2003

Aprendemos letras y sus sonidos : Learning letters and their sounds : an interactive experience

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APRENDEMOS LETRAS Y SUS SONIDOS

LEARNING LETTERS AND THEIR SOUNDS

AN INTERACTIVE EXPERIENCE

Diana M. Flores

A thesis submitted in partial fulfillment of the requirements for the degree of Masters of Arts in Education

California State University, Monterey Bay
May 2003

Action Thesis Signature Page

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ACKNOWLEDGEMENTS

First and foremost I need express my deepest gratitude and to give a very special thanks to my mother, Angie and father, Serapio Flores. Without their continual support, there would not have been a way that I could have completed my Education. They have been there since my junior college days to present both financially but most of all spiritually. Thank you so much.

The next on my list would be my siblings Patricia, Monica and Carlos. Their support was most certainly sought after especially by "borrowing" my nieces and nephews in order to complete this project.

I wish to also acknowledge, the times on my motorcycle and the guys Paul, Daniel, and Russell, that I ride with. Those rides were always helpful when I needed to clear those cobwebs at times. Especially thank you to Yolanda Villalon my riding partner.

I would also like to express my profound gratitude to my Administration, for giving me the time to complete this project. Above all most, thank you most of all to Mark J. Bedolla my teaching partner, who did not mind helping out be giving me the opportunity to take so time off and work with the substitutes assigned to my classroom.

I am gratified to my faculty reader, Dr. Claudia Perralta- Nash. Thank you for stimulating my thoughts on Bilingual education and the assistance.

Finally, and most importantly to me, is Dr. Christine Sleeter. Dr. Sleeter is a wealth of information; she inspired me and motivated me in order to complete this project. Thank you for having the patience to deal with my struggles in the completion of this project, I am so indebted to you.

ABSTRACT

The purpose for the creation of this multimedia project is to assist the native Spanish speaker, at the pre-primer level, to acquire phonemic awareness and phonics skills through the use of multimedia. The CD-ROM project will be used as a supplement to the Bilingual Language Arts Program used in the classroom. The lack of Bilingual multimedia phonics CD-ROMS was a catalyst for the inception and creation for the promotion of learning the Spanish alphabet and their sounds for the beginning stages for reading instruction. The lack of access to technology is also another purpose for the creation of this multimedia project. Technology can serve as one of the equalizing factors in access to education. Native Spanish speakers are at the end of the Digital Divide, with this project that divide will be somewhat closed, at least in the classroom utilizing it.

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CHAPTER ONE

Letras

The purpose for the creation of this multimedia project is to assist the native Spanish speaker, at the pre-primer level, to acquire phonemic awareness and phonics skills through the use of multimedia. Multimedia is a computer system product that involves the integration of more than one medium into a form of communication by incorporating text, sound, pictures/graphics, and/or video (Zeon, Lundeberg, Costello, Gajdostik, Harmes & Roshen, 1999). This project takes the format of an educational instructional interactive multimedia CD-ROM. The intentional design for this CD-ROM is to help students to become familiar with the Spanish alphabet and the alphabet letter sounds, and to begin to encourage the learning of strategies that are needed for decoding the written language.

This CD-ROM can be used as a supplement to the Bilingual Language Arts Program "*Cuentamundos*" and "*Esterillitas*" as mandated by the School District in which I currently am educating and addresses the following California Language Arts Standards: *1.3 Understand that printed materials provide information, 1.5 Distinguished letters from words, and 1.6 Recognize and name all upper and lowercase letters,* (http://www.cde.ca.gov/challenge/standards/langhtml/lang_k.html). The Office of Education for the County of San Diego has also developed an adaptation of the California English Language Arts Content Standards affirming a fundamental learning principle: instruction in the student's primary language is the most effective and efficient way to ensure access to high-quality curriculum and instruction, upon which to build the foundation for high levels of illiteracy. The CD-ROM addresses these standards, which

are 1.3 *Entienden que los materiales impresos proporcionan información, 1.5 Distinguen las palabras de las letras, and 1.6 Reconocen y nombran las letras mayúsculas y las minúsculas?* (San Diego County Office Of Education, 2000).

As a bilingual educator, I selected this interactive CD-ROM format with a two-fold purpose. The primary purpose for this project was to address the lack of an interactive multimedia phonics-based educational software program for use in or with a Bilingual Language Arts program "*Cuentamundos,*" for the primary Spanish language speaking student. Although there are Spanish language learning programs for children available, learning the language of Spanish is not the intention of this CD-ROM. This CD-ROM is designed to enhance the District adopted Bilingual Language Arts program that is required, and to fulfill the lack of an interactive multimedia component in my current Bilingual Language Arts curriculum. Despite the fact that there are many multimedia phonics, letter/letter sound based CD-ROMS in the commercial market for the English Only Teacher to supplement his/her Language Arts Program, there are very few available for a bilingual program or in this case the bilingual language arts program in place in my current classroom assignment. The lack of bilingual multimedia phonics CD-ROMS would be the catalyst for the inception and creation of a multimedia interactive CD-ROM, for the promotion of learning the Spanish alphabet letters and their sounds for the beginning stages of reading instruction. By the use of video and audio technology, classroom material is brought to life in a way that stimulates young minds. Incorporating pictures, sound, and animation, multimedia significantly enhances students' ability to recall basic facts (U.S. Department of Education, 1996).

More recent research findings appear to show that children respond best to multi media features such as animation, music, and particularly, voice. Technology can provide a mechanism for young children to interact with their learning environment in a developmentally appropriate manner (Dede, 1998).

The secondary purpose for this action thesis is to provide equal access to educational opportunities through the use of technology, for second language learners of lower socio-economic backgrounds and mainly to help them develop proficiency with informational technology. The students in this target population have traditionally been on the "have not" side of the digital divide. For this reason I have obtained and will continue to obtain technology for the use along side of traditional instruction. I believe that technology equates learning for all. In the classroom that I have been assigned, since September 1999 I have obtained four computers from various donors. One is a Macintosh that was donated by a couple from the local community; the other three are PCs running a Windows platform and the fourth one of these machines, was obtained by a technology grant. With the variety of platforms in the classroom, it would also be imperative that this project be design with the hybrid platform in mind. Technology integration in a bilingual classroom is the opportunity for educators to enable this minority to access technology where they do not have access at home. It is my intent to somewhat close the digital divide within my own classroom. According to U.S. Department of Education (1997) data, Whites students usage of technology is at 84 percent, Black students at 71.6 percent and Hispanic students not far behind at 68.3 percent. Total computer usage rate of students at school increased from 59 percent in 1993, to 69 percent in October 1997. The rate for grades 1 to 8 increased from 69 percent in 1989 to 79 percent in 1997.

In Chapter 2, the literature review will provide the information for the basis of this project. The analysis of educational interactive software design, cognitive and social development theory, the use of technology in the classroom and the component of reading instruction that this exercise will target will combine to assist in the construction of this project. As I will show in Chapter 2, the research has shown that students of this target population benefit from the use of interactive multimedia technology. The use of interactive multimedia technology will also assist these students and equate their language acquisition with their Euro-American counterparts. With the introduction of standards based curriculum, this project will be a useful tool for this student population in gaining the strategies for beginning readers. As the research on reading and reading strategies will show, this project will enable and assist beginning readers in a bilingual kindergarten classroom. This by all means will equate and promote a learning environment for an English Language Learning student. Technology plays a major role in students' motivation both to academic performance and to staying in school (U.S. Department of Education, 1996). Technology can serve as one of the equalizing factors in access to education. With educational technology becoming available, teachers have new tools to enhance learning. Technology tools in schools have made educational technology possible to equate the chance for all children to experience success in learning. The goal is to use technology to enable students to become well-educated, productive citizens (Mielke, Flores 1994).

The fact that this target population, Native Spanish-speakers, is one at the end of the digital divide, and the lack of the technology component of the Bilingual Language Arts

program are the reasons for the inception of this project. Upon partial completion and as suggested by Winieki and Ahern (1995), a working copy with periodically test runs will be utilized to evaluate, adjust and complete this project. This will be the subject of the discussion in Chapter 3 as will the creation of this project.

Finally, in Chapter 4, I will indicate the intentions of this project. I will discuss how this project was used in my classroom as well some of the classrooms of my colleagues. I will also discuss how the use of computer technology enriches this migrant student population. Development of this project will be on going as far as the development. With every new school year I will incorporate my student's names in the project. This is the First word as a student, we learn to read.

CHAPTER TWO

Multimedia in School

The literature for this action thesis addresses the inception, progression, and innovation in the area of educational interactive multimedia software. The topics include the design with functionality for the student in mind, the traditional theories of learning, cognition and development with regards to technology, the use of educational software in the classroom, and the components of reading instruction particular to this project. The reflection that was attributed to the guideline of the designablity of this software tool became very important to this project because as educators and students, we have all experienced situations that may have frustrated us in one way or another in regards to technology. The use of technology can contribute significantly to a student's success (Mielke & Flores, 1994; Duling, 1999) but the design needs to be functional yet user friendly. The screen should not be as busy as some of the commercial titles have become. Therefore I looked for information and research in the design and application of software tools within educational applications. Through much of the research, the uses of technology in classrooms were evaluated to enhance this project as well. This information would in fact contribute to the project.

Educational Software Design

The primary resource for the planning and implementation of the project was the need and use of a visual tool for the author throughout the planning stages of this project. The book Visual Tools for Constructing Knowledge (Hyerle,1996) provided insightful

guidance throughout the preliminary planning stages. The book provided a collaborative tool to assist in the generation, accumulation, and communication of information in such a manner that could be recalled and interpreted at a later time and by others. With such visual tool software aides such as "Inspiration" the difficulty of designing the software became less troublesome when the visualization was utilized. The task specific organizer also known as the graphic organizer was one of the tools used by myself for organizing the information portion of the project and the manageability of this project.

Nelson, Bueno, and Hufstsutler (1999) state that the usability engineering for the multimedia learning environment is a critical area in the design of interactive educational multimedia learning environments, and with the student in mind, thus address the question that I posed to myself as an educator: "How, can I as the designer and developer of this interactive multimedia educational software project, be assured that my project will be used as I have envisioned and intended the use of?" According to Nelson, Bueno, and Huffstutler (1999) usability is not a new concept in educational software design, but rather is a new term that describes well-established concepts. Usability is a term encompassing such attributes as learnability, efficiency, memorabilty, handling of user errors and user satisfaction. It also serves to the extent to which the computer software program may be of assistance in completing the task that it was designed for. There are many methods for the typical stages of software engineering. Through the use of interviews, questionnaires, expert reviews and measures of actual use, a project can be developed for optimizing its use. Observations will be the method incorporated for the usability of the program for the assistance of the design of this interactive multimedia educational software project. These results are incorporated in assisting with the analysis

and design through the final trial and inception of the product and for any follow-up studies. One of the principles of educational design use is the design of learning activities and the learner's ability to control the learning medium. Many educational software designs are based with the easy to use interface, which incorporates the GUI, graphical user interface, and a "windows" type feature. This gives the user more of a relationship with the software than with the ability to be able to learn the interfacing aspect of the software piece. Nelson, Bueno, and Huffstutler (1999) most effectively state that a focus on usability should permeate the design and development process, integrating usability heuristics with other principles and guidelines that exist for educational software design. This would be the visual tool for the preparation of this action thesis project.

DesiL (Designing for Learnability) is a methodology for informing the design of microcomputer software that may permit a designer to produce both usable and more easily learned software applications. This methodology is non-deterministic in that it does not make decisions for a designer, but rather informs a designer's options toward creating software that may be more easily learned by the end user (Winiecki, Ahern 1995). The reference to learnable software should accommodate a computer user's current knowledge, experiences, and perceptions and interpretations of a computer based task and its context of use (Winiecki, Ahern 1995). Software design methodology is based on the theoretical and empirically grounded notion that learning is most likely to occur when material to be learned is semantically attached to something already known.

Research based on the cognitive theories, which are reviewed below, also has informed us that other factors are crucial for the creation of "learnable" software. Factors include the computer user and his/her previous knowledge base, the environment he/she

will be in, and the task that the learner will be performing. These factors can be used to inform the design of the software that is not only easy to use but also easy to learn.

Theory of Development

The ideology subsequent to the use of theory of cognition and development was that any exceptional part of curriculum design requires sound theory. The theories particular to **Letras** include Vgotsky and his theoretical concepts of scaffolding and the Zone of Proximal Development (or ZPD, as it is most commonly referred to). In completing the research in this area, I began to look at the information with reference to the theory specific to what the main purpose of this project. Traditional theory of development and cognition and its inclusion are parallel to the specific technology of this project.

Wood and Wood (1996) reported on the research of individualized tutoring from the pre-school age children through to adult learners. Through research and theory from both face to face and computer-based tutoring, the authors believe that a set of common principals govern such tutoring. Vygotsky's theoretical concept of "Scaffolding" illustrates the nature of support that an adult provides in helping a child to learn how to perform a task that, alone, the child could not master. Also useful is his ZPD which refers to the gap between what a given child can achieve alone, the child's "potential development as determined by independent problem solving," and what the child can achieve "through problem solving under adult guidance or in collaboration with more capable peers" (Wood, Wood, 1996). The research provided for the design of effective one-to-one tutoring systems arising from the theoretical traditions. According to

Vygotsky's theory, what is internalized during instruction is not simply speech, but rules of action, in the service of goals, which become activated by symbol systems such as language.

Though the Language Experience Approach (LEA) was not one of the areas that I had planned on utilizing, the information that Duling (1999) provided would become inclusive with technology. LEA takes advantage of the wealth that children bring with them to school-linguistically, intellectually, socially and culturally. By focusing on language as a means of communication, the transfer from oral language usage to written language is made functional. Reading does become talk written down. John Dewey's theory that learning will occur when children's previous life experiences are linked with new information is still relevant in today's classrooms (Duling, 1999, p. 249). Computer technology can provide an exciting method for fostering literacy through language experience (Duling, 1999, p.250). These students do in fact bring with them a wealth of information, this would guide **Letras** with the prior knowledge of many of the graphics includes in the software program.

The learning styles research of culturally diverse populations, in this case, Mexican American descendants, reminds teachers that to understand and appreciate students personal cultural knowledge, and use their students prior knowledge and culture in teaching. This process calls for the construction and design of relevant cultural images in order to bridge the gap between what the students knows and appreciates and the new knowledge or concept that is to be taught (Irvine, York, 1995) Learning styles was an appropriate beginning point, since the population of my classroom is of Mexican

American descent as well as I, the graphics were chosen to depict the previous language knowledge my students tend to bring into the classroom.

Educational Software in the Classroom

The use of educational software within the classroom would most of all influence the design and platform of the project, **Letras**. **Letras** was created for use with an existing Bilingual Language Arts programs "Cuentamundos" by Hampton Brown and "Estellitas" by Karen Myers. These programs are currently used in my classroom and integration of this educational software into a classroom in a way that would benefit the target student population was also a determining factor for design. However, the technology attitudes, the use of and the learning styles of teachers would also affect the development. I created the software to be used with minimal teacher facilitation, or if need be a fading effect of providing assistance, initially assisting the student to maneuver within the educational software environment of **Letras** and succeed. The student could then use the project for ongoing learning and practice to the skills that were targeted and acquired through this self regulated learning environment.

Galowich (1999) targeted the attitudes of educators and the use of technology in their respective classrooms. As the 21st Century begins, the 21st Century citizen will need to be prepared for the future in all aspects to become a productive member of today's society. This attitude of course, tends to permeate into the classroom. Therefore the question for educators is no longer how much better do students learn with technology, but instead how do we integrate technology into our classrooms in a way that benefits students. This of course does tend to lead an educator into the choices of tools that are

used in their class. Galowich (1999) did a study that tried to answer these questions. The information that was isolated by Galowich was that interactive technologies can challenge students to be creative, think critically, and make decisions. In short, computers empower students by providing a tool that helps solve problems, facilitate communication, makes information available, and challenges human capabilities.

Teachers need both technological competence, as well as the methodological skills for effective classroom implementation of computers. The teachers also need know how to assess the effectiveness, and when and how to use computers, and which is the appropriate software for their classroom. Most importantly, in some cases, is the fact that the teachers are the ones that provide the equitable access to computers, especially for the migrant student population that I provide for (Wetzel, Chisholm, 1998).

Conway (1997) articulated the different approaches to learning, cognitive and behavioral theories from B.F. Skinner to Jerome Bruner, and then connected them to models of instruction, much to the knowledge that would be acquired by myself during my teacher training and during my post graduate work. The direct instruction/explicit teaching includes daily review, presenting new material guided practice, corrections and feedback, independent practice, and weekly, monthly reviews. This method has been particularly effective in much subject matter but is also connected with the reading decoding process. Most of all, according to Conway (1997), there are two major categories of educational technology that support this method of teaching. The most important to myself is the form of drill and practice program. Feedback is given right away and it gives the teacher the opportunity to work with other students. Also, if used in

a group setting then students may be provided the opportunity to collaborate, which uses a constructivist approach.

The other form of educational technology takes the form of the tutorial program. The tutorial program instruction offers the student the ability to learn a topic without any help or other materials. An example of this educational technology format is the new software that is pre installed on a newly purchased computer system, such as The Windows tour, or Introduction to Microsoft Works.

Balajthy (1995) states that drill and kill practice software is easy to create and popular with schools. A child as young as three years old can learn to use this software if introduced with close adult guidance. Many of these types of software are only distinguishable by the cartoon figure the software publisher has created or uses. Technology allows teachers to deal in new and innovative ways when teaching students concepts and skills. Computer technology is used to supplement, not to supplant, the human teacher.

Howard Gardner (1998) indicates that the theory of multiple intelligences, the MI theory, makes two strong claims. The first, is that all humans possess all these intelligences linguistic, logical-mathematical, musical, spatial, body-kinesthetic, intrapersonal, interpersonal, naturalist, existential. The second claim is that everyone has different profiles of intelligences. Children are smart in different ways, and can be reached more effectively if their favored ways of knowing are taken into account in curriculum and instruction as well as assessment. **Letras,** combines some of these natural intelligences enabling the student to be reached effectively.

Lev Vytgotsky's Zone of Proximal Development held that good instruction is aimed at the learner's zone of proximal development. She must be engaged in an instructional activity that is too difficult for her to perform independently. Her performance must be supported by an adult or capable peers. The teacher's role of supporting learning within the zone of proximal development involves three key elements; First, the teacher mediates or augments the child's learning. She provides support for the child through social interaction as they cooperatively build bridges of awareness, understanding, and competence. Second, the teacher's mediational role is flexible. What she says or does depends on feedback from the child while she is actually engaged in the learning activity. Third, the teacher focuses on the amount of support needed. Her support can range from very explicit directives to vague hints. Vygotsky's zone of proximal development enhances the constructivist prospective by adding the social context of learning. From a Vygotskian perspective, the teacher's role is mediating the child's learning activity as they share knowledge and meaning through social interaction. Metalinguistic awareness is important at the phonemic and word awareness levels in emergent literacy. Students develop a "conscience awareness" of the structure and function of speech and language as they learn a printed language. Vygotsky's ideas about the zone of proximal development and scientific concept development during school instruction would extend the emergent motif to include the child's developing knowledge about printed language all the way through adolescence to maturity. Through the design of **Letras**, students will become engaged by interacting with the letter of the alphabet, the letter's sound or phoneme and a word that begins with that letter's sound.

Liao (1998) researched and compared the effects of hypermedia and traditional instruction on student's achievement. The result of this study had a two-fold significance: 1) using hypermedia in instruction is positive and 2) it provided classroom teachers with research based evidence for using technology in instruction. The terms multimedia, interactive video, and hypermedia are often used synonymously in much of literature (Liao, 1998). Hypermedia is defined as "a classification of software programs, which consists of networks of, related text, graphics, audio files, and / or video clips through which use navigate using icons". It also acknowledged that this form of instruction employed a strategy that is advantageous to students because the learner is in charge and increases the learner's control over the subject matter. In conclusion, the research from this study does suggest the effects of using hypermedia in instruction are positive when compared to the effects of traditional teaching instruction. Most importantly, it provided me, the classroom teacher, with the result of research based evidence for positive outcomes of using technology in instruction.

Zeon, Lundeberg, Costello, Gajdostik, Harmes and Roshen, (1999) describe a project that included the collaborative partnership among the college of education and graduate studies at the University of Wisconsin. The partnership was called T I P S (technologies in pedagogical strategies). The key component is that it involves meaningful curricular integration of technology. Instructional software includes the drill and practice, tutorial, multimedia, desktop publishing, etc. This depends on the school and at the level of capability the teacher may have. Instructional support tools refer to the physical or technological inventory contained in the learn environment. A CD-ROM at the base level along with the computer can be classified as such a tool. Multimedia is a

computer system product that involves the integration of more than one medium into a form of communication by incorporating text, sound, pictures / graphics, and / or video to help students become comfortable with computers and technology. This study showed that student's motivation was more intrinsic and student learning generally more positive, and that teachers are beginning to focus on skills they want students to develop in order to become independent learners.

There is ever increasing pressure for teachers to include technology in their curriculum. Many teachers have grasped the potential that technology offers innocent learning. They use technology extensively most in their lives and their classrooms.

In learning with technology, research findings may not be as clear, but do appear to show that children do respond best to multimedia features such as animation, music and particularly, voice. Technology can provide a mechanism for young children (students) to interact with their learning environment in a developmentally appropriate manner. Teachers need to establish themselves in order to make good instructional decisions regarding how and when to incorporate technology into teaching environments. Technology-based instruction can be used to enhance all instruction but more importantly for this project, the specific academic skill and the maintainance of this skill. Teachers are able to create technology-based learning environments to enhance both teacher and self directed learning, but it takes a knowledge of technology, curriculum integration and instructional design associated with planning and the persistency to make all these components work together. Drill and practice software may also be used for developing fluency and maintenance of skills and knowledge. Whether using direct instruction or facilitated instruction, students learn by practice combined with the opportunities of

repeating and utilizing the knowledge. Multiple modality learning is very much supported by and enhanced by technology, self-directed instruction is enhanced and learning is made meaningful for these students. When the appropriate technology is available and used in a way that supports the individual strengths and needs of a student, that student can achieve success, fulfill her potential and experience life through active engagement within the surroundings, becoming a more productive and independent member of society, the 21st century citizen.

Reading Instruction

Finally but perhaps the most important of the descriptors for the project, was the need to have it target what has become very important in educating California, standards based curriculum. This project would target California Language Arts Standards; *1.3 Understand that printed materials provide information, 1.5 Distinguished letters from words, and 1.6 Recognize and name all upper and lowercase letters,* (http://www.cde.ca.gov/challenge/standards/langhtml/lang_k.html) Also targeted is the Office of Education for the County of San Diego adaptation of the California English Language Arts Content Standards *1.3 Entienden que los materiales impresos proporcionan información, 1.5 Distinguen las palabras de las letras, and 1.6 Reconocen y nombran las letras mayúsculas y las minúsculas?* With this, I found that the California Reading Task Force recommendations in the report to the California State Superintendent, would assist and provide me with sufficient guidance from research about how children best learn to read and about how a successful reading program works

to ensure the ability to learn the skills that the student will need to become successful (California Department of Education, 1996).

The purpose of this program advisory is to provide guidance in developing and implementing a balance, comprehensive reading program in grades pre-kindergarten to third. The program advisory suggests that explicit skills instruction be part of a broader language-rich program and that explicit instructional components such as phonemic awareness, letter names and shapes, systematic, explicit phonics, spelling, vocabulary development, comprehension, and high order thinking, and appropriate instructional material. Phonemic awareness is the understanding that spoken words and syllables are themselves made up of sequences of elementary speech words, which is a skill that is needed for the understanding of learning an alphabetic language. Phonemic awareness can be fostered through language activities that encourage active exploration and manipulation of sounds and that doing so significantly accelerates both reading and writing growth for all children. Until children can quickly recognize letters, they cannot begin to appreciate that all words are made up of sequences and patterns of letters. Learning letters and their sounds should best be accomplished through numerous guided and playful exposures to the alphabet. Throughout the pre-kinder and kindergarten years, teachers should create opportunities to engage students with the names, shapes, and formulation of the letters of the alphabet.

The findings of this research literature provided the need for well designed multimedia technology for the classroom setting. Design had to be easy to use, learn and to have efficient interface. The project needed to be developed to assist students to gain new

skills needed for use with this technology. The most basic tools could help this student population to become more productive.

CHAPTER THREE

Process for the Development of Letras

The process for the development of the CD-ROM **Letras,** began with the decision of which program would accomplish my needs as a developer of a software program. The best option for the overall design of the project was through the use of the program, Authorware version 5.0 the program Authorware by Macromedia is leading visual authoring software for interactive learning. The ease of the program to integrate graphics, sound, animation, and text to develop my education application was very important for the success of this project. In the remainder of this chapter, I will describe the process for the development and creation of **Letras.**

Classroom Population

My current classroom student population is twenty students; 13 boys and 7 girls. Of these twenty students, twelve students are classified as Migrant and participate in the Migrant program. Teaching in a self-contained classroom, I would use the CD-ROM, **Letras** in the beginning of the school year. The CD-ROM, **Letras** is to be used as a tool for, "catching up" targeting these migrant students to gain mastery of the standards that are intended for. The CD-ROM **Letras** may be specifically used by late arrival students, in order to successfully gain the skills necessary for pre primer stage of reading. This can be labeled as scaffolding tool, which is also cognitive, and development. The CD-ROM

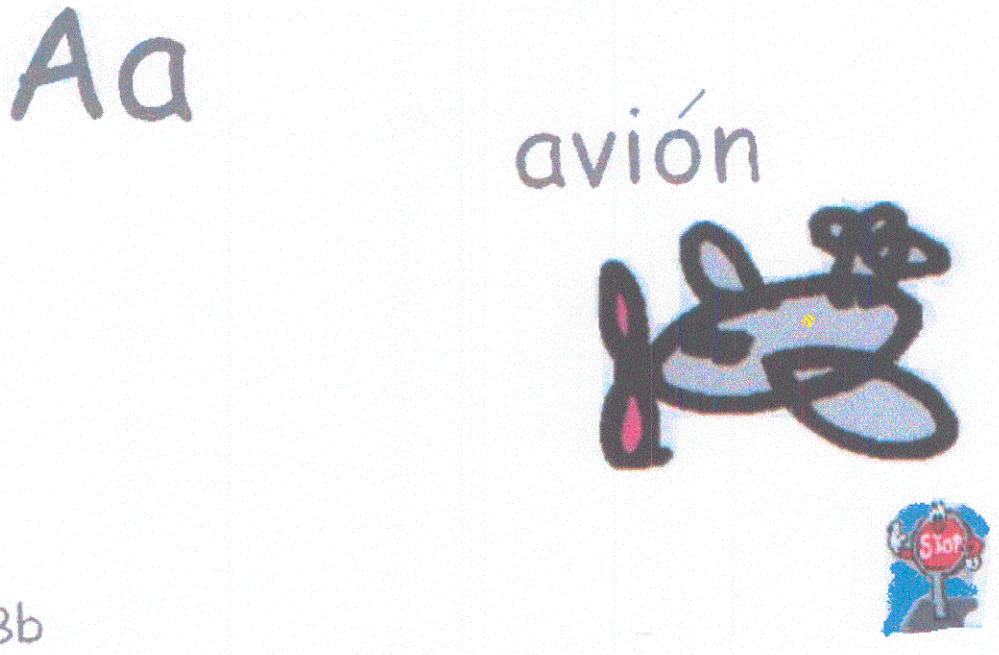
is self-paced exercise with minimal teacher intervention. Features for this minimal teacher intervention include a button in the form of a stop sign to direct the student to the main alphabet page and a button in the form of the next letter of the alphabet to take you to the next letter page.

The State of California has commenced to apply standards for achieving success in the subjects taught and assessment for the progression of students to the next grade level. The students in order to succeed need to be taught according to these standards so that they may progress by the standards. The CD-ROM **Letras** was designed to address the State of California Language Arts Standards; *1.3 Understand that printed materials provide information, 1.5 Distinguished letters from words, and 1.6 Recognize and name all upper and lowercase letters, and the Spanish Estádares 1.3 Entienden que los materiales impresos proporcionan información, 1.5 Distinguen las palabras de las letras, and 1.6 Reconocen y nombran las letras mayúsculas y las minúsculas?* A student, in order to succeed in the Language Arts subject of Reading, will need to accomplish or master the knowledge of recognizing the attributes listed above. The current Bilingual Language Arts program in use in the district that I teach within, has lessons designed with traditional teaching methods to specifically target the State standards, as is embedded by **Letras**. Students will memorize the letter sound or phoneme, letter name. Students will investigate that the written word also provides information. It was these lessons that were used to initiate to develop this project with a technological focus in order to experience this type of component.

Conceptual Design

Upon entering the program **Letras**, the student will see the main menu screen with the alphabet at this juncture. The student then clicks on the letter of choice. Next, the student will see a similar screen to the picture/graphics below. The following items are on the screen;

- The capital letter when depressed announces the letter name.
- The lower case letter when depressed announces the letter sound.
- The word for the graphic is said if depressed.
- The graphic has sound or movement attached.
- Left corner indicates the next letter of the alphabet.
- The stop sign at the right hand corner will take the student to the main menu, the alphabet.



Initially the design of the program **Letras** was to be in both English and Spanish for the English Language Learner. The objective to fulfill the English Language Learners Standards as well. (This is not to say it will not be developed at a later date.) The design for the project was guided by this reasoning for choosing the words for the project. The words were chosen for the traversing of both languages, or example barco and boat In order to succeed using the CD-ROM **Letras**, students would need to have prior computer mouse movement knowledge. A teacher with prior computer knowledge and skills can be creative and develop a simple mouse practice excises using simply Microsoft Paint, Kid Pix or any other drawing program. Another possible learning opportunity may be the assistance of the school site's computer lab and its instructor.

The Creation Process

The program chosen to develop this project was Authorware Version 4.0 by Macromedia. I had considered developing the project with Hyperstudio but, there were setbacks. The first and foremost problem developing the project, was the two main operating systems, PC or the Windows environment and Apple or the Mac environment. Developing the project through Hyperstudio would require that the computer intended to use the program must have Hyperstudio as a program loaded onto it. Whereas, the development through Authorware would be through one OS say on a Macintosh, yet be able to be distributed on the other OS, Windows. The developer would need the cross platform components for Windows. Conversely, if one is developing on a Windows

machine and wish to distribute on a Macintosh, one needs the cross platform components for Macintosh. The Authorware online help has a section called *Which Files to include* which has a list of all Xtras and drivers one may need depending on the type of content one may have in their piece. Another justification for choosing Authorware over Hyperstudio was the need for motion and sound to occur concurrently when a screen emerges by the decision of the student.

http://www.macromedia.com/support/authorware/its/documents/packaging

The voice for the project Letras is the voice of my niece Vanessa Prieto, she was eighteen at the time of recording. The sound media was provided by the CD-ROM Wave Sound Effects, which can be purchased at any office supply store. The art or jpegs, giffs and other graphics were either drawn in Microsoft Paint, Click Art or provided by the program The Print Shop Version 11 by Broderbund www.printshop.com. The graphic of the little girl's skin tone on the title screen was altered by using Microsoft Paint to reflect an ethnic look.

Field Testing

Letras was used in my classroom as well as by some of my colleagues. It was in my own classroom that I observed the students' hands on and discovery learning. It was a joy to see my students enjoy this project. The design of the project was simplistic enough that they maneuvered through the CD-ROM with relative ease. I observed several students also working collaboratively and with very little teacher assistance. They

anticipated any use of the computer center so thus they very much stayed on task. The use of technology in my classroom enriched my students' classroom experiences.

Feed back from three other Bilingual teachers included my partner Kindergarten teacher and a fellow Kindergarten teacher. I would also include a First grade Bilingual teacher as well. Response to the program included that a technology component in the Bilingual Language Arts program, was needed and that the teachers would very much like to see it used in their classrooms as well. Other comments included some "cleaning up" of the program such as that the voice all be at one level. The screens should all be identical to each other.

CHAPTER FOUR

Use of the Project Why Letras?

The State of California has commenced to apply standards for achieving success in the subjects taught and for the assessment for the progression of students to the next grade level. The students in order to succeed need to be taught according to these standards so that they may progress by the standards. The CDROM **Letras** was designed to address the State of California Language Arts Standards; ***(1.2)*** *Follow words from left to right and from top to bottom on the printed page* ***(1.3)*** *Understand that printed materials provide information,* ***(1.5)****Distinguish letters from words,* ***(1.6)*** *Recognize and name all uppercase and lowercase letters of the alphabet.*

(http://www.cde.ca.gov/standards/reading/kindergarten.html) and ***(1.3)*** *Entienden que los materiales impresos proporcionan información,* ***(1.5)*** *Distinguen las palabras de las letras, and* ***(1.6)*** *Reconocen y nombran las letras mayúsculas y las minúsculas?* (San Diego County of Education, 2000). A student, in order to succeed in the Language Arts subject of Reading, will need to accomplish or master the knowledge of recognizing the attributes listed above. The current Bilingual Language Arts program in use in the district that I teach within, has lessons designed with traditional teaching methods to that specifically target the State standards, as does **Letras**. It was these lessons that were used to begin to develop this project with the technology focus to have this type of component.

My current Classroom use of Letras

Teaching in a self-contained classroom, I would use the CDROM, **Letras** in the beginning of the school year, but only after the mouse practice exercises. As a bilingual teacher, my student population tends to be migrant. The CDROM, **Letras** is to be used as a tool for "catching up" targeting the migrant student to gain mastery of the standards that are intended for. The CDROM **Letras** could be used specifically by late arrival students in order to successfully gain the skills necessary for pre primer stage of reading. This can be labeled as scaffolding tool, which is also cognitive, and development. The CDROM is a self-paced exercise with minimal teacher intervention.

Prior Knowledge to Succeed using Letras

In order to succeed using the CDROM **Letras**, students would need to have prior computer mouse movement knowledge. There are excersises that may be used as a lesson for mouse practice, which also target the State's standards as to the physical development standard of fine motor skills. A teacher with prior computer knowledge and skills can be creative and develop a simple mouse practice exercise using simply Microsoft Paint, Kid Pix or any other drawing program. Another possible learning opportunity may be the assistance of the school site's computer lab and it's instructor.

Recapitulating the research for the development of **Letras,** I become aware of the components for the use in developing software. For instance the usability engineering for the multimedia learning environment is a very critical area for design. I used the

developmental theories to assist in the design so as to teach children at their ZPD. I examined how technology is used in the classroom through various forms of software programs i.e. the "drill and kill" and tutorial programs. I studied the use of technology by educators at the K-12 level and the components of instruction for the reading learning process. In its entirety, this information has assisted in the development and completion of a software program that can now be put in place where there was none prior. It is a program to be used with students not yet ready for the learning of the reading process, to be used with the migrant population that need the extra support in this area.

Letras was evaluated in my classroom as well as by some of my colleagues. It was in my own classroom that I observed the students' hands on and discovery learning. It was a pleasure to see my students enjoy this project. The design of the project was simplistic enough that they maneuvered through the CDROM with relative ease. I observed several students also working collaboratively and with very little teacher assistance. They anticipate any use of the computer center so thus they very much stayed on task. The use of technology in my classroom enriches my students' classroom experiences.

My Classroom Use

Currently in use within my classroom, **Letras** is being used with two students. One of these students came from another school within the district and had yet to master his knowledge for the letter sounds. The other student began the school year with my class then moved to a district that did not provide for bilingual education. He recently

moved back to this district, he is enrolled once again in my classroom, he did not know most of the letter sounds (only the o and u phoneme). This student needs to accelerate in order to begin the reading process in order to equate himself to the levels of the classroom. The use of **Letras** with these students was during the Language Arts center time, I would have the student listen to "Sonidos," the district's approved phonics program on tape. After listening to the phonics program, the student would have to move to the computer center and interact with **Letras** . The student would choose to listen to or interact with the program **Letras**. Using the program will release the Para- professional in the classroom to work with other students with other needs.

Fellow Colleagues; How they used Letras

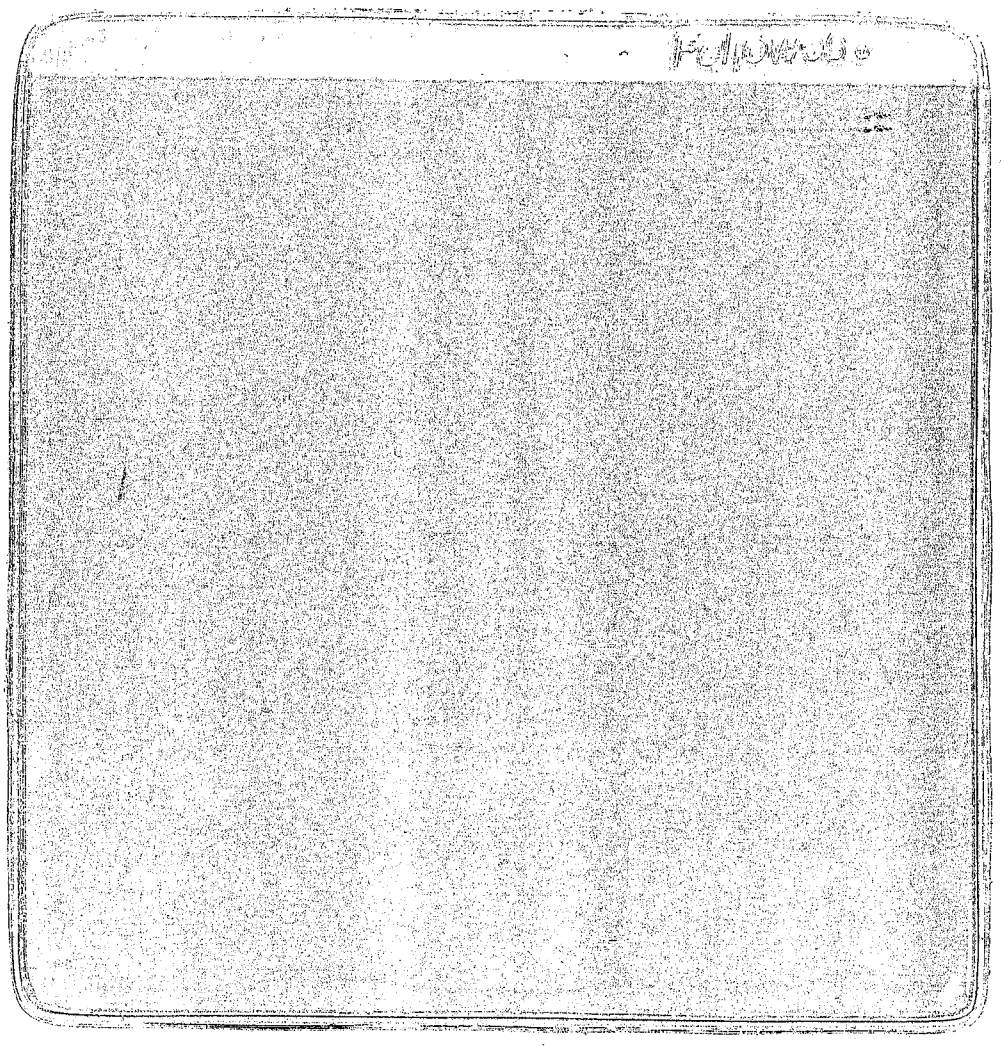
The other Bilingual teachers that reviewed this software program stated that a technology component for the Bilingual Language Arts program in use was needed and that they would very much like to see it used in their classrooms in addition. As to the programs evaluation, I gave the teachers a for question evaluation, to which the answers follow. 1) In first grade, use would be primarily for review in the beginning of the school year. 2) Also in the first grade, the program **Letras** would be used with the newcomers and the students at risk. 3) All the teachers suggested making sure the sound level was at the same balance and level. 4) As for changes to the program's overall design none were given. All were in agreement with the program and its intention.

Development of this project will be on going. One of the most important aspects of this project would be to continually change the program to incorporate the names of

my students every school year. I plan to incorporate more diverse and intricate animation as I become even more familiar with the software, Authorware, that was used to create this CDROM. I also anticipate that with refinement of this program, more of the Bilingual teachers and students will be excited and will make more of an effort to incorporate the technology daily.

APPENDIX

CD-ROM LETRAS



Bibliography

Authorware (Version 4.0) Macromedia, 1987-1997, [Computer Software] **http://www.macromedia.com**.

Balajthy, E., 1995, "Using Computer Technology To Aid the Disabled Reader" paper delivered at the Annual Meeting of the International Reading Association, Anaheim, CA. April 30- May 5.

California Department of Education, 1996, "Teaching Reading: A Balance Approach to Teaching Reading in Prekindergarten Through Grade Three". **http://www.cde.ca.gov/cilbranch/teacherrd/htm**.

ClickArt 1999, The Learning Company, [Computer Software].

Conway, J., Retrieved March 19, 2000, "Educational Technology's Effect on Models of Instruction" **http://copeland.udel.edu/~jconway/EDST666.htm**

Dede, C., ed.,1998. ASCD Year Book 1998 Learning With Technology. Aum Development.

Duling, V. P., 1999, "Literacy Development of Second Language Learners with Technology and LEA" pp. 248-256.

Galowich, P. March 1999. "Learning Styles, Technology Attitude and Usage: What Are The Connections for Teachers and Technology in the Classroom?" delivered at Society for Information Technology & Teacher Education International Conference San Antonio, Texas. February 28 – March 4.

Gardner, H., 1998, "A Multiplicity of Intelligences," Scientific America Vol. 9 No. 4, pp. 19-23.

Hampton – Brown Company, 1997. Cuentamundos Spanish Reading/Language Arts Carmel, California. Hampton-Brown Books For Children.

Hyerle, D., 1996. Visual Tools for Constructing Knowledge. Alexandria, VA. ASCD.

Inspiration Software Inc., Inspiration (Version 5.0), 1998 [Computer Software Program] Portland, Oregon. **http://www.inspiration.com**

Irvine, J. J., York D. E., 1995 " Learning Styles and Culturally Diverse Students: A Literature Review," In J. A. Banks & C.A.M. Banks, eds.the "Handbook of Research on Multicultural Education, pp. 484-97. New York: McMillan.

Liao, Yuen-Kuang C., 1998, "Effects Of Hypermedia Versus Traditional Instruction On Students' Achievement: A Meta-Analysis," Journal of Research On Computing in Education Summer.

Milkie A.., Flores C., 1994, "Bilingual Technology Equalizes Opportunities on Elementary Classrooms," In Malave, L.M., ed. National Association for Bilingual Education (NABE). Annual Conference Journal, NABE '92-'93. District of Columbia :NABE.

Myers, Karen, 2000, "Estrellitas Accelerated Beginning Spanish Reading" **http://www.estrellita.com**.

Nelson, W. A., Bueno, K. A. Huffstutler, S., 1999, "If You Build It, They Will Come. But How Will They Use It?" Journal of Research On Computing in Education Winter, pp. 270-86.

San Diego County Office of Education (2000) Estándares de Lecto-Escritura en Español primera Edición Febrero 2001 San Diego: County San Diego County Office of Education.

TLC Multimedia Inc. 1999, Broderbund, The Print Shop Version 11, [Computer Software Program] http://www.printshop.com.

U.S. Department of Education, 1996. Getting America's Students Ready for the 21st Century. Retrieved 2000 **http://www.ed.gov.Technology/Plan/NatTechPlan/benefits.html**

U. S. Department of Education 1997, Digest of Education Statistics. Retrieved March 19, 2000. **http://nces.ed.gov/pubs99/digest98/chapter7.html**

Wetzel, K., Chisholm, I., 1998, "An Evaluation of Technology Integration In Teacher Education For Bilingual and English As A Second Language Education Majors," Journal of Research On Computing in Education Summer.

Winiecki, Donald J., Ahern, Terence C., 1995, "Designing for Learnability (DesiL): An engine for Informing the Design of Easy-to-Learn Microcomputer Interfaces," **http://www-cscl95.indiana.edu/csl95/winiecki.html** College of Education Texas Tech University.

Wood D., Wood H., 1996, "Vgotsky Tutoring and Learning," Oxford Review of Education, Vol. 22 Issue 1 March 1996, pp. 5–12.

Zeon, S., Lundeberg, M., Costello, S. M.; Gajdostick, L.J.; Harmes, N. R.; Roshen, N. A., 1999 "Restructuring at the Classroom Level: Effects with Technology," Paper presented at the Society for Information Technology & Teacher Education International Conference. San Antonio, Texas, February 28-March 4, 1999.