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Using the computer to motivate at-risk students as writers

Janet Yvonne Parrish

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USING THE COMPUTER TO MOTIVATE AT-RISK STUDENTS AS WRITERS

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
In
Education: Instructional Technology

by
Janet Yvonne Parrish
December 1997
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Approved by:

Dr. Rowena Santiago, First Reader

Dr. Sylvester Robertson, Second Reader
ABSTRACT

The purpose of this project is to develop a computer-based software program to motivate at-risk students in writing. This is accomplished by developing a software program for pre-writing that will expand the knowledge-base of students. By using this stack, students will have the advantages of learning writing through technology; they will also experience the hands-on portion of technology that is encouraged by the reading/writing framework.

This project characterizes design and development of a computer-based instructional program that can be used in conjunction with a pre-writing lesson. After teaching students the theory of organization/categorizing of ideas and brainstorming techniques, teachers can design computer-based lessons using authoring software. These lessons can be used to reinforce the understanding of the concept or to address the individual needs of a particular at-risk student. Specific skills, namely, brainstorming, organization of ideas and categorizing concepts can be improved.
ACKNOWLEDGMENTS

I would like to thank Dr. Rowena Santiago for her patience and expertise on the production of this project. Her time, effort, dedication and sincerity have been a major factor in this achievement. I would also like to acknowledge Dr. Sylvester Robertson for his diligence and guidance while working with me on this project. My goal has been obtained and my vision is now a reality.
# TABLE OF CONTENT

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vii</td>
</tr>
<tr>
<td>CHAPTER ONE: INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>The Need For Computer Technology for At-Risk Students</td>
<td>2</td>
</tr>
<tr>
<td>Statement of Problem</td>
<td>2</td>
</tr>
<tr>
<td>Project Overview</td>
<td>6</td>
</tr>
<tr>
<td>CHAPTER TWO: REVIEW OF RELATED LITERATURE</td>
<td>10</td>
</tr>
<tr>
<td>What is an At-Risk Student</td>
<td>11</td>
</tr>
<tr>
<td>How Writing for At-Risk Students is Taught</td>
<td>19</td>
</tr>
<tr>
<td>Advantages of Using Computer Based Instruction</td>
<td>24</td>
</tr>
<tr>
<td>How Computers Support Writing for At-Risk Students</td>
<td>25</td>
</tr>
<tr>
<td>How Computers Support Motivation</td>
<td>29</td>
</tr>
<tr>
<td>How Multimedia Supports Motivation</td>
<td>34</td>
</tr>
<tr>
<td>CHAPTER THREE: STATEMENT OF OBJECTIVES</td>
<td>47</td>
</tr>
<tr>
<td>CHAPTER FOUR: PROJECT DESIGN AND DEVELOPMENT</td>
<td>49</td>
</tr>
<tr>
<td>Content Area</td>
<td>49</td>
</tr>
<tr>
<td>Audience</td>
<td>54</td>
</tr>
<tr>
<td>Structure</td>
<td>55</td>
</tr>
<tr>
<td>Technology Requirements</td>
<td>55</td>
</tr>
<tr>
<td>Stack and Screen Design</td>
<td>56</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>The Menu Screen</td>
<td>51</td>
</tr>
<tr>
<td>Figure 2</td>
<td>The Role Model Screen</td>
<td>52</td>
</tr>
<tr>
<td>Figure 3</td>
<td>The Opening Screen of Subject</td>
<td>52</td>
</tr>
<tr>
<td>Figure 4</td>
<td>The Life Story Screen</td>
<td>53</td>
</tr>
<tr>
<td>Figure 5</td>
<td>The Youth Screen</td>
<td>54</td>
</tr>
<tr>
<td>Figure 6</td>
<td>The Program Structure</td>
<td>55</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Example of Sub Menu Options</td>
<td>57</td>
</tr>
<tr>
<td>Figure 8</td>
<td>The Informational Screen</td>
<td>59</td>
</tr>
<tr>
<td>Figure 9</td>
<td>The Audio Speech</td>
<td>61</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Example of Video</td>
<td>62</td>
</tr>
<tr>
<td>Figure 11</td>
<td>The Navigational Instruction Screen</td>
<td>63</td>
</tr>
<tr>
<td>Figure 12</td>
<td>The Detailed Navigational Instruction Screen</td>
<td>64</td>
</tr>
<tr>
<td>Figure 13</td>
<td>The Lesson 1 Categorizing Ideas Screen</td>
<td>65</td>
</tr>
<tr>
<td>Figure 14</td>
<td>The Lesson 2 Brainstorming Ideas Screen</td>
<td>66</td>
</tr>
</tbody>
</table>
CHAPTER ONE
INTRODUCTION

Computers have become progressively important as instructional tools in schools. Technology is the key factor in assisting teachers to meet the academic needs of at-risk students. Technology can be utilized to employ students in stimulating activities in which teachers can present skills, concepts or problems to be solved. Technology holds promise for assisting teachers in successfully meeting the academic needs of at-risk students (Scott, Kahlich & Barker, 1994).

Many educators and politicians are deeply concerned with the growing shortage of talent in our society. They want to know why so many students appear to be at risk and never fully or deeply explore their talents and abilities. They wonder what role school plays in this dilemma. Finally, they want to know how literacy can make a difference in the lives of these students, and what effect this may have on our society as we prepare for the 21st century (Gentile & McMillan, 1990).

Scott, Kahlich & Barker (1994) found that traditional materials and methods are not working in teaching at-risk students how to write. Kozma & Croninger (1992) suggested that emerging technologies can facilitate learning, including the learning of students at risk of school failure. However, technology by itself cannot be expected to address skill
deficiencies in at-risk students. But the capabilities of technology as they are matched to and integrated with the social and curricular arrangements of the school might begin to make a difference.

The Need for Computer Technology for At-Risk Students

In a recent study, Sinatra, Beaudy, Pizzo & Geisert, (1994) found that at-risk students responded positively to the use of technology incorporated with instructional strategies aimed at developing high order thinking and literacy skills. Studies reveal that instruction within such environments shifts the emphasis from information giving and receiving to an emphasis on finding relevant information and learning how to solve problems, ask questions, think critically and communicate ideas. Activities that are not engaged in for any particular communicative purpose are unlikely to result in active engagement of higher-order thinking processes. Therefore, technology allows children to act, to exert control, and to devise the satisfaction that comes with task accomplishment.

Statement of Problem

Teachers focus almost exclusively on basic skill instruction and strategies to help at-risk students overcome their reading and writing difficulties (Allington, 1988). This approach to remediation is often insufficient,
unsuccessful and boring for both the student and the teacher and may do harm to the development of healthy interactions between them. By emphasizing student’s deficits in reading and writing, teachers may actually reinforce a student's feelings of inadequacy or incompetence (Gentile & McMillan, 1987).

In the early days of identifying and labeling students, the label at-risk referred to students who were "at-risk" of failing in school (Payne and Payne, 1991). There is no consistency in how the term is defined. Trends do exist between definitions put forth by various authors. Those students identified as at-risk are generally thought to be low achievers from low socio-economic status (Maverogenes, 1994; Weinberg and Weinberg, 1992; Robinson, 1992; Payne and Payne, 1991; and Gentile and McMillan, 1991).

Writing instruction for chronic low achievers typically focuses on techniques for remediating so-called "basic" skills such as spelling, grammar, and handwriting. A central assumption made by many educators of low-achieving students is that the acquisition of so-called "low-level" text production skills is a necessary prerequisite to the acquisition of composing skills associated with writing as a powerful tool for personal learning, such as problem-solving strategies and rhetorical knowledge. A direct consequence of this "bottom-up" approach to writing instruction is that the achievement gap increases as students move through school,
and at-risk learners become progressively more disadvantaged because of a systematic lack of instruction in the higher-order skills that underlie writing (Bryson & Scardamalia, 1991).

An effective writing program treats writing as a process, a concept which regards the act of writing as an interrelated series of creative activities. Included within this series are prewriting, writing, responding, revising, editing, developing skills with the conventions of writing, evaluating, and postwriting (Smith, 1986).

Pre-writing is the first stage in the writing process. It includes any experience, activity or exercise that motivates a person to write, generates material and ideas for writing, or focuses a writer's attention on a particular subject. Prewriting stimulates and enlarges thought and moves writers from the stage of thinking about a writing task to the act of writing. This stage in the writing process is frequently overlooked, and students are merely expected to write without being motivated to do so (Smith, 1986).

Current evidence suggests that emerging technologies can facilitate learning, including the learning of students at risk of school failure. Technology is capable of providing at-risk students with meaningful and motivating context for learning. Technology is capable of providing at-risk students with varied multi-sensory opportunities to read and
write about their own concern and issues (Kozma & Cronninger, 1992).

Students who are labeled "at risk for academic failure" undoubtedly constitute a diverse group, including students who cultural heritage is not consistent with the sociocultural context of mainstream schooling, as well as students who are unable to achieve acceptable levels of literacy for a variety of causes, none of which allow one to advance a deficiency model of underachievement. It seems important, therefore, to suggest that we undoubtedly need to expand our notions about what counts as "literacy." We need to question and to deconstruct the kinds of arbitrary constraints that historically have tended to exclude minority students from effectively participating in school-based literacy activities (Bryson & Scardamalia, 1991).

Schools reflect cultural diversity and as one of their special functions attempt to recognize and to address the diverse needs of different cultures (Banks, 1975). Multicultural education in the school is generally a task assigned to the classroom teacher. In performing this task the teacher must act as an instructional designer who chooses instructional materials appropriate for the content and learners (Briggs, 1977). Locating instructional materials specifically designed for various cultural groups is difficult because such materials are typically limited or
non-existent. The teachers options are to create new instructional materials or to adapt other available materials to the special cultural needs (Cannings & Finkel, 1993).

An effective writing program should also produce students who believe what they have to say is important, students that are motivated to write, because they feel they have something significant to say and do not overly fear putting their ideas on paper for the consideration of others. Such programs should also produce students who readily engage in revising and editing early drafts with some evidence of enjoyment in the act of writing (Smith, 1986).

Project Overview

The purpose of this project is to develop a computer based program to motivate at-risk students in the pre-writing stage. Although motivation is a factor for all students in reading and writing, it is especially critical for those who struggle or fail to learn in the regular classroom because their earlier learning experiences in school have not been rewarding, and they have few if any incentives to achieve. They lack sufficient motivation to read and write, and this frustrates educators because their most carefully developed program and materials are not enough to ensure that learning will occur (Gentile & McMillan, 1990).

This project will furnish the students with relevant subject areas in which they can choose from. The subject
areas will provide the background information necessary in the pre-writing stage. It is contemplated that this will supply the students with the motivation necessary in the pre-writing stage. Hodges (1993) says that at-risk students lack background knowledge and general information which enables comprehension. This lack of background knowledge and low motivation level typically results in writing deficiencies. This project will supplement their knowledge-base by providing background information on a number of subject matters to help formulate ideas. Hodges (1993) states that at-risk students do not become better readers or writers, despite special programs, because they lack intensive reading practice, they lack background knowledge and general information which enables comprehension. It is anticipated that when these students are tasked with writing on subjects of interest and provided with background information they will begin to create and organize their own thoughts during the pre-writing phase.

Studies prove that at-risk students want to express themselves and communicate with others, but they often believe that what they have to say is unimportant and, as a result, they tend to be careless in their writing. They will believe that their writing is important if they have experiences that confirm that belief. Such experiences are likely to occur if they are given opportunities to write on topics of deep concern to them or with which they are

This computer-based M.A. instructional project addresses these needs. The topics were pre-determined by conducting a survey on subjects of interest to the audience. By providing the students with background information on subjects of interest, their curiosity to read more will be stimulated.

It is believed that students will become more creative and will begin to formulate information and ideas before writing. It is anticipated that with the provided subject matter and background information, students pre-writing skills will show increased effort at creativity and students attitude toward writing will improve. The students will also learn the importance of research and organization of ideas during the pre-writing stage.

This project will be accomplished by developing an instructional material called a stack, that will integrate technology and pre-writing exercises. The instructional material will incorporate sound, video, graphics and animation. The software will help improve pre-writing skill deficiencies in at-risk students by motivating them and helping them generate and organize their ideas. The intent is to provide at-risk students with stimulating subjects of interest in which to learn and to help them become
participatory learners. This project involves the design and development of computer-based instructional material that can be used in conjunction with a pre-writing lesson.

This program is different from other programs because of its uniqueness to offer subjects of interest to at-risk students and its ability to provide them with the information necessary to create the knowledge-base that supports the creative process of pre-writing. The effectiveness of this program will be measured by the learners' ability to generate more ideas and express their thoughts on the subject matter. Another expected result is increased enthusiasm that will lead to more on-task behavior during writing time, because students are more focused and more productive during the pre-writing stage. The software is limited to activities that lead to writing a report.
CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter will review the role and impact of technology in schools for at-risk students. This chapter will also examine the current methods for teaching at-risk students and discuss how technology can make this better.

State, national government and business executives have identified a general failure on the part of public schools to meet the needs in literacy of at-risk students. They point to a crisis in education and forecast gloomy results for society if we continue to lose them. Large financial incentives are being offered to support new ways of teaching and altering curricula for these students. Other agencies (i.e., Social Services, Mental and Health Services, and Probationary Services) have responded with specific programs designed to reduce absenteeism from the classroom, the student drop-out rate, and the numerous effects of sociodemographic, deficits of students at risk and their families. Education has yet to define a clear role or approach for teachers working with these students to develop their literacy (Gentile & McMillan, 1991).

The major solution is that the public, corporate America, educational leaders, and elected officials recognize the need and demonstrate the resolve, intelligence and courage required to provide the resources (Hornbeck, 1990).
Assistance for children in the high risk of failure category may come through computer-assisted instruction (CAI), not only because software is available that addresses student needs, but also because of the ability of the computer to empower students to take control of their own learning. Such experiences of control are integral to the academic success of at-risk students, many of whom feel a lack of control due to environmental, physical, mental, or language disabilities. While research has shown that CAI can help at-risk students learn basic skills such as reading, writing, and mathematics, studies have also revealed that CAI helps students think critically, solve problems, and draw inferences. Technologies such as instructional video, videotapes, and distance education systems can be used to enhance motivation, interaction, and learning in at-risk students, while student databases can be used to produce, manage, and assist in the analysis of student performance, in planning instructional programs, and in organizing and tracking learning objective for individual students (Hornbeck, 1990).

What is an At-Risk Student

Within any given classroom, there will be students who struggle with the curriculum. We tend to lump these students experiencing difficulties together and call them at-risk. The term at-risk is readily familiar, but its specific
meaning is not apparent. The definition generally depends upon the circumstances of a given situation. Just as the dynamics and variables of every situation are different, so too are the definitions for the term at-risk. While there are many commonalties in and among various definitions, the specifics depend upon who supplies the definition (Colby, 1995).

At-risk students come from every level of society but the majority live in poverty and are overrepresented by ethnic minority groups. Many are the products of broken homes or dysfunctional families with no tradition of education. They live chaotic and turbulent lives and have little supervision or guidance. Their home culture is incompatible with the culture of the school. They have not acquired the literacy skills needed to succeed in school and they feel alienated from a system that appears inflexible, hostile and unresponsive to their needs (Gentile & McMillan, 1991).

Dutweiler (1992) notes that most definitions of at-risk students concentrate on the students' deficits and their need to change. Most definitions of at riskness ignore the relationship between the school and the student and the changes that should be made in the educational system. Yet, with the best intentions, schools can foster conditions that
guarantee a certain proportion of students will find schooling so inhospitable they will leave.

Gentile & McMillan (1991) state that at-risk students have been labeled resistant, reluctant, deviant, slow difficult, disruptive, hyperactive, helpless, or troubled. Students who are labeled "at risk for academic failure" undoubtedly constitute a diverse group, including students whose cultural heritage is not consistent with the socio-cultural context of mainstream schooling, as well as students who are unable to achieve acceptable levels of literacy for a variety of causes, none of which allow one to advance a deficiency model of underachievement (Bryson & Scardamalia, 1991).

Many at-risk students are the products of turbulent home environments. Many have been psychologically and physically abused by parents, teachers, or relatives. Many have a history of chemical abuse and drug dependence or have parents who misuse drugs and alcohol. Many are "latch key" children with little supervision or guidance in their lives. Many have failed in school and have developed negative attitudes toward reading and writing or learning itself. Many have few friends, and those they do have are negative influences. Many lack any purpose and feel alienated from a society that appears hostile and unresponsive to their needs. Many have developed a set of values or beliefs based on material
acquisition and agreed; they are unloved and treated indifferently by parents, teachers, or peers. Many have given up hope and despair of any future based on conventional paths from the schoolroom to the marketplace (Gentile & McMillan, 1990).

Gentile & McMillan (1991) found that, "At risk students encounter early difficulty and failure in learning to read and write. Schools fail to address their needs in literacy by connecting their home culture to the culture of the school. Frequently, they develop negative attitudes toward teachers and literacy." Fox (1990) states:

The study of children at risk is a study of paradoxes. These children are of average intelligence, yet they leave school without the reading and writing skills needed for success in life; they enter school with spoken language competence but do not exploit their knowledge to master the written code; they and their parents have high apparitions for their success in school, yet these children fall behind early and fail to catch up; they participate in their communities but are often disengaged from the culture of the school. (p. 70)

Students at risk spend an inordinate amount of instructional time in recursive drills; they have not learned to interact with the text and teacher using their background knowledge and experiences as a means of questioning what they read and write, processing information and interpreting an author's ideas. Moreover, some teachers have low expectations of these students, do not serve as models of higher order thinking for them and furnish insufficient
attention to fluency and comprehension (Knapp & Needles, 1990).

Higher order thinking is not developed using lock-step methods and materials. Teachers must develop activities that access these students' prior knowledge and experiences, clarify and discuss the problems or circumstances, suggest and lead them to related examples and materials, and serve as models of higher order thinking, using "scaffold instruction." This requires teacher to think aloud and explain or demonstrate to these students the mental processes they used to read and interpret literature or write to express their thoughts and feelings (Duffy, Roehler & Herrman, 1988; Vygotsky, 1978).

At-risk students often fail to develop higher order cognitive skills because they are placed in classrooms that de-emphasize the need for them. Classes for at-risk students break lessons into small, sequentially related tasks that emphasize drill and practice, work sheets, and extensive desk work (Levine, 1988).

Studies that compare these classrooms to those attended by high- and moderate-achieving students report more discipline problems, low teacher expectations, slower paced instruction, fewer academically oriented interactions with classmates or adults, and an emphasis on social goals, such as learning to be punctual or accept responsibility for
assignments (Oakes, 1985). As Levine (1988) argues, these classes make few academically oriented demands on students, which may actually retard learning and cause at-risk students to fall even further behind (Kozma & Cronninger, 1992).

Researchers are not the only group who define at-risk. Classroom teachers play an important role in determining certain students are at-risk. This is seen as teachers refer students in their classrooms to receive extra support or school services. As teachers hear of programs to help at-risk students, it is their job to determine which of their students if eligible. In this way, teachers are some of the most influential people in defining the term at-risk.

"Teacher judgments are almost always initially required either to identify or confirm the designation of students as at-risk" (Payne & Payne, 1991).

The role of assessment in education of at-risk students is a pivotal one. It involves the systematic gathering of pertinent educational information for the purpose of making decisions about the provision of instruction, and in the case of special needs students, for the purpose of providing special education. Without educational assessments teachers would be severely limited in their ability to identify, then subsequently create and implement appropriate instructional sequences to increase literacy in students. For children who present a risk when learning, instruction must be highly
individualized with precise data about student needs. Technology is a data gathering tool available to students and teachers during the assessment process (Duckworth & Taylor, 1995).

The assets that at risk students bring to the classroom often are unnoticed and unprized by schools and classroom teachers (Moll, 1990). These students have a vast store of intrapersonal knowledge and experiences with polarized themes; good and evil; life and death; love and indifference; kindness and malevolence; joy and sorrow; perseverance and surrender; purpose and aimlessness; belonging and alienation; honor and dishonor; hope and despair; vitality and lethargy; loyalty and treachery; courage and cowardice; generosity and greed; forthrightness and dishonesty; loss and gain; proper ambition and exploitation and, acceptance and change. At risk students can read and write to learn, not by means of isolated drills and exercises, but by means of a wide body of literature and activities that have significance to them (Veatch, 1996).

What works with students in at-risk situations? There are many programs beginning with early childhood and continuing through adulthood. The National Dropout Prevention Center located at Clemson University in Clemson, South Carolina has found that comprehensive programs that address a broad spectrum of issues, especially those programs
which begin during early childhood and include parent assistance and involvement, are most effective. Certain kinds of learning environments have been identified as having the best results with students in at-risk situations. They include:

- participatory decision-making and school-based management;
- alternative forms of schooling;
- flexible scheduling;
- year-round schooling;
- non-graded clusters replacing graded classes;
- adjustments for developmental levels and styles;
- appropriate use of technology;
- increased staff development; and
- collaboration with businesses and the community.

Other important strategies for ensuring student academic success are early concentrated assistance with reading difficulties, individualized instruction, summer enhancement programs, mentoring and tutoring and career counseling for workforce readiness. Technology has opened many more opportunities to make these academic methodologies come to fruition (Duttweiler, 1992).
How Writing for At-Risk Students is Taught

Many teachers focus almost exclusively on basic skills instruction to help at-risk students overcome their reading and writing difficulties (Allington, 1988). This approach to remediation is often insufficient, misdirected, unsuccessful and tediously boring for both the student and teacher and may do great harm to the development of healthy interactions between them. By emphasizing students’ deficits in reading and writing teachers may actually reinforce a student’s feelings of inadequacy or incompetence (Gentile & McMillan, 1987).

Some “whole language” methods have narrowed the cracks through which previously at-risk students have fallen but the gap remains for many. Furthermore, the ongoing debate in reading and writing instruction over basic skills versus “whole language” distracts many teachers from focusing directly on the at-risk student (Gentile & McMillan, 1991).

Question Answer Relationship (QAR) is another way at-risk children are taught. QAR instruction is especially effective with at risk students because it forces them to use their background experiences to read and write more knowledgeably and to combine, what they know with an author’s message to create clearer questions or ideas and new meanings. This approach motivates at-risk students to write and think about human needs. It fosters a healthy respect
and appreciation for difference among others (Gentile & McMillan, 1991).

The use of QAR instruction requires at risk students to pose questions, think and reflect on ideas related to their own and others' lives. It teaches them the interactive process between the student and the text in reading that is vital to content learning. It also demonstrates the importance of using the valuable information they bring to literacy instruction to make decisions and solve problems. More importantly, it helps teachers work with them successfully to expand their view of the world, to test their vision of reality and appreciated different points of view. It helps remove some of the psychological barriers. While most of us do the best we can with the information we have, information that is not applicable to making life better and solving problems is not valuable. This approach motivates at-risk students to read, write and think about human needs and human rights. It fosters a healthy respect and appreciation for differences among others (Gentile & McMillan, 1991).

At-risk students are also taught to write using the normal writing process. The writing process involves prewriting, drafting, revision, and editing. Pre-writing is the first stage in the writing process which includes any experience, activity, or exercise that motivates a person to
write, generates material for ideas for writing, or focuses a writer's attention on a particular subject. Prewriting stimulates and enlarges thought and moves writers from the stage of thinking about a writing task to the act of writing. This stage in the writing process is frequently overlooked, and students are merely expected to write without being motivated to do so (Smith, 1986).

There are many different kinds of prewriting a teacher may choose to do with students. These range from brainstorming or clustering ideas to researching and participating in sensory experiences. Prewriting may be done in groups, with the whole class, or individually. It can be done with the conventional classroom tools or it can be done on the computer (Cannings & Finkel, 1993).

The earliest application of computers to writing instruction and the composing process was in the area of drill and practice. This group of programs only focused on basic skills such as spelling, punctuation, or sentence combining. Well designed software provides instruction that takes advantage of the computers capacity for presenting information in a compelling and interactive way while also keeping track of the student's progress (Smith, 1986).

Drafting involves actually "doing" writing. This is the point at which the student takes the ideas from prewriting activities and begins to string the thoughts and ideas
together in forming a written piece. The thoughts and ideas at this stage may have little cohesion. The purpose of the drafting stage of the writing process is to include the major themes or ideas that are necessary and important to the writer in creating the piece and to begin putting them together into a unit or form (Scott, Kahlich & Barker, 1994).

Revision involves taking the piece and scrutinizing it for clarity, cohesion, and unity. This is the most difficult part for students when creating written pieces. It is here that research indicates the most explicit and direct instruction is needed. At this point the teacher may want to use examples that closely resemble the works of some of the student authors and illustrate ways to make revisions that do in fact improve the product rather than simply changing or adding words (Scott, Kahlich & Barker, 1994).

Editing is the stage of the writing process when students take their written work and correct the spelling, grammar, and punctuation errors and look for ways to "polish" it. Editing is again easier for students using a computer since students do not like to rewrite, especially at-risk students. After the author has critically reviewed the piece it may be shared with a dialogue partner in the group or with the members of the group (Scott, Kahlich & Barker, 1994).
The final step in the writing process is the creation of a literary piece for publication in the classroom or outside the classroom. This requires student ownership in the process and products involved in writing. It is essential that students are given opportunities to create written pieces of their own. This encourages independence and insures participation and ownership in the literary activities (Scott, Kahlich & Barker, 1994).

There is substantial evidence in the literature that topic interest facilitates the comprehending, learning and enjoyment of discourse (E.G., Asher, 1979); Asher, 1980; Asher, Hymel, & Wigfield, 1978; Schiefele & Krapp, 1988; Schiefele, in press). Similarly, it has been assumed that topic interest would also improve children’s writing. Graves (1975, 1982, 1983) is an advocate of self-selected topic choices for beginning writers. The underlying rationale for self-selected topics is that they increase interest, motivation and intellectual activity, and therefore children who choose their own topics write better than those who are given their assignments by teachers (Englert, Stewart, & Hiebert, 1988). And furthermore, Graves (1983) concluded that:

the topic is the single most important factor contributing to writer variability... Whether the child’s writing is imaginative, personal narrative, or composing an information book, the topic is usually hot because there is a strong root of personal experience or affect to the topic (Hidi & McLaren, 1991).
Advantages of Using Computer-Based Instruction

Technology can be used to engage students in interesting activities through which teachers can present skills, concepts or problems to be solved. Computers provide immediate feedback with the intended motivational advantages. In addition, computers mix visual activity and listening modes of learning and they offer a non-judgmental, private environment in which students can test their own thinking at their own speed (Duttweiler, 1992).

Computer-based instruction afford students the opportunities of interactivity (interactive learning). Gardner & Cochran (1993) define the term interactivity as the user engaging in direct and continual two-way communication with the computer, responding to questions and receiving feedback in reaction to answers provided.

The uniqueness of the computer as an educational tool enables at-risk students to venture into problem solving and creative writing activities with minimum risk of failure. In addition, the computer offers motivation, self-pacing and privacy (Scott, Kahlich & Barker 1994).

Media and technologies can be used to enrich and accelerate the pace of learning for students who are behind. When used as a tool for accessing information research and problem-solving technology provides students with a positive
means of taking more responsibility for their own learning (Duttweiler, 1992).

One appealing advantage of computer-based instruction is that it offers the flexibility to teach high thought processes such as problem solving as well as relatively simple learning theory (Media Evaluation Services, 1994). Lewis, et al. (1987) and Lewis (1993) have researched the various benefits of technology for young people in school with disabilities. It would seem reasonable that these benefits could apply to the broader category of at-risk students, also. Some advantages are:

• Technology is a strong motivator

• Technology can produce improvement in student academic performance

• Technology can create opportunities that are unavailable to learners with difficulties

• Technology acts as a catalyst for improving students' self-esteem and self-concept

• Technology can add to the perception of at-risk students being more able as learners

Such advantages and benefits of technology establish the foundation for creating literacy in at-risk learners (Duckworth & Taylor, 1995).

How Computers Support Writing for At-Risk Students

Computers support writing for at-risk students in many ways. Computers make writing exciting and provide at-risk
students with varied multi-sensory opportunities to read and write about their own concerns and issues. According to some leaders in education, technology can contribute substantially to learning. It has been noted that some teachers using computer-based writing curriculum in their classrooms were better able to meet the writing/reading need of their diverse students populations, regardless of socioeconomic status, race, or sex than teachers using traditional instructional methods and materials (Kozma, Cronniger, 1992).

With the computer, students can pace themselves. They can linger over material that they need more time to absorb or they can speed through material that they quickly understand. In fact, with the computer it is possible to branch a student to remedial material or jump the student ahead to more advanced material on the basis of the student's response (Gardner, & Cochran, 1993).

Computers enable parents and educators to pass along a set of processes for solving unknown problems and creating possibilities. Among the processes that can be effectively transmitted and used by each successive generation are those associated with computer use, that is, processes for using symbols to represent and structure experiences and ideas in ways that provide order and meaning in our lives (Cannings, & Finkel, 1993).
A computer using curriculum begins with the traditional curriculum, but it does not attempt to integrate or “infuse” the computer into the curriculum. It does not use the computer to provide drill and practice in math or reading, it does not use the computer to present rote concepts through tutorials; it does not use computers to chronicle historical dates or scientific facts. Instead, the traditional curriculum serves as a springboard to processes for making sense of the world we live in. Therefore, to the traditional content emphasis, a computer using curriculum adds, to overall educational objectives, such competencies as:

- Using computers and content as vehicles, students will discover ways to talk about and direct their thinking and problem-solving strategies.

- Using computers and content as vehicles, students will explore techniques for working cooperatively while attacking complex content related problems.

- Using computers and content as vehicles, students will become communicators modeling strategies for sending and receiving messages using a variety of symbol systems (linguistic, print, mathematical, musical, and visual).

- Using computers and content as vehicles, students will create meaning from information by using processes modeled during a variety of computer applications for searching, sorting, evaluating, and reporting information (Cannings & Finkel, 1993).

The traditional language arts curriculum is concerned with such things as grammar, spelling, punctuation, vocabulary, and letter writing. The computer using
curriculum, however, turns students into writers. As students learn to formulate their ideas through writing and to share those formulations with a reading audience, grammar, spelling, punctuation, poetry, and essays come alive. They learn what to do with language arts content. The writing process changes from a mechanical operation to a vehicle for thinking. Much of writing is reformulation—making significant changes in overall organization, structure, and clarity. Reformulation is a form of creative play, requiring intuition, experimentation, and the reconstruction of patterns of thought. The writers asks a series of what-ifs, testing alternative structures (Cannings & Finkel, 1993).

Writing in a computer environment both suggests and provides writing environments more conducive to reformulation than more static print environments. Therefore, to the traditional language arts curriculum, a computer using curriculum adds such competencies as:

- Students will used writings as a vehicle for shaping understandings derived from studying the social sciences and the physical and biological sciences.
- Students will be able to reflect on their feelings through creative writing, and literacy experiences.
- students will reflect on their thinking through prewriting, writing, editing, and publishing their ideas (Cannings, & Finkel, 1993).

Computers provide the perfect learning environment for emphasizing process, since their uniqueness lies in their
ability to process symbols. A computer has the power to process print symbols, mathematical symbols, and graphic symbols. Add a voice recognition unit, and it can also process spoken language symbols. The ability to process each of these symbol systems permits the computer user to devise descriptions about qualities of their experience. When interacting with a computer the user is able to do more than just use symbols to describe experiences and ideas. They are able to bring these descriptions to life, to model the processes these symbols describe (Cannings & Finkel, 1993).

How Computers Support Motivation

In an increasing number of schools, at least one computer is available in each classroom. It may be a permanent fixture, or it may be wheeled in as needed. A software library is readily available, and students are able to use the computer at any time during the day at the teacher's discretion. Clearly, the classroom-based computer has the greatest potential for becoming an integral part of the curriculum. It is proximate, available, and easily supervised. With proper management, the classroom-based computer can become a tool that greatly enhances student learning (Cannings & Finkel, 1993).

Studies have concluded that the use of computers in education increases, at least at the start, the motivation of
students. The students have a better perception of learning compared with the traditional way of teaching. Studies have revealed that students enjoy their learning experience more than those learning from traditional textbooks, because of the computers dynamics and colorful graphics, sound and provision of immediate feedback (Cannings & Finkel, 1993).

The motivation or excitement to learn generated by a computer is, indeed, a big "plus." LD children become discouraged with the pencil-and-paper practice that must take place for them to completely learn a skill. The computer can serve two purposes here. The computer will wait as long as necessary for children to grasp a concept. They will soon perceive the computer as a non-threatening medium where they can risk being wrong. If children lose patience with the computer, they can turn it off and come back later. Learning can be interesting and competitive (Cannings & Finkel, 1993).

The effective utilization of computers in early childhood education must be based on an understanding of how children learn. Young children learn through many natural interactions in the environment. As Kamil (1985) notes, children acquire an understanding of the environment through experiences which they can then use to construct images of the world around them (Cannings & Finkel, 1993).

A report by Henry J. Becker of Johns Hopkins University attempts to bring together all available research related to
the question, Can computers be effective, general-purpose learning tools? Becker begins by summarizing his own survey research conducted over the past five years, the most recent survey involving some 8,000 teacher and principals. Computer-using teachers perceived computers as "helping students to enjoy their school experience more and motivating them to pay attention to academic work." Four out of ten believed that student enthusiasm in school subjects for which they used computers was much improved" because of computers. They also saw computer as being highly useful to special populations—gifted students and special education students (Cannings & Finkel, 1993).

The computer allows the student to feel in control. It is non-judgmental. It does not react to the amount of time a student takes to answer a question. It gives immediate feedback. Computers provide an exciting, dynamic new learning tool; they can enrich existing instructional practices by providing a medium for extending learning to new visual and manipulative modes; they are potentially a self-confidence building experiences for many children; and recent research indicates computers can serve to strengthen children's social skills, especially team planning and cooperative learning (Beaty and Tucker, 1987; Harlow, 1984).

Reports from the Laboratory of Comparative Human Cognition (LCHC) (Cole & Griffin, 1987; LCHC, 1989) examine
the cognitive and social needs and contexts of at-risk students, making several recommendations about how computer might be more effectively used with these students. They suggest that:

- Computers would best be used in conjunction with collaborative groups of students organized around goal-oriented tasks. Student working in pairs or groups with the computer tend to correct each other's mistakes, cooperate in the completion of tasks, and discuss the assignments in ways that clarify the task.

- Rather than drill and practice software, these tasks should involve rich, interactive simulations and microworlds that embed the need for basic skills in higher order thinking. Such tasks should challenge the capabilities of both students and technology. Instruction within such environments shifts the emphasis from information giving and receiving to an emphasis on finding relevant information and learning how to solve problems, ask questions, think critically, and communicable ideas. Social interaction within this context reduces low-level errors and creates support for higher level activities.

Finally, LCHC suggests that media can be effectively used to connect students to family, community, and other cultures, particularly those in which their ethnic and language characteristics are dominant (Kozma, Cronninger, 1992).

Computers need to be increasingly thought of as tools to enable the mass of students, including at-risk students to think critically or analytically, to solve problems, to draw inferences. Computer can sometimes provide instruction when no satisfactory alternative is available (Hornbeck, 1990).
Computer-assisted instruction (CAI) can speed up certain learning; it provides greatest improvement for the lowest achieving students. Motivation is enhanced. Patience is a hallmark of the computer. Interactive devices provide students with a sense of control. Students can fail without embarrassment. All of those qualities can be helpful to the LEP student. There is evidence that CAI program like "Writing to Read" which are designed generally to help young children with language, are effective not only with youngsters whose first language is English, but LEP students as well (Hornbeck, 1990).

Computers can juxtapose, or transform, information in one symbol system to that in another (Dickson, 1985). A learner can type in printed text, and a computer with a voice synthesizer can transform it into speech. The computer can take equations, numerical values, or analog signals and transform them into graphs. Computers can be used to aid students in constructing links between symbolic domains, such as graphs, and the real world phenomena they represent (Kozma, 1991).

There are generic contributions of computer technology which are not limited to any particular application. One might fairly summarize those generic characteristics within the framework of empowering the student. The computer motivates. It is non-judgmental. It will inform a student of success or failure without saying by work or deed that the
student is good or bad. The computer individualized learning, permitting mastery at one's own pace. In most instances, the learner has far more autonomy than in many other teacher directed settings. The computer gives prompt feedback. And good software makes the computer, at least potentially, remarkably imaginative. Such generic qualities allow the learner more often to be in charge. This is a quality missing in the lives of many students, especially those who are at-risk, due to environmental, physical, mental or language disabilities (Hornbeck, 1990).

How Multimedia Supports Motivation

During the last decade, at-risk students, including those with disabilities, have been able to learn more easily due to phenomenal advances in technology. Stories, poems, reports, and letters can be written by students with the use of computer software. Literature for young children as well as adolescents who are disabled is accessed through adapted computers. Recognizing familiar phrases and familiar words such as those from Clyde Watson's *Father Fox's Pennyrhymes* is facilitated through the telecommunications and multimedia technologies of interactive video. While not a "magic bullet," technology has increased possibilities for learners at-risk to become successful (Duckworth & Taylor, 1995).

Media can be defined by its technology, symbol systems, and processing capabilities. The most obvious characteristic
of a medium is its technology, the mechanical and electronic aspects that determine its function and other physical features. These are the characteristics that are commonly used to classify a medium such as a television, a radio, and so on (Kozma, 1991).

Because more recent research shows that children learn better actively, non-linearly, visually, and cooperatively, the software publishing industry has made great attempts in the last decade to adapt software to these new models. But until the emergence of videodiscs, with their ability to give teachers and students random access to thousands of visual, and CD-ROM, with its capacity to allow learners to explore enormous amounts of textual data in a non-linear fashion, software developers were somewhat limited in how they could help students be proactive, visual learners (Cannings & Finkel, 1993).

Computer-based, multimedia and other advanced technologies now provide not only great diversity in structural designs, but enable us to custom make programs to meet each student's individual needs, abilities and goals. So "sameness" is obsolete. Moreover, "distance learning"—the use of telecommunications to deliver instruction from anyone, anywhere to anyone anywhere; virtually eradicates spatial barriers to choice. (Cannings & Finkel, 1993).
Multimedia and hyper environments are the most promising, as well as the most speculative and expensive, technologies. There is little doubt that these environments are where we’re heading (Cannings & Finkel, 1993).

Learning with media is viewed as active, constructive process whereby the learner strategically manages the available cognitive resources to create new knowledge by extracting information from the environment and integrating it with information already stored in memory. This process is constrained by such cognitive factors as the duration and amount of information in short-term memory, the task-relevant information that is available in long-term memory, the structure of this information, the procedures that are activated to operate on it, and so on (Kozma, 1991).

Learning with media can be viewed as a complementary process which representations are constructed and procedures performed sometimes by the learner and sometimes by the medium (Kozma, 1991). In other words, some learners will benefit from certain media because of what these media will provide. This creates another reciprocal relationship, one between the medium and the learner, which Salomon, Perkins, and Globerson (1991) call a cognitive partnership. As such, learning with media is sensitive to characteristics of both the learner and the medium: What the medium is capable of and what the learner does. To paraphrase Resnick (1985), the
medium does what it can do and the child must do the rest (Kozma & Cronninger, 1992).

Interactive multimedia is the rage in educational technology these days. Most early examples that brought the benefits of multimedia to educators featured the laser videodisc—a 12 inch platter offering access to thousands of still images, up to an hour of video footage, and two parallel soundtracks. No doubt, interactive videodisc applications, which are making their way into classrooms in increasing numbers, will play an important role in education for years to come. But another medium is competing for the attention of those interested in interactive multimedia: The compact disc (Cannings & Finkel, 1993).

Compact disc technology, popularized by the audio CD in the mid-1980s, offers an advantage over laser videodisc: while the videodisc stores images and sounds in analog form (and do traditional videotapes and audio cassettes), the compact disc is a digital medium. This mean that a CD can store computer programs (compact discs used in this manner are know as CD-ROMs), and that the images and information stored on the DC-ROM can be manipulated by the computer in the same way as other digital input (Cannings & Finkel, 1993).

Since at-risk students frequently have serious deficiencies in basic reading, writing, and math skills, many
educators place a heavy emphasis on remediation in these areas. These educators are gravitating toward basic skills software, available in several formats. Some of these teacher focus on microcomputer-based drill and tutorial programs. The programs they generally select are the more text-based basic skills packages—ones that have been stripped of most graphics and sound other than those needed to illustrate particular concepts. But, since most at-risk students need more motivation than that provided by such "plain vanilla" packages, many educators find it necessary to supplement these packages with classroom projects, career search programs, and other activities that help student see a need for the knowledge and skills covered (Cannings & Finkel 1993).

Other educators are finding that a multimedia approach is effective with at-risk students. The realistic graphics and sound offered by videotapes and videodisks can be important aids for students who lack basic reading skills. And in this day of television, rock videos, and movies, videobased lessons are one way of gaining the interest and attention of young people who have been turned off to school (Cannings & Finkel, 1993).

Media vary in two ways that are relevant to this reciprocal relationship: They vary in the symbol systems they employ and the processes that operate on these symbols.
A medium's symbol systems are those "modes of appearance" (Goodman, 1976) that can be used to construct its messages. For example, television can use moving pictures and spoken words (among other symbol systems), whereas radio, obviously, can employ only spoken words and other sounds, and books can use text and show pictures but these pictures do not move. Salomon (1979) contends that information presented in different symbol systems may be represented differently in memory and may require different mental skills to process, a contention supported by the work of Pavio (1990).

The capability of video to employ motion pictures can be used to provide dynamic information, such as the trajectory of moving objects, that may be critical to understanding certain phenomena, such as the relationship between force and motion. Video can also be used to connect mental representations to real world situations in a way that learners with little prior knowledge may have trouble doing on their own (Kozma & Cronnigner, 1992).

Processing skills of a medium play a particularly important role in learning. Specifically, they can complement and interact with the cognitive structures, skills, plans, purposes, and processes of the learner. A medium with the appropriate capabilities may perform or model certain operations that can facilitate learning. If such processes are explicit, the learner may come to incorporate
them into his or her own repertoire of cognitive skills (Salomon, 1988).

Kozma and Conninger, (1992) theorize that technological interventions can help at-risk students if they build on the students’ current representations, if they connect these representations to the real world, and if they are used within effective school environments:

• The use of interactive multimedia allows students to operate on and see phenomena simultaneously represented in several linked symbol systems (graphs, pictures, sounds). This can help the students leverage their current mental representations and media skills to create knowledge structures that are stored in multiple, interconnected, representational forms, thus deepening student understanding.

• In addition, multimedia can connect students’ school-based learning to real world situations. Interactive video can present problems embedded in real world situations that cue knowledge structures associated with personal experience, integrating these with formal, school-based knowledge.

• Improved school financing, increased availability of preschool instruction, collaboration with social service agencies, the elimination of curriculum tracking, and increased parent participation and community involvement—all these things will improved the quality of school as well as increase the impact new technologies can have on school learning.

In summary, the symbol systems and processing capabilities of media correspond in many ways to the representations and operations required of learning and problem solving. Some learners will benefit from certain media because those media will provide representations and perform operations that learners cannot yet supply for
themselves. Others learners will benefit because they can use the medium to capitalize on the representations and operations they already have (Kozma, Cronninger, 1992).

When investigating the role of motivation in children’s writing performance, one encounters a paradox. On the one hand, motivation has a strong and undeniable role in all human cognitive performance, so it must be an important factor which affects written production. On the other hand, very little of the considerable literature which has emerged on writing and motivation has dealt with the relationship between the two. It is interesting to note that among the research efforts that explored so many facets of the writing process, motivational factors tended to be ignored (Hidi & McLaren, 1991).

Other specific findings from research that may be helpful to motivate at-risk students to read and write. Although there is contradictory evidence concerning the use of tangible rewards Gentile & McMillan (1990) found that with many at-risk students a tangible reward is a place to start. They state that many of these students are threatened by reading and writing, and a reward or the promise of a reward deflects their attention from the fear of anxiety they feel when asked to read or write and propels them to act and approach learning. Many at-risk students lack purpose or the desire to excel and do not include paying these students to
read and write, and tangible rewards should not be the sole means of motivating them. Strong positive verbal interaction in the form of praise and encouragement may be more effective than tangible rewards with some of these students (Deci, 1975). Nevertheless, teachers must establish an environment in which, ultimately, they can help at-risk students learn self-motivation in four ways

1. Teachers should work with at-risk students to identify and shape reasonable and reachable goals in reading and writing and to structure incremental learning steps that are measurable and provide successful outcomes. Bloom (1982) examined the characteristics of master teachers regarding motivation and determined that in most cases they had worked out a master plan of instruction. Evidence of progress and improvement was used to maintain motivation. Students were continually informed of progress, and teachers usually had an ultimate goal in mind.

2. Teachers should work with these students to develop reading and writing skills instruction that transfers to academic core curricular work in regular classroom. Unfortunately, fragmentation, inconsistency, and incoherence seem appropriate adjectives for describing
the typical curriculum of at-risk learners (Allington & Johnston, 1987; Allington, Steutzel, Shake, & Lemarche, 1986).

3. Teachers should work to develop at-risk students' own incentives for learning to read and write as well as those provided by the teachers, and they should teach these students to reward themselves for time spent concentrating on reading and writing (Blackham & Silberman, 1980).

4. Teachers should teach at-risk students to monitor their behavior and reverse their negative self-talk. This refers to the negative statements these students apply to themselves when teachers assign them to read and write (Gentile & McMillan, 1987). Many at-risk students set themselves up for failure (Gentile & McMillan, 1990).

In conclusion, only when schools have to earn their revenues in the marketplace by competing to serve consumers who are free to choose where to take their business (and money) will schools and teachers have the incentive to adopt productive technologies. And only when schools are free to operate as autonomous enterprises—true "school-based management"—will educators have the opportunity to use their own resources to acquire the technologies they judge to work best. The latter point is often overlooked. We need choice and competition in education not only to goad technical innovation but to provide quality control. The market is the
essential solution to the “one best system” fallacy that has yielded, among other disasters, the dumping down of the school textbook to perfect idiocy. Also overlooked is how crucial technology is to the success of the policy called “choice”—which, to work effectively, must include the freedom for students to choose what schools and programs to attend. Technology blows away many of the key objections to choice programs: That “choice” is phony when all schools will be filled up and leave many students stuck in bad schools. That distance and geography limit actual choices (Cannings & Finkel, 1993).

The benefits of new technologies can only be realized if teachers and students have access to them. Despite a dramatic buildup of technology over the past decade, the number available are still small compared to the numbers of students in schools. Mecklenburger (1990) estimates that the ratio of students to computers in public and private schools is somewhere between 20 to 1 and 40 to 1. If older and outdated models are eliminated, he contends that the ratio might well be 400 to 1 or even 1,00 to 1. Consequently, teachers and students seldom have access to more than one or two machines in a classroom (CSOS, 1983-1984).

Although the ratio of computers to students is generally low across the country, it is particularly low for certain schools. schools with large enrollments of low-income and
minority group students, for example, have fewer computers than schools with small enrollments. Higher achieving students have greater access than low achieving students (CSOS, 1983-1984). Extrapolating from these early assessments, at-risk students and their teachers will find themselves at an even greater disadvantage than they are now if educational policies and practices do not compensate for these trends (Kozma & Cronninger, 1992).

Whenever we fail to thoroughly understand and explore the roots of educational problems and the ideas and technologies offered to remediate them, we will be the victims of superficial thought and undisciplined good intentions. The only guarantee against faddism in the coming decade of expected unprecedented change is that we invest in a thorough evaluation and ongoing refinement of our instructional process, and that we provide first-rate staff development and support (Cannings & Finkel, 1993).

The future classroom will foster a lifelong love of learning—for teachers and students alike. It teaches skills more often than facts: for example, writing skills more than word processing, problem solving, not just multiplication tables: and research skills with access to the world’s greatest libraries. It will present diverse options and acknowledge individual differences. All learners will be accepted where they are in their own development and guided.
toward the acquisition of the skills they need (Cannings & Finkel, 1993).

If we look at the future of computers for special needs students, it can only be described as exciting. The innovations seem endless, as software and hardware both become more finely adaptable and thus more universal. The awareness and understanding of special student needs—and the use of computers to help meet them—will continue to increase. We have only touched the surface of the endless possibilities of this technology. Our dreams are restricted only by those limitations we allow ourselves and others to make (Cannings & Finkel, 1993).
A major problem confronting most teachers of at-risk students in elementary schools is how to motivate them. The purpose of this master's project is to provide at-risk students with a computer-based multimedia program to motivate them, while supplying them with background information on subjects of interest to them. Multimedia systems utilize interactive media technologies that combine, deliver, and transform information by means of images, video, audio, animation, and graphics, and text. The initial goal of the program is to develop a software program that utilizes current technological resources to supplement traditional textbooks that are being used in writing instruction. This approach utilizes cognitive, affective, and psychomotoric higher order skills.

Current evidence from cognitive psychology suggests that learning is an active, constructive process whereby the learner strategically manages the available cognitive resources to create new knowledge already stored in long-term memory. Consequently, a learner's current understanding (or prior knowledge) plays an important role in new learning. The content of this knowledge and how it is structured,
organized, and represented in memory has bearing on the outcome of a learning episode (Kozma & Cronninger, 1992).

The objective is to develop a software program that will make use of available technological resources to supplement the textbooks that are currently being used in prewriting instruction. It is anticipated that at-risk students motivation levels will be enriched by adding multimedia. With the dynamics of the software, students will be engaged in their own learning and will be provided with multimedia information to help move them from one idea to another. It is hoped that the students will be empowered by having a chance to operate the program on their own. It is anticipated that after completing an exercise in this computer-based instruction that these at-risk students will be able to construct and formulate ideas on subjects in which they are given information on. After constructing these ideas it is hoped that these students will have more information which will be connected with prior knowledge to write on particular subjects. The students should become motivated with the use of the program and it's dynamics, and in turn will organize thoughts and ideas more consciously during the pre-writing stage and have more to write about on the subject during the writing stage.
CHAPTER FOUR
PROJECT DESIGN AND DEVELOPMENT

This chapter emphasizes the characteristics of the project by beginning with the description of the project. The content area, audience, structure and technological requirements are discussed. Later in the chapter the project design, development, implementation and formative evaluation are described. In conclusion, the strengths and limitations of the project are explored as future recommendations for the project are given.

Content Area

The project is titled, "Using the Computer to Motivate At-risk Students as Writers." The software which was developed to support this project is titled, "Having Fun Writing." The purpose of the project is to develop a computer-based program to motivate at-risk students in writing. This is accomplished by developing a computer based program that will integrate technology and pre-writing exercises. This program will furnish users with relevant subject areas in which they can choose from. The subject areas will provide the background information that is necessary in the pre-writing stage. This will make the student more comfortable with the subject matter and help motivate the student during the pre-writing stage.
The content of this project was determined prior to the development of the project. It was determined by conducting a survey to identify topics of interest that at-risk students would enjoy writing about (see Appendix A). In the survey two main topics were identified. The topics which sparked the most interest in the students were role models and movie stars. The role model and movie star topics in this program provide background information on the subjects. The information is broken down into the categories of parents, youth, career, family, struggles, beliefs, accomplishments and awards. After reviewing the subject information, the user will participate in pre-writing exercises. The prerequisite skills expected of the user for this program include reading at least a first or second grade level. Some familiarity with the keyboard is helpful, but not a prerequisite.

The project begins with an opening screen that directs the first time user to the credit or help screen. There is also an option for the experienced user to go directly to the menu screen. After a couple screens of instructions, the project directs the user to the menu screen. At the menu screen the user has the option of selecting the topic in which they choose to write about. The user can choose from the movie star screen, role model screen or elect to begin writing (see Figure 1).
If the user selects movie star or role model they find themselves at a screen in which they are given the option to choose between three role models or three movie stars (see Figure 2). Once the selection is made the user is directed to a stack that consists of approximately 16 to 20 cards. The opening screen begins with a photograph of the subject and their name (see Figure 3).

The user then goes on to the next screen which displays a diagram. This diagram gives the user the option of looking at various aspects of the subject’s life. There are a variety of paths in which the user can choose to explore. If the user enjoys the freedom of freely moving around in the
FIGURE 2. The Role Model Screen

FIGURE 3. The Opening Screen of Subject
FIGURE 4. The Life Story Screen

stack and viewing information of interest to them. There are significant facts revealed about the subject’s lives on this screen (see Figure 4). The next screen gives the user the option of selecting various things that took place when the subject was a youth (see Figure 5). After reviewing the material the user is directed back to the sub menu.

If the user is ready to begin the pre-writing exercises, the writing screen button should be selected. The writing screen begins with instructions and then continues on to the first lesson and the remaining two lessons. The writing lessons that the user participates in after viewing the program are interactive and prepare the students for writing. In the first lesson the user is asked to categorize a list of
ideas. There are three exercises in that lesson. In the next lesson the user will brainstorm as many ideas as they can recall from a story or a subject. The user will then print these ideas to refer to later. This lesson is highly motivational and gives the user an opportunity for feedback. In the third lesson the user will categorize the ideas identified in the previous brainstorming session. These exercises should prove to be very interactive and essential in preparing the students for writing.

FIGURE 5. The Youth Screen

Audience

This interactive multimedia software was developed for at-risk children in 4th and 5th grade. The students are
between the ages of nine and ten years of age. The students thought to be low achievers from low socio-economic status. The average student reads at a 1st or 2nd grade level. Most of the students generally have little supervision at home and come from homes where the importance of school is not a factor. The students are not self motivated, they are guided learners who do not work independently alone.

Structure

The program structure is outlined below in Figure 6.

FIGURE 6. The Program Structure

Technology Requirements

The technological requirements consist of a Macintosh computer with 2MB of RAM with system 6.0.8 or 4Mb of RAM with
System 7.0 or higher. A color Mac is required to take advantage of the color screens of this program. The program can be used with Apple IIGS Version 1MB of Ram and one 3.5 disk drive.

If this program is being modified by the teacher for presentation, a zip drive, zip diskette and scanner are required.

Stack and Screen Design

This computer-based program emphasizes integration through the use of visuals and models. There is user control on every screen. The user can quit, go to previous page, next page or go to the sub menu. The icons used are consistent and very intuitive. The user can always go the previous sub menu (see Figure 7). Most of the navigation techniques used (moving from screen to screen) are non-linear. The user is not locked in and can freely go where he desires. The user has the freedom to flow through the stack in any pattern in which they choose. There are a few sections that have a linear pattern for navigation. This linear pattern was a necessary navigation technique because of the importance of the user to read the information on the three connecting screens. However, the user has the ultimate control on how they navigate through the software program.

The program consists of several stacks which contain approximately 16 - 20 cards per stack. The clarity of the buttons make the navigation a very smooth transition.
In May of 1920, Mallie Robinson and her five children, carrying baskets, boxes, bundles and old suitcases, headed West. Mallie called the train that took her and the family to California her "Freedom Train." Jackie was just a baby then. He was only sixteen months old when his family

FIGURE 7. Example of Sub Menu Options

The program is a stand-alone program and the activity is guided by the teacher. All learning styles are different, which is why the software program incorporates several design features.

There are multi-sensory techniques which are incorporated in the instructional design. There is also video, text, graphics and audio. Visual, textile and auditory concepts are also utilized. For example, on most of the role model and movie star screens there is a photograph and textual information. On a few of the screens there is also an option to view a short video clip.
The instructional design takes organization, relevancy, consistency and visualization features into consideration. The role model and movie star screens have approximately eight main categories. These categories in this sub menu are consistent throughout the software. The categories are parents, youth, career, family, beliefs, struggles, accomplishments and awards. The organization of these concepts will help the students later in the pre-writing exercises to categorize their ideas properly. The organization is not only consistent, but motivating and helpful to the user.

The computer-based instructional program provides a constant overall look and graphic design. The majority of background colors are vivid, exciting and fun to work with. The card layout is uniform for similar cards and visually related for all cards in the program. The button structure is consistent and placed in reliable and functionally grouped locations along the bottom of the screen.

The screen space is freely used establishing functional areas. For example, the screen is divided into top and bottom. The very bottom of the screen is used for navigation and other functional buttons. The bottom of each screen is consistent throughout the program. On most screens there is a symmetrical design with a photograph on one side and subject information on the other side (see Figure 8).
Demi began to find work acting. She made a few guest appearances on T.V. show and found small parts in the films choices and Young Doctors in Love. Demi's big break came when she was cast as Jackie Templeton in the popular daytime T.V. show "General Hospital." Demi starred as Jackie for two years. Demi appeared on the cover of a magazine, touted as a

Figure 8. The Informational Screen

There are several graphical representations used to invoke a mood of liveliness. The use of bright exciting colors also helps to motivate the user. By using these particular techniques the importance of structured and effective screen design is adhered to.

Rich colors are used in the software program to keep the user motivated and alert. Most of the graphics used are shiny and colorful which will keep the user interested. On the other hand, the graphics are simple and precise to help clarify the concept.

The information presented follows normal eye movement and the text is readable and specific with letters large
enough to read. Most of the fonts used are 14 and 18 inch fonts which are compatible to what the user is accustomed to. There are a variety of fonts utilized to break the monotony of standard conventions. Through the use of a various fonts the user can continue to absorb the textual information without becoming bored with the same monotonous textual style. The fonts used include lucida bright, old english text, courier and new century schoolbook. These fonts are anticipated to be exciting and stimulating to the users.

On some screens there is an audio button to help clarify instructions due to the difficulty that some users might experience. Audio is utilized in the program to help motivate the user. For example, Figure 9 motivates the user by providing them with an audio speech of Dr. Martin Luther King, Jr.

During the testing phase it was revealed that some of the students would not take the time to properly read the instructions. The students would quickly rush through the screens without thoroughly reading the instructions. It was concluded that the reinforcement of instructions in audio form was a positive feature to ensure that students clearly understood the instructions.

Development

The development of this computer-based project utilizes an hyper-media authoring tool which is known as HyperStudio.
FIGURE 9. The Audio Speech

This authoring tool gives the user control over the computer screen, rather than the computer screen having control over the user. The development of the project incorporates sound graphics (see Appendix B for copyright permission), color, animation and movie clips. See example of movie clip in Figure 10. With this computer-based program the user can reach increasing stages of proficiency without having to synthesize everything at once.

During the development phase, a writing survey was conducted on students to determine their writing patterns (see Appendix C). The survey provided information regarding the students likes and dislikes about writing. The survey
FIGURE 10. Example of Video
also helped determine why the students had difficulty writing. As mentioned earlier, there was another survey conducted prior to the development phase. This survey identified the students' interest and subjects that they wanted to write about. While developing the program, the user was the constant focus, as screens were constructed and revised. The graphics, color, sound, and animation used in the program were used specifically because they were thought to be appealing to the user.

How to Use Software

Once the program is opened by the user, they learn about its purpose, how it works, and how to use it. The user is
given instructions on navigational techniques. There is a next icon which moves the user from screen to screen. The user has the option at any time to exit the program or return to the sub menu screen. Information is given in small chunks, while the user is told how the program works. For example, the instructions begin with the main navigational techniques (see Figure 11). Then later the instructions review other functional buttons (see Figure 12).

This computer-based program will gradually be implemented into the classroom for use shortly after the formative evaluation. The use of the program will slowly be integrated into the curriculum and lesson plans in the
You will see this later. This means that you are ready to write, after viewing the subject material.

This means that you would like to go to the Role Model menu.

This means that you would like to go to the Movie Star menu.

Let's go to the menu screen. Which button would you choose?

FIGURE 12. The Detailed Navigational Instruction Screen

resource class. It is hoped that at least one resource teacher will be utilizing the program by early winter.

Formative Evaluation

Set-Up

The purpose of the formative evaluation is to test the computer-based program for effectiveness, and for further revisions prior to actual use. This is not a research study; rather, the evaluation results are used to alter the program until its desired instructional goal and/or effectiveness of user-interface is obtained.
The testing took place in a resource classroom at Arlanza Elementary School in Riverside, California. It was pre-determined that the students would be individually tested. The evaluators are 4th and 5th grade at-risk students. The students were all volunteers. All of the students being tested have similar characteristics and are basically achieving at the same level.

Two students were evaluated on the computer and two were evaluated by using the traditional textbook methods. A booklet was constructed with the same textual information as that in which the students viewed on the computer. A lesson plan was devised for the computer lesson (see Appendix D) and

FIGURE 13. A Sample Lesson 1 Screen on Categorizing Ideas
for the lesson without the computer (see Appendix E). The lesson plan was constructed to ensure that both groups of students were receiving the same set of instructions and the same objectives.

FIGURE 14. A Sample Lesson 2 Screen on Brainstorming Ideas

The testing was comprised of a series of pre-writing exercises that occur before the writing stage. The students were tasked with completing a series of exercises that will help them write more in the writing stage. In the first lesson, the students were given a list of ideas and were asked to place them into appropriate categories (see Figure 13). The students were tasked with selecting the categories
based on the material in which they had reviewed. In the next lesson the students participated in a brainstorming exercise. The students were asked to think of someone that they admire and to list all the ideas that they could about that person (see Figure 14). In the last lesson the students categorized the ideas that they generated in the brainstorming session.

Evaluator

The evaluators are four at-risk children in 4th and 5th grade. The students are between the ages of nine and ten years of age. As stated above, the students are generally thought to be low achievers from low socio-economic status. The average reading level of these students is 1st or 2nd grade level. The students basically have the same motivation levels. The IRB approval was given for the evaluators participation in the formative evaluation (see Appendix F).

Procedure

The procedure for the evaluation began with a demonstration of the software. The evaluators were given the opportunity to experiment with the software to determine it's effectiveness. The Evaluators were four, 4th and 5th grade at-risk students between the ages of nine and ten years of age and are typically thought to be low achievers from low socio-economic status.
The students were given a subject area to write on. The subject selected was Dr. Martin Luther King, Jr. For evaluation purposes, the students were all given the same subject to review. The program provided the background information necessary for at-risk students to begin formulating ideas in the pre-writing stage. The students were given fifteen minutes to review the subject. After the fifteen minute review they participated in pre-writing exercises.

The students that did not participate in the computer-based testing were provided with small booklets. These booklets contained the same textual information that the students on the computer reviewed. After reviewing the information the students completed identical pre-writing exercises. They were both allowed fifteen minutes to complete the exercises.

Feedback Received

The survey conducted on subject areas prior to the project was a necessary preliminary task because it allowed students to write on areas of interest to them. The students were delighted that they could write about Martin Luther King, Jr. or Bill Cosby. These were subjects that the students had some prior exposure to. The students were familiar with the subjects and made it apparent that they could definitely relate to the material. Their enthusiasm
about the program was apparent by their eagerness to begin working. As the students scanned the subjects they could write about, they expressed their excitement and pleaded to get started right away. The students that participated in the traditional textbook exercises said they preferred to work on the computer.

The evaluators were surveyed after testing the software to find out if they were experiencing any difficulties with the program. The evaluators completed an informative evaluation form which revealed that they did not care to write in the past because they did not have much to write about (see Appendix G).

A comparison between the computer writings (see Appendix H) and the writings without the computer (see Appendix I) was made to determine if the students using the computer formulated more ideas than the students using traditional textbook methods. It was also a consideration of whether or not the computer-based program proved to be more motivational than the traditional textbook instruction and whether the background information provided was a factor. From the formative evaluation forms, it was determined that the background information helped the students tremendously. It was also revealed through the survey that the computer-based program was more motivational than the booklet.

The students that reviewed the booklets did not retain the information as readily as the students that reviewed the
software program. This was apparent by the amount of information that was written during the pre-writing exercises. The students that reviewed the software program came up with longer lists than the students that reviewed the booklets. The students that worked on the computer were able to categorize/group their ideas better than the students that reviewed the booklets.

The motivation level was apparent by the enthusiasm the students expressed as they joyfully completed the pre-writing exercises. The screen design appeared to be very effective as the students navigated through the stack with ease. There were a navigational question where the student was not sure whether to go on to the next screen or return to the sub menu. This was later corrected by eliminating the "return to sub menu" arrow. This is one of the few instances in a couple of the stacks where the students does not have control over the navigation through the stack. This was necessary in order to make sure that the student absorbed all of the information provided on the subject.

Overall, the organization and effectiveness of the program was satisfactory. Most of the students noted on the evaluation forms that they did not care to write because they could not come up with much to write about.

All forms of feedback was encouraged during the testing phase. The majority of the feedback received from the evaluators was positive. There was some clarification needed
on the pre-writing exercise instructions. The instructions were not easy to follow. This was rectified by reinforcing the instruction with audio and making the instructions more detailed. It was also noted that more writing space for the students was necessary in the pre-writing exercises. This was later corrected to make sure the students had plenty of writing space.

The teacher suggested that later it might be considered to add a subject area on video games. The teacher felt that video games seemed to be of great interest to the students. It was theorized that the subject would be very motivating, considering the amount of time that the average child spends playing video games.

Revisions Made

The feedback was taken into consideration and the revisions in the writing screen were made. More writing area for the students in the pre-writing exercises was provided (see Figure 12). The instructions were clarified in the pre-writing lessons and audio was provided to help the students through the instructions. The minor navigational corrections were also made, to ensure the users are exposed to all of the material provided. During further testing of the software program any other equitable revisions will be reviewed and considered for implementation.
Strengths and Limitations of Project

One strength of the project is the design of the project. The graphics, audio, and text are very exciting and fun to work with. The structure of the program is also a strength of the project. The format is consistent and easy to follow, yet it is not monotonous. Therefore, the students should not become confused with jargon that they do not understand, or with fancy navigation buttons. The navigational buttons are consistent and easy to follow.

Another strength of this project is the content of the project. Before the content of the project was determined, subjects of interest were identified in a survey by peers. Therefore, the material presented was relevant and familiar to the user. The relevancy of the material should spark the interest of the students and motivate them.

One limitation of the project is its focus only on the pre-writing phase. Some of the other stages of the writing process include drafting, revising and editing. A major goal of a writing program is to acquaint students with the stages that experienced writers go through as they compose and refine their writing and to help students experience those stages in their own writing. It would have been beneficial if all stages of writing could have been addressed. Smith (1986) states that some writing assignments may not require attention to each of the stages. Also, the amount of
attention that should be given to each stage will vary from student to student.

Time constraint was another limitation of the project. The time constraints made it difficult to concentrate on all areas of the writing process. The most important stage of writing is said to be the pre-writing stage; where ideas and concepts come together. This is the area in which the project was concentrated on.

The strengths of the project include the detailed literature review of the problems that at-risk students experience. There was an abundance of literature available on at-risk students and their reading/writing deficiencies. The literature review provided some insight into the problem and steps that need to be taken to remedy the problem. The literature also provided information on what others concerned with the problem are doing to help rectify the problem.

Another strength of the project is the simplicity of the design. The graphics, audio, screens and information presented are kept at a very simple level. The students are not confused with jargon that they do not understand, or with fancy navigation buttons. The information is fun to look at and easy to read and grasp. The simplicity of this program made it a pleasurable experience for the students to interface with. A CD ROM version of this project is provided in Appendix J.
Recommendations for Future Projects

Future projects should look more into the design of the software that will motivate at-risk students in all phases of the writing process. Specialized software for at-risk students should be developed to provide students with the background knowledge and general information that they lack during the pre-writing stage. It is of vital importance that software is developed that is relevant, rejuvenating and motivating. Instructional technologists must realize that traditional ways of learning are not suitable for all students. It must be understood that students learn differently and deviations from traditional ways of teaching are necessary to reach at-risk students. Constraints that have excluded minority students from effectively participating in school-based literary activities must be challenged.

Teacher's efforts to build positive relationships with at-risk students are crucial. Students need to be motivated to overcome reading and writing difficulties. These students experiences in school and relationships with teachers have not been rewarding. They have few role models for literacy and few if any meaningful goals or incentives to achieve. By emphasizing these youngsters' firsthand experiences and background knowledge teachers can assign value to what these students bring to reading and writing. This will help develop mutual understanding respect and trust. It
strengthens teacher/student relationships and creates congruence between their home culture and the culture of the school (Brophy, 1990).

Hornbeck (1990) states that the challenges we face are extraordinary. The stakes are high. Commitment, imagination, will, courage, and resources in that order are necessary to succeed. Technology can help teachers do that.
Survey revealed the following ranking of the subjects.

1. Movies Stars
2. Roles Models
3. Movies
4. Basketball
6. Dinosaurs
7. Video Games
8. Planets
9. Pets
10. Football

Other Shopping & Toys
SAMPLE STUDENT WRITING SURVEY

Please rate the subjects that you would enjoy writing about. Starting with "1" being your most favorite subject to write about and "10" your least favorite subject. Please rate them all from 1-10.

________ Basketball
________ Pets
________ Computers
________ Dinosaurs
________ Football
________ Movie Stars
________ Movies
________ Planets
________ Role Models
________ Video Games

Other ______________________________________
October 29, 1997

Janet Y. Parrish
230 E. Heather Street
Rialto, CA 92376

Dear Janet:

Reference is made to your letter of October 14, 1997.

Children's Television Workshop is pleased to grant you its consent to use two (2) photographs on pages 56 and 57 in the book entitled "Family Funny Man, Bill Cosby," by Larry Kettlekamp. Permission is granted solely for the use as described in your letter of October 14, 1997, that is, to satisfy your course's project requirement. Any other use will require further consent.

Very truly yours,

[Signature]

JTD:II
July 31, 1997

Janet Parrish
230 E. Heather Street
Rialto, CA 92376

Dear Ms. Parrish:

Thank you for your letter of July 19, 1997 requesting permission to use audio and video of Martin Luther King from The Grolier Multimedia Encyclopedia.

We grant you permission to use this for the purpose of your Master's degree project. No commercial use is intended.

Sincerely,

Ernie Cormier
Senior Vice President, Product Group
LETTER OF PERMISSION

Dear Janet,

This letter is in response to your recent inquiry regarding the use of a number of images from IMSI's MasterClips 101,000 Premium Image Collection for your organization's private use. IMSI hereby grants your organization permission to use images from its MasterClips 101,000 Premium Image Collection. IMSI requests that use of content from the product be set forth in the following format:

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MasterClips is a copyrighted and a registered trademark of IMSI
1895 Francisco Blvd. East, San Rafael, CA 94901, 415/257-3000

Please take a moment to review the additional republication restrictions that are described in the MasterClips 101,000 Premium Image Collection supporting documentation, most notably the Dover Art Collection restriction and the model release requirement. If you are uncertain about any of these restrictions, please do not hesitate to telephone us.

Thank you for your continued interest in IMSI products!

Respectfully,

Sincerely,

[Signature]

Legal Counsel for IMSI
10 September 1997

Janet Y. Parrish
230 E Heather St.
Rialto, Calif. 92376

Dear Ms. Parrish:

This is in reply to your letter regarding the use of a photo of Martin Luther King in your project.

Unfortunately, I do not have a copy of the book you cited; but if the credit line for the photo is just to the Kennedy Library then it is very likely that the photo was taken by a White House photographer and thus in the public domain. If so, you are free to use it as you choose.

Should you want confirmation of the above, send a xerox of the page from the book and I will be able to identify the source for you.

Sincerely,

[Signature]

Allan B. Goodrich
Senior Archivist
Audiovisual Archives Department
August 12, 1997

Ms. Janet Y. Parrish
230 East Heather Street
Rialto, CA 92376

Dear Ms. Parrish:

In reply to your request, McCall's is hereby granting permission for one-time only reprinting of "Demi Moore- Hollywood's hottest mama and coolest star-What's she still hiding?" by James Spada, which appeared in our March 1996 issue. Due to the educational purpose of your request, no reprint fees shall be incurred.

Please use the following permission lines:

"Reprinted with permission of McCall's Magazine.
Copyright 1997 by Gruner + Jahr USA Publishing."

Thank you for your interest in McCall's.

Sincerely,

Vanessa C. Echevarria
Assistant to the Editor-in-Chief
Dear Ms. Parrish:

Thanks for your interest in "COSBY."

You have my permission to use my written material in your Master's degree project. Also the photos you cited that were from Movie Still Archives.

I don't have re-print authorization for the picture of Cos and Culp you mentioned (Photo Trends) or the one of Cosby, Camille and Bill's mother (Fotos International). But I think that "fair use" rules apply here. The photo agencies involved would only be concerned if the photos were going to be used in another book, or a large circulation magazine or newspaper. (Or for commercial purposes, such as on a t-shirt!)

Good luck!

Sincerely,

[Signature]

Ronald L. Smith
To Whom It May Concern:

I am currently pursuing my Master's degree in Education. One of the degree requirements includes the completion of a project. I am developing a project to aid at-risk children in writing. The project will be used expressly to satisfy degree requirements, with no further use intended.

I am writing to request permission to use material from your Champion of Change, Biographies of Famous Black Americans Magazine by Arlene Gause-Jackson & Barbara Banks-Hayes. I assure you that if permission is granted the material will be properly cited in the program.

The articles that I am interested in are listed below:

From Champions of Change (Copyright 1989)

Articles on Martin Luther King Jr. & Jackie Robinson

Thank you for taking time out of your busy schedule to read my letter and consider my request. Your prompt response would be greatly appreciated.

Sincerely,

Janet Y. Parrish

permission granted

9/11/97

Amita Amdt
August 11, 1997

Ms. Janet Y. Parrish
230 East Heather St.
Rialto, CA 92376

Dear Ms. Parrish:

Thank you for your letter of July 28.

PEOPLE Weekly grants you one-time permission to reprint the text portion only of our June 24, 1996 issue article on Demi Moore and our July 1, 1996 issue article on Eddie Murphy in an instructional software program to aid children in writing for your Master's degree in Education requirements. We require that the material be reproduced word-for-word as it appeared in PEOPLE with a byline for the authors and the following credit line: Reprinted from the (Issue Date) issue of PEOPLE Weekly Magazine by special permission; (c) (Year), Time Inc.

Sincerely yours,

Maureen Fulton

Mf:intr
September 23, 1997

Janet Y. Parrish
230 E. Heather Street
Rialto, California 92376

Dear Ms. Parrish,

This is in response to your letter dated September 4, 1997 regarding permission to use Stars Magazine Number 122 - Eddie Murphy article and Stars Magazine Number 123 - Demi Moore article as part of your Master's degree project. Permission has been granted as long as citation is used, crediting the proper parties.

Thank you very much for thinking of our product when seeking literature for your project. If you have any further questions, please feel free to contact me at (212) 255-7900.

Sincerely,

Christine H. Helling
Editorial Coordinator
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from Rolling Stone issue dated July 11-25, 1996

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June 6, 1997
### APPENDIX C: WRITING INFORMATION SURVEY RESULTS AND SAMPLE

#### WRITING INFORMATION SURVEY RESULTS

Please answer the following questions using the scale from 1 to 4.

- 4=AGREE
- 3=SOMewhat AGREE
- 2=SOMewhat DISAGREE
- 1=DISAGREE

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I like to write whenever I can use the computer.</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>I would rather write using the computer than with pencil and paper.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>I like to write, but I have a difficult time coming up with ideas when I am trying to write.</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>I don't like to write because I don't have anything exciting to write about.</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>I don't like to write because of all the rules.</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>I find writing very difficult because I don't know that much about the subject.</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>If I knew more about the subject or had more information I could write more on the subject.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>I find writing very difficult because I am afraid what I write might be incorrect.</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>I write every opportunity that I have to write.</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>I feel what I have to write is important.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>I enjoy writing about things of interest to me.</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>I find it easy to get started in writing if what I am writing about is interesting to me.</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>13</td>
<td>I write only when asked to write by my teacher.</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>14</td>
<td>I write poorly when the subjects are boring.</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>I very seldom have any ideas to get started with.</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>I am a good writer because I write a lot on the subject.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
17. I am a poor writer because I cannot come up with ideas during the pre-writing stage.

18. If I can't come up with ideas I do not write much.

19. I would like to improve my writing.

20. I believe that writing is very valuable.
SAMPLE WRITING INFORMATION SURVEY

******************************************************************************

Please answer the following questions using the scale from 1 to 4
4=AGREE  3=SOMETHAT AGREE  2=SOMETHAT DISAGREE  1=DISAGREE

******************************************************************************

1. I like to write whenever I can use the computer.  CIRCLE ONE
   1  2  3  4
2. I would rather write using the computer.            1  2  3  4
3. I like to write, but I have a difficult time coming 1  2  3  4
   up with ideas when I am trying to write.
4. I don't like to write because I don't have anything 1  2  3  4
   exciting to write about.
5. I don't like to write because of all the rules.     1  2  3  4
6. I find writing very difficult because I don't know 1  2  3  4
   that much about the subject.
7. If I knew more about the subject or had more      1  2  3  4
   information I could write more on the subject.
8. I find writing very difficult because I am afraid 1  2  3  4
   what I write might be incorrect.
9. I write every opportunity that I have to write.    1  2  3  4
10. I feel what I have to write is important.           1  2  3  4
11. I enjoy writing about things of interest to me.    1  2  3  4
12. I find it easy to get started in writing if what I 1  2  3  4
    am writing about is interesting to me.
13. I write only when asked to write by my teacher.    1  2  3  4
14. I write poorly when the subjects are boring.       1  2  3  4
15. I very seldom have any ideas to get started with. 1  2  3  4
16. I am a good writer because I write a lot on the    1  2  3  4
    subject.
17. I am a poor writer because I cannot come up with 1  2  3  4
    ideas during the pre-writing stage.

90
18. If I can't come up with ideas I do not write much. 1 2 3 4
19. I would like to improve my writing. 1 2 3 4
20. I believe that writing is very valuable. 1 2 3 4
APPENDIX D: WRITING LESSON PLAN WITH COMPUTER

LESSON PLAN

DATE: May 20, 1997

CONTENT: Martin Luther King Bibliography

CONCEPT: Pre-Writing/Writing Exercise on Role Models

MATERIALS: Paper
Pencils
Writing Information Survey
Formulative Evaluation Forms

SOFTWARE: Hyperstudio

HARDWARE: Macintosh Computer with 2MB of RAM with system 6.0.8 or 4MB of RAM with System 7.0 or higher. Color Monitor.

ANTICIPATORY SET:

"How many of you know what a role model is? How many of you have heard of Dr. Martin Luther King? Can anyone tell me anything about Dr. Martin Luther King?"

"Dr. Martin Luther King was a great civil rights leader. He was born in 1929. He wanted equality for all people. In his protests for equal rights he stressed non-violence. Dr. King was assassinated in 1969."

"Do you have role models? Can some of you tell me who your role models are and why they are your role models? Why do you think that Dr. Martin Luther King was a role model to so many people."

OBJECTIVE:

By the end of the lesson, students will be able to structure ideas and begin generating ideas in the prewriting stage. The students will also have the ability to categorize ideas.
PRESENTATION:

"Today we are going to work on a computer program that has exercises that help us formulate, brainstorm and categorize ideas. First we are going to take a look at a role model in this computer program. That role model is Dr. Martin Luther King. After looking at the information on this role model we will complete the pre-writing exercises which will help us formulate, brainstorm and categorize ideas."

GUIDED PRACTICE:

First the students will complete a writing survey questionnaire. The students will then individually interact with the computer. During this interaction the students will gather information on Dr. Martin Luther King to use in the pre-writing exercises. The students will then participate in three pre-writing lessons. In the first lesson the students will be given a list of nine ideas pertaining to the subject. There are three exercises in lesson one. In each exercise the students will then select 3 ideas from the list and determine the category that they should be in. In lesson two the students will participate in a brainstorming session. They will think of a subject or a person and then list all the ideas they can remember about that subject or person. The students then print this list out for lesson three. In lesson three they will then determine at least two category and list those ideas in the correct categories. There are two exercises in lesson three, one for each of the two categories.

INDEPENDENT PRACTICE:

If time permits, students will write one short paragraph on Dr. Martin Luther King.

CLOSURE:

I will call the students back together and ask them how well they were able to generate ideas from the computer session. I want the students to tell me what they found helpful about the computer session. I want the students to tell me what helped them remember certain ideas in their pre-writing exercises. I will ask the students to complete a formulative evaluation survey which will be evaluated to make changes in the software program.
APPENDIX E: WRITING LESSON PLAN WITHOUT COMPUTER

LESSON PLAN

DATE: May 20, 1997

CONTENT: Martin Luther King Bibliography

CONCEPT: Pre-Writing/Writing Exercise on Role Models

MATERIALS: Notebook (printed material from software program on Martin Luther King). Paper Pencils Writing Information Survey Formulative Evaluation Forms

SOFTWARE: N/A

HARDWARE: N/A

ANTICIPATORY SET:

How many of you know what a role model is? How many of you have heard of Dr. Martin Luther King? Can anyone tell me anything about Dr. Martin Luther King?"

"Dr. Martin Luther King was a great civil rights leader. He was born in 1929. He wanted for equality for all people. In his protests for equal rights he stressed non-violence. Dr. King was assassinated in 1969."

"Do you have role models? Can some of you tell me who your role models are and why they are your role models? Why do you think that Dr. Martin Luther King was a role model to so many people."

OBJECTIVE:

By the end of the lesson students will be able to structure ideas and begin generating ideas during the prewriting stage. The students will also have the ability to categorize ideas.

PRESENTATION:

"Today we are going to work on a lesson that will help us formulate, brainstorm and categorize ideas. First we are
going to take a look at a small booklet that I have prepared for you with information on a role model. That role model is Dr. Martin Luther King. After reading the information on this role model we will complete some pre-writing exercises which will help us formulate, brainstorm and categorize ideas."

GUIDED PRACTICE:

First the students will complete a writing survey questionnaire. The students will then read the material in their booklet. During this time the students are gathering information to use in the pre-writing exercises. The students will then participate in three pre-writing lessons. In the first lesson the students will be given a list of nine ideas pertaining to the subject. There are three exercises in lesson one. In each exercise the students will then select 3 ideas from the list and determine the category that they should be in. In lesson two the students will participate in a brainstorming session. They will think of a subject or a person and then list all the ideas they can remember about that subject or person. The students then print this list out for lesson three. In lesson three they will then determine at least two category and list those ideas in the correct categories. There are two exercises in lesson three, one for each of the two categories.

INDEPENDENT PRACTICE:

If time permits, students will write a short paragraph on Martin Luther King.

CLOSURE:

I will call the students back together and ask them how well they were able to generate ideas during the pre-writing stage. I will ask the students to tell me how they categorized the ideas and why. I will then ask the students which ideas they were able to remember during the brainstorming session and what helped them remember those ideas. I will ask the students to complete a formulative evaluation survey which will be evaluated to make changes in the software program. Then I will compare the exercises completed to those completed on the computer to determine if more ideas and concepts were generated by the use of the computer software.
APPENDIX F
(IRB) APPROVAL LETTER

May 20, 1997

Janet Parrish
c/o Dr. Rowena Santiago
California State University
5500 University Parkway
San Bernardino, California 92407

Dear Ms. Parrish:

Your application to use human subjects in research, titled, "Using the Computer to motivate At-Risk Students as Writers," has been reviewed by the Institutional Review Board (IRB). Your application has been approved. Your informed consent statement should contain a statement that reads, "This research has been reviewed and approved by the Institutional Review Board of California State University, San Bernardino."

Please notify the IRB if any substantive changes are made in your research prospectus and/or any unanticipated risks to subjects arise. If your project lasts longer than one year, you must reapply for approval at the end of each year. You are required to keep copies of the informed consent forms and data for at least three years.

If you have any questions regarding the IRB decision, please contact Lynn Douglass, IRB Secretary. Ms. Douglass can be reached by phone at (909) 880-5027, by fax at (909) 880-7028, or by email at ldouglass@wiley.csusb.edu. Please include your application identification number (above) in all correspondence.

Best of luck with your research.

Sincerely,

Joseph Lovett, Chair
Institutional Review Board

cc: Dr. Rowena Santiago, Science, Mathematics and Technology Education
### Formative Evaluation Survey Results

Please answer the following questions using the scale from 1 to 4.

4 = AGREE  3 = SOMEWHAT AGREE  2 = SOMEWHAT DISAGREE  1 = DISAGREE

<table>
<thead>
<tr>
<th>Question</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I enjoyed working with the computer.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>2. The computer program was very easy to follow.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>3. I was glad to see different subjects to write about.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>4. I found it exciting, exploring different subject areas.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>5. I found it easier to write on the subjects because of the information presented.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>6. I prefer to write using a computer instead of pencil and paper.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>7. The instructions were difficult to follow.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>8. I was able to move around in the program and get back to any section without much trouble.</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9. Some parts of the program were difficult to follow.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>10. The colors used are exciting and lively.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>11. I liked the video and graphics in the program.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>12. There were too many instructions in the program.</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13. The program helped me get excited about writing, where before I did not like to write.</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>14. I enjoyed writing about the subjects in the program which we very seldom write about in class.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>15. The program helped me combine what I already knew about the subject with the new information presented.</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>16. The subjects were very boring.</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
17. I like to write when I use a program like this one.

18. I would like to use the program again.

19. I think the program would help improve my writing.

20. I think that other students that have difficulty writing should try this program to help them.
**SAMPLE FORMATIVE EVALUATION SURVEY**

Please answer the following questions using the scale from 1 to 4.

4=AGREE 3=SOMewhat AGREE 2= SOMewhat DISAGREE 1=DISAGREE

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
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20. I think that other students that have difficulty writing should try this program to help them. 1 2 3 4
## ORGANIZING IDEAS

**Exercise - 1**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Category</th>
<th>Ideas</th>
</tr>
</thead>
</table>
| Adult Life    | Martin Luther King | One believes that there should be equal rights for all.  
                  | | They could go on the same elevator. |
| Awards        |           |                                                                      |
| Beliefs       | Beliefs  |                                                                      |
| Career        |           |                                                                      |
| Death         |           |                                                                      |
| Education     |           |                                                                      |
| Parents       |           |                                                                      |
| Struggles     |           |                                                                      |

## ORGANIZING IDEAS

**Exercise - 2**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Category</th>
<th>Ideas</th>
</tr>
</thead>
</table>
| Adult Life    | Martin Luther King | He had a friend named Billy and Billy's mom didn't let him play with Martin because he was black.  
                  | |                                                                      |
| Awards        |           |                                                                      |
| Beliefs       | Childhood |                                                                      |
| Career        |           |                                                                      |
| Death         |           |                                                                      |
| Education     |           |                                                                      |
| Parents       |           |                                                                      |
| Struggles     |           |                                                                      |
ORGANIZING IDEAS

Exercise - 3

<table>
<thead>
<tr>
<th>Adult Life</th>
<th>Awards</th>
<th>Beliefs</th>
<th>Career</th>
<th>Death</th>
<th>Education</th>
<th>Parents</th>
<th>Struggles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Martin Luther King</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Death</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IDEAS

1. Act shot in spinal cord
2. Act shot in a motel

STOP

PRINT

BRAINSTORMING IDEAS

Lesson 9

What do you want to write about? Select your subject.

Please list all the ideas that you remember about that subject.

SUBJECT

We got shot in the spinal cord. He got shot in a motel

STOP

PRINT

102
He went college.
He fought equal rights.
APPENDIX I

SAMPLE OF STUDENT WRITING WITH COMPUTER

ORGANIZING IDEAS

<table>
<thead>
<tr>
<th>Adult Life</th>
<th>Martin Luther King</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awards</td>
<td>Parents</td>
</tr>
<tr>
<td>Beliefs</td>
<td>Ideas</td>
</tr>
<tr>
<td>Career</td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td></td>
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<td>Education</td>
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<tr>
<td>Parents</td>
<td></td>
</tr>
<tr>
<td>Struggles</td>
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</tbody>
</table>

<table>
<thead>
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</tr>
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<tbody>
<tr>
<td>Awards</td>
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<tr>
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<tr>
<td>Parents</td>
<td></td>
</tr>
<tr>
<td>Struggles</td>
<td></td>
</tr>
</tbody>
</table>

Exercise - 1

Exercise - 2

104
### ORGANIZING IDEAS

**Exercise - 3**

<table>
<thead>
<tr>
<th>Adult Life</th>
<th>SUBJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awards</td>
<td></td>
</tr>
<tr>
<td>Beliefs</td>
<td></td>
</tr>
<tr>
<td>Career</td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td>Martin Luther King</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>Death</td>
</tr>
<tr>
<td>Struggles</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IDEAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. King got shot in the spine</td>
</tr>
<tr>
<td>2. We got shot on the balcony</td>
</tr>
<tr>
<td>3. Got shot at a Hotel</td>
</tr>
</tbody>
</table>

---

### BRAINSTORM IDEAS

**LESSON - 2**

Whom do you want to profile and what is your subject?

Please list all the ideas that will become part of the subject.

<table>
<thead>
<tr>
<th>SUBJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

| 1. Can't play with |
| 2. Died for equal rights |
| 3. Skipped grades in school |
| 4. Peace Award |
| 5. Delivered papers |
| 6. Fought for rights |
| 7. Got shot |
| 8. March on Washington |
| 9. Had four children |
| 10. Was a preacher |

---

105
Using the previous subject list at least four ideas under two categories that you select.

1. Peace award
2. Fight for rights for people
3. Was a preacher

1. Can't play with Billy
2. Skipped grades
3. Delivered papers
REFERENCES


