with the understanding there was an expert in their midst.

Aida appeared to believe that learning occurs when she set orders and students followed the procedure. Her expertise and formal authority blend was dominant. She introduced a topic, provided a vocabulary list, and gave the students a short silent time to read. Then she read the vocabulary one word at a time, students following along with her; then students read one sentence each. Next, she let her students answer as she asked them questions about the reading. She tended to use a one-way interaction pattern from teacher to students rather than student-student interaction. Her computer lab usage for thirty minutes a week to search for information was not regularly executed. From seven observations, the computer visit occurred four times. She frequently reiterated statements to the students that they had to focus on reading comprehension and grammar. Most of her questions were related to vocabulary, reading, and grammar drills.

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Her belief regarding learning ESL with the assistance of technology was inclined toward technology use as a conflict with the students' level or type of instruction students required. She said, "I use the transparency projector all the time and ESL software or Internet sometimes." Despite this claim, she had never used software with the class during the observations. In addition, she stated to the students that developing language acquisition should be focused on reading writing, speaking, and listening skills. Using a computer was considered to be a supplementary tool for learning English, according to her. Moreover, she believed a teacher's role was to guide and control the environment of the classroom. During regular classroom hours, the teacher was the only one who talked except when students responded to questions she asked. Her approach implied that technology was not capable of providing the type of learning experiences students needed.

Bill's teaching approaches appeared to be unorganized. His teaching methodologies seemed unplanned, focusing on his description of American life. The examples he used were often too complicated for students to understand. For example, he began one class by stating that all the students were going to do that day was listen to him and listen to each other's talking. Then he said, "We will start with the sentence, 'I went to a movie last weekend.'" This lesson did not have clear objectives, goals, or specific steps to fulfill the desired objective. His chosen activity seemed more like an ice-breaker. His presence during the computer lab hours was lacking. He took the forty-five minutes regularly as a time for a break. He did not consult with his aides or the computer lab assistant for collaboration. This loose instructional style affected the quality of students' learning. His students were not able to think about the topic they were writing, review what they wrote, or revise their writing. There was no structured lesson plan, implementation, or assessment in the class. With no collaboration between the teacher and the

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lab assistants, there was no initiative to improve or enhance technology integration into the teacher's lesson planning.

### Instructional environment

Computer usage in the teachers' own classrooms and the usage in the computer lab were challenging issues to investigate. It seemed that it was easier for teachers to have computers in their own classroom so they could apply new skills, troubleshoot, review materials, record students' progress, and complete their own organizational tasks. Also, it seemed hard for a teacher to use the Internet for instruction or planning when its only access was in a computer lab.

Stockton Adult teachers who used technology in their classrooms tended to be more comfortable than those who used the computer only in the lab setting. They had more interest in gaining experience and skills and engaged in more problem-solving attempts when they were troubleshooting their classroom computers. They tended to welcome and anticipate upgrading issues more and were better oriented toward the importance of maintaining a good quality of technology. The Stockton teachers who had computers in their class were able to control what type of software the students used, as well as control the use of accessories such as a headphone set or a printer. Also, they were able to monitor their students and check their learning progress.

Turlock Adult teachers who did not have classroom computers did not even realize that there were three unusable computers in the lab much less who was responsible for repairing them. Both of the teachers who used the computer lab had to rely on the lab assistant to choose software and accessories, and they had limited ability to monitor the students and check their learning progress. They did not know what programs were installed in the computer lab and therefore they were not able to operate the software program or application.



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### Summary

This research was designed as a qualitative descriptive study. A variety of qualitative data were examined, and information was organized into categories. Many themes emerged that provided an in depth look at current computer use and supporting and discouraging factors involved using technology in two schools that taught adult ESL students. Chapter V includes a discussion of these results.

CHAPTER V

SUMMARY, DISCUSSIONS, CONCLUSIONS,

AND RECOMMENDATIONS

The data for this study were collected through interviews, questionnaires, and observations and were analyzed through the use of primarily qualitative methods. Through the process of analysis, several themes emerged with regard to using technology in adult ESL classrooms. These themes developed emerged through the investigation analysis of participants' reports related to comfort levels and practice, expectation for technology integration, the classroom/school technology environment, and instructional use of technology. Also themes emerged surrounding factors that supported and restricted technology integration including administrative support; time; teachers' attitudes, beliefs, and approaches to instruction; teacher characteristics; and the instructional environment. In this chapter, these results are discussed.

Summary

Current Practices of Technology use

Participants' comfort levels toward instructional technology were above average based on the analysis of the related interviews and questionnaire answers. Most of the participants used e-mail. Computer usage was a commonly accepted activity for their work as well as for a learning tool. These findings suggested that computer utilization in schools is a commonly accepted concept. The technology environment in the two schools suggested that contributing factors toward the use of technology were distinctive within the differing demographics of the ESL classrooms. Implementation of technology varied among the administrators and teachers

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reflecting their preferred approaches. Turlock Adult School teachers added isolated hours for students to use computers for short periods of time, which did not seem to enhance the students' learning. Rather, students' achievement increased when the teachers matched the appropriate teaching methods to the instructional environment where technology was being utilized as in Stockton.

Also, the students favored the use of technology in learning environment where opportunities are more individualized and more participative than traditional teaching approaches. For example, the Turlock teacher's controlling behavior in managing the classroom and the students' carrying out the teacher-directed instructional tasks tended to inhibit the students' potential for self-directed learning opportunities. This contrasted with a Stockton teacher's strategy in which each student learned with different objectives, which tended to create a more flexible and relaxed learning environment. In addition, in using assorted software for ESL, the quality of the students' learning was stimulated by the motivation of the students in addition to the quality and content of software. Also, the teachers' competency in demonstrating and explaining how to use the software played a part in encouraging students. The teachers' motivation to engage students with useful resources stimulated them to learn more about the U.S. social structure and created a co-operative learning environment in a Stockton class. For example, by incorporating certain websites such as the U.S. Citizenship and Immigration Services site into the lessons, the students were exposed to the naturalization process as well as the training information of immigration-related employment.

Introducing and adapting new technologies did not seem to be a mere perfunctory process in terms of authentic teaching and learning at the Stockton site. Various pedagogy and cognitive development seemed to be required to generate an efficient educational outcome. The

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complexity of the learners' prior knowledge in cognitive, social, and technical fields, all of which culminate with the cultural diversity, seemed to call for a substantial consideration to employ technology components effectively into adult ESL literacy.

#### Supports and Barriers influencing technology use

Administrative support in the Stockton School of Adults was stronger than that of the Turlock Adult School. This was manifested by the existence of technology-related documents, such as a teacher skills assessment, standards, a handbook, policies, and a technology plan at the Stockton site. More time spent on computers had an encouraging effect on the students' learning. Stockton Adult School students emerged as engaged and enthusiastic in the learning process, presumably due to their frequent use of technology. The site also provided professional development sessions, workshops, training opportunities, and mentoring opportunities to promote technology use in teaching. Site personnel sought funding sources for technology to augment the principal's budget and income from tuition. It seemed clear that the presence of strong administrative support contributed to teachers' willingness to experiment with and use technology within their ESL instruction. The lack of such support seemed to be reflected in the practices and beliefs among the Turlock teachers who participated in the study.

All participants were aware of the ways in which technology could influence teaching and learning. A lack of time for planning and learning was, however, prevalent among all administrators and teacher participants. Time seemed to be an important matter among barriers to technology use.

The difference in professionals' characteristics was noticeable among the staff in the two schools. Teachers' preparation time, efforts to train themselves, and teaching styles differed at

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the two schools, and seemed to influence the likelihood of technology use in the ESL classes. The practices among the teachers and paraprofessional participants raised questions regarding whether more adequate training was necessary in order to integrate technology effectively into ESL classrooms.

The teachers' attitudes, beliefs, and approaches impacted the integration of technology into ESL instruction. Various teaching styles were recognized. Teachers who brought multi-media technology into teaching enriched students' English learning process. The teachers who had acquired computer skills over extended time used computers in ways to promote their students' use of technology through their explanation and presentation of the lessons. The Turlock Adult School computers were located in a computer lab, resulting in a lack of instructional connection with regard to technology use. The Stockton Adult School placed computers in the classroom to integrate technology into the curriculum with the presiding teacher.

## Discussion

Many studies have discussed the current practice of technology in schools. Patterns that emerged in this study bore a resemblance to those in the articles written by researchers. Competency, expectation of technology, physical environment, and instructional technology were identified in many other studies as common factors in the practice of instructional technology.

Martin and others found that a strong positive relationship existed between teachers' feelings of preparedness and comfort to implement technology in their teaching and the rates of implementation (Martin, Kanaya & Crichton, 2004). Perry's (2001) survey of teachers' attitudes and viewpoints on the role of technology showed that over ninety-four percent of 600 teachers

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responded that they were comfortable using computers and eighty-seven percent of them were comfortable using the Internet. Despite the high comfort levels and strong positive attitudes, sixty-seven percent of the teachers acknowledge that the Internet is not well integrated into their classroom. Similar to Perry's study, almost of all participants in the researcher's study showed their proficiency with using computers as close to comfortable, but their actual practice of technology integration into their lessons did come close to these levels.

Jackson (1997) discussed expectation as a social element that deters individuals' perceptions of physical objects. He argued that the first aspect of expectation is associated with what can be called the functionality of technology. Functionality refers to the capability of an object to be used to achieve a social task (Jackson, 1997). Mitra (1999) also recognized expectation as a set of attitudes that can impact the use of technology and ways in which a desire to use or not use a technological tool is related to expectation associated with that tool. According to her argument, it is probable that users who have different abilities could show variances in expectations of the potential of technology to develop the existing pedagogical process. Thus, in the current study examining technology use in ESL classrooms, it was important to be able to evaluate the teaching staffs' expectations about their practice of technology as an indicator that might have affected their technology usage.

According to the Market Data Retrieval's (MDR) survey results, in the U.S., about eighty percent of schools with Internet access had high-speed connections in 2002 and a majority of school computers were running recent operating software (Park & Staresina, 2004). In the same survey, forty-eight percent of instructional computers in schools ran Windows 98 software, and twenty-nine percent had Windows 2000, NT, or XP. In a survey conducted by the National Center for Education Statistics (2003), the number of students per instructional computer with

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Internet access has improved to about 5 to 1 from 12 to 1 in the survey from 1994-2002.

Regardless, the discrepancy in the ratio of students to instructional computers with Internet access tended to be related to the poverty level from 5.5 to 1 in high poverty schools as shown in Kleiner and Farris' study in 2002 compared with 4.6 to 1 for students in schools above the poverty level (NCES, 2003). Also, in the 2003 National Assessment of Educational Progress survey (NAEP, 2003), thirty three percent of students in the study did not have access to computers in schools. The same study found that thirty-seven percent of fourth graders reported not using a computer even once a week. In addition, the MDR survey also found that fifty-eight percent of teachers used a computer daily for planning and/or teaching. The rates declined to forty-seven percent and forty-four percent, respectively, in high-poverty and high-minority schools (Park & Staresina, 2004). Fryer (2003) argued that inadequate resources limit the computer access time more severely than students realize. In the current ESL study, the implications from the studies above were similar to the findings from the school in Turlock, which could be categorized as a high minority school with low computer access. Indeed, accessibility seemed to contribute to a sluggish pace in terms of technology implementation in ESL education.

Many factors identified as supports and barriers to technology integration were negatively correlated. In other words, if one element was not sufficient as a support, it tended to act as a barrier. Administrative encouragement; time; teacher attitudes, beliefs, and approaches ESL; teacher characteristics; and instructional environment were both supports and barriers.

On-site support appears to be an important component in the process of integrating computers into classrooms (Evans-Andris, 1996). Administrative support in the Stockton School of Adults was apparently more cultivating of instructional technology use than that at the

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Turlock Adult School. The school's clear planning through the standards, procedures, and policies to implement technology into teaching provided strength to the learning process. Designated personnel to solve technical and networking problems provided fundamental reinforcement and stability for using technology. The need for technical support for teachers on-site has been consistently identified as important to the success of integrating technology into instruction (Becker, 1994; Knupfer, 1993). The school's efforts seizing professional development sessions, workshops, and training opportunities was creating a bond between the administrators and teachers interested in integrating technology into teaching.

The Turlock school, which lacked administrative supports, seemed sluggish in infusing ESL instruction with technology. Bradley & Russell (1997) pointed out that one of the foundations that hinders the frequent use of computers is lack of teacher and administrative support. (1997). They claimed that a school's absence of policy, standards, procedures, or plans to incorporate technology reflected the lack of administrative support. Successful use of technology in schools may depend on how well schools organize and implement technology, present opportunities to practice and reflect, and train teachers to employ technology in their classrooms (Kent & McNergney, 1999; Pellegrino & Altman, 1997). The administrative attention given to utilization of technology into adult ESL teaching affected the technology use positively or negatively in the two schools.

A lack of time for using technology was prevalent among all participants in this study, similar to what was found in the literature (Marcinkiewicz, 1995). In both participating schools, all administrators needed more time to learn skills to educate teachers in ways to implement technology into the curriculum. Evans-Andris (1996) discussed the concern about the need for experimentation time in the learning process. In both schools in this study, all teachers needed



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more time to acquire knowledge and skills to operate newer systems, software applications, and peripheral equipment. Time to plan, create lessons, implement, and monitor were also required for the four participating teachers from both schools. Repairing hardware glitches also made additional demands on teachers' time. Two teachers in Stockton seemed to use their outside of school time to incorporate their technology prospects into their ESL teaching, and it had a beneficial effect on their students. A central theme among those who successfully implement computer technology involves the availability of ample time beyond the regular teaching hours to adequately prepare (Knupfer, 1993). Available time impacted the degree of implementation of technology by the teachers because time to prepare, implement, and assess what the teachers desired was directly associated their teaching schedule. Indeed, availability of time played a vital role in promoting technology integration in the researcher's study.

Time spent on computers had an impact on the students' learning in this study as well. The students who were spending fifteen hours a week in Stockton using computers during class time appeared to have a learning process that was speedy, effective, and enthusiastic. The Turlock students who were spending less than forty-five minutes a week with computers seemed to have insufficient time to improve their writing, discussion, and other English skills via the technology.

The financial resources set aside for adult education programs are inadequate and far behind compared to the resources provided to the K-12 community or to the post-secondary education community in California (Imel, 1988; Johnson, 1995; OTAN, no date). The implications of this lack of funding, critical in statewide planning initiatives involving adult literacy, are very significant in education (OTAN, no date). However, personnel at the Stockton Adult School acquired funds and grants to augment the state allocation, and as a result succeeded

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in providing more robust technology implementation than at the Turlock Adult School. The external funding at the Stockton site appeared to advance the quality of technology use in the classroom, impacting the integration process into adult ESL teaching because it provided a feasible support system for the teachers to plan, create, and organize technology-based lessons. Also, sufficient and updated installment of technology equipment as a result of extra funds provided a stable learning environment for the students. The Turlock Adult School, which was short of funding, had irregular technology integration that only minimally influenced the educational process.

Teachers who were skilled and longtime computer users greatly benefited from training and updating skills in Scheffler and Logan's study (1999). The National Council for Accreditation of Teacher Education (NCATE) added a technology component to its standards to ensure that teacher education candidates have appropriate preparation for using technology in teaching (2001), suggesting the importance of professional development. Despite the availability of more than two hundred training opportunities from the Outreach and Technical Assistance Network and many websites, the Turlock Adult School refrained from tapping into the sources. The Turlock Adult School, which made little effort to train teachers, appeared to maintain an unstructured and undefined training procedure.

The difference in professionals' characteristics influencing adoption of technology was manifested in the two schools. In Stockton, the average years of integrating technology in adult ESL was more than eight as opposed to two years on average by the teachers in Turlock. Both Stockton teachers had taught more than ten years of ESL with more than a six year history of integrating technology. On the other hand, both Turlock teachers were part time faculty. The OTAN's finding that over eighty percent of the adult education and literacy personnel are hourly

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or part time (OTAN, no date) was a convincing phenomenon which seemed to be a negative characteristic of ESL teachers in general'. According to the same source, more than half of the adult education providers offering literacy programs are small in size and hire only part time or volunteer staff that typically plays a variety of roles in the field. Similar to the findings of OTAN and other sources, the Turlock teachers who worked part-time indeed seemed to struggle to find necessary time to incorporate technology within the lesson materials. On the contrary, Stockton teachers who worked full time had more time available to find necessary means to improve the teaching environment, generating a synergy effect. The administrators and the teachers who took technology development seriously benefited from their willingness to explore, resulting in positive student attitudes. In other words, it came into view that only the school professionals who were willing to involve themselves into the technology integration process were having noticeable positive effects on their students' ESL learning.

The qualifications of an ESL teacher have been listed by the California Commission on Teaching Credentialing (CCTC, 2004). In California, Adult Education Teaching Credentials are issued to individuals who meet the following requirements: Five years of experience or having a bachelor's degree; completion of ten upper division semester units; pass California Basic Educational Skills Test (CBEST); and coursework equivalent, such as, Teaching English as a Second Language (TESL). As of 2004, There there was no requirement for taking a technology course for California adult ESL educators (CCTC, 2004), and requirements had not changed at the time of this ESL study.

Many studies have documented that candidates seeking K-12 teacher certification tend to have little familiarity and practice incorporating technology into the students' learning process and typically do not have experience applying it into their classroom (Cifuentes, 1997; Morehead

Contrasting Technology to Traditional Methodology in Adult ESL Instruction & LaBeau, 2005, Schrum, 1999; Strudler & Wetzel, 1999). Willis argued that teacher candidates currently receive little technical, pedagogical, or administrative support for all of those fundamental changes, and few teacher preparation programs prepare their graduates adequately to use technology to enhance student learning (2006). As a result, most teacher candidates have very little insight into how to integrate technology into their curriculum (Recesso, Wiles, Venn, Campbell, & Padilla, 2002). Resesso and others' findings can be substantiated in the survey result from the National Report on NetDay Speak Up Day for Teachers (NetDay, 2004). In the survey, a third of teachers said that their pre-service training did not adequately prepare them at all to integrate technology into classroom instruction, but a similar thirty five percent of teachers felt that in-service training provided by their school district was satisfactory (Speak Up Tomorrow, 2004). No Child Left Behind requires a highly qualified teacher be present in all K-12 classrooms (U.S. Department of Education, 2005). Even with NCLB, the previous research suggests inadequate preparation of teachers to integrate technology well. Since the laws that demand competent teachers for children do not pertain to adult ESL teachers, the problem is even more prevalent for teachers working with this group of learners.

One reason for ESL teachers' lack of preparation can be found in the California Adult Education Technology Plan 2001–2004. According to the plan's description, many adult ESL personnel work part-time for more than one institution, and a high level of transience is the reality among these staff nationwide (OTAN, no date). Turlock Teachers were neither required to maintain preparation time at school, nor did they attend professional development sessions for applying technology into their ESL teaching. In contrast, the Stockton teachers who were encouraged by the administrators, not only enjoyed their application of the technology, but also had a positive professional relationship with their administrators.

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Several studies showed that schools and educational agencies involved in education maintain an emphasis on the use of technology as a teaching and learning tool because technology encourages teachers and students to work together as they explore ways to improve (Burns, 2006; Kontos & Mizell, 1997; Schrum, 2005). These results were positively affirmed in the current ESL study's Stockton Adult School findings because the teachers were making an effort, conspicuous to the researcher, to achieve a high level of knowledge, skills, and awareness of the mechanics of English through technology.

The teachers' attitudes, beliefs, and approaches impacted their willingness to integrate technology into ESL instruction. Effective teachers motivate and influence the students to support learning and school success (Burns, Griffin, & Snow, 1999) and exemplary uses of technologies with elementary students are typically driven by constructivist models of teaching and learning (Becker, 2000; Berg, Benz, Lasley, & Raisch, 1998). Indeed, the Stockton teachers who integrated more technology than the Turlock teachers tended to use a constructivist model and to recognize more instructional approaches. Specific instructional strategies that facilitate teaching and learning by virtue of using the tangible computer equipment can be identified as scaffolding according to Wood, Bruner, & Ross's (1976) definition. Through modeling, teachers can show how learning on the computer screen can be supported, reinforced and enhanced (Cummins & Sayers, 1997). In Stockton, the teachers' demonstrating and helping students to recognize what English sounds like, looks like, and means on the computer monitor indeed seemed to motivate students to learn. Literature findings on computer-assisted learning point out that the guided literacy lesson practices on the computer screen can offer motivation to learn language that is critical to the learning process (Meskill, Mossop, & Bates, 1999; Meskill & Mossop, 2000a). In Stockton, the teachers who were identified as having constructivist

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approaches in their teaching appeared to favorably impact the students' learning styles. Their students were showing recognizable improvement in their performance as they were getting acquainted with the student-directed lessons compared with the students of other teachers. The teaching styles of the teachers who had constructivism elements exhibited aspects consistently identified as positive in the previously documented literature.

Elliot & Hall (1997) found that explicit modeling of self-regulating behaviors around computer tasks contributed to better performance of at-risk students. They affirmed that the wealthy context of a computer program serves to capture and maintain learner attention in ways that otherwise would not occur. Technologies represent potential contexts where active participation of learners, in conjunction with caring teachers, can be coordinated well (Meskill, Mossop, & Bates, 1999, 2000a). In the current ESL study, the Stockton teachers who utilized multi-media elements in their instruction confirmed the findings of Elliot and others' study result as well as that of Meskill et al. However, a teacher's delivery method can interfere during the integration of the technology into instruction. Schofield (1995) recognized a relationship between computer competence and authority as a possible hindrance of computer use in the classroom. The Schofield finding was affirmed by the Turlock teacher's commanding teaching style which tended to limit the possibility of students' self regulation on learning with technology in ESL instruction.

Mayo and others (2005) found that teachers need to situate instructional technology within the context of lesson. Francher (1985) also argued that the media in CAI (Computer Assisted Instruction) alone can not be shown to increase learning. Lewis (1997) suggested that writing for beginning English learners should be a guided activity so students do not become frustrated by software learning. Svedkauskaite (2003) further argued the important role of the

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adult ESL teachers to teach English in addition to technology for immigrant students. Technology utilization in the classroom for learning English required modifications in the curriculum, teaching procedures, redistribution of resources, and reorganizing the structure of classroom (Collins, 1996; Means, 1994; Merrow, 1995). In the current ESL study, the Turlock teachers who used technology as a stand-alone activity seemed to separate technology and ESL learning elements. On the contrary, Stockton teachers who incorporated technology into the sum and substance of ESL lessons were recognized as facilitators who assisted their students' own formation of learning of both English and of technology. Also, the teachers who displayed graphics and practical websites contributed to the students' awareness of current American social elements as well as conventional English skills used in everyday life. The teachers who modified their lessons to blend the elements of technology and ESL seemed to be most successful with technology integration. Appropriate knowledge, experience, and skills to integrate technology into ESL areas seemed necessary to successfully blend the two.

In this study, the placement of computers in the classroom tended to increase the flexibility of the learning process over placement of computers in a lab. According to Barr and others (1999), teachers must become comfortable with computers in order to use them effectively. They argued that teachers' efficiency in using computers will happen when computers are available in the classroom on a permanent basis. Their finding was well illustrated by teachers in Stockton. These teachers were able to apply their technical knowledge and skills as much as their time and energy allowed. Also, these teachers seemed to access a computer to develop technology-enhanced ESL curriculum more flexibly than Turlock teachers with their schedule. Unquestionably, classroom access to computers along with the Stockton teachers' efficient classroom management strategies resulted in effective learning.

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Shared equipment was identified as a barrier to integration in a study (Denk, Martin & Sarangarm, 1993). The school environment in Turlock, which had a small computer lab scheduled for many classes, seemed to have a number of disadvantages with regard to technology infusion into the ESL curriculum, closely resembling the findings described in the Denk and others' study. In Turlock, the computer skills were practiced separately from ESL instruction. According to Barr (1999), a computer lab setting makes it hard to integrate technology to enhance subjects' learning. She argued that for both teachers and students, time limits are another disadvantage to computer labs. Her findings again corresponded to the hardships the teachers in the Turlock Adult School were exhibiting. The teachers in Turlock were assigned use of the lab, which restricted their activities with students. The computer related activities were being exercised without the ESL teacher's guidance in the lab, and when the students came back to the classroom, it was difficult for the teachers to merge the learned technology principles into the ESL lessons. In the Barr study, she also pointed out that minimal scheduled time to conduct a task in a lab each week doesn't allow ample time to work on projects with students. This point appeared to be realized at the Turlock school, given the school's lab-only access to computers.

## Conclusion

This qualitative study was conducted to identify the patterns that emerged from the participants' current practices in terms of technology utilization in adult ESL education. Interviews, questionnaires, and observations were conducted to delve into the opinions and behavior patterns of administrators, teachers, and students. The researcher hopes that this study can contribute to the identification of persistent paradigms that might lead educators to plan, improvise and implement technology principles into their teaching practices.



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This study was also administered to better understand the facilitating and interfering factors involved in using technology in adult ESL classrooms. The same techniques were conducted to inquire into the views and recurring patterns of all the participants. Factors determined as constraints and supports were identified to understand the phenomena related to the integration of technology. The researcher aspires that this case study will shed some insights to administrators, teachers, and students as well as researchers interested in the integration of technology into ESL instruction. As technology becomes more accessible and recognizable in the educational setting, ESL teachers will require embracing technology as a vital resource in their teaching. A better understanding of the factors involved to employ technology into their ESL instruction will benefit everyone on the way.

## Recommendations

As a consequence of this study's findings and the literature review, recommendations can be proposed to contribute to the integration of technology into the ESL classroom. In order to foster technology use in adult ESL programs, schools should envision a comprehensible plan and well-organized implementation of a process that will be realistic for all the members of the school community.

For further research, it will be useful to study the following within adult ESL learning environments:

- Measurable outcomes of using technology
- A teacher's role in computer aided instruction
- Efficient methodology in combining literacy and computer skill instruction

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- Cultural and linguistic issues impacting English literacy

Since the emergence of computers in the 1960s to microcomputers in the 1980s to the Internet, education has adopted computers to improve educational performance. However, existing literature in adult ESL has shown little about the degree of improvement in terms of adult literacy and ESL learning, both of which may be influenced by technology integration. Are our adult ESL students improving their performance with technology inclusion?

Computerized technology utilized by students with self-directed instruction in the Stockton Adult School seemed to more favorably impact the instructor's role to facilitate the students' learning rather than that of a traditional teacher. The role of the teacher was the key in the management of the class, in acquainting students with computer use, and monitoring and providing prompt feedback on the student's progress. These areas must be refined in the future of computer-assisted instruction.

The researcher identified that developing technology skills among low ESL level students who also had a low technology skill level seemed a daunting task for teachers. Some students didn't feel that they were learning English when the teacher isolated computers from the direct instruction. They felt that class was devoted to learning computers and most felt that they needed a better background in English before learning computer skills. Integrating computer use directly into the syllabus seemed much more effective with regard to learning English. Activities that integrated computer skills into reading, writing, listening, and speaking, drew upon Internet pictures of students' home countries, and practice in how to interview for the naturalization process, or writing a resume to get a job; these activities developed technology skills as well as English skills.

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Questions that remain include examining: What type of pedagogical approach is appropriate when integrating technology? Should the students work in groups or individually? How long should the activity last? Combining English literacy and computer skills is a complicated process and in-depth studies are needed in this area.

Issues influencing the educational settings for culturally and linguistically diverse learners are tremendous. How can educators implement technology into their literacy skills curriculum? How can curriculum be enhanced with the students' cultural perspective using instructional technology tools? These questions might bring about important insights to increase the quality of adult ESL.

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