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Eighth-grade writers and meaning-making: a study of computer-mediated conferencing and publishing

Lois J. Yocum

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Eighth-grade writers and meaning-making:  
A study of computer-mediated conferencing and publishing

by

Lois J. Yocum

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Education (Curriculum and Instructional Technology)

Major Professor: Dr. Leslie Rebecca Bloom

Iowa State University
Ames, Iowa
1999

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CHAPTER I. INTRODUCTION

The act of writing involves thinking; it requires active engagement with content. As students write, they construct meaning around the subject matter. They make connections between the topic and themselves. They discover what they know and what they do not know. Writing is a tool for learning. (Fulwiler, 1987, p. 87)

In this study, I take a constructivist approach to investigating how eighth graders use technology as tools for making more meaningful connections between information, personal experiences, and new knowledge. Constructivism, a way of thinking about the formation of knowledge and understanding, says that as students interact, they form understandings of how both the world and the people in it work. As students are confronted with ideas that may not fit their understanding, they adapt their ideas to include these new understandings. Constructivists view this process of changing and adapting as learning (Anderson, 1996).

As a reflective practitioner, I strive to facilitate a constructivist, process-oriented, collaborative, learner-centered classroom environment that assists middle school students in working as apprentices in integrating technology as tools for improving their writing.

The primary goal of this investigation is to discover ways in which technology tools facilitate writing improvement. Thus, my practitioner research examines eighth graders' progress in learning and using technology and in growing as writers. I also describe the social interactions of my first-semester publications and language arts classes. While some research literature (Barker & Pearce, 1995; Bonk & King, 1998; Daiute, 1986; Knudson, 1995; Sudol, 1985) suggests that writing instruction using computers heightens students' interest and self-esteem, few studies examine whether technology improves middle-level students' actual writing.
The specific questions prompting this study relate to issues of depth, meaning-making, and competency in middle schoolers' writing, and the meaningful and effective uses of technology, especially computers, to answer these questions. Thus, the "problems" on which this dissertation focuses are both complex and multi-layered. The dissertation takes up the problem of eighth-grade learning, specifically, learning to write. It examines this problem of learning to write as an experience that takes place in a classroom committed to constructivist pedagogy and with attention to the meaningful use of technology to facilitate writing for eighth graders. Thus, while I may not offer solutions to problems, such as "Why can't kids write?", I do hope that this dissertation suggests pedagogical methods that other middle school teachers can implement to enliven their instruction as they have mine.

Specifically, I illustrate how middle level students use technology as tools for thinking, writing, and revising. Further, I show the ways that eighth graders in my publications and language arts classes construct meaning through collaborating with distant audiences by participating in computer-mediated conferences, publishing their school newspaper on the Internet, and preparing and sharing multimedia projects. Finally, I analyze how middle school students perceive themselves as independent, collaborative, and interdependent writers; technology users; mentors; and self-directed learners in the wake of specific experiences with writing and technology in the classroom.

To most effectively demonstrate how my study addresses these issues, I have organized this study in five chapters. This first chapter, Chapter I, introduces the three major themes that structure this dissertation: developmentally appropriate activities for middle level learners, constructivist theory as it relates to technology use in education, and technology use in writing instruction. Specifically, this chapter reviews recent research that
helped me to think about what it means (1) to teach middle level learners; (2) to have one's pedagogical practices and technology uses informed by constructivist theory; and (3) to use technology to improve middle-level learners' writing. These three themes, while further developed in each chapter, are briefly described here as a way to provide context for the study as a whole. Thus, in this chapter, I review the characteristics of middle level learners, explain theoretical contexts that ground my research practices and goals, relate constructivist theory to using technology as tools for improving eighth graders' writing process skills, and describe the research scene.

Chapter II describes and analyzes the use of computers in an eighth-grade creative writing class. Specifically, I analyze how computers and technology for distance learning facilitate a participatory learning situation for eighth-grade writers. Further, I analyze how the relationship between constructivist theory and practice leads to specific instructional strategies. Chapter III describes and analyzes the use of computers and the Internet in an eighth-grade online journalism class. Specifically, I describe the mentorship pyramid (apprenticeship model of instruction) where students learn from their teacher or peers and then teach others to connect new knowledge with prior experience and technology skills. Chapter IV describes and analyzes the use of computers and various multimedia tools in an eighth-grade language arts class, including an emphasis on how these tools can help shape a democratic classroom and a negotiated curriculum.

Chapter V concludes with a discussion and critique of ways technology facilitates or limits the development of eighth graders' writing skills, a discussion of the effect and impact of constructivist theory on process writing instruction, and reflections on the practitioner research process as a means of understanding the phenomena studied.
While Chapters II, III, and IV describe and analyze different groups of students, different curriculum content, and different technologies used to facilitate writing, the three themes that undergird this dissertation are integrated throughout. Therefore, in each of these chapters, I explicate the constructivist pedagogy that is specific to the class content, describe the technological tool that is particular to that class, and analyze specific examples of student interaction in that social/pedagogical setting. Taken together, these chapters present a holistic account of how middle school language arts students learned to be better writers through computer-mediated instruction and constructivist pedagogy.

**Middle Level Learners**

The 1989 Carnegie report, *Turning Points: Preparing American Youth for the Twenty-first Century* (1989), claims that a "volatile mismatch exists between the organization and curriculum of middle grade schools and the intellectual and emotional needs of young adolescents" (p. 8). Citing the National Assessment of Educational Progress (NAEP) findings that only eleven percent of thirteen-year-olds were adept readers (could understand relatively complicated written information), and that fewer than one in five eighth graders wrote adequate or better essays, the Carnegie report (1989) concluded that middle school students were deficient in higher order thinking skills. Similarly, current information related in *The National Education Goals Report* (1998) indicates that seventy-two percent of American students in grades K-12 have not mastered challenging subject matter in reading, seventy-five percent cannot understand complex mathematics theory and problems, and a comparable percentage cannot competently compose analytic or persuasive essays.

Eighth graders, for instance, sometimes regard what expert writers would consider the first draft of an essay, newspaper article, or other writing assignment, as in final draft form.
Even though they have participated in the writing process (prewriting, composing, revising, proofreading/editing, and publishing) throughout elementary school, they appear impatient to be finished with their written work. They take little time to reflect on and self-assess the writing process and/or product. Sometimes disenfranchised students particularly complain that nobody listens to them anyway, so why bother writing "clean copy" at all?

My own work with middle level age students demonstrates the validity of these studies. As indicated through interviews and surveys of my students, approximately seventy-five percent of the students in my publications and language arts classes come to me with self-confidence that they are "good" writers. However, a district holistic assessment completed during the 1995-1996 school year suggests that students' self-perceptions of their writing competencies do not match the actual student achievement data. Fully sixty-six percent of the eighth graders fell below grade level in writing skills during that school year. At the end of seventh grade in 1998, fifty-eight percent of the students in my current publications and language arts classes fell below their Iowa Grade Equivalent as measured by the Iowa Tests of Basic Skills writing assessment.

These problems are partly due to where middle school, early teen learners are in their development. It is important to remember who these students are. As the Carnegie report (1989) suggests, the organization and curriculum of most middle schools do not meet the needs of the students. Middle level writers say that they need to learn to write for the purposes of self-expression, personal problem solving, and interpersonal communication (Manning, 1994). Somewhere between writing enough stories to cover refrigerator doors in elementary school and struggling to articulate what they feel, think, and learn as thirteen-year-olds, some middle school classroom writers lose their desire and motivation to put on
paper what is in their hearts and minds. The lack of safe, encouraging, and productive environments in which to write leads some students to stare at blank sheets of paper and feel that they have nothing to say. These students seem to be crying out to their teachers, asking them to help to create a community of writers wherein they can find the words and audiences that mean something to them, the words that give them voices in expressing who they are and how they see the world.

To determine how to help early adolescents improve their writing skills, it is essential to understand the current state of writing instruction for that age group. Further, we need to understand where they are in their intellectual and emotional maturity and how to best coordinate teaching and technology with their range of abilities. Therefore, first I describe the characteristics of middle level learners. Then I describe teaching and learning approaches that engage this age group, maintaining the focus on the use of computers and other technologies.

According to a revised and expanded list provided by the National Middle School Association (1995), youth between the ages of ten and fifteen:

- demonstrate a wide range of individual intellectual development
- are in a transition period from concrete to abstract thinking
- are intensely curious and have a wide range of intellectual pursuits, few of which are sustained
- prefer active over passive learning experiences
- prefer interaction with peers during learning activities
- respond positively to opportunities to participate in real life situations. (p. 35)
To meet the diverse needs of middle school learners as suggested by this profile, teachers need to recognize that not all of their students have the cognitive structures necessary to engage in challenging intellectual activities. Toepfer (1988) argues that rather than assuming that young adolescents can succeed by trying harder, educators should understand that readiness, not effort alone, affects what early adolescents can do. All children must have opportunities to be actively engaged in learning, to be challenged at a higher level, and to be successful. Dewey (1938) espoused the view that learners do not function as passive recipients, but instead collaborate with teachers to become active partners in learning.

As students engage in dialogue with their teachers, they not only reveal their developmental readiness levels but also their interests and multiple intelligences. Gardner (1987) suggests that educators should try to understand as sensitively as possible the abilities and interests of students. As teachers match students to learning opportunities as apprentices in the wider community, they gain a feeling for the different roles offered by society. Gardner expresses a particular concern for students who do not perform at high levels on standardized tests. He offers middle level educators a special challenge to provide activity-based learning opportunities for students who otherwise "tend to be written off as not having gifts of any kind" (p. 192).

Teachers also need to understand the rapid physical, psychosocial, and intellectual growth of middle school students and adapt their instruction to meet a variety of learning styles. Piaget (1971) theorized that children pass through four developmental stages: sensory-motor (birth to age two); pre-operational (ages two to seven); concrete operational (ages seven to twelve); and formal operations (ages twelve and older). The last two of these stages are especially important for middle level teachers to consider as they plan meaningful
classroom instruction. During the transition from the late concrete operations stage to the formal operations stage, learners develop the ability to formulate and test hypotheses (Ginsburg & Opper, 1988). Fifth and sixth graders order, organize, and structure information while some seventh and eighth graders employ deductive reasoning and reflective thinking (Thornburg, 1980). Teachers need to assess middle school students' levels of readiness in order to determine developmentally appropriate learning experiences. For example, some students might be ready to conceptualize abstract relationships, to employ inductive thinking, and to expand processes of logical thinking while others in the same grade level have not reached the formal operations stage. During the formal operations stage, the middle level learner considers all aspects of a problem and experiments, hypothesizes, and analyzes to arrive at conclusions. Active, hands-on learning experiences are particularly important to successful development.

Middle level teachers who are sensitive to the needs of their students understand that they must provide opportunities for early adolescents to manipulate and think about objects and to develop process skills. These young people, who have short attention spans and difficulty sustaining intellectual pursuits, are motivated by teachers who plan and implement brief, but intense lessons and who ask exploratory questions that require higher-level thinking (Schurr, Thomason, & Thompson, 1996).

Opportunities for social interactions are also important aspects of the middle level curriculum. Therefore, to engage middle level learners and to meet their developmental needs, teachers need to construct frequent opportunities for their students to work both individually and cooperatively, mastering relevant processes and learning skills needed for the next century. Rubinstein (1994) suggests that the skills needed in the twenty-first century
are the ability to think and reason abstractly; understand and communicate complex ideas; work cooperatively with others; analyze and use resources; and solve complex problems. McKenzie (1987) points out that teachers can assist middle school students in preparing for their futures by teaching data analysis, risk-taking, originality, collaborative problem solving, thinking and writing skills, the arts, effective use of leisure time, physical fitness, and interdependence. Especially pertinent to this study are students' abilities to improve their originality, collaborative problem solving, and thinking and writing skills.

A variety of technology tools are currently available to assist teachers in providing a framework for inquiry in which students pose meaningful questions and construct knowledge for themselves rather than passively receiving information. Wiles & Bondi (1993) suggest that the incorporation of computers and related technologies into all areas of the curriculum enhances learning for middle level students. Instruction in available software applications that assist early adolescents in semantic mapping, logic and problem solving, data processing, writing, and publishing provides students with opportunities for active learning and to develop the expertise to apply technology tools beneficially in their learning environments.

Given these findings, if we are to prepare students to use technology in ways that will benefit them in the future, we need to find methods for engaging middle level learners in writing as a way of thinking. As the Carnegie report (1989) urges, educators need to strengthen curriculum by emphasizing thinking, writing, and doing. Recent studies published by the National Middle School Association (1995) suggest that varied teaching and learning approaches should enhance and accommodate the diverse skills, abilities, and knowledge of young adolescents; cultivate multiple intelligences; and capitalize on students' individual
learning styles. Students should practice diverse ways of posing and solving problems and engage in learning situations in which basic skills can be taught in functional contexts. New concepts should build on the knowledge students already possess because effective learning experiences capitalize on students' cultural, experiential, and personal backgrounds (National Middle School Association, 1995). As Stephenson and Carr (1993) observe, "Middle grade students learn best when they work with primary sources of information to develop their own knowledge and skills" (p. 12). Thus, real-world experiences, problems, and issues are provided, simulated, or duplicated in integrated learning experiences.

Teachers can use technology-mediated instruction to help middle level learners learn basic skills in active, collaborative environments. As I discuss in this dissertation, one way for teachers to help their middle school students master the basic skills is to use collaborative, technology-mediated instruction. I illustrate how, if taught to work in collaborative groups, students may come to recognize multiple perspectives of problems and ideas. Further, I show how middle level learners have the potential to use technology to support their meaning making, to articulate what they know, and to reflect on how they came to know it. In keeping with my understanding of the importance of social interaction for middle level learners, I also illustrate how students working in collaborative groups can engage in active, critical, creative, and complex thinking, particularly when this grouping is part of an overall constructivist learning experience.

**Constructivist Theory**

Constructivism is a theory of learning and a theory of knowing. According to Walker and Lambert (1995), it is an epistemological concept that draws from a variety of fields, including philosophy, psychology, and science. The theory of knowing articulated by Piaget
(1971) suggests that when people encounter new experiences and events, they seek to assimilate them into their existing cognitive structures or adjust their perspectives to accommodate the new information. Learners reformulate their schemas to make sense of dissonant information and experience. This reformulation of personal schemas brings coherence and purpose for students’ learning and is shaped by the values that contribute to an individual's ability to make meaning. Walker and Lambert (1995) describe it as "a coming together of the countervailing themes from throughout the century" (p. 14). Thus, individuals assign meaning to experience and at the same time construct knowledge from experience. For example, when middle school students are given authentic or real world writing tasks, they are asked to stretch beyond their current competencies. They begin to address multiple audiences with single texts, learning to convey information with which their audiences may be unfamiliar. At the same time, students then bring their own life experiences to every learning task. As they connect their prior experiences with their new knowledge, they assimilate not only information, but also new experiences into their new repertoires. With teacher scaffolding, students can participate at the outer limit of their capabilities. When students see teachers modeling the uses of writing and technology, they are more motivated to become involved in collaboration. "The processes of 'coming to know' are influenced and shaped by reflection, mediation, and social interactions" (Walker & Lambert, 1995, p. 2).

**Relationship among experience, knowledge, and social interaction**

During the 1980s, the metaphor of the school as a community of learners emerged. The view that learning is an interactive process was brought about by the work of Bruner (1986) and Vygotsky (1978) in the social construction of knowledge and of Greene (1985) in
democracy in schooling; by changing conceptions about the scope of intelligences, women in leadership and research, and brain research; and by the emergence of respectability of qualitative research. The view of learning as interactive also suggests that achievement is increased when the culture of the school supports learning for students and adults alike.

The Russian social psychologist L. S. Vygotsky (1896-1934) articulated the processes by which experience becomes part of the learner's usable knowledge through social interaction (1978). Vygotsky described the Zone of Proximal Development (ZPD) through which knowing is mediated and negotiated. He defined the ZPD as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86).

The concept of a ZPD suggests that teachers develop the sensitivity to recognize when to say or do something to support children in their development. Teachers serve as guides who provide assistance with tasks that students could not accomplish alone. Meyer (1996) suggests that teachers open their own Zones of Proximal Development whenever they come together on fertile ground for learning with students. He further explains that this ZPD rests at the intersection of teachers' background knowledge and the background of knowledge of others with whom they are learning.

This ZPD represents the crossroads to which I have come with my students many times. We have brought our multi-perspectival views to interpreting literature, sharing and revising our writing, and deciding together how we will go about the business of reading, writing, listening, speaking, and communicating in the classroom and with our near and
distant peers via technology-mediated systems. We have come together and presented what we knew and expected to learn from each other's stories.

Constructivist teachers ask students to analyze, predict, and create. Assessment becomes an effort to understand how students think rather than whether or not they understand. The exchange of points of view, according to Anderson (1994), encourages students to consider others' points of view and expand their thinking. As the students and teachers negotiate curriculum and shift roles as members of an educational community, they engage in experiences that reinforce the value of collaborative planning, doing, reflecting, assessing, and revising their own learning. Most of all, learners bring valuable experiences to the classroom and apply what they know to assimilating new information and reframing new understandings in interactive processes. Students' and teachers' values and beliefs help them interpret and assign meaning as do their interactions with each other.

Wertsch (1991) reminds teachers that the responsibility for carrying out strategic activities in everyday settings is often distributed among members of a social group. He argues that students can be highly involved in the intellectual life of the classroom—actively listening and interacting with texts, with adults outside the classroom, and with other nonverbal media—while interacting verbally within the classroom very little. Similarly, some students who interact in highly verbal ways may actually be only superficially engaged in finding meaning in the material being studied. Wertsch's expansion of Vygotsky's theory illustrates that given the same task, individuals select different tools and go about completing a task in different ways, but they may all be equally successful. As writing teachers, we need to understand that students take diverse approaches to writing and learning to write.
Relationship between constructivism and improving writing skills

The writing workshop (Murray, 1968) provides an example of a constructivist classroom environment that invites students to be active participants in collaborating to improve their writing. Unlike the arrangement of a traditional classroom, the writing workshop may be divided into several areas with tables for writing, small groups for conferencing, and a publishing area with computers and bookbinding equipment (Atwell, 1987). Lots of books, reference materials, and writing supplies are available for student use, and student work is prominently displayed. In this collaborative learning environment, students share responses, ideas, drafts, and finished written products through conferences with the teacher, conferences with peers, and journal exchanges with each other and their teacher.

Within the context of this constructivist classroom environment, the teacher serves as a consultant, moving from student to student, reading and responding to students' work, and helping to facilitate student publishing for broader audiences in the school, community, and sometimes on the Internet. The students collaborate to make meaning, rather than reiterating teacher-held interpretations. The teacher becomes a learner, constructing meaning through reading, writing, speaking, and listening.

When technology is integrated within the writing workshop, small groups or learning teams can engage in prewriting activities such as brainstorming or share responses to each other's writing. One of the advantages of conferencing electronically is that the conversation is documented. Each group member can print suggestions and make revisions accordingly. Small groups or entire classes can respond or edit a single document simultaneously, or students may choose to create a document collaboratively (Willis, Stephens, Matthew,
1996). As they interact, the students have the ability to add or change text on the shared document, and they can also proofread and edit together.

Knowledge shared within the writing workshop is collaboratively constructed. Students construct their learning and are given activities that elicit their involvement. Also, the learning cycle is incorporated as standard procedure—moving from conjecture to exploration to experimentation to communication and self-expression. The centrality of writing instruction in this workshop model shifts the focus of the classroom away from the teacher as knowledge-giver toward the student as meaning-maker. Writing processes involve the dynamic relationships between writers and their texts. In the classroom, students talk about their writing in conference groups, or they may collaborate to revise their writing with distant peers. The connections they form between what they read and what they are in the midst of writing are reflections of the processes that students engage in as they develop meanings (Kirby, Latta, & Vinz, 1988). These processes may lead writers to explore and understand ideas. Writing processes involve a dynamic and interactive relation between writers and teachers. As teachers and students and their classmates work together, they offer tentative suggestions for what to do next or ways to focus a piece of writing. By carefully observing, constructivist teachers become aware of what students already know, of what they might find helpful to try next, and of what gaps in learning may need filling. Such knowledge allows teachers to show students how to derive the most impact from their ideas and to discover how writing works. Contextualized writing about students' experiences, thoughts, and interactions involves them in making sense of real issues. Through writing, they explore the real concerns and activities of their lives.
Students use personal narratives to make sense of our world and their experiences in that world. They take risks with their writing, and their success then builds their self-confidence and their abilities to relate experiences. Creating a context for learning means holding the instructional world of the classroom together in ways that allow time for students to seek and to develop the interconnected threads of the ideas presented to them and form meanings for themselves. Constructivism, in a sense, attends to the questions about learning that Dewey posed in 1938:

What avail is it to win prescribed amounts of information about geography and history, to win ability to read and write, if in the process the individual loses his soul; loses his appreciation of things worthwhile, of the values to which things are relative; if he loses desire to apply what he has learned and, above all, loses the ability to extract meaning from his future experiences as they occur? (p. 16)

I ground this study in constructivist theory because I believe that writing serves as a tool for thinking, helping students organize, reorganize, and construct knowledge; make meaning; and enhance their own intelligences. Constructivism is about how students learn, and suggests that they do not learn alone. Teachers, peers, and collaborators provide opportunities for active learning so that students create, build, discuss, compare, collaborate, and experiment with writing. The teacher becomes a facilitator of learning who considers her students' needs, interests, and strengths when planning the curriculum. Further, I believe that constructivism enhances the classroom, and technology is becoming central to the pedagogy.
Computers in Teaching Writing

Computers and other technologies may provide increased opportunities for students to interact with others, but studies (Soltis & Walberg, 1989; Baker, 1982; Satran, 1999) show that the introduction of computers and related technologies in schools lags far behind that of homes and businesses. For instance, in 1994, only three percent of classrooms, labs, and media centers in public schools were connected to the Internet. In 1995, this number had grown to nine percent. By the end of 1998, fifty percent of homes had computers, compared with just over forty percent just two years earlier (Satran, 1999). Yet, only seven percent of teachers had between four and seven computers in their classrooms (Ravitz, Wong, & Becker, 1998). Urban schools face additional challenges. Currently, these schools have found it harder to get new technology in schools partly because of the size of their districts. Many urban schools, lacking cash because of low tax bases, increasing enrollment, equity issues, among other problems, may not be able to buy computers, modems, and telephone lines. If they find the money, the installation costs may be high because urban school are older and need more work to make them computer-ready. Furthermore, corporations center their aid on wealthier districts where fewer problems exist and more paying customers live.

To remedy this situation, in June of 1996, the U. S. Department of Education set four national technology goals for the current administration: (1) All U. S. teachers in the nation will have the training and support they need to help students learn to use computers and the information superhighway. (2) All teachers and students will have access to modern multimedia computers in their classrooms. (3) Every classroom will be connected to the information superhighway. (4) Effective software and online learning resources will be an integral part of every school's curriculum (USDE, 1996). While these are lofty goals, the
fact is that as many as fifty percent of teachers in the United States have no experience at all with technology in the classroom. Training for teachers is imperative if the national technology goals are to be reached.

**Facilitating computer-enhanced learning in the classroom**

Computers in classrooms can enhance and improve instruction and learning. Caissy (1987) cites advantages of the computer as a tool for improving student engagement in the learning process:

- Interactive programs keep students continually involved in the learning process.
- Instant feedback can be provided as students work independently of their teacher.
- Computer programs can be used to develop/improve thinking skills through simulation, problem-solving, and discovery learning.
- Computer-related skills, such as word processing, assist students across the curriculum and provide a form of motivation.
- Computers provide individualization because students can work at their own paces. Many programs offer a variety of levels of difficulty. (pp. 12-14)

This final point can work to students' disadvantage. Sometimes when students work alone, the computer can contribute to desocialization. Faigley (1992) warns educators against appropriating theory selectively and adhering to a utopian vision of the benefits of computer-assisted instruction. Specifically, he criticizes those who believe that anyone with minimal keyboarding skills can participate equally in knowledge construction. This equality of participation, Faigley asserts, "does not necessarily lead to community building and cooperation, but rather may lead to just the opposite—dissension and antagonistic classroom conversation" (p. 185). Teachers should be aware that computers cannot cure all of
education's problems, but they may be used in carefully designed curriculum to connect learners and build alliances.

Of particular interest to this study, researchers agree that there are many advantages of using word processors to teach writing. The advantages to students include that they spend more time composing and write longer texts when using a word processing program (Kane, 1983; Hawisher, 1986; Appleby, 1988); display a more positive attitude toward writing using computers (Daiute, 1982; Johnson & Sterkel, 1984; Kurth, 1987); work as partners with their peers and teachers, sharing information and learning (Selfe and Wahlstrom, 1986); and collaborate and write more freely and easily, enjoying a heightened sense of audience and immediate feedback from their peers (Thompson & Jarchow, 1983; Hawisher, 1989). Students who have access to technology also become risk-takers as they perceive writing as a cognitive and physical activity that takes place continually as one writes (Humes, 1983; Becker, 1984). They make two-thirds more revisions (word substitutions and reordering sentences twice as often) using word processors (Collier, 1983) and feel encouraged to revise because they can change text by giving commands rather than recopying (Daiute, 1982; Reynolds & Hart, 1988). Further, students are motivated to make higher level thinking types of revisions, such as those that improve idea content and coherence (Balajthy, McKeveny, & Lacitignola, 1987).

Over half of the advantages of using word processors in teaching writing relate directly to the revision portion of the writing process. However, research does not support the hypothesis that students automatically revise and compose more successfully using word processors. As Becker (1991) observes, teaching word processing without teaching writing skills will not necessarily lead to improved writing. Becker's research replicates earlier
studies that suggest that students limit their changes to superficial, mechanical alterations unless directed by a teacher to make more sophisticated revisions (Collier, 1983; Kane, 1983). Therefore, whether technology is in place or not, the teacher holds a powerful responsibility for creating a classroom environment in which students and their instructor share information and learning as they work through the writing process together.

Effects of computers on collaborative writing

Collaborative computer-assisted writing originated out of necessity in schools because of the lack of computers. Students had to work in small groups around one computer. But research in the area of small-group, computer-based learning predicted the potential power of the computer to facilitate a positive group learning environment that would lead to enhanced student achievement, more positive attitudes, and higher-level problem-solving skills.

Johnson and Johnson (1987) measured the impact of cooperative, competitive, and individualistic learning structures on eighth grade students' achievement and attitudes while working on a computer-simulated writing task. The researchers found that the cooperative-oriented group scored significantly higher on test items than students in the other two groups and that the cooperative group displayed more positive attitudes toward computers than the individualistic group. Allen (1997) concluded that students not only improved their written products when working collaboratively but also found that students had more success when writing individually later. Collaborative computer work also improved students' attitudes toward writing as well as toward themselves.

Research involving computers and collaboration has long supported collaborative writing using word processors (Daiute, 1989; Dickinson, 1986; Herman, 1985; Levin &
Boruta, 1983). These studies focused on two or more children working collaboratively together to create one written piece either from beginning to end, or sequentially, where one student began the writing, and the other helped revise and edit. Recent studies indicate that collaborative writing has now become a National Curriculum attainment target in Great Britain (DES, 1994). Some advantages to collaborative computer writing include that the writing product is equally visible to the partners; there is no stigma attached to poor handwriting; and any editing that might result from discussion can be efficiently/effectively completed. Charles Crooks (1994) suggests that pairs of students did not always compose symmetrically at the word processor, but they were oriented to share knowledge even though one partner appeared to take responsibility for the final content. In Crooks' study, collaboration was seen to involve an active concern for the construction of mutual understandings, a clear explanation of the anticipated shared product, and reciprocal social actions that led to task completion.

Sullivan (1994), in discussing adjustments that teachers should make in using collaborative strategies in teaching writing in electronic classrooms, advocates the use of revision software such as Prep Editor, a prototype software product that allows co-authors to place comments in columns adjacent to the text. Lookatch (1993) found that middle school students who collaborate to improve the quality of their writing cite the following benefits of using software designed to facilitate the revision process:

- It gives writers opportunities for shared decision-making and shared creation, such as joint development of graphics within a story.
- It provides opportunities for students to negotiate with one another to achieve a wide range of results.
• It allows students opportunities to monitor their individual and collaborative progress as they work together. (p. 11)

*Effects of distant audiences for writing*

Another useful technology for enhancing student engagement in the writing process is distance learning. Telecommunications settings contribute to the development of functional writing environments that help students contextualize their work. Functional learning environments are focused contexts in which novices learn skills by participating in similar activities as experts while receiving the necessary support to make their participation successful. Research literature validates the notion that distant audiences play an important role in the development of middle school students' texts (Cohen & Riel, 1989; Hawisher, 1989; Selfe & Wahlstrom, 1986). For example, seventh-grade students in Jerusalem wrote two compositions on the same topic, one addressed to their teacher and the other to middle school student peers in Russia. Both the Russian and Israeli students shared drafts via the InterCultural Learning Network. Students wrote significantly better for their distant peers. When writing to the audience in another country, these middle school students realized that their audience did not share their background knowledge; therefore, they were far more explicit in describing a game played only in Israel. The research has also noted that audience awareness leads students to change or delete colloquial expressions, chain sentences more clearly toward the expression of a main idea, and write better-organized and more formal compositions (Cohen & Riel, 1989). In summary, using a computer network improved the quality of the content, organization, vocabulary, language use, and mechanics of writing when the distant peer interaction took place. When the students wrote simply to demonstrate
their skills to the teacher, however, their writing was much less fluent and less well developed.

Similarly, a group of forty-five fifth graders in a predominantly Hispanic school in the Southwest participated in the Cultures Connect Project (Rasmussen, 1998). Randomly assigned to one of three treatment groups (essays to be read by teacher, self-selected classmate, or distant peer), these students corresponded for six weeks primarily about geographical and cultural characteristics of the school's site and state. The AT&T Worldwide Telecommunications Network was used to link the students and teachers in the United States with seven schools in this country and one in England. The researchers surmised that, like the Israeli middle schoolers, these students viewed writing to a distant audience as more purposeful than writing only to their teacher.

Finally, an exchange between middle school students in Great Britain and the United States suggests that students also perceived the importance to their writing growth of having a peer audience from another culture. As Farah, a British student, said, "If you've got an audience, you don't want to do rubbish work. You do your best. Do you get what I mean?" (Freedman, 1994, p. 85)

These studies suggest that distant audiences can have a real impact on improving students' writing. In my study, one of the classroom uses of technology that I analyze is the interaction between a community college distant audience and my eighth graders. Further, I similarly analyze specific improvements in eighth graders' writing (see Chapter II). More importantly, I use qualitative methods to understand the meaning that collaborative conferencing and writing had for students and their interpretations of how it helped their writing or changed their perceptions of their writing.
Advantages of multimedia composing

Multimedia composing, which integrates images, animation, and sound into the writing process, works to bring children's worlds into the classroom and to help middle level students with writing problems develop written language skills. The purpose of Daiute's (1992) project was to create a book about the interests of young people in their city in 1991. Using Personal Media Studio for three weeks, the students interacted with researchers and other students in their own and distant classrooms using computer-mediated collaborative conferencing networks.

Through analyses of field notes reflecting students' motivation, questions, problems, and peer interactions, the researchers in Daiute's (1992) study concluded that multimedia composing supported children's composing and that they were capable of using diverse media as sources of knowledge and expression. In multimedia compositions, students found new ways to develop their writing, sometimes grounding their texts in the sociocultural context of photography and music. One impulsive student learned to stay on task by shifting among visual, aural, and textual media to complete writing assignments with the help of his adult collaborator. Daiute found that all of these students used their daily life experiences and influences from their peer cultures to think and write creatively in a highly visual context. They were able to create and publish higher quality sounds, images, and real-life experiences in multimedia products through computer-mediated conferencing with their distant peers.

In my study, I analyze ways that multimedia composing is helpful in developing my students' self-confidence and their abilities to articulate what they learn from specific Internet research and literary analysis projects. Through sharing their HyperStudio and PowerPoint
presentations, students demonstrate their collaborative group skills as well as their abilities to incorporate research writing, literary interpretation, and technology skills into products that help them teach their peers what they learn (see Chapter IV).

**Advantages of collaborative conferencing**

Two investigations of the benefits of collaborative conferencing serve as important background for this study. First, a collaboration between middle school students and adults in a university English methods class benefited all of the electronic writing partners (Robbins & Fischer, 1996). The computer-assisted conferences via the Internet or local bulletin board systems, available through using inexpensive university distance education software, provided an opportunity for students at both levels to interact as equals or peers. They discussed such writing improvement areas as topic choice, elaboration and development, organization, word choice, and punctuation. Seventh graders clarified meanings and thought more deeply about their ideas while the university students learned that writing for an adult audience increased the middle schoolers' motivation to produce higher quality written products. The personal connections the adults made with the younger students helped them understand the importance of trust in a conferencing situation as both university and middle school students offered suggestions for revisions and refined their writing.

Second, in a similar study, Harrington and Quinn-Leering (1996) discovered that computer conferencing activities sensitized prospective teachers to the complexity of moral decision making involved in teaching and a multitude of perspectives on educational issues. Preservice teachers and middle school students signed on twice weekly to dialogue about issues being discussed in class. Researchers analyzed texts of their computer-mediated conferences. They found that as students were presented with multiple views on the different
educational issues, they questioned the validity of their own views and views of others and clarified their understanding through discussions with their peers. Implications from this study's results paralleled my own. Engaging younger students in moral discourse helped them learn to tactfully ask leading questions that prompted their writing partners to add descriptive details and convey more clearly their purposes for writing. If students are expected to serve as mentors to their peers in computer-mediated collaborative conferencing for the purpose of improving writing quality, they must develop trust and a sense of credibility as technology users and writers.

Collaborative conferencing is not only a primary part of my classroom activities, but it is also an important focus of my research. Specifically, I look at how conferencing with college students about shared assignments improves the student writers' clarity of expression and depth of detail. I also address issues of trust and respect within the relationships that developed between writing partners. My students particularly enjoyed learning about shared interests as they collaborated with their writing partners (see Chapter II).

**Internet-based educational telecomputing activities**

Electronic mail via the Internet offers teachers a variety of activities that assist students in finding information, communicating with others, and increasing their knowledge base. *Keypals* projects provided one of the first, commonly used telecomputing activity structures. Middle school students in Pennsylvania corresponded with groups of other eleven to fifteen-year-olds to share the following types of information: (1) biographical and family; (2) geographical/historical/regional; (3) political/country; (4) social customs (floods, clothing, holidays, etc.); (5) educational; (6) literary; and (7) environmental (Harris, 1994). In addition to corresponding via their e-mail addresses, these students sent and received
cultural boxes containing students research projects, cultural items, photographs, videotapes, etc. Through exchanging focused messages related to the topics listed above, the middle level students learned about each other's cultural values and also established friendships.

I found several types of pen pal projects available on the Internet. The Reynoldsburg Geography Project emphasizes the importance of middle school students learning about diverse cultures through direct contact with other students. Via electronic mail, this project links individual students to age mates at other schools to help them understand differences between scientific fact and presumption and errors based on misinformation relevant to stereotypes and prejudice.

Global classroom projects offer another way for students to use the Keypals activity to collaborate with others around the world in such special interest areas as Earth Day. Students also participate in electronic mail list (LISTSERV) discussions about controversial international issues. Through helping young people exchange ideas about solving the world's problems, teachers facilitate meaningful dialogues that lead to the implementation of real solutions and transfer of learning.

The AT&T Electronic Learning Circles network projects cross cultural boundaries and facilitate a more active search for ways in which ideas, experiences, and backgrounds in various countries differ. These projects bring small groups of classrooms together to collaborate on a study area, and then students become researchers, reporters, and authors in responding to other circles in distant areas. Some joint publications are planned and carried out, exposing students to different points of view, enhancing multicultural awareness, and developing cooperative skills (Jonassen, 1996). Teachers also acquire knowledge, develop
instructional strategies, increase self-esteem, and develop professional and personal relationships with peers.

My eighth graders looked forward to being keypals with students in countries that use the languages (French, Spanish, German, and Russian) they plan to study in high school. This student-driven decision-making is an important part of the negotiated curriculum in my classroom. Exchange students from these countries visit our classroom as well. The importance of this activity is discussed in Chapter IV.

Implementing technology solutions in the classroom

The U. S. Department of Education (1997) recently published a literature review indicating that educational reforms are driven by changes in society, which include information systems and communications. This review states that education lags behind business and industry in the adoption of technologies and concludes that until all students and teachers have equitable access to the necessary technology, distance education will not be widely used. Students learn by constructing their own knowledge and sharing that process with others in their classroom and across networks with instructors who have become effective facilitators of learning (Willis, Stephens, & Matthew, 1996). The combination of equitable and universal access to technology, student construction of knowledge, and facilitative teaching has the potential to transform teaching and learning. To implement distance learning, teachers need resources, training, and well-defined goals for outcomes.

McHenry and Bozik (1997) conducted a study of distance learning from the perspective of Midwestern junior college students that supports the findings of the U. S. Department of Education. In analyzing their observations and interviews, these researchers found six primary themes emerging from their study. First, new opportunities for learning
were created through distance learning technologies. Second, students, while being tolerant because the technology was new, felt that teacher training and accessible technicians were needed. Third, advance preparation, fax, phone, and e-mail were needed to transfer paperwork more efficiently. Fourth, non-traditional students were serious about learning and frustrated by those who were not. Fifth, teaching participants how to use the equipment (microphones, etc.) was essential to communication. Sixth, teachers encouraged more focused student-to-student and student-to-teacher interaction in their classroom communities in order to develop and enhance learning.

Concerns about access to computers and their practical uses in education have shifted to concerns about equitable access across class lines and the impact/significance of computers in relation to specific purposes. My concern is to provide developmentally appropriate technology experiences for students so that they learn to use computers and other currently available technologies as tools to enhance their writing. Thus, as this discussion of computers in teaching writing suggests, there are multiple ways to integrate technology into the middle school publications and language arts classroom. Computers and other technological equipment serve a variety of functions, such as helping students to revise their writing, to shift their ways of thinking about writing, to collaborate with a distant peer audiences, to broaden the audience and publish their writing, and to expand their cultural understanding.

These uses are fairly new and have not always been studied with middle school students, who, as the Carnegie report (1989) suggests, are particularly in need of assistance to improve their writing. Therefore, it is important for me to focus research on a classroom where technology-mediated education for middle schoolers is taking place. My need to
understand what is really going on in my technology-rich classroom underscores the significance of my research—to examine and understand how middle level students use technology as tools for meaningful thinking, writing, and revising.

Like Faigley (1992), I agree that teachers tend to discuss technology as a utopian solution. Education, particularly, has embraced technology as a panacea for all that is wrong with it. Having computers in schools is seen as a measure of educational excellence, and very little research questions this assumption. While I have found computers to be profoundly empowering for my teaching, I acknowledge that this may not always be the case and that computers may, in some instances, hinder or limit learning. Further, I am well aware of the social concern that economically disadvantaged students do not have equal access to computers and computer education and that computer literacy may be currently gender-biased. However, my primary purpose in this dissertation is not to review the literature that critiques the use of technologies in schools. My purpose is to examine the purpose of technology in my own teaching—for better or for worse.

**Methodology**

I chose practitioner research as a form of qualitative methodology for this study because it best fits my own desire to learn. Nixon (1981) says that the practitioner researchers often begin with their own skills, inclinations, and enthusiasms and progress, sometimes by hints and guesses, toward the development of a research style that suits their own particular needs and circumstances. For me, the purpose of conducting educational practitioner research is to better understand my educational situation in order to improve my teaching practice, especially as it facilitates students' improvement in writing skills.
Practitioner research

Practitioner research is a method of research that offers teachers opportunities to conduct research in their own classrooms in order to improve teaching and learning. It takes advantage of the skills of those who work most closely with students, namely teachers, administrators, other school staff, parents, and community members (otherwise known as school stakeholders). According to Noffke and Stevenson (1995), practitioner research is

(1) motivated by a quest to understand and improve some aspect of the classroom;
(2) designed to help teachers and other stakeholders; (3) done on teachers by themselves to help them improve how they work with others; (4) shared collaboratively with other teachers and school stakeholders to improve teaching and learning; and (5) continually refined after reflection through planning, changing, observing, learning, and remaining open to surprises and responsive to opportunities.

(pp. 7-8)

McKernan (1991) defines practitioner research as a form of problem solving that enables practitioners to better understand and solve pressing problems in social settings. Current researchers view practitioner research as valuable because it represents insider or local knowledge about a setting, is deliberately and systematically undertaken, and requires evidence to be presented to support assertions. Often this qualitative practitioner research takes place in educational settings that reflect conflicting values and unequal distributions of resources and power.

Bonnie Sunstein (1994), through her observations and interviews relevant to the value of practitioner research, found that teachers wanted an arena in which to work hard at understanding their stories, their lived experiences. The teachers with whom she worked
needed support groups that allowed them time, let them tell their stories, cultivated and did not oppress, and allowed them to revise. Affirmation from their peers kept them alive, interested, motivated, committed, and passionate about their teaching.

Because I, too, am interested in improving my teaching effectiveness, I used what is called the practitioner research cycle in my research. This model consists of a cycle of four basic steps: planning, enacting, observing the plan, and reflecting (Kemmis & McTaggert, 1988). Prior to beginning the cycle, there is an initial phase that may be thought of as having three different but related parts: an open-ended preliminary review of one's situation, the identification of an area of concern that one wishes to impose, and a reconnaissance of the circumstances related to the thematic concern. I believe it is important, as Dewey (1938) noted, "to keep track of ideas, activities, and observed consequences. Keeping track is a matter of reflective review and summarizing, in which there is both discrimination and record of the significant features of a developing experience" (p. 87). Through reflecting back on what has been done, I have learned to interpret teaching and learning as a continuous process of reconstruction of experience.

Through practitioner research, I have also learned to be more observant of the engagement of students in my classes. For example, when I once noticed that several students did not value the ten minutes allocated for journal writing at the beginning of the class period, I initiated a teacher-student dialogue. This conversation led to small group brainstorming of alternative journal topics so that students always had the list of over two hundred topics about that they agreed most eighth graders could use each day. Our class meetings helped us identify those topics that students found interesting and exciting and those teaching and learning strategies that engaged them. Together we came to understand
that reflection and discussion are essential to learning and to understanding what happens in class. Most often we used the questions that Fischer (1996) cites to direct our shared inquiry:

- What do we see here?
- What do you think is happening?
- What makes for a good day in this class?
- What have we learned together?
- How did you go about doing it?
- What worked for you? What didn't?
- What did you find most useful and/or most enjoyable?
- What could we do differently?
- What might be our next step? (p. 38)

I teach from the perspective of reflective action and continually search for information and solutions to problems that arise in the classroom. I view practitioner research as a way of sharing control for curriculum decisions with my students and facilitating an inquiry-based instructional method that encourages students to be more self-directed and empowered to learn. I believe that contextualizing student writing and integrating technology across the curriculum are ways through which teachers can help students find meaning and understand multiple perspectives related to issues they feel are important locally and globally.

Through using the practitioner research cycle of planning, enacting, observing, and reflecting, I scrutinize my pedagogical practice. I view research as a way of deepening my understanding of the school life of my students and subsequently improving teaching and learning. In my study I identify the problem of decontextualizing student learning
particularly in the area of writing. I provide collaborative thinking-through-writing experiences for my students and describe the specific methodologies used in the creative writing class in Chapter II, the online journalism class in Chapter III, and the language arts class in Chapter IV. I analyze the experiences of eighty students in these classes through observations, interviews, surveys, and analyses of the eighth graders' written and multimedia products.

The research scene

My study took place in a Midwestern city of 25,000 in a middle school with 520 students. Sixty-six percent of the students were Caucasians; twenty-eight percent were Mexican Americans; three percent were African Americans; and three percent were Native Americans. Fifty-four percent of the students qualified for free and reduced priced meals (breakfasts and lunches). Forty-seven percent of this eighth grade class read at grade level, and forty-two percent scored at grade equivalent in writing skills as indicated by spring 1998 results from the Iowa Tests of Basic Skills. Although I teach six classes, I chose to study two publications classes because these students usually elected to take the class. However, due to the total number of eighth graders in relation to the number of electives offered, about ten students in each class were scheduled into publications because there were no other electives available to them. This scheduling problem accounted for the fact that the students who had not chosen to take the publications elective brought to class negative attitudes toward writing generally and revision specifically. I chose the language arts class because it was my largest class, and I wanted to study ways to help these students' improve their writing skills while also integrating multimedia technology software into the existing curriculum.
First, twenty-three eighth grade students participated in an elective publications course that provides a creative writing workshop environment. These students conducted computer-mediated collaborative conferences with twenty-five first-year junior college composition students. The students use collaboratively revised texts to express multiple perspectives and to record socially constructed meaning (see Chapter II).

The second publications class focused on basic journalism concepts and the publication of the World Wide Web version of the school newspaper. This class of twenty-four eighth graders used a collaborative process to democratically organize their staff and a mentorship pyramid (apprenticeship model) instructional method. Their online newspaper articles were self- and teacher-assessed using student-teacher devised rubrics applicable to news, feature, and editorial writing. A professional web page creator advised and critiqued the relationship between content and form of the online school newspaper (see Chapter III).

The final group in this study included thirty-two students grouped heterogeneously in a language arts class. Through using a variety of computer applications such as Inspiration, PowerPoint and HyperStudio, these students designed and produced hypertext presentations and taught their peers how to best use the computer equipment and software for information collection and analysis, interpersonal exchanges, and problem solving. Student-teacher devised rubrics required students to self-evaluate content as well as layout and design as they progressed in their collaborative group work (see Chapter IV).

Data collection and analysis

Because I used multiple methods of data collection and analyses appropriate to the particular focus of each chapter, I explicate these methods specifically in each chapter. However, one aspect of data collection that I used with all of the groups consisted of semi-
structured interviews with students that began with the question, "What does writing mean to you?" Subsequent questions (see Appendix A) related directly to the focus of the study, which was to discover the meaning that eighth graders found in writing with or without computers for audiences near and far. Other primary data sources were observations recorded in field notes and daily journal entries. Analytic memos were written and coded, and pre- and post-participation surveys were tabulated and analyzed.

I describe the documents that I analyzed in the methodology sections of Chapters II, III, and IV. They included an autobiographical introduction, personal narrative, and descriptive essay for the creative writing class; news, features, and editorials for the online journalism class; and various multimedia projects for the language arts class. Surveys were also described in the specific chapters.

Data analysis included coding and summarizing interviews and, most importantly, identifying recurring themes. I used The Iowa Tests Writing Assessment (1996) scoring protocols to analyze students' essays and student-teacher devised rubrics to assess the online journalism class articles. Such triangulation (the inclusion of multiple perspectives) guarded against viewing events in biased ways (Anderson, Herr, & Nihlen, 1994).

Conclusion

As I hope this introduction demonstrates, I am deeply committed to and have a theoretical understanding of collaborative, technology-mediated instructional techniques that can provide ways for teachers to engage middle school students in relating their prior knowledge and experience to new learning. I will examine how when students can use technology to support meaning making, they are assisted in being empowered to communicate what they know and can do with broader audiences. I will also show how
eighth graders can reflect on how they come to know what they know. I hope to show how by working in collaborative groups, middle school students may learn to participate in democratic decision making and to recognize and appreciate the multiple perspectives of the problems and ideas they encounter not only in school but also in their homes and communities. As the students learn to use new technologies and the apprenticeship model to teach their peers and others, they may grow not only in technology competencies, but also in their ability to communicate and cooperate with learners of all ages and interests.

In the following three chapters, I describe each of the three learning communities outlined above. I make connections among constructivist theory and practice, the middle level writing instructor as technology facilitator and reflective practitioner, and eighth grade students as collaborative workers and peer mentors. The goal is to understand how middle level students think about their writing and to empower them to use technologies as tools for making meaningful connections between information, personal experiences, and new knowledge acquisition. I am going to show how a knowledge of constructivist pedagogy assists me in developing approaches to facilitating the integration of technology tools and telecommunications into the creative writing, online journalism, and language arts curricula. I hope to illustrate how within the context of a constructivist learning setting, my students can construct knowledge in transaction with the environment and through interacting with their near and distant peers, how learning cannot be separated from action, and how meaning can be socially constructed through a variety of computer-mediated telecommunications efforts to improve written self-expression.
CHAPTER II. CREATIVE WRITING CLASS APPLICATIONS

Somehow I can never quite express myself through speaking so I write. To many people, this may seem weird or strange, but I like to write. Writing has helped me through some of the most difficult times of my life. Writing is my life...like a keeper of my feelings. It lets me explain myself. Better yet, it doesn't laugh at me or make fun. I will never stop writing. (Rebecca, an eighth grader)

As the above quotation from one of my students affirms, writing is an important form of self-expression for some middle level learners. Therefore, the creative writing class may be seen as an important site for middle level students to engage in meaningful learning, writing, and interaction. For me, the creative writing classroom is a space where constructivist pedagogy and the use of computers to facilitate writing come together in powerful ways. I selected the creative writing class as my first analytic chapter because the creative writing class, more than any other class, inspires students to want to write. Further, the creative writing class offers unique ways to implement technology use in class for improving writing and for generating collaborations among students when they write.

In this chapter I connect constructivist theories of learning with actual pedagogical practice. I also describe and analyze the benefits of computer technologies and their uses within the context of my own instructional practice. I discuss how I use technology and distance learning in the creative writing classroom to broaden the audience for students' writing, facilitate collaborative conferencing for the purpose of revision, and enhance the social dimension of the educational process. The examples included demonstrate how implementing technology and collaboration within a constructivist framework helped my students in a creative writing class to improve their writing.
Constructivism and the Teacher as Facilitator

Constructivist theory underscores the importance of the teacher as facilitator of learning. Grounded in notions of empowering learners to construct their own knowledge, this model of teaching and learning gives middle school students opportunities to develop their own understanding of the world as they acquire knowledge and reflect on experiences (Kerka, 1996). Instead of being the provider of information, the teacher in a constructivist classroom becomes a facilitator and a provider of opportunities for students to gather their own information, actively create or invent knowledge, and integrate new ideas and concepts into their existing knowledge structures. Thus, learning is perceived as a socially constructed process among the teacher, the learners, and their environment (Vygotsky, 1978). This view of teaching contrasts with the traditional, transmission approach, which promotes neither the interaction between prior and new knowledge nor the conversations that are necessary for internalization and deep understanding.

Teachers of middle level learners should also understand that middle level students yearn for responsibility, independence, and self-direction. Turning Points, the Carnegie report (1989), recognizes the need for middle schoolers "to feel that they are part of a responsive educational system in which they have defined rights and clear responsibilities" (p. 54). Too frequently, schools decontextualize learning so that students fail to understand the relationships among participants in education or to see connections between the subject matter fields that they study. Additionally, if learners are to see their prior knowledge and experiences as alive and important to them, educators must challenge them to ask critical questions about the work of others situated historically and socially in the past and present, and together with their peers to collaborate to solve current problems. In terms of the writing
classroom, the National Council of Teachers of English and International Reading Association Standards for the English Language Arts (1996) state that students should employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes (p. ix).

One way that teachers can help middle school students better understand and remember what they know and can do as they write is to provide them with collaborative thinking-through-writing experiences. Early studies suggest that middle level students who shared their writing with peers achieved at higher levels than those who did not (Pascarella & Pflaum, 1980). Recent studies show that providing distant audiences for collaborating via computer-mediated communication networks also plays an important role in improving middle schoolers' written text (Robbins & Fisher, 1996). Based in the results of research, I brought technology and distance learning into the creative writing classroom as a means of providing a flexible space within which students interact and invent solutions to problems and use technology as tools to produce high quality writing.

Jonassen, Carr, and Yueh (1998) agree that recent theories of learning emphasize the social as well as the constructivist nature of the learning process. These researchers suggest that students need to be able to interpret messages, consider appropriate responses, and construct coherent replies. Many students are unable to engage in coherent discourse because they have rarely been asked to contribute their opinions. Jonassen, Carr, and Yueh also note that synchronous and asynchronous computer-supported learning environments are currently available for supporting this social negotiation process.
Background of the Creative Writing Class

This study of the creative writing class took place in the third year that my creative writing students participated in collaborative writing exchanges with first-year composition students at a community college. Two research questions shaped the design and guided the implementation of this study: (1) Will middle school students who use distance education classroom equipment to conference with junior college writers make meaning-changing revisions more readily than they do with their peers in the regular classroom? (2) In what ways will carefully constructed distance education activities assist the construction of knowledge and heighten the self-esteem of novice writers?

Before Cherie Post, my community college colleague, and I planned our distance education exchange, we knew that there were many improvements that we wanted to make over previous collaborations that we facilitated. We wanted to accomplish the following goals:

- articulate our vision/goals more clearly
- make students aware that we are studying the impact of computer-mediated collaborative conferencing on revising for the purpose of improving writing
- take more time to teach and prepare students to use the distance education classroom equipment
- teach more revision/editing strategies
- help students reflect on processes they use to improve their writing
- establish ongoing contact via e-mail for students.
Description of the class

This study paired twenty-three eighth graders and twenty-four first year junior college students in three separate distance education sharing sessions held during the first semester of the 1998-1999 school year. The students met on alternate days for forty-five minutes and at various other times to participate in the statewide fiber optics distance education classroom exchange. Thirteen of the members of the middle school creative writing class were girls, and ten were boys. Fourteen of the students were Caucasian, six were Mexican American, two were African American, and one was Asian. Only four of these students read at eighth-grade level as indicated on the Iowa Tests of Basic Skills, and six met the grade equivalency standard in writing skills.

The community college composition class consisted of fourteen women and ten men. Twenty-two of the students were Caucasian, one woman was Chinese, and one man was Arabic. These college students ranged in age from eighteen to twenty-two. Two of them had taken basic skills English class before registering for the required first-year composition class.

Methodology

I used pre- and post-surveys to determine changes in students' self-assessment of their writing/technology expertise. Using the analytic writing protocols from the Iowa Tests Writing Assessment (1996), I examined multiple drafts of three writing assignments—an autobiographical introduction, a significant event (personal narrative) essay, and a profile (descriptive) essay—for the number and quality of meaning-changing revisions and for the quality of the final written products.
I also interviewed students about their attitudes toward using the fiber optics distance education classroom as well as toward writing, sharing, and revising with their junior college partners. Data sources included notes from observations, transcripts from interviews, documents from class sessions, and the surveys.

**Description and analysis of computer technologies and their uses**

As a constructivist facilitator-educator, I believe that students learn by interacting with their environment. Even though I teach to the local standards and align my teaching with the national standards, I am constantly trying to find ways to engage my middle school students in activities that will prepare them for the kind of team work and critical interchange that they will need to be effective participants in their communities and workplaces in the future.

One of the most important things I learned from using the technology prior to the study was that students need to feel comfortable using the equipment. Research literature identifies the need to develop a comfort level with technology, but perhaps it is most clearly articulated in Hawisher's and Pemberton's (1998) work in facilitating a course on the Theory and Practice of Written Composition. They set three specific goals for their college students:

1. Students were well trained to use the software and felt comfortable with it early in the term.
2. Students were accountable for posting electronic messages at least twice weekly.
3. Students were expected to use the software for completing course assignments and conducting asynchronous conversations with their peers and instructor.

(pp. 23-24)
By monitoring students' using the software, Hawisher and Pemberton were able to adjust their teaching by asking students to tutor or mentor those whose limited experience with the software hampered their progress. Repeated opportunities to use the technology helped their students gain confidence that they could complete their assignments successfully.

The students in my study needed to learn about computer hardware and software, including Hewitt Rand (IBM-compatible) computers, Microsoft Word, the Internet (accessed using Netscape Navigator 4.0), and e-mail. They also needed to learn to use the distance education classroom equipment provided at a nearby intermediate educational agency. To use the fiber optics (television) connected classrooms, students needed to learn to use the teaching station with its touch sensitive computer screen, microphones, overhead projector, fax machine, and other features.

As a result of the e-mail communications and distance education classroom exchanges, my students and their community college writing partners moved from conversation to correspondence to composition of texts for distant audiences. Such conversation and correspondence are essential aspects of the learning process by which one becomes a writer (Moffett, 1985; and Moffett & Wagner, 1992). The contrast between the following e-mail excerpt from the beginning of the school year with one that was written near the end of that semester, provides one illustration of how the student grew in her ability to focus on the development of specific details in their essays. Sheila, a community college student, wrote in response to a conversation that an eighth grader initiated:

I want to answer your question about sports. I enjoy roller blading, but for sports in school I enjoyed track and cheerleading. I was a cheerleader for football and wrestling. I had to quit because of my job, though.
Near the end of the semester the same college student wrote:

I really enjoyed reading your profile essay. It gave me a lot of information about your mom. You're off to a good start. Next time try to be more descriptive. Don't be afraid to tell too much. Always give the reader a lot of details so she can picture it in her head.

At the end of the semester, students at both locations discussed composing strategies and accompanied writers as they moved through various stages of drafting, especially after the distance education, television classroom exchanges. One eighth grader commented to a college peer:

Your introduction is very creative and involves the reader. I like the way you asked your reader to think back to what she was doing at 6:00 a.m. today. Most kids were probably still in bed, but your friend was making breakfast for her children. I do have a couple questions, though. What does this person mean to you? Do any of her family members ever help her? She seems so alone in taking care of her kids. Maybe to add details about why there aren't any other adults around might help the reader understand why she has chosen to live alone so far from town.

These comments show that the eighth grader was empathizing with the subject of the essayist's responsibilities as a single parent, but she also advises her community college writing partner to elaborate or explain something she, as the reader, doesn't understand. By providing her writing partner with comments, questions, and suggestions, this eighth grader offered electronic guidance and feedback that stimulated discussion and internal reflection. Such electronic guidance is especially important to younger writers because they seldom have opportunity to benefit from outside support and feedback on their communicative
ability (Bonk & King, 1998). However, in my study I found the dialogue between the eighth graders and college students mutually beneficial.

As the television classroom exchanges progressed, the students more spontaneously asked questions that led their partners to revise to include more specific supporting details. As Moffett and Wagner (1992) suggest, the ability to anticipate and adjust text to meet audience needs is an essential part of what it means to learn to write. The students practiced this skill with their writing partners as they corresponded via e-mail and collaborated in real time via the interactive television classroom.

Collaboration in writing instruction and the apprenticeship model of instruction

Collaboration in the classroom is beneficial to students and teachers alike since it generally improves learning. Teachers need to understand how to devise strategies for effective collaboration. Teaching the roles of facilitator, recorder, reporter, and process observer and other group member skills in small groups increases the accountability of individual students. Dewey (1938) said that one of the philosophies of education is not to learn merely to acquire information but rather to bring that learning to bear upon our everyday actions and behaviors. Collaborative learning attributes become important. My students and those in Stahl's (1994) study similarly

- gathered in four-person teams with one computer per table
- focused on trust-building activities, joint planning, and an understanding of team support conduct
- developed positive interdependence through setting mutual goals
- practiced role fulfillment, individual accountability, and task commitment.
The students practiced working collaboratively and were able to use participatory decision making to set goals for their distance education classroom exchanges. These young adolescents wanted to improve their abilities to narrow, elaborate, and develop writing topics; organize their writing; and improve word choice and grammatical usage. First they worked in their small groups to brainstorm a list of problems that they often found in written expression. Then they used the consensus reaching process (I/D/E/A/, 1995) that I taught them the first week of school to arrive at large group goals.

During this study, I encourage collaborative conferencing that improves writing by broadening my students' perspectives and the audiences for their writing and by exposing them to technologies that teach them to communicate and share ideas effectively. When my students interact with their writing partners in two-way audio and video or in e-mail interactions, they realize that learning occurs in real time. Karissa, an eighth grader, acknowledges this realization in an e-mail message to her college writing partner:

Thanks for commenting on my interesting topic for my profile essay. Not many people know that my dad is a photographer for National Geographic. Interviewing him with your suggestions from our last e-mails helped me focus on the real purpose for my essay—to show how important it is to choose a career that you care about passionately. You helped me draft a purpose statement that gave my essay the introduction and organization it needed.

Both age groups experience their writing partners' responses instantaneously, revise to meet the needs of extended audiences, and benefit from the social interactions that they experience in their collaborative writing exchanges. As Vygotsky (1978) suggests, a child transfers social behaviors to the realm of the personal when he or she engages in the process of
internalization. Students become members of learning communities and help their peers enter these communities as well. For example, when students discuss their writing in terms of the process they use to construct meaning, they demonstrate that they are capable of metacognition, the self-monitoring of one's thinking.

The students also devise strategies for acting collaboratively. For instance, we began our year with the computer skills inventory. The eighth graders demonstrated that they were proficient in basic computer skills. Only two members of this class could not remember how to shut down the IBM-compatible computers (a skill they were taught in their seventh grade computer class). Seated at tables in learning teams of four, these students often elected one skilled typist to record their work, and they were quick to appoint their most capable speakers as their reporters during collaborative group debriefings. Less capable keyboarders soon took advantage of the after school applied academic units in keyboarding and returned to the classroom having used Sticky Bear and other keyboarding programs to improve their proficiencies. Learning teams urged those who did not complete homework to quickly finish during the work time provided at the beginning of the class periods. These learning teams grew in their "on task" behaviors in direct proportion to the number of responsible students seated there.

Through collaborating with their peers, eighth grade students set the following goals for themselves at the beginning of the first semester:

- to help less well prepared students elicit college students' perspectives on the papers they write
- to understand what it is like to be a community college freshman
• to revise (add/change details, dialogue, or other specific facts or opinions) to make our writing more clearly understood.

These large group goals served to direct the students' class discussions in their learning teams as they worked with peer revision/editing partners in determining purpose, audience, thesis, and organization of the various writing assignments. The goals listed also served the purpose of focusing the television classroom exchanges with the community college writing partners on improving students' actual writing processes and products.

In addition to facilitating collaboration in the creative writing classroom, I also implemented an apprenticeship model of instruction because I wanted the students to apply their prior experiences, knowledge, and technology and writing skills in meaningful ways in the classroom. Jensen (1998) notes that the educational model on which apprenticeships are based is simple and frequently found in history. If a person wanted to learn about something, he or she found someone who knew more in that area and learned through working directly with him or her. Before my students traveled to the distance education television classroom, they learned about the fiber optics network and how it worked through a PowerPoint presentation that I had prepared. I then explained the mentorship pyramid or apprenticeship model of instruction that would be an important part of our classroom learning process. This each-one-teach-one method of instruction is a part of the constructivist learning environment that is a facet of our classroom procedure. Students, as Murphy (1997) describes it, "guide their peers through the completion of tasks, skills, and knowledge acquisition necessary to complete projects" (p. 3). Two students (Rebecca and Trevor) volunteered to teach the other students how to use the equipment. They paid close attention as a technology consultant explained how to use the touch sensitive computer monitor to activate the various television
cameras in the classroom. The students were also responsible for facilitating the exchange as other students took turns coming to the teaching station to visit with their junior college collaborative writing partners via television. This responsibility heightened the self-confidence of each of the students who served as facilitators for the fiber optics classroom exchanges. As Rebecca noted:

Not only did I learn to use the new equipment in the state-wide communications classroom, I was also able to help my peers in class receive feedback from their writing partners so that they could make sense of their writing from an outsider's point of view. After this experience, I was invited to serve as facilitator for a similar exchange in Russian class. I could do this without feeling nervous because I had learned by doing in creative writing class.

This example shows how an eighth grader's experience in my class empowered her to reflect not only on her developing technology skills but also on her ability to help others think, learn, and create meaning through the television classroom collaboration.

**Description of Creative Writing Class Activities**

In this section, I describe three different writing activities, explain why each activity is important from a constructivist standpoint, and show the meaning that students derived from using technologies as tools for learning in writing.

On the first day of school, I asked my students to complete a two-page activity combining writing and art. They wrote about their personal lives, self-perceived proficiencies, and career aspirations. This activity broke the ice in that after they were finished drawing and writing, they paired and shared, something we frequently do in my classroom. The students wrote me notes about why they took the class. I would eventually
compare these to end of semester evaluations to see how these eighth graders' attitudes changed.

As a constructivist facilitator, I examined the first-day writings to see what students were thinking. Some of the students chose the class, but some did not. This affected the class atmosphere and highlighted the difficulties with autonomy and responsibility of the middle level age group. I wrote notes to the students and discussed their concerns in individual conferences to let them know that their thinking was accepted and valued. I encouraged them to make decisions about the day-to-day routines in the class and to determine classroom rules that were agreeable to everyone. I hoped to follow Anderson's (1996) example and build a classroom of better thinkers. By giving them opportunities to exchange points of view, I intended that they expand their thinking.

Negative comments from students illustrate what Poplin (1991) suggests as the reasons children don't learn: insufficient involvement in learning, insufficient previous experience, lack of interest, and mismatched previous experience. Several of the students in the creative writing class not only lacked interest in writing but also had not experienced much success in reading or writing. They did not feel that their parents supported academic achievement. Forty-one percent indicated through the Writer Self-Perception Scale Survey (Bottomley, Henk, & Melnick, 1997) that their families did not perceive them as competent writers. At the beginning of the year these students avoided doing homework and generally did not get involved in class activities. In previous years these students had developed reputations for being disruptive and unmotivated. Motivation is closely related to social development and perceptions of social events.
Most eighth graders, however, recognize new cognitive abilities and are aware of how their minds work and how they can learn better (Allen, Splittergerber, & Manning, 1993). They employ metacognitive abilities. For example, in a dialogue with my students early in the year, they agreed to ask themselves when they crossed the threshold of our classroom: In what ways can I help myself or someone else learn today? They began to rethink their roles as learners and to take ownership for their own progress in the class. They came to understand that they could make decisions that might be different from others around them, know why they made these decisions, and be comfortable with them. They grew in becoming more responsible as they understood the importance of meeting deadlines, especially in our distance education classroom exchange work.

During the first weeks of the creative writing class, which meets for forty-five minutes on alternate days, I asked the students to write about how they proceeded with an ambitious writing project. I tabulated the results and learned that many of the students enjoyed the seventh grade research project in language arts classes that required them to research a famous person, dress in costume as that individual, and present their information as a speech. Through students' discussion of their writing processes as recorded through their written self-analyses, they articulated a good grasp of the concept of metacognition. They were able to reflect and describe how they usually composed first drafts. However, they did not perceive revising as important. When I explained metacognition as "thinking about thinking" and explained the prefix and root word, they seemed pleased to identify their planning processes, which were as unique as the individuals in the class. Some writing processes were orderly. As Sharon explained:
I find out what my subject is, think of where I can get my information, try to get some main ideas, and find some facts to support them. Then I put my main ideas and facts in order. I start over and place things in different places over time. When I found there was not enough information to support three subtopics, I had to find more information.

Others took more time and found the information search process more important than actually writing the paper. Trevor said,

It took me two days to find a topic because I could not find information about currently popular musicians except on the Internet. I did not yet have the skill needed to use the search engines. I hope to learn that skill in this class.

Both of these examples show how important planning, monitoring, and evaluating are among the metacognition processes. These students understood that different tasks and goals demand different kinds of information processing. The class period spent thinking, writing, and sharing how students plan and craft sophisticated writing projects represented time well spent because it helped students link prior learning with current journal writing and discussion, and it also helped me know them better. We were already establishing a community of learners. My eighth graders were similar to those whom Rief (1990) describes in her middle school observations as students who knew themselves as learners better than anyone else. Discussion of writing processes demonstrated to the students that they already knew how to set goals for themselves and judged how well they had reached those goals. For example, Chaneze, in describing her interests at the beginning of the year said:

I like to enter writing or essay contests. Of the dozen or so essay contests that I have entered, I have won almost all of them. That shows that I have good writing skills.
Last year I entered the "Turn Off Television for a Week" essay contest. I wrote about how t.v. viewing has such a negative impact on young children and families. I won the entire contest. Sometimes I set winning a contest as a writing goal, and often I achieve my goal. I know I am a better essay writer than a poet. I can never get all of the things I want to say into poems.

What Rief (1990) discovered was the intrinsic motivation that is needed for developing deep understanding and personal meaning. This "meaning" can be constructed in two ways, according to Poplin (1991), through new experiences and through contemplation and recalled experiences. As Sharon wrote in an essay entitled "The Meaning of Life Is Found in Contradictions":

> The meaning of life is not one thing. It is nothing and everything all at the same time. People have choices, and they make life exciting. The meaning of life is to take all your goals and wishes, move toward them, and do the best you can. I may not be a writer professionally when I grow up, but I know that the processes—the prewriting, first drafts, revising, proofreading and editing—we practice in class will help me as an archaeologist.

This thinking relates closely to that of Jonassen (1996) as expressed in his explanation of the use of *Mindtools* (computer applications that engage learners in critical thinking about the content they are studying). Jonassen suggests that students may use databases and concept mapping tools to help them connect new subject matter with prior knowledge in ways that reflect the process of knowledge construction. As my students learned to use Inspiration, a concept mapping and outlining tool, early in the school year, I noticed that they were becoming more adept at self-assessment. They could more easily
articulate what they knew and reflect on how they came to know what they knew. They helped me construct rubrics in kid-friendly language and to understand the importance of peer and teacher feedback in the revision process.

In my beginning-of-year interviews involving every fourth student, I asked why students thought writing was not meaningful to some eighth graders. The interviewees agreed that some students simply did not care about writing because they thought it was boring or stupid. Half of those interviewed said that the students who did not perceive writing as meaningful did not like school and were often uncooperative. These conclusions are supported by the research literature. Langer (1987) says, "People learn to write in social settings where reading, writing, and talking about language have particular uses for those involved" (p. 111).

For some of my students, writing held no value in their everyday lives. Alberto, a student who (in an interview) said that no one in his family wrote anything, offered that the reason he did not write was because he never knew where to put the capital letters and periods. Hull (1989) suggests that literacy researchers ten years ago realized that writing is a process that, by its nature, is embedded in a context and a physical technology, and that writing instruction provides opportunities for students to learn culturally valued skills. She states:

Writing research should be centered on analyzing the interactions among processes and contexts rather than only on process descriptions and/or error counts and quality assessments. One way, then, to involve more disenfranchised students in learning to write might be to create discourse communities with authentic tasks and social interaction. (p. 106)
Through planning the self-portrait writing and drawing exercise, noticing how students perceived their own research and writing processes, and listening to interview responses, I came to understand my students. As a constructivist facilitator, I let my students know that I viewed them as thinkers with their own emerging theories about the world. When they handed in their dialogue journals, I noted the following concerns: cultural diversity, economic issues involving personal security, conflicts among people, environmental problems, how the future might unfold, and the advancing pace of technology. As these concerns were aired in "journal sharing" read alouds, the students identified service projects that they could plan and implement in their service learning classes and in the community. The beginning-of-the-year activities set the tone of acceptance and team cooperation in the table groups.

The middle school students liked the idea of working in teams (four students at a table with one computer connected to the Internet). Team members became responsible for each other's progress. If a student did not have a rough draft ready for a community college writing partner on the appropriate day, others in the table group would help him or her talk through ideas and organize content. Sometimes they would type while the unprepared student dictated his/her essay. They learned to empathize with students who appeared disorganized and to help them put their notebooks and other class materials in order. They shared computers so that those who could finish final drafts elsewhere gave their table computer use time to the ones who had no access at home.

At the beginning of this school year when I asked my eighth graders in creative writing class to consider ways to broaden the audience for their writing, many of them indicated in writing first-day essays that they took the creative writing class because they
liked to write. They welcomed the opportunity to use the technology-rich classroom to write for the audience of the first-year community college students who would be their collaborative writing partners. However, some (ten of the twenty-three) did not elect to take the class and seemed more than somewhat reluctant. Their attitudes influenced the personal dynamics of the class, and there were times when they came to class angry. I was irritated about the things that were going on in my classroom that got in the way of helping students become responsible, caring individuals who knew how to think, not just what to think. Then it occurred to me that I was going to have to follow Barbara Coloroso’s (1990) advice: "Responsibilities and decisions need to be age appropriate and meaningful, constantly increasing as students get older, so that they are making all of their own decisions and are truly responsible for their own behavior" (p. 4). To help my students grow to be more responsible in the writing classroom, I would have to expect them to get in their journals at the beginning of the class period without having to be told every time, to work independently, and not to blame others for problems they created themselves.

How do teachers, then, find ways to bring students to activities that they resist? One way to encourage students to gain personal and social efficacy and to construct meanings around their concerns and those in the larger world is to facilitate student interaction through computer-mediated teleconferencing. By initiating lessons that foster collaborative exchanges, teachers can help students become more interdependent and responsible for their own learning.

The autobiographical introduction

The purpose of the autobiographical introduction was to acquaint the eighth graders and first-year community college students with their writing exchange partners. Cherie, my
college professor colleague, and I had prepared tentative syllabi for the classes, allowing flexibility in scheduling our e-mail and distance education classroom exchanges. But we also followed Nanci Atwell's (1987) middle school framework for structuring our writing workshops. She claims that writers need: "(1) chunks of time; (2) their own topics; (3) response; (4) to read; (5) to learn mechanics in context; and (6) to know adults who write. (7) Writing teachers need to take responsibility for their knowledge and teaching" (pp. 17-18).

We also agreed that that we wanted to follow the key aspects of constructivist learning environments: "(1) avoid oversimplification of instruction; (2) focus on knowledge construction not reproduction; (3) provide a meaningful and authentic context for learning; (4) foster reflective process; (5) support collaboration" (Wertsch, 1991). Cherie and I agreed that Atwell's seven principles, cited above, related just as well to her community college students. We further believed that by providing a fun activity at the beginning of our exchange, we might engage a higher number of students in the collaborative distance education exchange and hopefully keep their attention and interest.

Cherie and I also shared a belief expressed in research literature (Alexander et al., 1997) that computer-mediated discussion of peer writing tends to decrease students' reticence and increase students' attention to sentence-level issues. We established e-mail accounts for our students and set a requirement of ten e-mails per student during the first semester of school. We taught a few students in each class to access e-mail, and they used the mentorship pyramid or apprenticeship model to teach other table groups. In my classroom students had their own e-mail profiles at their table team locations. The community college students obtained hot-mail addresses.
Our students brainstormed journal and e-mail topics, and the college students soon e-mailed a list of "silly questions" for us to use as ice breakers for our first distance education classroom exchange. For example, one college student asked, "If you could be a zoo animal, which one would you be and why?" The autobiographical introduction required both classes to write narratives in which they presented details about themselves and their school interests, activities, and achievements; unique features about themselves and their families; qualities they looked for in friends; descriptions of themselves as writers; specific genre they preferred to write; and kinds of responses they would most appreciate receiving from their distant writing partners.

Cherie and I reminded both groups that the purpose of the distance education classroom exchange was to help students improve the quality of their writing by broadening the audience and collaborating with another student in writing and revising. They also understood that it would be helpful to learn to know and trust the writing partner before interacting with him or her about an essay.

To complete this assignment, the middle school students brainstormed examples of the various types of items they might include using Inspiration, a semantic mapping program. They wrote the first paragraphs of their essays in class and finished them as homework. Both the middle school and community college students typed their essays on Microsoft Word. They e-mailed each other twice before meeting virtually on television at the distance education classroom. E-mail contents related directly to the assignment or to other personal concerns, such as the football season, part-time jobs, or weekend activities.

The first distance education, television classroom exchange gave students an opportunity to see their writing partners in real time. The eighth graders needed to be able to
visualize the people with whom they would be corresponding and collaborating. Through the get-acquainted session, the students realized how much they had in common with their writing partners. For instance, several of the students in both groups said that they would appreciate help from their collaborative partners in organizing their writing. They also built a sense of trust and community as they worked through the "silly questions" and practiced using the equipment in the distance education classroom. One of the basic tenets of constructivist theory relates to learning as a social activity. As Hein (1991) suggests:

> Our learning is intimately associated with our connection with other human beings, our teacher, our peers, our family as well as casual acquaintances, including the people before us or next to us. Progressive education recognizes the social aspect of learning and uses conversation, interaction with others, and the application of knowledge as an integral aspect of learning. (p. 3)

Taking time to facilitate interactions between the writing partners established a trust level that helped them not only in their class writing, but also in the e-mail correspondence and collaboration that followed. Their e-mails were purposefully related to the content of their essays, but they always began as a personal conversation naturally would with questions such as the following from Angie at the community college to Colby, an eighth grader in my creative writing class:

> How have you been? I'm fine. College is getting hectic, and it's been busy on the farm with a lot of fieldwork. I enjoy it, though. Let me tell you a bit of advice: Don't gripe now when you have a paper to write. Enjoy it because when you're in college, you will know how to do it. Believe me, I wish I could have been part of a writing exchange like this in eighth grade.
This e-mail excerpt also illustrates how some of the community college students regarded their middle school writing partners as younger sisters or brothers. They frequently gave advice that helped the middle level writers see the benefits of learning to organize their writing and to revise to make themselves clear to audiences outside our school. Working with the college students also helped my students understand that using the distance education classroom technology was a privilege that the older students had not experienced when they were in middle school or high school.

As Rebecca and Trevor worked with the distance education technology consultant, I noticed that they took the exchange much more seriously than the others in the class. Reflecting on his experience, Trevor later noted:

By using the fiber optics communications network for publications class,

I learned that technology is within the grasp of everyone from an eighth grader to a college professor. I got to be a teacher. I liked interacting with the older students, empathizing with them, and understanding their situations.

This comment shows Trevor's growth not only in using the fiber-optics classroom equipment proficiently and facilitating the movement and conversations of students within the classroom, but also in understanding older students. His self-esteem grew as he perceived himself as a classroom leader and representative of his middle school. Research (Allen, Splittgerber, & Manning, 1993) suggests that boys show an overall increase in the relationship between achievement and self-image from sixth to eighth grades. Both of these students internalized the importance of their leadership position at the teaching station in the distance education classroom. They also understood the wide range of writing capabilities found in their creative writing class.
Wiles and Bondi (1993) indicate that the widest range of achievement occurs in the middle grades. Students who sometimes fall a half-year behind grade level in elementary school reading find themselves two to three years behind by the time they reach middle school. Proportionately, students fall behind in writing competencies. Rebecca and Trevor demonstrated not only strong facilitation skills but also a sensitive awareness of the importance of dignifying responses whether they came from our class or from the community college students. They seemed intuitively to know when to add a humorous comment and when to simply move forward with another pair of writing partners.

Cherie met with me in my classroom after each writing exchange. We recorded the benefits the students derived from the exchanges and the problems they encountered as we reviewed the students' reflective essays that they wrote after each distance education classroom exchange. We recorded the following observations based on student work.

- Students used e-mail frequently to reply to writing partners, interact with peers, and conference with teachers. Students used the classroom computers to send e-mail at the beginning of each class period. They efficiently rotated around the table so that each table team member could send a message during class. Altogether two hundred ninety e-mails were sent from the two classrooms.
- The range of technology expertise was broader for community college students than for middle school students. While only fifteen of the college students had used computers extensively in high school, all of the eighth graders have received keyboarding and basic word processing instruction.
- Some middle school students perceived themselves as writers. For example, Jessica described herself in her autobiographical essay: "My best genre is poetry."
I like to write poems because I can make a point in one short story. Another reason is I'm creative. The last reason is I think very well."

- Several community college students perceived middle school students as more sophisticated than they were at the same age. Emily, a first-year college student wrote, "The eighth graders were an energetic group of kids. They made the experience less tense when they showed us their great senses of humor. I could hardly believe how self-confident they seemed. I wasn't that grown up and self-assured when I was in eighth grade."

- Journaling built self-esteem in both age groups. For example, Miranda, a generally disruptive eighth grader, wrote about how she felt after her favorite seventh grade teacher asked her to help wallpaper the new principal's office. "I have learned from this experience that if I do good to people, they will do good to me. I felt proud when other teachers came in and said we should go into the wallpapering business."

She later used this journal entry as the basis her significant event essay. Momdoh, a community college student from Saudi Arabia, wrote:

Exchanging my writing with an eighth grader is teaching me to explain my ideas more clearly. It is helping me see Americans from a different viewpoint. I used to think they were interested only in success. They seemed to have an obsession with making money and living rich and beautiful lives. My writing partner once had to live in a car because she had no house or apartment. I did not know that kind of poverty was part of the American landscape. By explaining how some people in my
country live with very few possessions, I believe that I have helped her understand that she doesn't have to be rich to enjoy her family and be happy.

Using the distance education classroom equipment was fun for the middle school students, but some community college students appeared hesitant with the new technology. Carrie, a college freshman, wrote after her first distance education classroom exchange:

Our trip to the communications network room was new to me because at my old high school, we didn't have all that machinery. Going to the room was interesting and informative for me. I had never even seen one until today. I was nervous, but I enjoyed myself interacting with the kids. Like all good things, this time with our writing partners had to come to an end.

Overall, the first e-mails and distance education exchange set the tone for the semester. The students demonstrated the ability to log on and use e-mail to communicate with their writing partners and their peers on both campuses and to use the microphones, touch-sensitive computer monitor, and overhead projector in the distance education room. I wove assessment, as viewed from the constructivist perspective, with teaching and learning and used my own observations, student demonstrations, and portfolio documents to determine students' writing progress. I measured student growth in collaborative skills using the rubric for small group collaboration found in Appendix E. I evaluated students' autobiographical essays using the Iowa Tests Writing Assessment (1996) analytic protocols.

** Significant event essay

The second distance education classroom writing exchange related to a significant event in the student's life. This personal narrative served the purpose of helping students know themselves better. Using the *St. Martin's Guide to Writing, Fifth Edition* (Axelrod &
Cooper, 1997), Cherie and I adapted the assignment to fit both student groups. Since my students did not have access to the college textbook, and their reading skills were at the sixth grade level as measured by the Iowa Tests of Basic Skills (1996), we adapted the assignments to meet their needs by simplifying the language and shortening the directions. We stressed the importance of subject, audience, and purpose in writing because we wanted them to develop a sense of the different audiences for which they write in everyday. Middle school students soon called this SAP, an acronym that helped them remember the importance of subject, audience, and purpose. We reviewed the writing process (planning and drafting, critical reading, revising, editing/proofreading, and publishing). We also added a reflective portion as a final step in the writing process: thinking critically about what you have learned. This final activity required that students consider how they solved problems writing a particular kind of essay, how their reading influenced their writing, and how their thinking and writing reflected the situation or cultural context in which they occurred. This reflective thinking piece of the writing process connected directly to the idea that students construct personal meaning from the text as writers construct personal meaning through text (Bernhardt, 1994). It also served as a means of encouraging metacognition and as a way for us to determine students' levels of knowledge so that we could recognize, monitor, and respond to their learning needs.

This assignment raised a concern with finding the appropriate level at which to engage the learner. Vygotsky (1978) spoke of the Zone of Proximal Development, referring to a level of understanding that is possible when a learner engages in a task with the help of a more expert peer (teacher or mentor). People can learn as they are stretched beyond their
own knowledge but only within a range that is within their grasp, given the knowledge and skills they bring to a task.

Could an eighth grader write a personal narrative that would interest a community college student? Both classes brainstormed lists of significant events in their lives. Both classes participated in a collaborative activity in their own classrooms that required that they each tell a story to the small group and that the story let classmates learn something about the storyteller. Then the classes read Annie Dillard's essay, "Handed My Own Life," in which she relates a coming-of-age story that led her to believe that she could achieve anything she set her mind to do. This well-told story with autobiographical significance and vivid description of scenes and people helped the students understand that their own essays must attract their readers' attention and make them want to know what happened in the end.

To assist the eighth graders in composing their essays, I provided a checklist that required the following components in their writing: (1) a generalization; (2) an autobiographical anecdote that supports the generalization; (3) a dialogue between participants in the situation; and (4) a point well stated at the end of the essay.

Again, the students chose to use Microsoft Word as their word processing program. They liked the automatic spell checker's red, jagged line under misspelled words. Most eighth graders used the Word Art Gallery to print creative, colorful titles at the tops of their essays. They used the mentorship pyramid or apprenticeship model of instruction to learn how to send their essays as attachments to e-mail to their community college writing partners. The community college students reciprocated with their essays. As the e-mails flew between the campuses, the middle school students noticed how much longer and deeper in depth of detail the college students' essays were. In response, they revised to add
The eighth graders and college freshmen e-mailed introductions of their essays, read thesis sentences, and commented on the clarity of opening paragraphs. After e-mailing each other with specific suggestions for revision, the partners shared their writing in progress at the second of the distance education classroom exchanges. To prepare for the television classroom experience, the students used the "Praise! Question? Polish." (Rosen, 1996) method of peer feedback that I adapted to more specifically fit the significant event essay. Relevant to the "Praise" factor, students asked the following question of their distant writing partners: In what way have I made myself clear in my writing? Angie, an eighth grader, complimented Colby's description of how well she got along with her sisters the day they traveled to a Midwestern amusement park. In their responses, the community college students would often praise responsible behaviors that they thought were developmentally appropriate in eighth graders. For example, Brad, a college student, praised Edith's description of how she always picked up her brother from kindergarten on the way home from middle school. The writing partners grew to be mentors almost as if they were big brothers and sisters to the eighth graders as the semester progressed. Karissa, an eighth grader, described herself as "Your little friend from middle school," in the closings of her e-mails.
The "Question" portion of the peer response process asked the writing partners more specific questions that would lead both sets of student writers to make meaning-changing revisions. For instance, in what ways does my essay fit the criteria for the event essay? Does it include an autobiographical anecdote that narrows the topic to one incident? How do description and dialogue contribute to "showing" instead of "telling" writing? Students' example comments indicate that they know how to implement this critical tool. For instance, Angie, an eighth grader, asked Colby, a college student, two specific questions about her paper: "Who is this?" in regard to the pronoun *we* in the first sentence of her essay, and "What does this mean?" in relation to the “smootherst ride on the Batman” amusement park ride.

From a constructivist's point of view, the students collaborated in determining the meaning of certain perceptions. The college students perceived the eighth graders as full of energy and humorously uninhibited. The eighth graders perceived their writing partners as reserved and cautious in their first responses. As time progressed in sharing their writing via the television classroom, the students socially negotiated meanings. They came to understand that if their partners had more questions about their essays than praise comments, there must be a greater need for adding specific details to their writing.

The "Polish" component of the revision process meant proofreading and editing. The important question in this area was: What mechanical errors (spelling, punctuation, paragraphing, etc.) should be corrected? The community college students found errors in comma usage most frequently in their middle school partners' writing. Punctuating introductory adverb clauses and appositives was particularly troublesome. For example, Bea wrote, "When we hiked the Grand Canyon it was so beautiful—mostly red, orange and
brown but the size was huge and deep." When I noticed that other eighth graders also frequently omitted commas, I taught a series of mini-lessons addressing the middle schoolers' punctuation and usage needs. They applied the content of the mini-lessons as they improved their abilities to proofread, edit, and help their peers "polish" their writing.

I modeled my punctuation mini-lessons after those that Nanci Atwell (1987) describes in her book *In the Middle: Reading, Writing, and Learning with Adolescents.* Using the computer and large screen television teaching station, I typed two sentences that required commas. Students in their table team groups then discussed how these sentences should be punctuated correctly and sent a team representative to the teaching station to keyboard in the corrections so everyone could see them. Through this practice of pulling topics for mini-lessons from specific, frequent, student errors, we were able to call the group's attention to the correctness of expression and usage needs of most of the students.

In our classroom, the eighth graders and I focus on what the person has to say first, and in our everyday, triad writing groups, we first ask ourselves, "What do you like about my writing? In what ways have I made myself clear?" The junior college writers, on the other hand, planned their writing more in advance and included a depth of detail not found in the eighth graders' essays. For instance, Carrie, a college student, described winning a horseback riding contest at the state fair.

When I got back to my horse, Dad had her ready to go. I slipped on my gold, sequined jacket; matching satin sash; and horse show pin and then pinned my best cream-colored cowgirl hat to my heavily curled and sprayed hair.

In contrast to this detailed description, Catalina, an eighth grader with limited English proficiency, wrote the following description of her cousin's wedding.
The big day came, and Maricela look grate [sic] in her dress. She looked very happy.

Then we went to the church. I like the decoration of the church it has a lot of flower every were [sic].

Through facilitating the interactive essay revision exchanges, Cherie and I created a learning environment in which learners actively constructed their own knowledge. As the students in both groups built their own interpretations of their experiences, they showed more ownership of the process of exchanging revision suggestions as well as a higher degree of ownership of their thoughts. In response to Catalina's first draft of the significant event paper, Brandon, her college writing partner, wrote, "You explain that the wedding will take place in Mexico very clearly. Try to add adjectives (words that describe nouns) to show the colors of the flowers and other decorations in the church. Also, can you write what Maricela said to you just before the wedding? That might show how happy she was." Brandon was careful to word his specific revision suggestions in ways he felt Catalina would understand as he responded to her essay. He did not indicate any punctuation or spelling errors because, as he told his college instructor, "She isn't ready for that yet."

Only two middle school students did not complete this assignment. One was Alberto, to whom I referred earlier in this chapter as a student who did not write because he did not know how to capitalize and punctuate. I learned later that his parents could not read a permission form that required their signature. I had it translated into Spanish so that Alberto could go to the distance education classroom with us the next time. Also, he said he did not write the paper because it was too much work. Alberto later emerged as one of the most capable poets in the class. He also completed the artwork for the cover of the all school creative writing magazine. The other student who did not participate in this exchange was
Brandi, a girl who was easily distracted and frequently absent. She gave the excuse that she just could not finish the paper in time. One of the qualifiers that the class had established when they learned about the field trip to the community college in November was to have final drafts either e-mailed or sent otherwise to their college writing partners in order to be part of the "in person" exchange. Brandi finished her essay and faxed it the day of the trip.

The community college and middle school students shared their final drafts when the eighth graders took a field trip to the two-year college in November. Over pizza lunch, the students met their partners in person, discovered common interests, and discussed and narrowed topics for the next essay. Benefits derived from meeting their writing partners in person and from touring the community college campus will be discussed in Chapter V.

Profile essay

The third (profile essay) assignment required students in both classes to limit a subject, explore their thoughts and feelings about it, plan the project, write open-ended interview questions, and find a theme or focus for an informative essay. The purpose of this essay was to inform the readers, but also to describe a person, place, or activity by presenting the subject in a new light. My community college colleague and I wanted our students to move into their communities and interview people whom they found interesting. We hoped they would bring their readers' attention to the uniqueness of their subjects, showing what they found remarkable about them.

Frequent e-mails included attachments (rough drafts of the profile essays) sent in Microsoft Word. A student in class who was a member of the middle school computer cadre (student-staffed computer troubleshooters' group) often volunteered to help her peers until they mastered sending their essays as attachments. By this time, many students were using
Inspiration, the semantic mapping program, in more sophisticated ways to prepare outlines of their papers. Students in their learning teams became more self-directed as they grew to know each other's personal goals and interests. When one student had difficulty composing open-ended questions for his interview with a bartender, his learning teammates helped him. One girl's mother owned a bar, and this student brought her prior experiences to the discussion. As the students interacted, they formed understandings of how both the world and the people in it work. As I observed this small group discussion, I was reminded of Anderson's (1996) constructivist definition of learning: "As students are confronted with ideas that may not fit their understanding, they adapt their ideas to include these new understandings. These ideas are always changing, even into adulthood. This process of changing and adapting is learning" (p. 49). My students were seeing each other differently. The formerly disenfranchised students were sharing their thinking with those whom they formerly regarded as the "preps." As they exchanged points of view regarding the subjects of their profile essays, they learned to listen and expand their thinking. As Jessica, an eighth grader, wrote after hearing Rachel's profile of her sister who was in prison:

I never realized how hard it must be to deal with all those problems in one family.
Your sister's addictions and then her arrest for theft must have really hurt you and your folks. The fact that you have all been able to get counseling shows that you are moving forward. I think it is great that you are helping Cleo rebuild her life.

They felt safe giving opinions and settled into democratic, participatory, and collaborative working units. They solved problems that ranged from sharing floppy disks to reordering paragraphs in their essays. When one computer hard drive malfunctioned, students asked to use the school newspaper staff's laptop. Cheryl, when one of her table team
members asked her to move the last paragraph of her essay to the introduction, replied, "Would you find a scissors? I think I will be able to reorganize this better if I can actually cut and paste the paper on the table rather than doing it on the computer."

Even though most of the students revised recursively as they composed at the keyboard, not all of them could do that. Some preferred to compose first drafts with pen/pencil and paper. Table teams soon learned individual composition preferences and collaborated to provide computer access without teacher intervention. Additional analysis of the benefits of collaborative group work within the creative writing classroom appears in Chapter V.

The profile essay required that students choose a subject, explore their preconceptions of it, plan the project, pose some preliminary questions, and find a theme or focus for the profile. One of the most difficult tasks for the eighth graders was writing open-ended interview questions. We practiced this skill in class, and students who worked on the school newspaper staff after school served as table team facilitators to monitor students as they wrote their questions. Many eighth graders interviewed their parents, but most of the community college students interviewed community members, such as morticians, teachers, musicians, or other interesting acquaintances.

Through this assignment, I realized what I had taught my students: they had learned how to do field research. They went into the community to observe and to interview. Then they transcribed their notes and audio-taped conversations and reflected on what they had learned. The boy who interviewed a bartender observed the setting and described it with sensory details that helped his readers imagine the scene and the people. He wrote:
As I opened the door, an overpowering wave of smoke and alcohol hit me. The bartender signaled me over and placed a small white napkin on the sparkling marble counter. 'What’ll you have?' he asked. Since I'm only fourteen and wasn't supposed to be there at all, I didn't know what to say.

Through his observations and interview with a man who worked nights, this eighth grader changed his attitude toward his subject and offered an interpretation of bartending as a career that he would not have considered had he not conducted this interview. He wrote, "I think it might be fun to work in a bar for a short time, but becoming an auto mechanic appeals to me more now. I'm glad I interviewed Dave, and I think he does a great job of listening to people's problems, but he is hardly ever home with his wife and kids. I wouldn't like that."

The eighth graders met with their writing partners one last time as they shared responses to the final essay before polishing their final drafts. Because the distance education classroom that we usually used was unavailable, we traveled to the television classroom at the community college just two miles south of our small city. Students quickly observed that our community college did not have dormitories, and the campus was much smaller than the one we visited. The television classroom was different too. Several remarked that they thought it was neat that the camera would focus on whichever student pressed his or her microphone button. This remote feature was one that the middle schoolers had not experienced previously. As is typically the case in a constructivist classroom, the students drew on their prior experience and knowledge, adjusted to the new technology, and used it to enhance their collaborative distance education classroom teleconferences.

Again, two different students learned to use the computer at the teaching station. Because of the zoom camera feature that focused on the individual students as they spoke,
there was no need to facilitate movement within the room to the teaching station for each pair to exchange remarks. Each distance education classroom exchange used the familiar "Praise! Question? Polish." format. Specific prompts suggested for this assignment included adding specific details; reorganizing already existing details; omitting irrelevant details; and more clearly explaining a situation or describing the specific person, place, or event selected for the profile essay.

**Conclusion**

During the class period following our last distance education classroom exchange, I asked the students to write their perceptions of the benefits and barriers of their collaborative conferences with the community college students. Most of them indicated that they were glad that they learned to use e-mail and the microphones, touch sensitive screen, overhead projector, and fax machine at the distance education sites. A few noted that learning to get along with new, older students helped them talk to adults in school and in the community. Others addressed the benefits to their writing, such as specific comments that helped them make their writing more specific, focused, or better organized. All of them appreciated having experienced writers outside our school reading their essays and objectively appraising their writing. They said that they were interested in attending community colleges now that they knew about the programs offered and how their writing partners decided to major in specific fields. Tyler wrote:

I am now thinking about a career as a graphic artist. Working with the computer clip art and seeing the junior college publications department helped me see how much fun it will be to work in an area that combines writing and art. Advertising layout and design sounded really interesting.
Other students wrote reflectively about how different the distant community college was from the one in our town. "They have dormitories, but they don't at our junior college," Susan observed. "I think it would be fun to live away from home, and I couldn't do that if I go to our community college."

"Because of this field trip and my work in the industrial technology lab at school, I am now thinking about a robotics career," Michael wrote. "I like inventing ways of doing things faster and easier, and reading the community college booklets helped me realize that it won't cost as much as a four-year college either."

My students began to think more realistically about their future educational plans. As Grimmett (1997) suggests, "We come to understand how we make meaning of our lives when we reflect on our own personal narratives" (p. 125). This meaning-making concept surfaced as one of the most important ramifications of the computer-mediated collaborative conferencing that took place between my eighth graders and their first-year community college writing partners. As Timisia, a thirteen-year-old girl, reflected in an e-mail to her college writing partner:

I think that life is a path. As years go by, we walk along that path, but sometimes we step off the path (make mistakes). Family and friends are the flowers on the side of the path. You love them more than anything. They know you so well that they know what you are feeling. As you walk along life's path, you come to a fork in the road sometimes. You stop and think and finally make a decision. As you continue, you realize that you made a good or bad choice. I learned this path meaning from reading Robert Frost's "The Road Not Taken." I think about it whenever I have to make an important decision.
Collaborating with their community college writing partners validated both the need for belonging and for fun in the eighth grade writers. Their interest in writing and motivation to revise soared as they frequently exchanged e-mail messages and felt connected to a writing audience outside our school. The feelings and attitudes that surfaced in this collaborative writing exchange may be more significant than the actually quantifiable improvement through revision that the students made in terms of meaning-changing, content-enriching descriptive details.

While some eighth graders appeared to be slow to conceptualize, these writers' worlds grew larger as they read and heard the stories of significant life events unfold in the college level writers' essays. It was as if through the eyes of the older students, the middle schoolers could see themselves in the future. Being able to see and hear the college students read their papers and respond to their partners' papers brought a sense of learning through knowing other students who were purposefully intent on improving their abilities to express themselves with the written word.

Research (Cohen & Riel, 1989; Hawisher, 1989; Selfe & Wahlstrom, 1986) indicates that writers who perceive their distant audience as unfamiliar with their basic lifestyle or habits and routines will provide greater depth of detail in descriptive writing. This proved true for the eighth graders as they attempted to improve vocabulary and write for a more mature audience. Cherie and I also found that using the new technologies allowed students to become more self-directed and more self-motivated. Students assumed greater responsibility for their own progress. Distance education classroom exchanges were not just enjoyable; they also engaged both groups of students in improving their writing. The
experiences that we provided helped the students connect their prior experiences with new knowledge acquisition.

When asked what barriers to learning were created by the distance education classroom, students most frequently cited attendance problems with the community college students. They also suggested that most students wanted to get right to the business of exchanging ideas for revision and omit the welcome and fun warm-ups. They recommended e-mailing and visiting with their partners via the distance education classroom more often. Except for two students, the eighth graders wanted to be facilitators at the teaching station. They also noted that partners should not "get attitudes" about recommended revisions. Instead, they should interpret them as possible improvements, not necessarily as required changes. Considered together, their comments indicated that they would like to participate in further computer-mediated communication exchanges.

The purpose of this chapter was to show how the students grew in their ability to collaborate with their near and distant peers to improve their writing. Broadening the audience for their writing and exposing them to technologies that taught them to communicate effectively with their community college writing partners helped the eighth graders to become more skillful in narrowing, elaborating, and developing topics for writing; organizing their writing; and improving word choice and grammatical usage. Through collaborating with their distant writing partners, they also grew more self-confident and self-directed in their learning. Specific results of the surveys and analysis of the writing skills improvements made in the three essays will be discussed in Chapter V.
CHAPTER III. ONLINE JOURNALISM CLASS APPLICATIONS

The more meaningful, the more deeply or elaboratively processed, the more situated in context, and the more rooted in cultural background, metacognitive, and personal knowledge an event is, the more readily it is understood, learned, and remembered. (Iran-Nejad, McKeachie, & Berliner, 1990, p. 511)

One of the key issues a constructivist teacher faces is the need to develop a sense of depth about concepts. The above quotation holds great meaning for me in the context of the online journalism class because the "event" was the actual publication of the online newspaper. Learning journalistic writing concepts and techniques before moving toward the actual online publishing took considerable class time, but the time and effort yielded considerable rewards for the online journalism class members. In this chapter I discuss how I use technology, particularly Internet publishing tools, in the online journalism class. Using the practitioner research cycle described in the introduction as a guide, I cite examples of what I did to help my students improve their writing. I describe how keeping a reflective teaching journal helped me to know my students. Further, I explicate how, through reflecting on my teaching practices, I planned and implemented new teaching strategies to more successfully engage middle level learners in writing for the broader audience of Internet and online newspaper readers.

In this chapter, I continue to make theoretical and pedagogical connections with constructivist theory of learning, and I expand the analysis of the benefits and limitations of computer technologies within the context of my own instructional practices. In this particular classroom circumstance, it is important to note that I teach fundamental journalistic skills before teaching about the technology that is important to online or Internet publishing.
Because the technology is new to the students, I found that my reflections as a teacher and researcher were all the more important in determining when and how to infuse new software. As Tomei (1999), for example, rightly suggests, over the span of a semester, technology infusion is appropriate at the precise time when the skills and tools are required by the learner to satisfy other learning objectives. Hence, students were better prepared to adopt technology into their learning when they had a specific task in mind. After they learned fundamentals of journalism, they capably applied what they knew and could do and synthesized their new learning with previous experience and knowledge. Reflection on the learning process allowed me as a teacher/facilitator to locate these critical instructional times.

**How Do We Get There from Here? Reflecting on Reflection to Improve Teaching**

Reflection is a process of making sense of one's experience and telling the story of one's journey. In *How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process*, John Dewey (1933) defines reflective thinking as the "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it" (p. 9). Reflective action involves meeting and responding to problems. I teach from the perspective of reflective action and continually analyze my teaching practices and the educational, social, and political contexts in which my teaching is embedded. This reflective action allows me to improve my own teaching effectiveness and to develop a deeper wisdom about educational practice. Because reflection is an integral part of the practitioner research cycle described in the introduction, it gives me a better understanding of my own school-centered circumstances and allows me to step back for a
holistic view of my teaching. It invites me to be self-sustaining as I pursue ways to integrate technology not only in my online journalism classroom but also across the curriculum.

As this dissertation demonstrates, practitioner research provides me with a systematic approach to reflection as a teacher of creative writing (Chapter II), online journalism (Chapter III), and language arts (Chapter IV). A central component of reflecting for me in the online journalism class was writing with my students, who also kept journals. Writing with my students gave me the gifts that Dewey (1933) defines as prerequisites to reflective action—openmindedness, responsibility, and wholeheartedness. As I wrote with my students, I found that my reflective journal became a source of self-evaluation of past performances as well as a projection for change, innovation, and practice for the future. My journal entries provided a means for critically analyzing classroom activities, recording intellectual and emotional reflections and attitudes, and documenting questions concerning teaching and learning procedures and practices. Rereading and analyzing my reflective journal entries also helped me determine how and when students were ready to learn and apply new technology skills, such as those required to incorporate digital photography into online publishing.

As Hughes, Kooy, and Kanevsky (1997) suggest, "to learn, to make knowledge their own, students and teachers must reflect on, interact with, and react to the materials presented to them" (p. 187). The online journalism class encouraged students to interact with curricular material as well as with their peers. For me, my own research was important in deciding when to introduce specific technologies and new, more democratic ways of teaching. In addition, I wanted to understand where the students were personally. This was particularly important because my eighth-grade students, for instance, sometimes complained that
really listened to them. I learned, as a result of reflecting on my practice, to listen "slowly" in order to understand what they were thinking as they strove to improve their written/spoken communications.

I wrote in my reflective teaching journal about how I hoped to create a context for shared cultural experience with online publishing in my classroom using seven computers, each with Internet access (see Appendix H). This reflection helped me to design the curriculum in partnership with my students and helped them define the curriculum themselves. I also wrote in my reflective teaching journal about my goals for my students working together to establish democratic classroom rules that distribute a sense of power and ownership among us comparable to that of a healthy community. As a result, I provided time at the beginning of the year for students to discuss the need for classroom rules and consequences. We decided that from time to time, we would re-evaluate our rules, update them, and make them more usable and meaningful. Eby and Kujawa (1994) describe this type of management as a democratic teacher management style. The teacher who shares classroom decision making with her students enhances technology teaching and learning because her leadership sets firm yet fair and consistent expectations for students' academic achievement and behavior.

Bottomley, Henk, and Melnick (1997/1998) advise teachers to conduct individual conferences with students whose self-efficacy as writers is low and focus on one improvement the middle level students could make in their writing in the next assignment. By identifying a specific problem such as focus, clarity, content, or organization, the students might work with manageable rubrics for self-improvement and notice measurable improvement in the next feedback. Another possibility, and one that I used successfully,
suggests that the teacher have two students (one who sees little improvement in his or her individual progress in writing and one who possesses positive perceptions of his or her writing ability) collaborate on a single writing project. My reflective teaching journal served not only as a record of my students' self-perceptions of their writing skills, but it also was a storehouse of ideas from research literature that informed my teaching practice daily. In short, a reflective teacher is always planning to improve her teaching. She is always asking, "How do we get there from here?"

Keeping my reflective journal held an importance it had never held before. Having taught for twenty-six years, I found this journalism class particularly difficult. The students were less mature than previous journalism classes. I needed to use writing to uncover my thoughts and feelings about this class. Further, as I reflected on and analyzed what I wrote, I was able to use the practitioner research cycle to plan, implement, reflect, revise, and act to provide activities that more appropriately matched these students' interests and aptitudes. According to Black and Ammon (1992), one method that a teacher can use to engage most of the students most of the time is to create a classroom environment that offers students opportunities to learn through relevant experiences rather than through the accumulation of facts received from others. For example, I taught the eighth graders early in the semester how to make bookmarks on the computer so that they could return to Internet sites they wanted to use to supply supporting details in their newspaper articles.

The student-centered classroom setting that Scardamalia and Bereiter (1991) describe and that I sought to create is one that would incorporate computer technology to support the learning environment and offer students opportunities to take ownership for their own learning through
assuming primary responsibility for noticing what is important, recognizing what must be learned to accomplish a given task, setting and evaluating criteria for understanding, and applying effective performance in the transfer environment. (p. 104)

However, while much has been published to describe practitioner research, reflective teaching, and the teaching of writing as illustrated above, there are few qualitative practitioner research-based studies of middle level computer-mediated instruction and collaborative interaction as it relates directly to improving the quality of written products using technology. I began this research to fill the void.

**Background of the Online Journalism Class**

Since 1995, when I used the Internet access provided at the National Education Association symposium in Tampa, Florida, to access *The Vocal Point*, the first middle school online newspaper published in the United States, I knew that I wanted my students to have freedom to express themselves for broader audiences. I thought that if I could just get them Internet access, the rest would take care of itself. Maybe they could even collaborate with students in this technology-rich middle school in a western state. This particular Internet publishing opportunity piqued my curiosity about how learner-centered, constructivist, and sociocultural ideas could be enhanced through technology. It also fit with the negotiated curriculum model that was a part of my practitioner research plan to shift my role from the traditional teacher-centered model of instruction to that of a guide for a student-centered classroom. I felt that supporting students as they learned to construct their understanding of the cultures and communities of which they were a part was important, but I found a dearth of pedagogical guidance about integrating tools for collaboration and communication into the
middle school language arts and journalism classrooms. My own belief that learning should be anchored in real world or authentic contexts compelled me to continue to search for ways to make writing for online publication meaningful and purposeful for my eighth graders.

I found an opportunity to learn more by participating as a facilitator for a Star Schools collaborative curriculum writing group of six K-12 grade teachers who were interested in moving their school newspapers from ink to Internet. Together we learned to use sophisticated desktop and Internet publishing programs, created technology-based curricular materials that could be disseminated after evaluation to other schools throughout our Midwestern state, and used interactive instructional technologies in effective and significant ways to accomplish teaching and learning objectives. The Star Schools technology-based curriculum development project grant provided Internet access for one school year for each of the teachers in our collaborative curriculum planning team. I was then able to bring this opportunity to publish for broader audiences to my students.

As a part of the U. S. WEST Technology for Teachers project during the summer of 1997, I learned more about integrating the Internet across the curriculum, and as I taught my colleagues similar teaching strategies, I grew in my ability to facilitate this form of publishing. The intermediate educational agency in our small city offered staff development courses, and I also took a university course that required teachers to learn web publishing skills. These opportunities to train using current technologies qualified me to plan and implement instructional strategies that met my middle school students' developmental needs.

When I learned that I would have twenty-four students in the online journalism elective, I thought that providing Internet publishing as a portion of the journalism class might spark the imaginations of the students. With the seven computers and printers in the
classroom and the expertise to facilitate online publishing, I felt more confident that broadening the audience for students' writing in this way would hold meaning for most of the students most of the time. I felt sure that when they saw how outdated the school's web page (written by a high school student and including a welcome to the middle school from the retired principal), they would surely be motivated to create a quality product. They would see this new publication outlet as an opportunity to showcase some of the exciting, student-centered learning projects that were actually happening in our school.

My goal for the students was to learn to write news; features; editorials; and movie, book, or video reviews and then to adapt those departmental specialties to writing for the online version of the school newspaper. My goal for myself was to research the online journalism class so that I would understand the benefits and limitations of online publication. The questions that shaped the study of this class were: (1) How does broadening the audience to World Wide Web (WWW) newspaper publishing and facilitating interactions between eighth graders and their distant peers affect student writing? (2) How do these students perceive themselves as independent, collaborative, and interdependent writers; technology users and mentors; and self-directed learners?

Methodology

To answer my questions I studied the twenty-four journalism students. These students participated in a collaborative writing workshop wherein they selected their newspaper department responsibilities and used an apprenticeship model to learn new forms of journalistic writing as well as hardware and software to produce the online version of the school's student newspaper. The class included fourteen girls and ten boys—fourteen Caucasian; five Mexican American; two Native American; and one each who were Puerto
Rican, Indian, and Hawaiian. Six of these students read at grade level, but eight of them wrote at the state grade equivalency of tenth grade or above.

To begin my study of this class, I used pre-semester surveys to determine how students assessed their writing and technology expertise. I assessed samples of students' basic journalistic writing and articles that they wrote for the World Wide Web (WWW) audience using the teacher-student created rubrics for news, features, and editorials (see Appendices B, C, and D). I observed and evaluated their ability to work collaboratively in small groups using the rubric found in Appendix E. Finally, I used post-semester surveys to study changes in students' self-perceptions of their own writing development and technology learning.

Because I also thought it was important to see what students were thinking, I interviewed every fourth student at the beginning of the study about his or her attitudes toward writing and publishing as well as toward writing, sharing, and revising in learning team groups of three to four students. Other sources used to evaluate student development include notes from observations, transcripts from interviews, documents from class sessions, and surveys.

Knowing that studying my journalism class was as important to me as teaching the class, I began the online journalism class with a survey. I wrote the survey to elicit data relevant to students' self-perceptions as writers and to learn how receptive the students might be to writing for journalistic purposes and publishing for the broader audience of readers on the World Wide Web. I felt it was important to begin with surveys and interviews because as Tapscott (1999) suggests, learner-centered instruction should begin by evaluating abilities, learning styles, social contexts, and other important factors that affect the students.
In surveys and interviews, I included some questions about both the content area and learning style issues. For example, questions in the survey served to help students articulate their prior knowledge about journalism and technology. Asked what they thought the term *inverted pyramid* meant in regard to news writing, these students' responses ranged from "I have no clue," to "It's like going right to the point and doing the details later." The students were also asked to describe in surveys their perceived level of expertise with technology. They indicated their preferences for writing with pen/pencil and paper or for composing at the computer. Overall, the students showed enthusiasm for using the new computers and for technology-based learning. Three indicated that they had Internet access at home, and one had used a digital camera in another class. In related interviews, the students were asked to describe the ideal writing classroom. Results of these interviews will be discussed later in this chapter.

When asked to define the term *mentorship pyramid*, one student said that she thought it meant "everybody relies on others to help them or hold them up." Although their responses showed the broad range of students' interpretations, they also revealed the eighth graders' interests in independent classroom action. Allen, Splittgerber, & Manning (1993) suggest allowing young adolescents autonomy and independence in learning activities and encouraging greater student control over classroom procedures. When teachers meet students' independence and control needs, they enable middle schoolers to know that educators understand their need for autonomy and are willing to cooperate within reasonable limits. By giving the students choices for the online newspaper duties, I felt that I was offering them developmentally appropriate opportunities to grow intellectually and behaviorally.
As asked what they thought "student-driven learning" meant, surveyed students gave diverse responses. Their ideas ranged from "learning on your own" to "learning how to drive." Some responses included:

- Student-driven learning is a student learning on his own by reading a book or something. It would have more student input and more student views.
- I think it's a student-managed writing workshop that would be entirely the kids' achievement.
- I think it would show independence of the student body and that students don't always need the teacher.
- Student-driven learning is something you worked hard on and did good at [sic]. You would be a better writer and understand better by teaching yourself.

As part of the survey, the eighth graders were given a list of production roles for the online newspaper and were asked to indicate what they wanted to do. Only one student indicated that he would like to be managing editor. He said that he would make a good leader and could get everyone to finish his or her work on time. Two girls wanted to serve as news reporters. One said she liked "to ask people questions about certain topics that interested them," and another gave her definition of news reporting as a response: "I want to write about what's happening around school—straight facts!" Three girls indicated they would like to write editorials. One described it as "giving opinions on issues, writing articles and posting them on the web."

Three boys and two girls wanted to write sports articles. The boys wanted to write about sports outside the school (National Football League, etc.) while the girls were concerned that the names of their friends on the volleyball team were published in the
newspaper. Many wanted to learn more about photography. As I tabulated the results of the surveys, I noticed that the class had shown a high degree of interest in the idea of writing for the monthly hard copy school newspaper as well as the online version.

The survey also asked students to indicate interests that they would like to share with their classmates. Many students said they listened to music and watched sports. Only two gave their hobbies (trapping, drawing, and writing) as interesting things to know about them. Several boys found that they, too, shared interests in trapping, drawing, and writing. They created a feature column based on their trapping experiences and illustrated it with original graphics for the online newspaper.

The following represent a cross section of responses to the survey question: "What is one thing your teacher should know about you in order to help you learn?"

- I write well and want to help you plan the technology mini-lessons.
- I don’t have patience.
- I don’t work well with other students.
- I don’t have an attention span. I am easily distracted. Help me stay on task!
- It might take me a while to get stuff done, but when I do, it will be quality work.
- That I could actually be a nice person.

These remarks indicated that the students in this class represented vast extremes in the eighth graders' intellectual and social development. Further, many of these students indicated that they did not get along well with their peers.

As I recorded the students' responses, I thought about the developmental level of eighth graders and that they learn to be independent of their families and lean more on their school friends or peers for support in their daily lives. I remembered what Judith Baenen, a
middle school language arts teacher, advised at a middle school conference I attended recently: "Kids want control of their lives." As I considered this, I realized that directly teaching consensus reaching and developing a social contract during the first few days of the school year—based on the beliefs we shared—would help our class maintain a positive classroom climate. Establishing this climate was as important to me as teaching journalism. As Patterson and Shannon (1993) note: "When given a chance, students can help establish nurturing environments and will earnestly comply with the behavioral guidelines they help institute" (p. 6). The belief statement that we created in our classroom was then blended with those from other classes, and the following school wide belief statement served as a guide whenever disruptions occurred: "We believe that our school should be a safe, clean, fun, and respectful environment where positive, active, and exciting learning is emphasized. We believe that students and teachers should be cooperative, lifelong learners." Frequently as the year progressed, I was happy to have the belief statement poster prominently displayed so that students were reminded that they had agreed to honor the values elicited and used in writing that credo.

As I wrote in my reflective teaching journal at the beginning of the year and continued to analyze the surveys, I also noted that students in this class did not rate themselves highly in any of the categories on the Writer Self-Perception Scale (see Appendix F). In addition, on the Student Self-Assessment in Writing (Prentice Hall, 1997) these students did not indicate that they perceived themselves to be "very good" writers. Fifty percent of these students rated themselves as "good" writers at the beginning of the year while another thirty-three percent rated themselves as "average" writers. Another sixteen percent viewed themselves as "poor" writers. As I reread my reflective teaching journal
entries in an effort to figure out what to do about my students' generally negative responses to these survey questions, I thought about ways to move them away from their negative self-perceptions. As a result, I planned and implemented a series of "kid talk" (Joat, 1994) classroom warm-ups that situated the students in pairs and asked them to first talk with their partners about specific intriguing questions and then to write paragraphs that included paraphrases and direct quotations from their table team partners. This fun activity helped students see that talking and writing are related skills and that through practicing specific writing skills and becoming more proficient, they would see themselves as more competent writers. This activity also introduced interviewing peers as a necessary skill for middle school journalists.

Analyzing the students' responses to my survey questions helped me think of ways to bring students into the decision-making process. For example, several students indicated in the survey that they would like to take ownership for publishing the school yearbook. They divided tasks into learning team groups, set weekly deadlines, and devoted two days of their time outside of class to meeting the final deadline for completing this project. Broadening the audience and taking ownership for their own learning empowered them to collaborate to create a product that their peers would accept, admire, and appreciate. Thus, I learned that using survey data can help me as a teacher to connect my curriculum with student interests, heighten student motivation, and increase active participation.

In the following section I describe three types of journalism class activities, explain why each type of activity is important from the constructivist standpoint, and show how my reflective teaching journal helped me use the practitioner research cycle to adjust my plans.
after monitoring students' progress and behaviors in class. I will also show the meaning that students derived from using specific technology tools to improve and enhance their writing.

Teaching technology for online publication

Before students began writing for this class, I made sure that they understood ethical Internet use. To qualify for district-required Internet identification cards, the students read and studied search procedures as outlined for our school district's Internet policy. The policy also requires that students secure parent signatures and be aware of the basic rules for using the Internet in any classroom:

- Ask for teacher permission to access the Internet.
- Identify the research topic. (Students may search for information about any topic relevant to a current curricular study area.)
- Place the Internet I.D. card above the computer monitor where it is visible at all times.
- If a site appears to be objectionable, back out immediately.

The students then learned the basic skills needed to use the software programs available on the computers in our classroom. I facilitated mini-lessons taught by eighth grade apprentices in how to use Netscape Navigator; the characteristics of the various search engines such as Infoseek, AltaVista, Yahoo, and Excite; and Internet search strategies that would help them efficiently and effectively access information for their online newspaper articles. I did this because I wanted them to see their technology knowledge and expertise from previous years as valuable when connected with their new experiences. I also wanted the student mentors to provide the mediational assistance of tools and human scaffolding within the Zone of Proximal Development (ZPD) discussed in Chapter I for their peers.
According to the sociocultural theorists (Salomon, 1988 & Wertsch, 1991), an individual acquires new mental functions and patterns of thought from interacting with other learners, co-participants, and available tools during involvement in a common activity. I hoped that the mentor or apprentice teaching experience might increase students' abilities to reflect on their own learning and boost their self-confidence.

As I taught these lessons, I recorded student responses in my reflective teaching journal and returned to reread my entries frequently as I planned the next class sessions. Taking time to record the students' comments, questions, and behaviors helped me monitor their proficiency levels in using various software programs as well as their developing collaborative skills so that I could adjust my teaching to meet their needs. As Dewey (1933) maintains, reflective action moves teachers away from impulsive and routine activity. Reflective practice places inquiry, not response, in the foreground. I found that I was delving deeper into the "doing" of teaching as I saw myself as much as a learner as a teacher when I worked with the students to develop competencies with the new technologies.

Apprenticeship model of instruction

Using the apprenticeship model, the online journalism class members taught themselves or learned from other students or me how to use software applications, a scanner, and digital camera. Specifically, they learned to use Microsoft Works, Microsoft Word, PowerPoint, and HyperStudio. They also learned to use FrontPage, a web authoring tool that helped them design a home page for their middle school and a directory that offered web page readers eight different school-related links, including their online newspaper and a virtual tour. Students reinforced what they had learned by teaching skills to their peers in our classroom. From a professional photographer, students learned how to compose action shots
that showed student-teacher interactions. They used the apprenticeship model of instruction discussed in Chapter II to teach their peers how to use a digital still camera and to edit their photographs that would become part of a virtual tour of the school. Students learned photography skills in much the same way.

As I recorded my students' progress in my reflective teaching journal, I noticed that the student apprenticeship model created a shift in my teaching, moving me into the role of a "guide on the side." Rather than giving whole class instruction, I was circulating around the classroom, checking over shoulders, asking questions, and teaching mini-lessons for individuals and groups who needed particular skills. Although I provided support when needed, it was customized and individualized. Marty and Jacqueline Brooks (1993) define this type of teaching as the "guide on the side" model—a teacher sets clear expectations, provides explicit directions, and keeps the learning well structured and productive. Like the constructivist teacher whom Brooks and Brooks describe, I also used the "'guide on the side' model to encourage student autonomy, allow student ideas to help steer learning, ask open-ended questions and encourage student questions, and nurture students' natural curiosity through frequent use of a learning cycle model" (pp. 103-117).

To foster self- and peer-assessment, my students and I worked together to create rubrics to assess collaborative group work as well as to create news, feature, and editorial criteria. One of the pedagogical strategies that was particularly important in this online journalism class was student collaboration. Like the apprenticeship model, which brings students together as learners, collaboration among students is also critical for classroom community. While the apprenticeship model may create hierarchies, in that some students perform as experts, collaboration brings students together as equals. In the online journalism
class, collaboration was a large part of the classroom activities. Specifically, students collaborated in learning teams of four students to complete the following tasks to:

1. create rubrics to assess their news, features, editorials
2. assess their growing abilities to work in collaborative groups
3. practice telecommunications etiquette
4. evaluate their progress in using new technologies
5. self-evaluate their growth as journalistic writers.

They also used collaborative methods to practice telecommunication etiquette. For example, they learned to follow the policies and procedures of other networks in order to be allowed access. In learning teams, they self-evaluated and group-evaluated their portfolios and held conferences with peers and me to improve both content and correctness of expression.

Through providing relevant frameworks upon which my students could construct knowledge and understanding, I discovered that they became more actively engaged in collaborative learning as they sought other middle schools' online newspapers and home pages. As I wrote my daily reflective journal entries, I came to understand how constructivist practices served as foundations for learning for my students in their collaborative groups. They focused on process rather than product as they worked together. Though their naïve beliefs about what a newspaper should be served as the starting point for their team discussions, they were never counted "wrong" in their brainstorming sessions. As the discussion of the benefits of collaboration in Chapter V indicate, students followed the brainstorming and consensus reaching format that I introduced at the beginning of the year and came to respect the ideas that they bounced off each other. Cooperation and mutual exploration, according to Osberg (1999), foster learning-in-dialogue rather than learning-in-
isolation. Conversely, I also considered carefully the utopian ideal criticism that Faigley (1992) leveled against Young (1991) when she argued for small groups as the ideal social organization. No particular instructional practice is without flaws, and I understand Faigley's interpretation that "conversation does not necessarily lead to cooperation any more than equality of participation leads to community building" (p. 185). In my online journalism class, students sometimes failed to assume their collaborative roles, so the groups failed to work harmoniously together. When this happened, we agreed that the students who created disruptions would either work though our school's conflict resolution process or simply move to the single desks on the other side of the room to work independently.

Description of Online Journalism Class Activities

In this section I describe the developmental readiness levels of the eighth graders in the journalism class. I also discuss the events of the first few weeks of school and the interviews I conducted with the students. I explain the traditional journalistic training that the students needed in order to produce quality newspaper articles and show how an understanding of journalistic principles contributes to their success in online publishing.

After spending the first two class sessions taking the surveys and developing the mission statement, the students completed a computer skills inventory. Approximately one-third of this class could not remember how to shut down the IBM-compatible computers (a skill they were taught in their seventh grade computer class). None of them had used QuarkXpress, the desktop publishing program used to publish the hard copy version of school newspaper, nor had they used FrontPage, the program used to create the World Wide Web pages. They were familiar with Microsoft Word and liked its red, jagged line beneath misspelled words, an indication of their level of concern for correctness over their concern
for content. It is also important to note that only three members of the journalism class had computers at home. Most did not have opportunities to practice computer-assisted writing except at school.

During the first few weeks of class, the students quickly learned that to do well in the class, they would have to learn to use the various features of the computer programs from their peers. Therefore, students who were interested in technology came to school early, sat with me at the teaching station, and learned QuarkXpress, an object-based desktop publishing program, so that they could teach their peers. They did not call attention to themselves as experts or leaders in the class, but they took pride in their new knowledge, attended school newspaper staff meetings on Thursday mornings, and contributed on a guest writer basis to the hard copy school newspaper published monthly.

Other students who brought proficiencies, such as creating tables and charts using Microsoft Excel and graphics using Forty Thousand Clip Arts, served as consultants to less knowledgeable students. Seated at table groups of three to four, these students often elected one skilled typist to record their work, and they were quick to appoint their most capable speakers as their reporters during collaborative group debriefings. One boy created a list of proficiencies and placed it conspicuously on a bulletin board so that students who needed help with specific computer skills could find a student mentor efficiently.

My discussions with the students during the first weeks showed me that in addition to needing to develop computer skills, they needed help evaluating writing. At the beginning of the year, most of the students in this class indicated that they did not write outside of class. When they did write, they said it was simply to finish assignments or communicate socially with friends. Topic choices for writing generally focused on things they saw and wanted to
learn more about, such as favorite rock music groups. Further, these students could not identify their "best" writing projects from previous grade levels. Some were quick to admit that they had never written anything they felt represented their "best" writing. Their comments were similar to this one: "I do my best writing when telling my best friend a problem because when you write, it's like talking." One girl said her best writing was "a really mean note." Overall, their responses suggested that their previous writing experiences were limited to personal notes or to assignments required in their language arts classes.

In my interviews, I learned that there was one exception to this, however. Nina told me after class one day: "At my house we have the family creative writing notebook. We started it when my nephew died. My brother wrote a poem as a tribute to him. Whenever one of us graduates or reaches a milestone in life, one of the other family members writes a poem or essay for the special person." It was clear to me from the beginning of the year that this girl took the class to seriously improve her writing. She also brought a portfolio of her poetry and asked me if I would help her send some favorite poems away for publication. She did this discreetly before school or after class so that others in the class would not know her true level of concern. Nina later discovered through her work with the Internet that many families are putting family archives online.

Surveys and interviews were important to my goals for knowing the class and their interests and aptitudes so that I could facilitate online publication and understand its benefits and limitations. Knowing how the students perceived themselves getting along with others and also knowing the purposes for which they wrote helped me structure activities that would be fruitful for them as they learned journalistic writing principles.
Environment also plays a significant part in how students feel about learning tasks. When asked in interviews for their ideas relevant to designing the ideal writing classroom setting, this class favored a room with a laptop computer for everyone so that each eighth grader could take a computer home to use for other class work too. Some said they would like soft music, dimmed lights, and fun. Others said they just wanted a nice room with space like the one we have. They said they liked the way our room was painted and the posters that inspired them to write. Catalina said in her interview: "The ideal writing classroom setting should have lots of computers and also a little stage where students could sit to read their writing to the class."

Later I wrote in my reflective journal about how the organization of the classroom contributed to students' writing improvement. In my previous classroom, with its six mismatched computers, students could not move freely from one computer to another because the software installed on each was not uniform. In the new, larger classroom, there was not only more flexibility of movement, but also there was plenty of space for the tables to be positioned far enough apart so that conversations in learning teams were not overheard.

Basic journalism and desktop computing

At the beginning of the year, the class reviewed the editorial policy for the school newspaper, *Cat Tracks*. Its purpose is to inform, to entertain, to influence, to recognize, to reflect upon, and to unify the students, staff, and administration of the school. The school newspaper is a co-curricular activity open to students in grades six to eight in our middle school, and the twenty-five students on staff take pride in publishing articles that are journalistically sound and representative of the interests of students and faculty. Online journalism class members who submit articles to the student newspaper are recognized as
guest writers unless they opt to join the school newspaper staff. The journalism class is not responsible for developing the hard copy version of the school newspaper, but looking at the school newspaper helped them realize that the journalistic principles they were learning were important in publishing for a broader audience of their peers, school staff, parents, and community members.

Students learned to write basic types of articles beginning with a news article. They used the textbook *Junior High Journalism* available in my classroom as a reference handbook instead of using traditional texts. They also studied articles from professional newspapers, such as *The Des Moines Register* and other publications, such as the high school newspaper. I asked pairs of students to identify the qualities that differentiated news articles from features and editorials. This activity provided an opportunity for students to interact and for me to observe the personal dynamics of the class as well as to determine their prior knowledge. It also helped the students to see what they already knew, plan what they wanted to learn, and demonstrate what they knew after the two-week unit. Students recalled concepts from previous grades, such as the "Who? What? When? Where? Why? How?" news writing questions and why they were important, but they did not understand the *inverted pyramid* concept. We then discussed more advanced concepts, such as putting the most important details at the beginning of a story.

When the students and I brainstormed a list of articles they wanted to write for the October issue, a student put a Microsoft Word table up on the large screen television connected to the teaching station, and together we created a rubric for evaluating news stories (see Appendix B). The student typist saved and printed a copy of our work. As I wrote my reflective journal entry that evening, I marveled at how well the process of collaboratively
constructing the rubric worked when combined with the technology (computer connected to the large screen television that all the students could see). Through creating this rubric, the students learned that knowledge, as Petrie (1990) suggests, is not in the possession of the teacher, waiting to be transmitted to the student, but it is mutually constructed by the students and the teacher in order to make sense of experience. Other activities, such as talking with a local high school journalist and a professional journalist, helped my students understand that these writers use the same principles to construct their news articles. As Michael, an eighth grader, noted after Charity, the high school newspaper editor, visited class to clarify the difference between news and feature articles:

Seeing the high school students' examples helped me see how much more creative I can be in writing features. I will save the punch line until the end now. Also, I realize now how more sophisticated the high school students' writing is than our student newspaper articles are. Maybe I should use those new words we learn in vocabulary mini-lessons more often.

Each month the high school newspaper adviser sent enough copies of his students' newspaper for each student in my journalism class. We formed triads and took turns finding exemplary newspaper articles of all kinds. By using the high school newspaper as a model, my students learned the types of specific details that appealed to a broad variety of readers and also a variety of samples of layout and design that they could replicate using the computers in my classroom.

As I continued to reflect in my teaching journal, I noted that the students sometimes had difficulty applying what they learned about the nature of different kinds of articles. For instance, they often included their own opinions in their news articles. When I recognized
the problem of students editorializing their news articles, I did not use the progression of lessons that I had planned to facilitate originally. Instead of teaching feature writing next, I turned the students' attention to writing editorials. I followed the practitioner research cycle in recording my observations, making sense of my recorded data, making adjustments (reordering my lesson plans), acting or teaching a relevant topic (editorial writing), and then observing and reflecting on those changes. This is one example of how reflective journaling helps practitioners recognize when and how to revise plans of action and to facilitate more effective instruction.

As we moved into the business of writing editorials, we also discussed the importance of accuracy of information provided in those articles and the need to include relevant direct quotations from involved people. The students rewrote editorials to conform to editorial rules, created a rubric using kid friendly language, self-assessed, and collaborated with partners to improve both content and correctness of expression.

One of the most difficult goals for the students to achieve was meeting deadlines. My question about students' self-directedness turned to questions that related more closely to my own teacher behavior. I wondered what behavior I should model to motivate my students to meet their time management goals. They decided that small groups should be responsible for helping their members finish their articles, and that bonus points should be given when students handed in their drafts on time. No longer was I the taskmaster; the students were assuming responsibility for their own work completion. As Richardson (1997) suggests, the practitioner's research questions change as the study progresses. In this case, my research question changed and grew to include this additional question: What inspires middle level students to become self-motivated?
I found the solution to the deadline problem by providing rewards for students who met deadlines for three writing assignments. They planned field trips to visit the high school journalism workshop, the local newspaper newsroom, and to a local art museum where the school newspaper, including their coverage of a student art show, was posted on a bulletin board. While the students who qualified for these enrichment activities were out of the building with parent and teaching staff supervision, I was helping the students who did not qualify to finish their work. One of these students observed, "We should have "re教ch" day more often. Then I could keep caught up." Because of his comment, I provided more in-class time to assist individual students with their writing and to facilitate tutoring for them in the school's individual resource center.

Photography composition and digital camera skills

A friend who enjoys a career as a professional photographer and journalist volunteered to teach photography composition for my journalism class. She brought highly illustrated, age appropriate, 4-H photography materials from the county extension service. With a slide show, she taught the eighth graders how to apply the rule of thirds, to fill the frame (viewfinder), and to include interactivity in their photographs. With her energetic, enthusiastic presentation style, she motivated my students to use the school's 35mm and digital cameras to take quality pictures for their hard copy and online publications. Each of the students took twenty-four 35mm pictures and critiqued them using the guidelines the photographer provided. The students used these photographs to compose storyboards.

I used the storyboard assignment to prepare students to create a virtual tour of the school building once they were ready to format the school World Wide Web pages. They had already noticed and been impressed by the virtual tour that students at the other middle
school in town had developed. Storyboards demonstrated the importance of logical sequence and spatial organization the students would need as they took their virtual tour visitors around our middle school. The storyboards also provided hands-on activity and brought my personal interest in photography into the classroom.

As I constructed my own storyboard, the students completed theirs. In my reflective teaching journal, I noted that my classroom questioning skills were changing. They now conformed to those that Roth (1996) observed in his exploration of questioning strategies as they relate to successfully promoting student-centered activities without compromising content knowledge. In the initial weeks of my study, my questions were frequent and focused on connecting the language of students and their classroom practices to the concepts studied. As time progressed, my questions provided a scaffold between what students knew and had done and where I wanted them to go with their thinking and learning. My questions became invitations for individuals to speak about what they had done and learned and to interact with others in student-centered discussions. As the unit progressed, I decreased the frequency of questions, and there was a higher incidence of self-sustaining discussions in which students interacted with one another independently of the teacher. My teaching role become less central as students increased their contributions to the class discussions, asked more questions, and became less reliant on the scaffold that my questions provided.

Similarly, this hands-on, minds-on storyboard activity helped my eighth graders engage in meaningful conversations with their peers and teacher as they self- and group-assessed their emerging photography skills. The students transferred their photography skills as they began to take pictures for the collage pages in the yearbook, which would become their next publication responsibility.
Learning to use a digital still camera also afforded an opportunity for using the apprenticeship model of instruction to facilitate collaborative learning among the students. One of the school newspaper co-editors trained one of the girls in the online journalism class to use this camera, and she taught the small groups in class to use the camera and its features. Each student took a digital photograph within the classroom before he or she went "on assignment" to take a picture for the virtual tour of the school. Again, small groups evaluated the photographs using the checklist that they had used with the 4-H photography materials. A particularly amusing assessment occurred when one of the boys photographed a sixth grade class engaged in a hands-on reading activity, but he inadvertently cut off the top of the teacher's head. He quipped, "I could just go back and take her picture and edit the photo and put the top of her head in this picture." He took the photograph another day with a similar activity, remembering to fill the frame.

At the end of our work time with the digital camera, one of the boys who indicated at the beginning of the year that he did not elect to take the journalism class wrote:

My view of publications class is that it has been a great experience for me. Global Cat Tracks is also going to be very important in my life. Learning how to write different types of articles has been fun. Editorials are awesome because I love to voice my opinion. I think that I will be really good at the web page things. Learning about the World Wide Web and how to put our newspaper articles and other school information on the web will be interesting. I want to be one of those computer cadre guys in high school who pull everything together for our school district on the web. I want to learn more, and I will.
This student's thoughts indicate the positive, motivated attitude that more of the students demonstrated as they gained confidence in their abilities as journalists. The collaborative nature of their class work also contributed to their abilities to interact in socially appropriate ways in the classroom. They grew in their ability to listen carefully and to accept others' ideas. When other teachers asked them to write about specific activities occurring in their classrooms, they interpreted these requests as compliments for the quality writing that they published in the school newspaper. Their self-confidence increased and transferred to their other classes. Several were invited to be student mentors in social studies class where they taught their peers how to use QuarkXpress to publish newsletters reflecting events situated in various historical time periods. This growth corresponds with research (Dewey, 1938; Gardner, 1987; Toepfer, 1988) presented in Chapter I that suggests that teachers need to assess their students' abilities, interests, and readiness to learn and then match their learning styles and activities with apprenticeship experiences in the wider community.

**Online web site and newspaper publication**

By the beginning of the second quarter of school, the online journalism class was ready to change the focus for their writing and apply the journalistic principles they had learned to the broader audience of World Wide Web readers. They had learned to search the Internet ethically, efficiently, and effectively; to select viable sources and to document them accurately; to link their articles to relevant Internet sites; and most important, they had learned to paraphrase and attribute information in interesting and thought provoking ways. They were ready to write news, features, and editorials as well as several other types of articles and to receive responses from their middle school peers and other web readers.
At the beginning of the year the students self-selected the specific roles described earlier in this chapter: managing editor; assistant managing editor; news, features, arts/entertainment, and sports department managers; and special interest areas, such as the advice column, opinion poll, and creative writing pages. Every student volunteered to participate. Through using the brainstorming process, students decided on the theme "Making a Difference" for their first online Global Cat Tracks issue. They then reached consensus in their learning teams, which now had evolved into newspaper department groups, that they could meet the deadline that required a rough draft every week and a final draft every other week. This student-planned schedule was ambitious in that this class met for forty-five minutes on alternate days. Each newspaper department became a support system for its members. When a student came to class without his or her article completed, rather than simply complaining, his or her teammates put problem-solving strategies into action. Department managers noted that bonus points would not be awarded if articles did not meet deadline. After recording the department's progress, the each manager elicited group responses for helping less capable or responsible students and for getting the page done. As soon as all students finished their articles, the entire group would critique each other's work.

Students composed articles on Microsoft Word and saved to floppy disks. The web page designers then developed pages using Microsoft FrontPage, the web-authoring package, and imported their peers' articles into the school's web page. The students working on the web page then asked for help to learn the more advanced functions of FrontPage. They had already demonstrated their resourcefulness by searching the web and locating supporting links to FrontPage, and now they needed more help than I could provide. A colleague of
mine who established a web page business in her home came to school to work with five students in this class who were especially interested in learning the HTML programming techniques necessary to modify the pages they had already prepared. The web page consultant prepared a thirty-minute presentation for the class about the characteristics of a well-designed web site and of the importance of their writing to the success of the online school newspaper. The topics that I asked our consultant to address specifically were: (1) layout and design; (2) speed of load; (3) ease of movement; (4) use of graphics; (5) return factor; and contact information. She also taught the small group HTML, graphics, and site troubleshooting skills. Two weeks later the consultant returned to help the students who assumed responsibility for the web pages make sure their pages were ready to post to the school district's server. When the students felt they had the pages as clean as possible, they invited a high school student to our classroom to demonstrate the process of actually publishing their pages. This was a day of celebration. After much classroom collaboration, the pages (http://www.marshalltown.k12.ia.us/schools/ansonm/index.html) were ready for the world to read.

As they took their journalism skills online, my journalism students experienced heightened self-esteem when invited to share their newspaper writing expertise with other middle school peers in Colorado. Not long after Global Cat Tracks, our online newspaper, first appeared on the World Wide Web, one of the editors of The Vocal Point, the Centennial Middle School online newspaper in Boulder City, Colorado, e-mailed to request that we teach that school's online newspaper staff journalistic writing. Suddenly, my students valued the journalistic writing skills they had learned earlier because those skills made a difference in how proficiently they could design instruction for their distant Colorado middle school
peers. In small groups, my students created the HyperStudio tutorials relevant to news, feature, editorials, and movie reviews and sent them to *The Vocal Point* editors as attachments to e-mails (see Appendix G for rubric assessment for HyperStudio tutorials). The entire eighth-grade class earlier participated in a HyperStudio workshop in their computer applications class during an interdisciplinary unit so they all knew how to use this software to create presentations.

At this point, the students realized the importance of their prior experiences with a multimedia presentation program such as HyperStudio. They built on their previous success with this program and used it as a tool to convey what they had learned about journalistic writing to their peers in Colorado. In this instance, they transferred what they had learned in keyboarding class in the sixth grade to our online journalism class and then built on the skills they developed in class to develop, design, and produce HyperStudio presentations and to share their expertise in using e-mail and sending attachments to facilitate mentoring for their peers in Colorado. In response, the students in Colorado indicated that they wanted to continue collaborating with our online journalism students as they expanded *The Vocal Point* to include writing from national and international middle schools.

At the end of the year, middle school students from a school fifty miles away asked if they could visit our journalism department to see how we published our online newspaper. The students served as hosts and used the technology skills they had learned to demonstrate to twenty-five other middle school journalists how they prepared their monthly online newspaper.

When we traveled to a state university for year-end evaluation, the students worked with a professor who taught web-page construction to improve small errors in their
publication. When Dr. Butler told them that their web pages and online newspaper rivaled any high school online newspaper he had seen, they were proud and happy. Not only had they learned to write using respected journalistic style, they had also learned to cooperate, organize, and support one another. Through learning self-management skills, these students demonstrated that they were able to learn and apply new journalistic and technology skills and to teach those skills to others using the apprenticeship model or mentorship pyramid as they worked together to develop a quality online newspaper.

Conclusion

In his book *Kids in Print: Publishing a School Newspaper*, Mark Levin (1997) lists some advantages of a successful online school newspaper publication:

1. Student and faculty readership provides a real audience on an ongoing basis.
2. Students are encouraged to write about things that are meaningful to them—to write what they know.
3. Process writing skills are an important part of newspaper work.
4. Students have a voice.
5. Online newspapers provide a variety of jobs and meet the needs of students of many persuasions.
6. Students learn and apply real-life skills (organizing, prioritizing, meeting deadlines, creative problem solving) by publishing a paper; and newspapers are positive public relations pieces to give to parents, libraries, community centers. (pp. 2-3)

Levin's advantages also describe the student-centered journalism class curriculum that my students helped me facilitate. As a constructivist educator, I was able to examine, as
Piaget (1972) theorized, how each student was thinking and then use this information to expand the students' learning. As they interacted with each other and with people from outside the classroom, the eighth graders learned about the goals and technologies of journalists and about how technology is applied in that field. Confronted with ideas that did not match their own, they adapted their ideas to include these new understandings. At first, the novice journalists did not limit their news articles to presenting only factual coverage of events. However, when the students learned that their opinions could be expressed more appropriately in editorials, they used that page of their online newspaper to discuss problems and to propose solutions in our school and in society. Their ideas changed, and the students used their new understanding of journalistic style and technology to adapt their writing for broader audiences, peers, school staff members, parents, and community members outside of school.

As I reflected on the progress this class made during the first quarter of school, I realized that I often practiced what Schon (1983) defined as reflection-in-action. He said that reflection gives rise to on-the-spot experimentation. Reflective practitioners think and try out new actions. They test their tentative understandings of them, and sometimes these classroom innovations work, but at other times they produce surprises and remind teachers of the need for further reflection and experimentation. For instance, when I used high school newspapers for the purpose of reviewing basic news, features, and editorial characteristics, most of the students thought it was fun to do the analysis using articles about recent events in which their high school brothers and sisters or older friends were involved. Incorporating reading about high school activities with learning to write journalistically contextualized the eighth graders' assignments in ways that helped them look forward to writing for the broader
audience of the high school newspaper staff. In my reflective journal that evening, I wrote about the importance of using real world materials as texts for my students to examine as models for improving their own writing:

This is the first year that I have closely examined the countless variables that affect learning in my classroom. Some of the students come into the classroom ready to learn while others come essentially to socialize. Using the high school newspapers as models for writing today focused the eighth graders' attention on the essential differences between news, features, and editorials in a way that engaged most of the students. They identified with their friends' experiences and were interested in what they were doing in classes and activities. The discussion following the examination of the high school students' newspaper articles was far richer than one we would have had relevant to textbook models of the same journalistic writing concepts.

At other times my reflective journal provided insights that might be described as reflection-on-action. When some students did not grasp the importance of editing, I experimented with a one-on-one approach that students soon learned to practice in their peer editing groups. As a coach, I sat next to individual students and asked them to quietly read their articles aloud. Often they recognized that they had omitted words or that their meanings were unclear as they reread their writing. By doing this, I discovered the actual thought processes of the students as writers, and I also modeled the thought processes of a perceptive reader. As students carried this technique into their learning teams, they gained skills in copy editing for clarity and style as well as a grasp of the process of polishing their work for publication.
My reflective journal notes also reminded me that I could not reach all of the students. I wrote often of Karen, a girl who could not focus on school because her thoughts were with her mother, who suffered from cancer. Although a counselor provided her a safe refuge in her conference room whenever Karen felt she could not deal with classroom pressures, this student did not return to the class for the second semester. Instead, she asked to be placed in art class where her emotions found a creative outlet. One morning not long after she left, Kelsey, another eighth grade girl, observed: "Since Karen left our class, our learning team has met every deadline, and our table talk is much more task-related. We can use our class time to get our publishing work done now."

This observant student's appraisal of the changes that took place in her collaborative learning group replicates Bruffee's (1984) findings that placing students in collaborative groups does not necessarily result in consensus. Faigley (1992) points out that social differences and personal concerns sometimes divide group members so that they cannot focus on a classroom task. Myers' (1986) questioning of Bruffee's unproblematic use of community and consensus reminds educators not to resort to oversimplified interpretations of educational theory or philosophy. Sometimes, as Myers (1986) noted, consensus develops from conflict. Teachers should realize that they cannot assume that any classroom innovation will result in all of the students benefiting. Rather, they should strive to engage most of the students most of the time.

Although there were many students who improved their writing through collaborating with their learning team members, others who did not elect to take the class sometimes resisted improving their writing and sometimes disrupted the class. These students, however, followed the classroom rules established democratically at the beginning of the year and, in
each case, they contributed to their learning teams more positively during the next class sessions.

Another of the disappointments that I confided in my reflective journal related to the superficial revisions that a few students made in their newspaper articles. Some of the students in the online journalism class did not read beyond the sentence level in responding to their peers' writing. This limitation might be attributed to their difficulty in reading. These students most often described other students' papers as "good," but they did not offer specific praise comments or questions. Consequently, their learning teammates expressed displeasure with the minimal efforts and vague comments their critics supplied. Students who found few comments after a revision session would sometimes hand their papers to me and say, "I think I need a teacher response, please."

By the end of the semester, several students recognized that their writing skills had improved. One girl said that she and her friends formed an outside-of-class peer revision group in which they read each other's essays for other classes and noticed that their other teachers marked fewer mechanical errors in their work after peer editing. Their grades were higher, and they enjoyed having their peers say, "Read this and tell me what you think." Two students wrote me notes during Teacher Appreciation Week. Matt wrote:

In the short time I have been with you, you have really changed my life, not only in school but all around. You have made me believe that I write well. I thought it was neat that I got to go to the university for the school newspaper year-end, evaluation field trip. You have raised my self-esteem and my self-worth. For this, I thank you."

These students' notes reflect the need for teachers to set high expectations; establish safe, nurturing environments; and develop positive relationships with students. Karissa wrote:
You are a teacher I enjoy and appreciate. You are always encouraging people to write different things that match their interests. You help us set high goals like when you said I should write poems for Creative Corner in Global Cat Tracks. At first, I didn't want to, but you kept encouraging me, and now I write poems for the school newspaper just for fun. You expect more of us than most teachers. I think that is good because everyone is capable of different levels of effort. You get people to do the best that they can. I have to say that this is my favorite class, and it has a lot to do with you as a teacher.

These students' remarks also indicate the need for middle school educators to recognize that students achieve at higher levels when they are trusted to take responsibility for their own work. The reflective practitioner knows she makes a difference when students see how they have grown in their abilities to write clearly and to publish for broader audiences. The students in this online journalism class benefited from a thorough grounding in journalistic writing and then transferred those skills to their online publication. They developed not only newspaper writing skills, but also the self-confidence and self-discipline to manage their online publication independently. They also learned to work collaboratively with their learning teams to plan, create, evaluate, and revise their newspaper articles and HyperStudio tutorials.
CHAPTER IV. LANGUAGE ARTS CLASS APPLICATIONS

To be a better teacher, listen to my rhyme.

Teachers should be nice—nice all the time.

Teachers are our mentors; they reflect what we do,

So if you scream and yell, they'll do the same to you.

Teachers need to listen; teachers need to speak;

Teachers are like books with knowledge you should seek.

D. J., an eighth grader

In this chapter I discuss using technology to make connections between my pedagogical practice and aspects of culture, class, and democracy in the language arts class. I analyze the benefits of computer technologies, particularly multimedia presentation tools, and their uses within the context of my own instructional practice. I cite examples of how I use collaborative learning principles and a negotiated curriculum to give middle school students a voice in the curriculum and to encourage leadership in a democratic, technology-rich learning environment. In this chapter, I also give examples of how I employ group work as students use technology to engage in problem solving, writing, revising, and evaluating their multimedia projects.

Constructivist Theory and the Middle School Student as Classroom Leader

The language arts classroom provides an educational and social context in which students come together to develop their writing skills. Developing a sense of community and focusing on the social or collaborative view of writing is important to the language arts class. Therefore, I set up a classroom environment for students to work together during all stages of the writing process, and I encourage conversation and social interaction that leads to
internalized talk, the beginning of meaning-making (Vygotsky, 1986). As Susan, an eighth grader in language arts class, noted while limiting a topic for her persuasive essay: "It really helps us to narrow our topics when we have ten minutes of class time to search through our journals and then talk with our small learning teams about current interests or needs and how they connect with new writing projects." A close connection exists between this type of collaborative learning and the social construction of knowledge. Social constructionism states that meaning is not privately constructed, but is generated by social interaction (DeCiccio, 1988).

To develop understanding, students need to see the big picture as well as its various parts. That is why "less is more" in middle school teaching. Today's curriculum must be developmentally relevant and appropriate. When teachers focus holistically, identify a few major ideas, and make them the center of instruction, they extend that whole to the social setting and community of learners. Among middle schoolers' concerns in the larger world are interdependence among people; cultural diversity; environmental problems; economic issues such as personal security and the distribution of wealth; the advancing pace of technology; conflict among peoples; how the future might shape up; and relations among freedom, power, and responsibility (George, Stevenson, Thomason, Beane, 1992).

A critical aspect of teaching any subject is the teacher's ability to examine students' perceptions and see how they arise from their experiences and uses of language. The effective middle level educator needs to provide developmentally appropriate experiences that help students stretch to their full potential. At times students may work independently, but at other times learners may complete tasks with assistance from adults or more experienced peers. Vygotsky (1986) describes children as active in their own development
and as creating knowledge of the world through activity. These young people need teachers who become change agents, who empower their students and join them in emancipatory knowledge construction. Emancipatory practices assist students in deconstructing and reconstructing cultural assumptions that have been taken for granted, thereby allowing for the possibility of social transformation (Vadeboncoeur, 1997). Pedagogical approaches derived from emancipatory constructivism begin with content that foregrounds cognitive development as sociohistorically situated and based upon merging academic and everyday concepts. This view defines knowledge as partial and positional and provides for the awareness and examination of discourses of power and privilege.

Current demographic reports (Bauersfeld, 1998; Bonk & King, 1998) urge educators to develop pedagogical approaches that are culturally relevant. Constructivists must work to sometimes interrupt and challenge the status quo and facilitate a critical analysis of inequality. If we hope to understand how all children develop and learn, we must not ignore the discourses of power and privilege. We must concern ourselves with critical issues and cultural relevance in teaching and learning. Cultural relevance is particularly important in my teaching situation where twenty-eight percent of the students have recently come to the Midwest from Mexico. They find regular classroom work difficult not only because of their limited English proficiency but also because they lack understanding of the procedures for accessing academic assistance in the school. Teachers need to help these students by connecting them with available mentoring or tutoring programs, but they can also systematically evaluate their own interactions with all of their students. For example, I found that when I provided a twenty-minute study time at the beginning of the class period, I was able to move about the classroom and take time to sit down with some students who needed
brief directions so that everyone benefited. Many of the students at our school go home from school to provide childcare for younger siblings and cannot participate in after school activities so they do not quickly develop a sense of belonging in school. Neither do these students have equal access to educational or enrichment opportunities, such as using computer technologies in their homes. When teachers understand their students' socioeconomic needs, priorities, and responsibilities, they can more effectively engage them in constructing meaning from new experiences.

Recently, my eighth grade teaching team colleagues and I taught an interdisciplinary thematic unit entitled Transitions. Our primary concerns were that the eighth graders engage in learning about the various changes they are going through as part of their own development as well as about the changes that are taking place in the world. To alleviate students' immediate concerns about making a smooth transition to high school, we invited high school students to visit with our eighth graders about activities in which they might be involved next fall. We also planned a field trip to the local high school that would serve as an orientation for soon-to-be ninth graders. Many other classroom activities and community field trips met the needs of middle school students to work together.

The Invention Convention in my classroom facilitated not only Internet-based research relevant to past and present inventors and inventions, but it also taught students to implement a problem-solving process in creating inventions or innovations that help others. Through planning, teaching, reflecting, evaluating, and revising interdisciplinary units, our middle level teaching teams have discovered ways to help our students make closer connections with the world in which they live, to construct powerful meanings around their own concerns and those of the larger world, to integrate self and social interests, to gain a
sense of personal and social efficacy, to experience learning as a whole and unified activity, and to bring knowledge and skills to life in meaningful ways.

**Background of the Language Arts Class**

The ideas for this study originated during the 1995-1996 school year as part of a practitioner research study of ways to help eighth graders share in democratic classroom decision-making, master available technologies, and find meaning in keeping classroom journals. I called these notebooks "experience/dialogue journals" because students wrote and shared their personal experiences in them, but they also recorded their learning in another "class notes" reading response (literary) journal and daily learning log. At the end of the previous school year, I noticed that some of the students who generally did not like school and did not achieve at high levels had not grown in their ability to articulate ideas that expressed their emerging senses of themselves and their places in the world. Many plodded through the year writing only short journal entries of chronologically organized daily events. While I recognized that middle level learners come in all sizes and shapes and need to be accepted at all developmental levels, I was not satisfied that the ten minutes we spent writing in our journals at the beginning of each class period was being used as productively as possible. My thinking about this coincided with whole school climate issues.

What I discovered through reviewing the journals caused me to plan differently the next school year. I invited my eighth graders to participate in class meetings with the specific focus of sharing what and how they wanted to study. We spent a good deal of time at the beginning of the school year learning to trust one another, establishing classroom rules for ways we would do business in the language arts classroom, and practicing the shared decision-making process (brainstorming, consensus reaching, etc.). We came to our class
meetings with problems that we solved through group interaction. As Apple and Beane (1995) recommend in implementing a democratic curriculum, we used a variety of cast off computers in my classroom as we engaged in participatory decision making; collaborative planning; and reaching decisions that responded to the groups' concerns, aspirations, and interests. We also practiced technology skills and organized databases, created spreadsheets, and charted achievement, using applications available in Microsoft Office.

My goal for the language arts classes (six sections or separate class groups) was for the students to make curriculum decisions with me through dialogue in class and in their "experience journals." I sought, through practitioner research methods, ways to listen and observe that would help me identify a sense of what students wanted to happen in their language arts learning. Journal writing was one method of encouraging reflection and interaction with curricular materials, as well as with peers and the larger world, that worked well that school year. I discovered that some students who did not have access to computers liked to write their journal entries on word processors. Using an eclectic mix of computers in a mini-lab in my language arts classroom, my formerly uncooperative students learned to know themselves through shared inquiry dialogues with their near and distant peers. The problem, as Maxine Greene (1988) observed, was not to tell students what to do—but to help them attain some clarity about how to choose—how to decide what to do. Together, my students and I worked to identify issues, define goals, plan and select curriculum themes, and evaluate outcomes to foster improvement in the educational performances of all students. For example, when Eric, a 4-H Club member, wanted to demonstrate how to show a steer at the county fair, others in the class suggested that he ask a friend to use a video camera to record the process. Our goal was to involve the people responsible for making decisions.
The new technology components on which this class focused were multimedia presentation tools, including PowerPoint and HyperStudio, the Internet, and the digital camera. Three research questions shaped the design and guided the implementation of this study were: (1) In what ways do eighth graders find meaning in creating multimedia presentations as demonstrations of what they know and are able to do? (2) How do these students perceive themselves as independent, collaborative, and interdependent writers; technology users and mentors; and self-directed learners? (3) How do facilitating collaboration, negotiation, and interactions between eighth graders and their peers using multimedia presentations affect student writing?

My goal for the language arts learning teams as they shared their prior knowledge and experiences at tables with a computer for every four students was to help them learn to work together to investigate, communicate, create, and produce high quality multimedia products. Brain research (Caine & Caine, 1994) indicates that children learn best when they are actively engaged in their own learning, when they feel a part of the group, and when multiple paths are taken to learning. When children participate in electronic communication and knowledge searching, the words are their own, the ideas purposeful, and the situations real. I believe that when technology is implemented thoughtfully, it brings out the best in students and helps them achieve up to their potential. By working in collaborative groups, students learn to be team players and problem solvers in everyday activities, both roles that employers deem necessary in the workplace.

Methodology

The students in the language arts class included thirty-two (seventeen girls and fifteen boys) eighth graders who met for eighty-four minutes on alternate school days. Twenty-
seven of these students were Caucasian, four were Mexican American, and one was Hawaiian. This required language arts class was one of five sections that I taught. Fifteen of these students read at the equivalent of grade ten or above. Sixteen of them scored at tenth grade or above on the writing skills component of the Iowa Tests of Basic Skills. Only two of the students in this language arts class were also members of the creative writing class or the online journalism class.

I used pre- and post-semester surveys to determine changes in students' self-perceptions of their writing and technology expertise. I assessed their beginning-of-year and end-of-semester persuasive essays using the Iowa Tests Writing Assessment (1996) analytic scoring protocols. I analyzed their PowerPoint presentations and HyperStudio stacks using rubrics (see Appendix G) that we devised together for appropriate content, creative format, and correctness of expression. I observed and evaluated their ability to work collaboratively in small groups using the rubric found in Appendix E.

I interviewed selected students about their attitudes toward writing in the experience journal as well as toward collaborating, writing, sharing, and revising in table team groups. I also collected data such as notes from classroom observations, transcripts from student interviews, documents from class sessions, and surveys. Through gathering and analyzing various types of data, I came to understand what was happening in my classroom earlier in the year than usual. I found it likely that these language arts students' positive attitudes and high self-confidence in their own writing abilities contributed to their making frequent, recursive revisions at their computer monitors that are generally associated with those that experienced writers make as they progress through the writing process.
The self-assessment of writing skills survey (see Appendix F) with students in this
language arts class yielded somewhat different responses from those of the creative writing
and online journalism classes. Pajares and Valieante (1997) suggest that aptitude has a
strong direct effect on self-efficacy and an indirect effect on writing performance. Fifth-
grade girls and boys, these researchers noted, did not differ in performance, but girls reported
higher writing self-efficacy, found writing more useful, and experienced lower apprehension.
In an earlier study of ninth graders' writing self-efficacy, Pajares and Valieante (1996) found
that ninth-grade boys and girls did not differ in writing performance, but ninth-grade boys
reported higher self-efficacy. In my survey, the eighth-grade boys reported higher self-
efficacy though there were no differences in writing performance between boys and girls. It
may be that girls have more positive self-beliefs about writing and express greater confidence
in themselves as writers in elementary school, but as they progress through middle school,
their confidence erodes despite no corresponding changes in writing competence. Gender
equity specialists, Myra and David Sadker (1986), suggest that students who participate in
class hold more positive attitudes toward school, and those attitudes enhance learning. Yet
they also found that boys overwhelmingly dominate the proceedings. They consistently
command more of the teacher's time and energy than girls, receiving more positive
reinforcement, more remediation, and more criticism. The Sadkers' research indicates that in
middle school, girls often lose heart: they may become reluctant to participate at all in class,
and they perceive even small failures not as educational tools, but as reasons not to try again.
The eighth-grade girls whom I interviewed gave similar responses. Asked why she felt
writing was not meaningful to some eighth-grade girls, Tyronda said, "Maybe they feel they
are not as creative as most people. They might not believe in themselves. I don't have a real high opinion of my own writing."

Interviews with the boys and girls in this language arts class support Bandura's (1997) argument that teachers have the responsibility to increase students' competence and confidence as they progress through school. Self-efficacy researchers, Hackett & Betz (1990), say that teachers should pay as much attention to students' perceptions of competence as to actual competence, for the perception may more accurately predict students' motivations and future academic choices. Asked what writing meant to them, the eighth-grade boys interviewed responded that writing was a way to let people know what they were thinking while girls most often indicated that writing was a means of expressing feelings. Boys also indicated that they thought longer about what they were going to write than girls. Boys viewed writing more as a form of self-expression, and girls said that they wrote to communicate emotions to friends. None of the students referred to school writing projects completed in previous years as their most valuable writing projects. However, by the end of the first semester 95% of the students indicated through the Writing Self-Perception Scale that they perceived that they had improved their writing in both general and specific ways, such as focus, content, organization, style, and coherence. Girls, as evidenced in their persuasive essays, were as competent as boys in supplying specific facts, reasons, and examples to support their arguments. Teachers hold a powerful responsibility to engage all students in writing as a way of thinking and in identifying and altering inaccurate judgments of their own writing.

Bandura (1997) asserts that students who develop a strong sense of self-efficacy are well equipped to educate themselves when they have to rely on their own initiative. As my
students and I discussed their writing in conference settings, they grew in their ability to determine independently what they needed to do to improve content, organization, and usage. As Kelsey noted, "You're right. I do have enough material for two essays here. Instead of writing about my parents and how they have shaped my beliefs, I think I will just write a description of my mother and father and show how the give and take in their marriage teaches us kids how to get along with people." The two essays that Kelsey produced served as focused models of descriptive writing. She then explained to the class how she had used her journal as a storehouse of ideas for writing, but she also read both of her essays to make the point that sometimes writers try to do too much in one essay. Her writing self-efficacy increased as other students asked her to read and respond to their writing particularly for the focus and development of the main idea. Her writing was also published in the online middle school literary anthology.

As a result of the interviews and surveys, I was able to shape assignments and understand the students' levels of expectations as well as to group the students more effectively. The personal dynamics of this large class was generally more congenial than the creative writing and journalism classes. In their interviews, students expressed the following advantages of daily journal writing as a method of beginning the class period:

- It helps you remember things. You collect your thoughts and go back and remember what you were feeling before.
- It helps us shift gears from physical education class, and it teaches self-discipline.
- The journal topics are springboards for my thinking. Sometimes I disagree with the statement or question on the board, but it always makes me think.
• It shows us that writing is important. This is the first time I have seen the teacher write when the students write in their journals. I would like to read your journal.

These interview responses show that the students valued the time spent journal writing, the sense of community created in the time writing, and viewed the experience as one that complemented their work in language arts class.

Description and analysis of computer technologies and their uses

I taught Internet ethos lessons to this class in a similar way to those described in Chapter III. As we worked through the first few lessons, I introduced the students to the idea that schools, like society, are structured organizations that impose limits on individual freedom in order to function smoothly (Dougherty, 1997). I explained the need for teachers and students to follow definite rules and regulations for using the Internet for educational purposes. I also explained how the school district's technology standards board consisting of parents, students, teachers, and administrators developed the Internet policy. I taught Internet search procedures and strategies and site evaluation techniques. I invited students to become meaning makers instead of merely knowledge consumers by showing them how they would be responsible for facilitating and maintaining technology learning in their four-person learning teams.

I used the same basic technology skills inventory that I had used earlier in the creative writing and online journalism classes with this class with the exception that I made it a learning team responsibility to rotate, monitor, and record the groups' computer proficiencies. The students kept their computer disks in a storage box in the classroom so that they could manage their own files. Using the apprenticeship model of instruction, student volunteers taught the class how to use Microsoft Word for their essays and other daily assignments.
Student apprentices taught PowerPoint lessons to acquaint the eighth graders with the program using lesson plans found at http://microsoft.com/education/curric/ppt97/start.jtm. I explained the practical reasons for using this presentation system, two of which were to save time and paper. Lesson topics that the table group facilitators included: (1) organizing a presentation; (2) developing a presentation style; (3) emphasizing your point with charts and tables; (4) adding pizzazz; and (5) putting it all together. Using a handout that I had prepared to teach teachers to use PowerPoint, I demonstrated the program's versatility so that students would be able to teach their learning team members to display information in ways that would focus the attention of their visually-oriented, middle school peers. Because capturing their audience's attention was important to the student apprentices, I showed them how to use color, sound, and movement in their presentations. I explained learning styles to them, such as the auditory, visual, kinesthetic, and manipulative so that they could relate this to ways they knew they learned best.

The students then learned to use HyperStudio through following the modeling that I did with the apprenticeship groups. I used the simple "Make Presentations" stack with the students, made several sample stacks, and later used stacks created by students. I used lesson plans accessible at http://www.manistee-isd.k12.mi.us/~onekama/onekama97-98/hyperstudio.htm as a guide and adapted them to fit the students' developmental level in eighth grade. I also taught the students to use the new Sony Mavica digital still camera and how to transfer their pictures from disk to their PowerPoint presentations and HyperStudio stacks. I taught the volunteer eighth grade apprentices or mentors similar lessons in importing graphics.

As a constructivist facilitator of learning, I try to find ways to work with national and local standards and still consider what is important to my students. In this situation, I
organized what I perceived to be engaging problems that directly connected to national or school district language arts standards. For example, the various technology projects that helped my students internalize, reshape information, or reinvent their knowledge related directly to two specific national standards:

(3) Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and other texts, their word identification strategies, and their understanding of textual features.

(8) Students use a variety of technological and informational resources (e.g.) libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge. (Wilhelm, 1996, pp. viii-ix)

I believe it is important for students to understand technologies not only as tools for gathering isolated bits of information, but rather as tools for developing and communicating ideas.

At the beginning of the school year we organized our lessons within the context of the theme "Charting Your Own Course." As the students in the apprentice groups guided their peers in understanding how to use the new technologies, they also saw their own leadership as empowering them to work further with technology. Some of them volunteered to become members of our middle school computer cadre, a group also facilitated using the apprenticeship model to troubleshoot, maintain, and teach various technologies to teachers, students, and community groups. This team concept extended outside our school building so that the students in my classes perceived themselves as important not only to their peers but also in their community.
Collaboration in writing improvement

Deborah P. Britzman (1991), in *Practice Makes Practice: A Critical Study of Learning to Teach*, comments: "Learning to teach—like teaching itself—is always the process of becoming; a time of formation and transformation, of scrutiny into what one is doing, and who one can become" (p. 4). Facilitating learning in the language arts class was important to me, to my apprentice technology mentors, and to students who were respected in the language arts classroom for their writing ability. The more capable students' senses of responsibility grew as other students began to regard them as resident technology or writing experts. They and I reflected, became more aware, and tried to understand why students or colleagues reacted as they did to what we said and did. For example, when one girl bristled when she realized that the technology apprentice would not do her multimedia project for her, we talked about ways that we could use the school's conflict managers' program to help us solve small disagreements. Then we returned to our reflective journals and planned again as Schon (1987) describes it: reflection-on-action—undertaken after the practice is completed; reflection-in-action—focused on spontaneously thinking and acting in the midst of a teaching situation; and reflection-for-action—analyzing events and drawing conclusions that guide future decisions. As I dialogued and planned with my students, and they worked together with their teams, we became a community of learners. By learning the collaborative process early, we built a foundation for the rest of the year's activities.

In Freedman's (1994) comparative study of schools in the United States and the United Kingdom, she found that the more fully British students discussed their ideas with their teacher, the more likely they were to make meaningful choices and the more evident their personal imprints were on their writing. She found that in U. S. schools, however,
students did not expect to participate in the curriculum-making process. Even when their teachers encouraged them to participate, many did not recognize the opportunity or know how to take advantage of it. My students were more like Freedman's British students who frequently moved beyond their apprentice duties into helping students and teachers in other classrooms and in the school's computer lab. One of the students wrote in his "experience" journal:

Today I helped a teacher figure out why her computer would not work. It was not plugged into the wall socket. Instead of saying anything about it, I just left my usual, businesslike, maintenance service note. On my way to lunch, this teacher stopped me to ask if I would return to her room during my study hall time to help her plan computer activities for the sixth grade interdisciplinary unit about oceans. This is going to be neat because I will earn credit in computer applications class for being a technology helper and be the first to use the new "Oceans" theme software.

This example demonstrates how the student learned to communicate sensitively in this situation because of his role as a respected technology technician. As the students moved into the apprentice positions, they frequently talked to me about the need to teach computer troubleshooting skills to teachers. As a result of our conversations, our building's technology site-based decision-making team planned and facilitated a teacher inservice in which my students assisted teachers in solving common technology-related problems.

During the first week of school when we began to work with the PowerPoint electronic slide presentation program, students created "All About Me" multimedia shows. Working in learning teams, they created slide shows to help their classmates and me understand them better. The technology mentors were trained first to make slides, and these
students taught others in their groups. Students, following my model, first created
storyboards of their slides or cards and then took turns at their learning team tables, sharing
the seven computers in the classroom.

Students' "All About Me" presentations included images, written words, sounds,
music, and even their own voices. They also included information about their hobbies,
favorite foods, future plans, and the funniest things that had ever happened to them. I acted
as a consultant, setting academic and collaborative objectives, helping the students choose
tasks, providing materials, supporting and assessing the students' interactions, and guiding
everyone in monitoring their progress. They learned by doing that multimedia means
communicating to people through visual images, sounds, and written words. Because
multimedia presentations use a variety of media, the information is clearer, more interesting,
and more exciting than plain text. Later, the students used their autobiographical, multimedia
presentations to introduce themselves electronically to e-mail pen pals.

For each multimedia presentation that the students created, alternative assessments in
the forms of rubrics and checklists guided their preparation and self- and group-evaluations.
Again, we composed the rubrics and checklists together—sometimes in small groups before
or after school and sometimes as an entire class on a Microsoft Word table on the teaching
station's wide screen television. Students' suggestions and "kid friendly" language helped
everyone understand exactly what was expected. Vygotsky (1978) alluded to this need to
accept the learner within his or her Zone of Proximal Development (ZPD) when he explained
that the tasks that students are asked to complete should not be too easy or too difficult, but
challenging enough to hold their interest. When middle school students set their own goals
for excellence, they are much more likely to achieve at the high level they establish for themselves.

I used the multimedia projects assignments as one way of decreasing anxiety about writing. Daiute (1992) suggests that students who perceive themselves as poor writers and who demonstrate that they have difficulty with written expression find the visual aspects of creating multimedia projects motivating. In Daiute's study, boys and girls who experienced writers' block or who had difficulty staying on task were able to bring their prior knowledge and experiences into creating multimedia projects and write more conversationally with the help of peer mentors. Not only did these students' attitudes toward writing improve, but they also created and published higher quality sounds, images, and texts about real-life experiences in multimedia products. For example, given alternatives to writing the standard comparison-contrast book review essay, several students who previously indicated they "hated" writing collaborated with the technology apprentices. They created lively multimedia presentations illustrating how their families and friends were similar or different from those found in the fiction books with family and friends themes that they read that month.

As the semester progressed, I observed students' growth in self-efficacy as they used the PowerPoint and HyperStudio multimedia programs to create presentations for their other classes as well. They used the images and sounds as springboards for elaborating beyond concrete details. They were capable of using diverse media as sources of knowledge and expression. For example, in his presentation about World War II aircraft, Matt included photographs that he had downloaded from Internet sites to show how the developing aircraft industries supported the war effort and strengthened the economies of the various nations.
involved in the war. Using the rubric assessment for HyperStudio presentations that the class
developed, he assessed his presentation as including richly detailed information, colorful and
clear photographs downloaded from the Internet, and nonlinear organization that provided
challenging data to classroom visitors. Through using the multimedia presentation programs,
Matt grew in self-confidence that he was a capable writer. In his learning log, he wrote:

This is the first time I have stayed after school to use the computers. It took me six
hours to put together my presentation, but the looks on my audience's faces showed
that they were really involved in my slides. I find it fun to write the text and import
photos to create slide shows, and I know that I am good at it!

Through using the collaborative learning approach, students pooled their various learning
strengths and individual skills, learned from each other, and achieved individual and group
goals more effectively and efficiently. With the cooperative approach, students developed
their social and communication skills in constructive ways, exercised some control over what
they wanted to accomplish, and chose projects that were meaningful to them (Rubinstein,
1994). Through their collaborative writing groups, my students became active classroom
participants who were enthusiastic about what they learned and more aware of how learning
could be useful to them in the future. Only five percent of the students in this class perceived
little improvement in their writing by the end of the semester, according to the results of the

Frequently, the students asked if they could use HyperStudio to create enrichment
projects to teach their peers about out of class interests. For example, after a family trip to
Northfield, Minnesota, where he saw a bullet intended for Jesse James embedded in a café
wall, Brett asked if he could do some Internet research on this famous outlaw for a
subsequent HyperStudio presentation. Another student in the same class volunteered to prepare a PowerPoint presentation on Tourette's Syndrome, a condition that afflicts him and which many of his classmates did not understand. Later, he took the presentation to an elementary school classroom where students harassed a younger boy with the same problem.

The response of other, less motivated students to those who wanted to demonstrate how to use the new technologies was disappointing. As the students progressed in creating HyperStudio stacks (slide presentations), some would occasionally forget basic HyperStudio processes. Even though we had established a signal to call for help with software programs from the student mentors, those in need of assistance would occasionally call out my name and expect me to assist them immediately. This irritated the technology mentors, who were ready to give assistance, and they soon expressed displeasure with certain students who did not retain instructions from one class period to the next. For some of the students, HyperStudio was a difficult program to learn, and they began to resist using it. This resistance mirrored the response of students in Sullivan's (1994) study who said they would never use sophisticated software again if it could not be learned immediately. To assist these less focused learners, the technology mentors and I developed a list of hypothetical problems and their solutions so that students could simply consult a checklist instead of calling for help when they could not recall a step in the process of creating a HyperStudio card or slide.

The students who demonstrated proficiency in using the multimedia software were sometimes teased for being teaching assistants. This dissension led to a dialogue between the technology mentors and me. We decided that students who felt uncomfortable with some of the criticism of their peers could opt out of the technology mentorship or apprentice positions, but they agreed to help teachers with similar software problems during the time
when they would have helped other students in class. These students understood that collaboration depends on people's ability to trust each other and to appreciate one another's expertise.

**Description of Language Arts Class Activities**

Each fall students in all five of my language arts classes brainstorm a list of over two hundred journal topics that they feel sure will reflect the broad range of interests of all eighth graders. In four-person teams with one computer per team, they work collaboratively to record their topics. This process elicits diverse interests and aptitudes and facilitates a sense of teamwork as the teams compete to see which team can keyboard in the most topics. From their lists, student volunteers prepare a master list from all of the classes so that students have access to alternative topics in the event that they do not want to write about the journal topic that I provide each day. They have taken this a step further recently in that individual students have produced monthly lists of twenty-five journal topics relevant to their interests during the various seasons. At least one student per team uses his or her team's computer to keyboard journal entries. They established at the beginning of the year that they should be responsible for writing at least a half page per class period, and they bookmark at least two pages per month for which they expect and appreciate teacher response. Like Strackbein and Tillman (1987), I find that the journals express meaning and provide an opportunity for dialogue between me and the students for which there is not always adequate class time. The shared ideas create a "new sense of interconnectedness" between the writer and the respondent (Calkins, 1986). For example, Jamie, one of the eighth grade girls in the language arts class, wrote in her journal,
I just got my short story back, and Mrs. Yocum wrote me a note suggesting that I send my writing to Merlyn's Pen or Seventeen for publication. I put a lot of thought and time into that story, and I'm glad that this teacher is giving me recognition. I appreciate that and the helpful criticism that she gives me. It helps me to know that she thinks I have writing talent. I find myself wanting to write more. She makes me want to please her, and it challenges me. I have a wonderful feeling of pride that I have never felt before.

This student later in the semester wrote a speech entitled "Optimism in My Life" that earned her a $1,500 scholarship in a statewide oratorical contest.

Journal writing serves as a vehicle for change for many students and teachers alike. It reminds us of the goals that we have set for ourselves and provides a record of progress throughout the school year. As Emily observed in our interview, "A journal helps you remember things. You collect your thoughts from today and yesterday. You go back and remember what you were feeling and thinking before. I love having my journal on disk and rereading it." The power of journaling is not simply about having a journal on disk. Having used journals for years, I believe that reflective writing helps crystallize issues, and writing down such thinking creates a visible record of thought for later examination.

Most of my students keep their eighth grade journals, and many comment on their value years later. Some talk to me about how the practice of journal writing became so automatic in the eighth grade that they have continued it through high school and college. Recently, I received a letter from a university student who referred to her writing experiences and how our dialogue about her high priority concerns led her to make some positive choices. She understood how writing in her journal helped her think reflectively and plan for her
future. The same benefits are open to teachers who use reflective journalizing as a way of thinking about changes they want to make in their classrooms. For example, as I wrote and reread by reflective teaching journal, I noticed that even though I wanted my research to inform and improve my own practice, the link between learning and instruction was not as simple. While my constructivist teaching involved more student-centered, active learning experiences, more student to student and student to teacher interaction, and more work with concrete materials and realistic problems, I was not satisfied that students were finding salient the same things that I did. According to Winitsky and Kauchak (1997), learners can create any number of meanings out of the same experience based on the interaction of their prior knowledge with instruction. As a means of determining if my students were using their journals as sources of reflection on their learning, I planned and implemented electronic journal exchanges between the students in the classroom.

With the computers in my classroom networked, journal writing moved to e-mail. Each eighth grader had an e-mail account, and the students communicated with their peers. Some teachers regard the use of e-mail as a nuisance, and they refer to it as a more sophisticated version of note passing. When I collected samples of students' peer-exchanged e-mails, I found that their messages to one another often related to their class work or to sites they had found in Internet searches that they thought were interesting or fun, such as http://www.hamster. For instance, Liz wrote to her friend, Elena:

Wuz up or down? Did you find the site about Happy Friendship Week? It's full of stars! The Star Catcher grinned and whispered a plan, 'I'll catch all the stars that I possibly can. Then I'll give them to all of my friends so they will truly see how sparkling and special they are to me. Like each individual star, your friendship
brightens my world.' Don't forget to bring your script writing materials to the Odyssey of the Mind meeting tonight. Have you done your net search for a dialogue with a living playwright yet?

This writing sample demonstrated that the experience/dialogue journals served as records of responses to recognition and praise and examples of retrospective and reflective thinking. The eighth graders were using their e-mail journals as vehicles for everyday communication about learning experiences and activities that held meaning for them.

**Robert Frost poetry explications on PowerPoint**

After teaching the students the collaborative decision-making process and how to use the PowerPoint presentation program using the apprenticeship model, I updated as a multimedia activity an assignment that students had completed in previous years by using the overhead projector and transparencies. The purpose of this assignment was to show students how to use a multimedia program to engage their peers in learning about eight Robert Frost poems. The students had little experience in reading and analyzing poetry. When we interpreted Robert Frost's "The Road Not Taken," we analyzed the poem in search of similes, metaphors, and other figurative language. In teams, the students applied the following activities in their search for deeper meanings of another Frost poem of their choice. First, they appointed a reader and listened to him or her read the poem aloud. Then another student read the poem aloud. Group members wrote journal entries about images and ideas from the poem that they liked and discussed why they liked these specific images. They also discussed how the images connected with the main feeling or message of the poems. Then they discussed their ideas with their peers. Each team created a draft of what they thought
the Frost poem they chose to study meant. They compared drafts and created a series of slides that they thought would best represent the meanings they discussed.

This activity engaged the students with the poetry and new technology. It also gave the eighth graders an opportunity to talk with their table team members about common interests. For example, one of the images and ideas they liked in Frost's poem "Mending Wall" read, "Something there is that doesn't love a wall." Another line they liked was, "Good fences make good neighbors." They reported in their PowerPoint presentation that they liked these lines because the wall served as a symbol of two opposing viewpoints, and it helped them see disagreements between neighbors from a new perspective. These lines also suggested to them that neighbors need their spaces, and they translated this need for space to the context of the classroom learning teams. They would often say, "Your space is only as big as your chair and the table space in front of it," whenever one of their peers would encroach (a vocabulary word from a reading unit) in their spaces. These interpretations show how the students formed and clarified ideas with their peers as they dialogued in their collaborative groups and also with the large group while presenting their poetry explications. They used the PowerPoint computer program to elaborate on their initial responses and to clarify superficial and deeper meanings.

All of the learning teams were able to add colors, graphics, and sounds to their multimedia presentations. They identified literal and figurative meanings and placed them on split screens. Identifying the theme or main idea for "Mending Wall" as expressed with the PowerPoint image of a handshake illustrated the message typed in the text box: "When friends argue, the best way to make up is to talk about it and do things together to work out the problem." This particular group also added an "Overall Message" slide. It read,
Two friends have a tradition of rebuilding a stone wall that divides their property each spring. One neighbor likes the tradition, but the other would rather revise it. Finally, the more modern neighbor agrees to rebuild the wall in the spring because he thinks his relationship with his neighbor is more important than creating a disagreement.

That the students conducted the explications and presentations on their own in learning teams, with less direction from me and with more interaction with each other and with the available technology, illustrates constructivist principles. Overall, the students were becoming more self-directed in their learning. They were asking questions on their own and not waiting to be told what to think. Using the technology as a presentation method piqued the eighth graders' curiosity about the various features of the PowerPoint application as much as it gave them a more exciting method of demonstrating what they had learned about poetry analysis. Several groups experimented with the program's visual versatility, displaying information in ways that attracted audience attention. The eighth graders enhanced instructional presentations, inserted images of the famous poet and audio samples of his poetry, and added sounds and animation to maintain their peers' attention. PowerPoint addresses other learning styles that are typical of middle level learners, such as auditory, visual, kinesthetic, and manipulative.

The PowerPoint adaptation of this particular assignment was successful in that it promoted a constructivist mode of discovery and learning. Students were encouraged and guided to construct deep understanding of significant concepts (Schurr, Thomason & Thompson, 1995), and the technology provided alternative means for them to express the concepts they developed. Only one team did not complete this assignment. Due to truancy problems, one student did not attend class regularly and so his team presented without him.
When he returned, he presented the project alone to an audience of other students who had been absent. Class members agreed that before we progressed with another lesson, we should respect the rights of those who were absent and arrange for them to make up their work.

When student responses are allowed to shape instruction, Brooks and Brooks (1993) say that the teacher is free to focus on themes that have immediate interest and importance to the students. As I wrote in my reflective teaching journal about the progress of the students in this class, I noted that many of them continued to ask if they could use the PowerPoint application to present additional topics that they researched for extra credit. Their presentations ranged in topics from biographical research about historical figures and current celebrities to the recent launching of a space shuttle. One group presented a HyperStudio slide show about the poetry of Emily Dickinson to illustrate how Dickinson used metaphors and similes effectively. Students' attitudes toward poetry in general improved, and because of their awakening poetic interest, we designated a portion of a class period on a weekly basis for the purpose of reading and interpreting poetry.

Elements of the short story PowerPoint presentations

After the poetry unit, the eighth graders moved into the thematic unit "Justice for All." By this time, the students and I were negotiating curriculum decisions frequently. This particular class consisted of many original thinkers who liked to experiment with a variety of ways to demonstrate what they have learned. They offered to create short story presentations to show their parents at open house how they could use the technology in our classroom to analyze short stories. In this way students contextualized their learning and demonstrated not
only what they had learned about the short story genre, but also their proficiencies with the
new computer hardware and software in the language arts classroom.

Students suggested that teams research authors via Internet searches. They thought
that they could show their parents how much more sophisticated these multimedia
presentations were over the two they created earlier in the school year. They decided that
they could demonstrate an understanding of the five basic elements of fiction—setting,
characters, plot, theme, and tone—by showing how these component parts contribute to the
success of the short story’s acceptance with a middle school reader. Their goal for the
project was to research the short story writers’ biographical backgrounds and connect them
with the themes or messages found in their fictional works. Students set their own criteria
for evaluating their PowerPoint presentations. Some of the features that they included appear
in Appendix G.

Each table team studied a different short story under the broader theme "Justice for
All." Some of the short stories they read were O. Henry's "After Twenty Years," Francisco
Jimenez's, "The Circuit," and Isaac Bashevis Singer's "Utzel and His Daughter Poverty."
The diversity of these texts illustrates the multicultural nature of the offering in our new
Prentice Hall theme books. It was while we were studying the short stories that I realized
that the students were searching for additional stories by the same authors outside their
textbooks. They conducted Internet searches to find living authors, interviewed them via e-
mail, and brought in their short stories to discuss in our Great Books after-school reading
groups. After reading three O. Henry short stories, Erin, an eighth grader who seldom spoke
said, "The ironic ending is a good way to make the theme stay with the reader. I can
remember 'The Gift of the Magi' and a 'Retrieved Reformation' like I just read them
yesterday." These examples of students' self-directed learning show that they were making a match between new concepts and ideas and past learnings.

This project taught me new respect for my students as curriculum designers. They often suggested ways we could use the new computers to enrich our learning. For example, they thought that if they printed their PowerPoint presentations six slides to a page of paper, they could assemble a notebook to show their parents at open house. They used this notebook to show the school board what they had learned during the first quarter of the school year. Instead of traditional tests, the students and I used their technology-based products as performance assessments to measure their grasp of the content and elements of the short stories they read. Their technology learning was not a separate methodology in and of itself. Rather, it was a tool provided both to the students and to me as we worked together to learn more.

World War II projects on HyperStudio

According to Windschitl and Irby (1999), "conducting independent inquiry is a highly valued academic enterprise for middle school learners" (p. 40). Student inquiry cultivates skills such as developing meaningful questions, deciding what information is relevant to problem-solving, critically analyzing sources of data, making inferences from data, and making judgments. As adolescents develop an increasingly comprehensive understanding of subject matter and grow in intellectual independence, they become capable researchers.

National Standards promote inquiry at the middle level. In language arts, students "research issues and demonstrate their interest by generating ideas and questions and by posing problems" (Wilhelm, 1996, p. 9). In history, students work "backward from some issue, problem, or event to explain its causes" (Kendall & Marzano, 1995, p. 122). The
National Standards also emphasize that technology should be used in language arts to gather and synthesize information from a variety of sources. One way for language arts teachers to infuse technology into their curriculum and to teach the historical and cultural context of literature simultaneously is to provide opportunities for students to use the Internet to access primary sources. Ward (1999) suggests that when middle school students take on the role of historian, conducting their own investigations and drawing and supporting their own conclusions, they find the study of history and the literature produced during a given time period to be motivating and interesting.

The increase in accessibility to primary sources via the Internet over the past few years has opened new avenues of learning for students and teachers alike. Students develop critical thinking skills through working with primary source materials that help them understand and connect with the past and prepare them for the future. Reading, analyzing, and looking for bias in print materials, gleaning information from visual and mixed media, interpreting the meaning of messages conveyed in various media, and using evidence from sources to reach and support conclusions are essential abilities in the Information Age.

Before my students read The Diary of Anne Frank in a reader's theater setting, they used the "I-Search" method to conduct research on the historical and cultural background of the drama. The "I-Search" method asks students to pose research questions that cannot be answered using only books. Interviews, observations, and real life experiences enrich the quality of the research and help enliven and personalize the final projects (Macrorie, 1988). To these alternative research methods, I added the Internet. The eighth graders also used the Know/Want/Learn strategy to identify what they already knew about the time period surrounding World War II. Then they worked in pairs to pose a question that intrigued them;
brainstorm everything they already knew about that question; search the library, the community, and the World Wide Web for resources to answer the question; and then organize and share the results. This approach focused on the inquiry method as much as on products. In addition to searching for answers to questions, students created a narrative about the inquiry, providing opportunities to monitor their own use of the Web and to build those critical skills needed for sorting out sources and the information they provide.

This is the tenth year that I have taught *The Diary of Anne Frank*. Prior to teaching this particular selection, I read an article entitled "Technology as a Change Agent in the Teaching Process" (Johnson, Schwab, & Foa, 1999). I found myself in their description of an "early adopter," a teacher who implemented several of the new technologies available in my school, but who also limited her innovations to patching new technologies on top of her traditional curriculum and teaching practices. While I was definitely transforming the curriculum in my creative writing and online journalism classes, I was not as ready to distance myself from the new Prentice Hall theme books that included a balance of multicultural/nonsexist literature and appropriate grade level curriculum. Then I thought about the HyperStudio projects that the students had created earlier in the year. After receiving instruction in their computer applications technology classes, they subsequently learned more sophisticated techniques to integrate sound, animation, graphics and photography into their HyperStudio stacks (groups of seven to twelve individual computer cards organized around one topic). Since students already knew how to use the technology proficiently, they simply needed an opportunity to apply their newly refined technology skills in a content area.
When we met in our "class meeting" before beginning the unit, I introduced the idea of researching the World War II time period using primary sources available via the Internet as well as within our community. Working in pairs, the students used the "I-Search" process to limit their topics, search for viable primary sources, such as those available through the National Archives and Records Administration site, the Think Quest Holocaust Team site, and the U.S. Holocaust Memorial Museum site. My goals in using this inquiry-based process were

- to assist the students in developing an understanding of prejudice, racism, and stereotyping in society
- to help them gain insights into the many historical social, religious, political, and economic factors that cumulatively resulted in the Holocaust
- to gain perspectives on how history happens and how a convergence of factors can contribute to the disintegration of civilized values.

I also developed a scaffolding for technology apprenticeships in which novice technology users worked with more experienced peers to extend their current skills and knowledge toward higher levels of expertise. Scaffolding, according to Jonassen (1996), includes asking open-ended questions, giving nonverbal instructions, encouraging greater involvement of the learner, and spending time reviewing. This peer mentoring approach worked particularly well as students prepared to "polish" or proofread and edit their HyperStudio presentations.

In their learning teams, the students clearly understood directions that their peers demonstrated, and through concrete, practical activities communicated what they had learned more effectively. For example, in her presentation entitled "Women Enter the Job Market," Rachael downloaded magazine pictures from Internet sites that showed Rosie the Riveter and
other images so that her classmates understood how powerful propaganda was in recruiting women to work in factories during World War II. In addition to successfully using the technology, this fourteen-year-old girl dressed in a 1940's costume and explained why her grandmother had to wear a leather apron when she worked in a munitions plant.

Alex invited a World War II flying ace to visit class. This active veteran used the teaching station in the classroom to access his Navy flight group's Internet site to specifically show how he was one of the first pilots to fly a bomb raid over Berlin. Through using the available technologies, the students and classroom visitors exemplified active intellectual interaction within a social context. After Mr. Smith visited class, Jared said, "I was really surprised when he asked to use the teaching station. I thought he would just tell war stories and maybe show us a few things he brought home from the war. I had no idea that he knew how to use e-mail and the Internet." Through e-mailing this former Navy pilot, my students were able to find answers to questions that occurred to them later as well. For instance, when John e-mailed to ask why the maps used in the air war were made of cotton fabric, Mr. Smith replied: "If our plane went down over water, we would still be able to read the map and know our exact location." The social dynamics of using telecommunications helped them see themselves and their community resource visitor as lifelong learners and as not tied to the classroom and books for expertise. In an end of semester interview, Thad commented: "We should write a letter to the editor of the historical supplement to the local newspaper and ask him to interview Mr. Smith. He knows so much about the European theatre of the war. I think other people in town would like to know about his experiences too."

These examples from the HyperStudio presentations and one veteran's classroom visit illustrate the point that when technology is linked to social purpose and correlations between
tasks and levels of cognitive development are carefully considered, students find learning more interesting and are motivated to continue learning about specific topics and people in their own communities. After interviewing World War II veterans at the state veterans' home in our community, students created data bases to indicate the number of soldiers representing the various military services who would be willing to be interviewed another school year. After interviewing these men, students borrowed photographs and scanned them into their HyperStudio presentations to illustrate specifically how people who still lived in our community participated in the war effort. Some of the eighth graders secured permission to videotape the veterans, who told them that they should make sure they participate in government and stand up for people against whom others discriminate. In an interview at the end of the study of *The Diary of Anne Frank*, Elena reflected:

I never knew before interviewing a survivor of World War II via e-mail how really hard life was in the 1940s. I believe it is important for us to tell these survivors' stories and to make sure that the denial groups do not overpower the truth that these older people relate in their personal experiences. I am looking forward to visiting the U. S. Holocaust Memorial Museum on our school field trip to Washington, D. C., next spring. It will have great meaning for me now that we have talked with World War II survivors in this unit.

The students and adults reciprocated their learning and teaching roles. The survivors and veterans thanked the students for sharing the multimedia presentations they had created. They were impressed with the sensitively worded questions the students asked, their ability to articulate the details of the interviewees' World War II experiences, and with their technology proficiencies. Relating their stories held great meaning for both age groups.
“Visit Another Country” HyperStudio presentations

Another way that multiculturalism is valued in the language arts curriculum is through a year-end project that asked eighth grade language arts students to plan trips to other countries. As technology availed itself, these projects became more sophisticated and interactive. Early in the school year my eighth graders in pairs identified countries that interested them and used a variety of electronic pen pal opportunities to correspond with middle school students around the world. Having keypals encouraged them to communicate their thoughts and feelings effectively in a few short paragraphs. Their responses were similar to those that Housley (1998) cited. Students felt more comfortable talking to their peers rather than adults. Keypals encouraged reluctant scribes to write more, and they also shared more creative writing than they had before the e-mail exchange originated in the fall. Students learned to use the digital camera and to e-mail photographs to their keypals. Some scanned family photos to show their keypals their brothers and sisters. One twosome even collaborated on a story and "polished" it for publication in our middle school's online creative writing magazine.

The Book of the Month (part of an annual eighth-grade reading project) for May was a travel book, so when we traveled to the public library, the students found books that related to their focus countries. Using their library books, Internet sites, and e-mail pen pal messages, the students created HyperStudio presentations to inform their classmates about historical, cultural, and economic aspects of the countries they chose early in the year. In addition to the above types of information, students researched the costs of transportation, lodging, food, souvenirs, and special events that interested them. In their HyperStudio presentations, they introduced their countries with photographs downloaded from the
Internet, taught bits of language using audio, demonstrated geographical knowledge with relief maps, and relayed vocational information and recommended recreational opportunities. Again, we used a mini-lesson format at the beginning of each period so that students could demonstrate the technology skills, such as importing images from a web site, needed for the day's work. Students looked forward to sharing their expertise with their peers, and some of these students volunteered to create HyperStudio tutorials for equipment, such as the scanner and digital camera, so that students and teachers who wanted to learn to use the equipment later could do so. A volunteer travel agency spokeswoman visited class and asked each student to complete a passport application. One day a boy asked, "Are we really going on our trips?"

Mediated learning experiences, such as this collaborative research HyperStudio project, enhance students' interactions with others and play a vital role in the development of their thinking. Mindy, an eighth grader, commented at the end of this unit: "I didn't even know where Indonesia was before we began this unit. I have learned a lot about geography as we viewed the HyperStudio slide shows. Someday I would like to visit my keypal and see her country."

Other students plan to save their money and visit the countries they researched when they graduate from high school. Students who took Russian class as an elective in eighth grade look forward to the Russian Club summer trip that takes place once every four years while they are in high school. One of these students confided in an interview:

I used to have this dumb idea about how we shouldn't trust the Russians, but now I am interested in how they are building their democracy and how their economy is suffering. Doing this collaborative research has taught me to think about what life is
like in this country. I plan to take another three years of Russian and participate in the exchange program in high school.

These students' interview responses indicated that their abilities to see multiple perspectives developed as they used various technologies to conduct research, interact, collaborate and synthesize what they have learned.

**Conclusion**

According to Vygotsky (1978), all higher level thinking, including metacognition, directed memory, logical reasoning, and abstract thinking originate in social interaction. By sharing their inquiries with their near and distant peers, my students grew in their ability to express new knowledge that they were able to synthesize in projects that they exhibited at the end-of-year "Celebration of Success" fair. Interested parents and school board members, business partners and community leaders, and school staff and students all enjoyed seeing how many different ways technology had been integrated across the curriculum during the first year of our middle school prototype technology classroom work.

That is not to say that this study is without its limitations. One of the most obvious limitations relates to the lack of success that some students experienced in learning about other countries through e-mail exchanges. Some of them complained that they had a hard time figuring out how much or how little to write or what to ask the student in another country. Even though we had brainstormed a list of questions designed to elicit responses that would help us understand other cultures, some students did not use them. They also expressed frustration in having to wait sometimes for days for a response from their computer pen pals. After writing about these students' problems in my reflective journal, I came to the conclusion, like Hawisher and Selfe (1991) before me, that e-mail in itself is not
necessarily empowering or liberating. It can enhance the social dimension of the educational process, but it can also become a tool for education as usual, by positioning students passively and uncritically. To strengthen the e-mail exchanges, I might more fully share responsibility with the students for writing rubrics to evaluate their own efforts to learn from their electronic communications.

Despite limitations, implementations of inter-classroom communications set the stage for a new type of group interaction in our classroom. Instead of computer use being an isolating task, now the task took on a new social dimension through collaboration, distance communication, and student mentoring. Brandt (1989) described the value of the apprenticeship model of instruction in a study that similarly reversed the roles of the teacher and student. Frequently, in my study as in Brandt's, students became teachers, and I became a student, especially as students demonstrated their proficiencies with animation and audio in the context of their HyperStudio stacks. Students internalized the processes of social interaction that Vygotsky (1978) noted. They used new skills in telecommunications and active intellectual interaction within the social context to make connections between their prior knowledge and experiences and new information they learned in my classroom.

I believe that by opening opportunities for students, teachers, and people in the community at large to learn together in our middle school, my eighth graders and I have cut across boundaries of culture and class and have built learning teams in our democratic classroom. Through using the apprenticeship model of instruction, we have taught others to communicate efficiently and effectively using the available multimedia presentation software. In many ways we have improved the climate of our school, and because of the recognition my students have earned, they are capable of making a smoother transition to our
high school. Plucker (1998) cites the importance of self-confidence and mentoring to the development of aspirations. My findings coincide with his in that my students' heightened aspirations were in part related to the successful multimedia presentations that also increased their excitement for learning, sense of belonging, social acceptance, and academic achievement.

My language arts students' writing improved especially in two areas—elaboration and reflection and decision making. Through working with their learning teammates, the eighth graders were able to help each other determine places in their writing where they need to tell more or to show what was actually happening. They asked specific questions that let the writer to add more emotion, detail, background information, and character development. They developed a broader range of options and reworked larger chunks of text as the semester progressed. Through elaboration, the students saw that more is often better, at least in the early stages of developing a piece of writing.

Relevant to reflection and decision making, the eight-grade writers grew in their ability to reflect on their own writing and to answer such questions as "What does this poem or multimedia project need now?" or "What could I do to improve this project to make it clearer in meaning to the reader?" Sometimes it was difficult for the students to decide to continue to refine a piece of writing. I wrote in my reflective teaching journal about how they grew in their interdependence on each other as they grew away from seeing their teacher as decision maker in determining when a piece of writing was ready for publication. My students assumed responsibility and authority not only for their own writing, but also as editors, revisers, publishers, and interactive listeners.
In response to the research questions found earlier in this chapter, there are several ways in which my eighth graders found meaning in creating multimedia presentations; noticed changes in the ways they perceived themselves as writers; and reflected on how collaboration, negotiation, and interactions between themselves affected their writing. In their late semester interviews, students shared with me examples of their progress in these areas. One type of meaningful experience for students relates to the importance of learning to work collaboratively. Collaboration with their learning team peers enhanced my students' meaning-making process. Also, active learning using kinesthetic, visual, and auditory modalities; creating opportunities for dialogue; fostering creativity; and providing a rich, safe, and engaging learning environment helped my eighth graders construct mental models that grounded their understanding of writing for broader audiences in a deeply personal and unique fashion. Many of their multimedia presentations combined slide presentations with performances as Rachael did when she presented a narrative about the changing role of women during the World War II time period. By dressing in a period costume complete with her grandmother's leather apron from the munitions plant, this eighth grader brought history to life. During these presentations, the entire class evaluated the research plan in the context of the assignment, analyzed the images on the screen, and assessed the overall effectiveness of the projects.

Another way in which students found meaning in their work with multimedia presentations can best be observed through their heightened self-perceptions of their own writing abilities. Only five percent of these students perceived themselves in the low range of general and specific writing progress on the end-of-semester Writer Self-Perception Scale. They also indicated through interviews that they seldom had difficulty thinking of topics for
writing, which had been a problem for most of them earlier. Their end of semester persuasive essays were not only longer but far better organized than their initial attempts at persuasive writing.

At the end of the school year, this language arts class showed a one-year, five-month gain over the previous year on the Iowa Tests of Basic Skills written expression composite. An analysis of their persuasive essays for usage errors indicated that they had learned to successfully reorder details, eliminate redundancies, and demonstrate pronoun antecedent agreement. Comma usage was the most improved punctuation area. After mini-lessons emphasizing a variety of comma usage rules, the students were punctuating introductory adverb clauses correctly. Contextualizing instruction in correctness of expression also helped them learn to use the grammar and usage handbooks in the classroom.

Another way in which students demonstrated growth in higher order thinking in their language arts classroom activities was noted in their journal entries. They often wrote about how much they enjoyed negotiating curriculum together. In Teaching, Learning, and Computing, a national survey of 5,800 teachers, Ravitz, Wong, and Becker (1998) found that language arts teachers frequently engage their students in reflective journal writing, but fewer than ten percent of all teachers include students in planning classroom activities. By listening to students' requests, paying attention to their needs as expressed in journal entries, and validating through research literature their ideas of what would work to enhance change in our classroom, I came to see the value of students sharing their writing with partners or in their learning teams. There they felt safe instead of vulnerable as they expressed their ideas. It was the commonality of writing to express feelings that cut across the diverse ethnic and socioeconomic divisions of the school culture.
Each of the twenty students I interviewed told me that they valued writing because it was a way of expressing feelings and innermost thoughts. When a dialogue about these thoughts occurred in small groups, students understood the life experiences and personal concerns of their peers, and they heard each other's voices in new contexts. Similarly, the dialogue that I shared with my middle school students taught me that they were as capable as the high school students I taught nearly twenty-five years ago in their ability to design lessons and teach each other. Sharing the responsibility for curriculum change gave new ownership of learning to those students who appeared to be restless and difficult. A structure for facilitating revision and peer editing enabled those students who previously depended on the teacher for direction to be more self-regulated and confident so that they made necessary changes in their writing based on their peers' questions. The students came to trust each other. Even though technology does not replace teachers, it changes the focus of instruction for students from listening to the teacher to actually working on projects. They are involved most of the time as they use collaborative roles to facilitate their decision making, operate at the edge of their zones of proximal development, and manipulate technology tools to enhance their writing. Through structured experiences, my eighth graders engage in inquiry and inventive work, discuss essential questions, and conduct individual and group research for specific performance tasks. They make meaning of ideas.

From this practitioner research project, I learned that my responsibility in the classroom is to set flexible limits and boundaries, provide direction and structure to those who need it, manage group work, practice active listening, and facilitate the writing process in ways that engage middle level learners. Through working in collaborative learning teams; negotiating curriculum democratically; and planning, researching, writing, revising, and
rewriting; my students and I learned to use multimedia presentation tools in ways that served as a means to the end of enhancing learning in the language arts content area.
CHAPTER V. CONCLUSIONS

The task of the educational critic is to write in a way that will enable the reader to vicariously participate in the events that constitute that aspect of classroom life about which the critic speaks. (Eisner, 1979, p. 15)

This study invited readers to vicariously participate in events that occurred in my classroom and to examine with me the multi-layered experiences of eighth graders learning to write in a classroom whose teacher is committed to constructivist pedagogy and to the meaningful use of computers to facilitate the writing process. I conclude here by summarizing the ways I have found that computers facilitated the development of my eighth graders' writing skills. Further, I discuss conclusions I have reached about the effect and impact of technology and constructivist theory on process writing instruction and reflect on the action research process as a means of understanding the phenomena studied.

The three major conclusions I focus on here are that

(1) A technology-rich, constructivist classroom environment in which a teacher serves as a facilitator of developmentally appropriate middle school learning activities provides students opportunities to collaborate with their peers to negotiate curriculum in a democratic setting.

(2) Providing opportunities for students to interact with their peers in collaborative learning teams and implementing a mentorship pyramid or apprenticeship model of instruction empowers students to learn collaboration skills and to experience a heightened self-confidence and self-esteem through teaching others technology skills and content-related information.
(3) By sharing ideas with broader audiences via distance education classrooms, online publications, and hypermedia presentations, middle school students not only improve their writing, but they also become more self-directed, confident, and capable. They see connecting their prior knowledge and experiences with new knowledge and technology skills as valuable not only to them, but also to their near and distant peers.

It is important to note the overlapping and recursive relationships of the themes underlying these conclusions. One theme is that constructivist teachers use various technologies as tools in providing opportunities for active learning in which students create, discuss, compare, collaborate, and experiment to improve their writing. Another is that educators need to more fully examine the specific ways that technologies enhance or limit students' abilities to make meaning of ideas and to create quality written products for various audiences. A final theme is that it is important for teachers to select developmentally appropriate middle level learning experiences as they engage their students in using technology to communicate, collaborate, and express themselves in their writing projects.

My primary purpose throughout the dissertation was to discover whether and how using specific technologies facilitated writing improvement. In doing so, I took a practitioner research approach to investigating how my eighth graders used technology as tools for making more meaningful connections between information, personal experiences, and new knowledge acquisition. Using the practitioner research cycle (in which teachers/researchers plan, act, observe the plan, and reflect) to study my own classes and student feedback allowed me to make changes that assisted students in collaborating with their peers in writing and revising for more specific audiences.
Thus, my critique is not whether or not technology should be used in a classroom. It does not compare ways I implemented technology in other classes, nor does it compare my classes with others using technology. Rather, it is a critique of my past experiences with computers and an examination of the place of technology in my own teaching methods. This discussion focuses on my decisions to incorporate computer-mediated collaboration and developmentally appropriate, technology-enhanced learning opportunities in order to help my eighth-grade students improve their writing.

I do not expect the results of this study to be generalizable, but my insights and results may inform other teachers as they strive to discover effective teaching strategies and practices for incorporating technology into their classrooms. My intent is that this discussion be interpreted as "more of the reader than of the writer" (Meloy, 1993, p. 315). If teachers and curriculum directors who read my research can benefit from using any of the methods for implementing technology that I describe here, I will have achieved my goal. I hope that by assisting their students to contextualize their learning, teachers who embrace constructivist practices and examine their classroom use of technology are empowered to provide high-quality educational experiences that prepare students for success in the twenty-first century.

**Major Conclusions**

In the following discussion, I provide support for the conclusions outlined above with references to Chapters II, III, and IV, and with brief references to the results of observations, interviews, surveys, and documents that I analyzed in order to improve my own teaching effectiveness. I follow my discussion of the conclusions with further implications of this study and offer suggestions for future research.
Facilitating a constructivist learning environment

My analysis of the data has contributed to my belief that computer-mediated writing experiences do serve students as tools for thinking; for helping them to organize, reorganize, and construct knowledge; to make meaning; and to enhance their own intelligences. As I worked through this study, I found that I shifted further from the role of teacher as an information giver toward teacher as facilitator of learning who not only considers her students' needs, interests, and strengths when planning curriculum, but values their input and choices. Therefore, my first conclusion suggests that a technology-rich, constructivist classroom environment is one in which a teacher serves as a facilitator of developmentally appropriate middle school learning activities by providing students opportunities to choose how they will learn and to collaborate with peers and teachers to negotiate curriculum in a democratic setting. In this context, a democratic classroom setting is one in which each young person's voice has a chance to be heard. Early adolescents and their teacher engage in collaborative planning, reaching decisions that respond to the concerns, aspirations, and interests of both (Apple and Beane, 1995). Given a constructivist classroom environment, students interact and form understandings of how both the democratic world and the people in it work.

Reflective middle school educators need to recognize that students achieve at higher levels when they are trusted to take responsibility for their own work. Through providing developmentally appropriate learning experiences and technology-rich environments, teachers can empower their students to be active in their own development and create knowledge of their own world through activities they help construct. My students became not only more proficient learners, but facilitators of learning as they worked in collaborative
groups first in our classroom and then with their distant peers via e-mail and distance education television classrooms. They shared in writing rubrics for assessing their progress in collaborative group work and for learning to create and write specific types of essays, newspaper articles, PowerPoint and HyperStudio presentations. Students set their own deadlines, revised their writing using their near and distant partners' suggestions, and dialogued with me and other adults to negotiate curriculum changes that made their learning more relevant to their real world experiences.

For example, in the language arts class discussed in Chapter IV, learning teams worked cooperatively through the collaborative processes implemented from the beginning of the year. When they brainstormed a list of journal topics for all eighth graders to use, this group stood out because of their ability to articulate their personal concerns and the larger issues that face our world. They were interested in correcting social injustices and improving our community. Also, when given a choice, many of the language arts students chose to use the computers in the classroom for their journal writing. They valued their neatly typed journal pages and often commented about how much neater the print copy was than their penmanship. These students often used their computer-generated journal entries as prewriting for class assignments, such as personal narratives or book analyses. They communicated with each other about the important academic work they were doing and with me about curriculum preferences and classroom procedures. Further, their attitudes toward writing improved as they began to e-mail their friends with online journal entries and messages that encouraged their peers to become active in co-curricular activities offered at school. Their journal exchanges recorded not only retrospective but also reflective thinking as they progressed in their ability to share their thinking through writing with their peers.
Another notable example of the benefits of involving students in decision making occurred in the online journalism class discussed in Chapter III. These students required a teacher who was willing to relinquish traditional control of the classroom. Encouraging student autonomy, giving students chances to speak their own minds about concepts first, and allowing students' ideas to help steer learning became especially important in this group of students who did not perceive themselves as skilled writers. As I worked with these students in creating rubrics for formative assessment of their journalistic writing, I learned the difference between discussion and dialogue. This group taught me to listen carefully but also to observe group dynamics, particularly for combinations of students who worked well together. The journalism class members chose to work collaboratively in pairs rather than individually within their own classroom. Recognizing this need for the support of another writer, I found that collaboration with near and distant audiences enhanced my students' meaning-making processes. By the end of the semester, these students grew in their ability to flexibly accept moving from working alone to working with one other person and then to working with a larger group.

As my students set their own deadlines, depended on each other for help with comparable assignments, and took turns using the computers, digital camera, scanner, and other technologies, they learned to share work loads democratically. No longer did one person do most of the work in cooperative learning group activities. Rather, the collaborative group members rotated through the various responsibilities and bonded socially through appreciating each other's personal talents. These students found a balance of what Dewey (1916) described as the fundamentals of group life—liberty equality, and cooperation or
fraternity. Subsequently, the eighth graders grew in their abilities to serve as facilitator, recorder, reporter, and process observer—roles that are frequently held in workplaces today.

Thus, through interacting democratically and dialoguing with their students, constructivist writing teachers can actively participate as co-learners, guiding, demonstrating, and explaining so that students grow in becoming independent learners. The focus in a constructivist middle school classroom is on stretching students beyond their current competencies, but also on creating meaningful writing experiences for them. By seeing their teacher modeling the uses of writing and technology, middle schoolers do have the potential to become motivated to be involved in collaboration. Assessment, in this context, becomes an effort to understand how students think. As teachers dialogue with their students and exchange points of view, Anderson (1994) suggests that all participants in the conversation consider others' points of view and expand their thinking. Through negotiating curriculum in a democratic classroom setting, students develop a sense of ownership and voice in the learning process. Further, they accept greater responsibility for their own lifelong learning as they work with their teachers using technology to collaborate and conference via television classrooms, learn journalistic writing principles, publish their writing on the World Wide Web, and prepare multimedia presentations to demonstrate what they know and can do.

The classroom experiences that I describe in this study indicate that constructivist theory provides middle school teachers, and, thus, their students, with a firm foundation for technology learning in the writing classroom. As middle school students see their prior knowledge and experiences as important, they might better contextualize their learning and prepare for the workplace of the future. Through collaborating with their peers and teachers to construct more meaningful learning experiences, these students employ a wide range of
strategies as they write and use different technologies and writing process elements appropriately to communicate with different audiences. When students make sense of, and take responsibility for, their work, their classroom environment, and, subsequently, their lives, they will see what they learn in their writing classrooms as relevant to the workplaces they see in their future. Students in technology-rich constructivist classrooms become skilled in the collaborative, interdependent, democratic processes that are in high demand in business, education, and industry today.

**Implementing the apprenticeship model of instruction**

Providing opportunities for students to interact with their peers in collaborative learning teams and implementing a mentorship pyramid or apprenticeship model of instruction empowers students to learn collaboration skills and to experience a heightened self-confidence and self-esteem through teaching others technology skills and content-related information. This was especially evident in the work that the creative writing class did in facilitating the distance education classroom exchange. Relevant to the use of the actual physical equipment offered in the television classroom, the eighth graders found that they learned quickly from their peers. They responded positively to interview questions that asked if they liked helping other students with the equipment and encouraging them to participate in more self-directed ways by taking greater responsibility for using the touch-sensitive screen, microphones, and other equipment. Those students who emerged as technology leaders enjoyed assisting with preparations for the sessions and felt that their self-confidence was enhanced through the experience.

As the language arts students worked through their "All About Me" presentations at the beginning of the year, they embraced the apprenticeship model as a way of doing
business. As they interacted with their more knowledgeable peers, they worked together to analyze, predict, and create quality multimedia presentations. They came to recognize people other than their teacher as having expertise. When one student needed help with some aspect of the multimedia program, others were quick to give assistance. Eighth graders whose writing skills were not as proficient as their peers' accepted help from their learning teams, and their attitudes improved as they perceived themselves as highly capable by the end of the semester.

The exception to this included four students who did not progress in their ability to use the multimedia programs and who resisted using the programs because they perceived them as difficult to use. In interviews, these students confided that they had little access to the multimedia presentation programs outside of class, and they felt inferior to the students who already knew how to use the programs. These conversations led me to consider the equity issues that related to technology access in our middle school building and to arrange for these students to receive academic assistance through the Twenty-first Century Learning Center after-school programs. After working with technology tutors or mentors, these students became more positive in their interactions with their learning teammates.

Through comparing the multimedia products that these students created at the beginning of the semester with those they produced at midterm and at the end of the semester, I recorded more highly sophisticated use not only of writing skills but also higher quality sounds; images; and combinations of texts, graphics and photography. Students learned to evaluate Internet sites and document Internet sources as they created links to related online sites with colorful buttons in their presentations. For instance, using the technology gave the students in the language arts class a more exciting method of presenting
what they had learned about literary analysis. Their attention to detail in revising enhanced their multimedia presentations. By the end of the semester, these students indicated in their surveys and interviews that they also perceived themselves to be above average in their general progress in writing. Factors taken into account included past success, amount of effort necessary, need for assistance, task difficulty, persistency, and the belief in effectiveness of instruction (Bottomley, Henk, & Melnick, 1997/1998).

As the eighth graders learned to use the available technologies from their peers, they soon settled into task-oriented learning teams. Their social skills improved. They learned about peer relationships, teamwork, critical thinking, friendships, self-expression, and self-confidence. Classroom activities met their needs for acceptance, autonomy, self-expression, and fun. In end-of-semester interviews, the majority of the students agreed that they had learned to work cooperatively and get along well with others. They also noted that they liked making friends with students in other schools and listening to their ideas and perspectives. They derived a sense of accomplishment and satisfaction from using their multimedia presentations to help others learn. In the Student Self-Assessment of Writing survey, students indicated that they were half as likely to be distracted at the end of the semester as they were at the beginning of the year.

To conclude, I would like to share one student's journal comments relevant to how he experienced heightened self-confidence and self-esteem through teaching technology skills and content-related information in the online journalism class:

You know, when you teach someone else, you learn all over again. I think it is a good thing that we teach others what we know so that when we go to high school, there will still be students here who know how to continue the online publishing.
This student's reflective writing shows the importance of students taking time to think about how they relate to others in and outside their own schools and communities as they prepare for a workplace that will demand that they be flexible in not only using technology but also in sharing their expertise with others.

As the semester progressed, I noted in my reflective teaching journal how the students in the online journalism class learned an easy give and take in sharing the computer with their learning teammates and in offering peer revision suggestions. Their use of courtesy words increased. One girl offered to take attendance every morning and greeted everyone with a cheery "Good morning!" Classroom cooperation increased in direct proportion to the degree of responsibility that students assumed.

Using technologies for broadening audiences

By sharing ideas with broader audiences via distance education classrooms, online publications, and hypermedia presentations, middle school students may not only improve their writing, but they may also become more self-directed, confident, and capable. They can see their prior knowledge and experiences as valuable not only to them, but also to their near and distant peers. My students' heightened self-efficacy as writers led them to write for audiences inside and outside the classroom including friends and family, college writing partners, the middle school's hard copy and online newspapers and creative writing magazines, and even for students from other schools via the Internet.

For example, the creative class members' experiences described in Chapter II, as well as the data collected from surveying students and examining their texts, indicate that the students who used distance education classroom equipment to collaboratively conference with junior college writers made meaning-changing revisions more readily than they did with
their peers in the regular classroom. Their distance education exchanges assisted them in using new technologies and also in using revision processes for the purpose of improving their writing. Providing computer-mediated collaborative conferencing opportunities for middle school students to interact and revise their writing with college students led my eighth graders to improve in their abilities to narrow, elaborate, and develop topics; organize their writing; and improve word choice and grammatical usage. Research suggests that writers who perceive their distant audience as unfamiliar with their basic lifestyles, habits, or routines will provide greater depth of detail in descriptive writing. This proved true for my eighth graders as they attempted to improve vocabulary when they wrote for a more mature audience.

Further, Rockman & Becker (1998) found, through anecdotal evidence, that students who use the technology for real communication with real audiences are much more capable of talking to adults because they become accustomed to doing it. When my creative writing students used the distance education classroom and e-mail to facilitate collaborative conferencing for the purpose of revising their writing, they found that they made two-thirds more meaning-changing revisions in their third (profile) essays than they did in their first (autobiographical introduction) essays. As suggested in Chapter II, these eighth graders progressed from conversation to correspondence to collaboration for the purpose of revising text to meet audience needs. Moffett and Wagner (1992) suggest that anticipating and adjusting text for broader audiences is an essential part of learning to write proficiently.

Through using various technology tools, the students in the creative writing class perceived themselves as capable creative writers and technology users. They grew in their ability to relate to the older students and to listen and learn from their experiences. As they
heard the stories of significant life events unfold in their college writing partners' essays, the eighth graders caught a glimpse of themselves as they might be in the future. Being able to see and hear the college students read their papers and respond to their partners' essays brought a sense of learning through knowing other students who were purposefully intent on improving their abilities to express themselves with the written word. An added benefit of the experience was that when the eighth graders met their writing partners in person and toured the college campus, they considered career options that they might not have discovered independently.

In interviews, my eighth graders indicated that they placed a high value on fun shared with friends. Working with the television classroom equipment validated both the need for belonging and for fun in the eighth-grade writers. They were happy to learn a new technology and to serve as mentors in teaching their peers how to use the equipment needed in facilitating the writing exchange. This collaborative writing exchange provided opportunities for Cherie and me to provide assistance with tasks when the students needed support. It also opened opportunities for us to create constructivist learning environments in which students could bring their prior experiences and knowledge and apply what they knew to assimilating new information and reframing new understandings in interactive processes. Our carefully designed curriculum assisted our students in the construction of knowledge by showing both eighth graders and first-year college students the links among pieces of information, technology proficiencies, and revision strategies. Through collaborating with their peers, the eighth graders achieved the goals they set for themselves at the outset of the project: to revise (add/change details, dialogue, or other specific facts or opinions) to make their writing more clearly understood, to help less well prepared students elicit college
students' perspectives on the papers they write, and to understand what it is like to be a community college freshman.

Results of the end-of-semester survey indicated that the distance education classroom project was a positive experience for all but two students. These students did not complete their rough drafts in time to travel to the television classroom. The same two students indicated in interviews that one of the reasons they did not complete their writing projects was that they could not work quickly enough to finish in class, and they had no computer access during the rest of the school day. Neither did they have computers at home. Therefore, their keyboarding skills were poor. The same two students did not take advantage of the after-school homework assistance provided. Teachers need to be aware that technology may be frightening to students who feel incompetent at computer keyboards or who have little access to technology after class. One of these students confided later in the semester, "I think we should have reteach day more often. When I sit beside you and you explain it step by step, I understand better." This student's need is comparable to that of the student who expressed a need for teachers to listen "slowly" and respond sensitively to students' needs. Middle level students' range of physical, emotional, intellectual, and social development may vary, and they may feel left behind when they cannot use technologies proficiently. This example illustrates the need for teachers to provide nonthreatening help in the form of mentors or tutors so that no one is left out.

The experience of the online journalism class discussed in Chapter III provides another example of how working with distant audiences can create opportunities for middle school students to both grow as writers and as participants in their own learning. Given the freedom to establish a working relationship with their age mates in a distant state, my
students in the online journalism class found a network of understanding and a community of others with whom they could learn and share through discourse.

The online journalism class members grew further in their ability to revise and to consider the broader audience of Internet readers as they collaborated with writing partners in their own classroom. Although nearly half of them did not elect to take the class, these students learned the benefits of collaboration and transferred them to other classroom activities and to preparing multimedia presentations to teach their peers in Colorado via the Internet. They also grew in their abilities as technology users and mentors, and they were successful in teaching younger students to carry on their work with the online newspaper.

Active learning using kinesthetic, visual, and auditory modalities; creating opportunities for dialogue; fostering creativity; and providing a rich, safe, and engaging learning environment helped my eighth grade online journalism students construct mental models that grounded their understanding of publishing for broader audiences in a deeply personal and unique fashion.

In the language arts class, students with high ability reading skills used them to good advantage in assisting peers within the classroom. Fifteen of the students in this class read at grade ten equivalent or higher. Research (McCutchen, Francis, & Kerr, 1997) suggests that students who are high-ability readers are more adept at detecting and diagnosing text problems, whether surface errors or meaning errors. The language arts students' diagnoses of revision needs as well as their skilled use of the "Praise! Question? Polish." revision method allowed them to suggest well-defined revision strategies (e.g., moving a sentence or paragraph). Only four students in this class had difficulty moving from detection to diagnosis in reading their learning team members' writing. When the lower-ability students
reached a conclusion about the need for revision, they would often couch their comments in
the form of a question rather than as a statement of their decision. Sometimes they would
call me over to their tables to check to ensure that their recommendations were correct.
These low-ability students used a sentence-by-sentence strategy to detect problems by
reading along until something sounded wrong; they seldom considered the global structure of
the text and never went back to read the entire text.

These students felt frustrated often and quickly tired of working with revision, but
when they worked with more capable readers, they expressed a high degree of originality and
devised animated graphics that complemented the text that their more capable writing peers
created. This observation suggests that teachers need to be alert to reading skills and
strategies that writers bring to the revising process. My students also discovered that they
were much more capable of suggesting revisions if they were knowledgeable about a topic.
If teachers expect to focus student revision on meaning, they also need to provide a
knowledge base so that meaning-based revision may occur.

My language arts students shared their prior knowledge and experiences and worked
together to learn to investigate, communicate, create, and produce high quality multimedia
products. In collaborative groups, they participated in electronic communication and
knowledge searching. Using technology first in brainstorming journal topics, growing in
their abilities to serve as technology mentors, and creating a variety of multimedia products
heightened their self-confidence and self-esteem and gave them a reputation in our school as
technology experts. They were able to provide technical assistance and offered their
troubleshooting skills to teachers. When they had the opportunity to work with others
outside their own classroom environments, they practiced courteous behaviors,
demonstrating their ability to assess and adjust their communication practices to various situations.

As these technology-using students go into their communities, they will be able to make decisions and shape their workplace worlds in ways others have not been able to do. They will facilitate change. As David Dwyer (1998), former Director of the Apple Classrooms of Tomorrow research programs says: "Technology is not an innovation that is limited to education. It is a change that is happening in the world at large in the ways professionals do science, or we all communicate with each other. This makes it hard for schools to ignore it" (p. 29).

Implications

One implication of this study for teaching is that the role of the teacher is changing as technology is infused across the curriculum. The teacher as facilitator of learning is important. While multimedia programs and software tools provide experiences that a teacher cannot replicate, the teacher serves as a facilitator of learning by placing tools in the students' hands so they know how to ask questions, evaluate sources, hypothesize, and communicate effectively. In this type of learning setting, technology has a catalytic impact on schools. Teachers are forced back into a learning mode. Those who reflect on their practice and question their teaching methodologies have the potential to create learning environments that take advantage of the opportunities technology presents.

Learning no longer resides in one person (the teacher). As students and teachers reversed roles in my class, other teachers in my middle school expressed more interest in having computer cadre students come to their classrooms to teach them to use the new computers and large screen television teaching stations that accompanied them. Students
frequently used enrichment times provided during class to go to other classrooms to help with technology learning and teaching. Sometimes they prepared presentations for other classes in using the technology, but at other times they simply worked with younger students in learning revision strategies that the computer could complete effectively and efficiently.

Another implication is that curriculum directors and teachers alike should think in new ways. They need to look at ways not to layer technology on top of what teachers are already teaching but to integrate it across the curriculum in mindful ways. For example, I realized midway through my study that much of what I was doing in the language arts classroom was infusing the technology into my existing curriculum. When I decided to "let go" of some of the existing curriculum and invite students to dialogue about their needs to know, I found that we could negotiate meaningful change in a more productive classroom. The middle school students who enter my classroom every fall are not the same when they leave to make the transition to the high school. By the time they are ready for ninth grade, they have become nonlinear thinkers, and much of their growth in higher order thinking can be attributed to their work with hypertext environments and constructivist theory-based instruction. My expertise as an open-ended questioner elicits responses from students that helps me know their interests and aptitudes early in the school year. If constructivism is about how students learn, it also suggests that they do not learn alone. The entire notion of who is the teacher becomes as elusive as the question, "How smart are you?" That question may need to be rephrased to ask, "How are you smart?" Every student brings a wealth of prior knowledge and experience with him or her. Now is the time for educators to implement technology-based writing instruction so that students can learn from their peers both in regular and distant classrooms.
There is a third implication of my research that is important as it focuses on ways in which teachers "see" and reflect on their teaching practice. This view can perhaps be best illustrated with reference to the two kinds of "seeing" to which Annie Dillard refers in *Pilgrim at Tinker Creek*. Judith A. Fueyo (1995), in an open letter to John Dewey, cites Dillard's (1974) observation: "The first kind of 'seeing' is a matter of verbalization. Unless I call my attention to what passes before my eyes, I simply won't see it....I have to say the words, describe what I am seeing" (pp. 30-31). This is the kind of descriptive writing that teachers do without reflecting or articulating what they might do differently if given the opportunity to change an instructional plan.

Fueyo claims that it is the second kind of seeing that is most important to teachers. This form of seeing, Dillard (1974) says,

involves a 'letting go.' When I see this way, I am transfixed and emptied. The difference between the two ways of seeing is the difference between walking with and without a camera. When I walk with a camera, I walk from shot to shot, reading the light on a calibrated meter. When I walk without a camera, my own shutter opens, and the light prints on my own silver gut. When I see this second way, I am an unscrupulous observer. (p. 31)

Dillard goes on to explain that the secret of seeing is "to sail on the solar wind. Hone and spread your spirit until you yourself are a sail, whetted, translucent, broadside to the merest puff" (pp. 32-33). It is this second interpretation of "seeing" that is most important to the third implication of my study. As Fueyo (1995) describes it, we teachers/practitioners must put away our traditional camera lenses (the ones that saw the scope and sequence charts, the multiple choice tests, and even the new forms of portfolio assessments), and, as professional
"seers," we must be cameras. In "seeing" my own research, I now interpret it as showing the
dulti-layered complexities of interactions that emerge when we try to understand how
successful we are when we teach. Through writing reflectively in my teaching journal, I
have taken time to record, describe, reflect, analyze, and repeat the practitioner research
cycle many times. However, it is through my interactions with students and through
observing my students' interactions with their near and distant peers as they collaborate to
improve and publish their writing that I have come to appreciate the meaning-making aspects
of our relationships.

It is in the "letting go" of the traditional role of the teacher that I have learned to say
to my students, "Let's find out together." No longer positioned as the central source for all
facts, I am now released to "see" with my own "silver gut." I can simply "see" what is
happening in my classroom, or I can "see" and capture the meaningful and powerful learning
experiences that my students and I share in technologically diverse ways for I no longer need
only to write descriptively about what is really happening in my classroom. My eighth
graders and I can dialogue and record these events using as many technologies as are
available to us in the classroom, or we can simply talk and plan "how we will get there from
here." I can continue to provide experiential learning situations that help my students think
about what combination of technological tools they might use in the future to create dynamic,
interactive materials for ever-expanding global audiences. As John Dewey (1938) reminds
educators everywhere,

Experiences in order to be educative must lead out into an expanding world of
subject-matter, a subject-matter of facts or information and of ideas. This condition is
satisfied only as the educator views teaching and learning as a continuous process of
reconstruction of experience. This condition in turn can be satisfied only as the educator has a long look ahead and views every present experience as a moving force in influencing what future experiences will be. (p. 87)

The experiential reflections on my teaching practice that are recorded here remind me not only to respect the prior experiences and knowledge that my students bring with them into the classroom, but also to "see" and to appreciate the multi-layered interactions that contribute to students' reflection and meaning-making in their own life experiences.

Recommendations for Further Research

Implications from this study indicate that further research is needed in comparing different technology-based teaching techniques to discover what works best to engage middle school students in using technology to improve their writing. If teachers are to use state of the art technologies in their classrooms, they need training not only in using the equipment but also in educational theories that support student-centered and developmentally appropriate instruction. In a recent mailing to Teaching, Learning and Computing: 1998 survey participants, Henry Jay Becker (June, 1998) shared current research indicating that fifty-four percent of teachers who regard computers as very important in their teaching were more likely to be strong constructivists in practice than those (thirty-one percent) with a similarly constructivist philosophy who did not value computers in that way. Changes in the past three years in the constructivist direction included:

- increasingly having students teach or help one another, having students work in groups, having students review and revise their own work, evaluating students based on authentic assessments rather than tests, having students explore a topic on their
own without close direction, and having multiple activities occur simultaneously in one classroom. (Becker, 1998, p. 14)

Teachers can benefit from staff development and university training in educational theory so that they recognize the many philosophies that undergird their pedagogies. As they develop communities of learners among teachers, they may identify learning how to teach reflectively, encouraging innovation with each other, discussing ideas together, and sharing samples of student work as ways to develop their professional expertise.

Most people who are excited about technology in schools care deeply about students doing sophisticated writing, engaging in complex reasoning, or figuring things out as adults do, but they do not agree on ways to consistently measure such outcomes. Additional research is needed to learn more about how computer-mediated collaborative conferencing impacts specific revision processes. Extending the study to a full school year rather than only one semester might provide time for the researcher to follow students' progress for a longer period and to measure whether revisions continue to increase. This time extension would also allow students time to become more proficient with the distance education classroom equipment and to learn to know their writing partners better. Another reason for extending the length of the study would be to continue to monitor students' attitudes toward revision in the writing process and toward collaborative conferencing via e-mail and distance education classrooms, creating more sophisticated online publications, and preparing multimedia presentations.

Additional studies might focus on the effects of only e-mail exchanges on revision in student-generated creative writing and publishing for online publication. Research (Horban, 1998) suggests that using e-mail for structured purposes assists students in finding
information, communicating with others, and increasing their knowledge base as well as in improving their writing skills.

**Final Reflections**

As I reflect on the practitioner research completed within the framework of this study, I focus particularly on the term *meaning-making*. It is especially important as it relates to those meaningful experiences to which my students alluded as they talked and wrote about the contextually rich learning tasks that, together, we negotiated and integrated into our curricula. Meaning making is also significant to me in my own growth toward becoming a more effective teacher and researcher. Through expressing my inherent interest in ways that middle schoolers think about their writing, I learned that my students found meaning in solving authentic problems related to their own computer-mediated conferencing and publishing tasks. By engaging in dialogue with their near and distant peers, the students came to value the feedback they received from their writing partners and used it to revise and improve their writing. As they developed deep understandings by writing about diverse subjects for a variety of audiences and purposes, the eighth graders learned to know themselves and their own thinking and learning processes in mature ways that contributed to their taking ownership of their writing and publishing processes and products.

As the students grew in their ability to collaborate with their peers, I, too, grew in my ability to facilitate inquiry in a constructivist classroom. I also learned something about myself as an educator. Through discussing my practitioner research with my peers in staff development sessions and by interacting via distance education classrooms with teachers who pursued National Board for Professional Teaching Standards certification, which I earned in 1995, I learned the restorative value of ongoing professional dialogue. As these
teachers practiced reflective writing in the context of their everyday teaching lives and in writing their site portfolio commentaries, they asked me for advice about reflective teaching and computer-mediated instructional practices. Through these professional dialogues, I learned that what works for teachers also works for students. We plan, act, reflect, revise, and enact the cycle again. Through exchanging ideas and roles, we become a community of learners. We encourage innovation, discuss ideas together, share our writing processes and products, and engage in meaning-making together.
APPENDIX A. INTERVIEW QUESTIONS

1. What does writing mean to you?

2. Why do you think writing is not meaningful to either yourself or other eighth graders?

3. What advantages or benefits do you find in daily journal writing?

4. If you were to rank the five types of writing you do, in what order would you put the following: Letters, notes, newspaper articles, creative writing, writing for other classes?

5. Given total freedom of topic choice in your journal, what would you choose to write about on a daily, weekly, or monthly basis?

6. Is there a page in your journal you particularly value? Why is it important to you?

7. What motivates you to write outside of class?

8. In what ways do you think it is true that inspiration comes while a person is writing rather than before he or she writes?

9. What do you feel is the best writing you have ever done?

10. If you could design the ideal writing classroom setting, what would it look like?

11. Tell me about your family and what you do for fun. Do your family members write too?

12. Would you prefer to write with pen/pencil and paper or to compose at a computer? Do you prefer to do some kinds of writing "by hand" and others on the computer?

13. What do you see as the advantages or disadvantages of writing on a computer?

14. Do you like to write alone, with one other person, or with a group?

15. In what type of magazine or book would you like to publish your writing?

- Interviews conducted with every fourth student in each of the creative writing, online journalism, and language arts classes.
## APPENDIX B: NEWS ARTICLE RUBRIC FOR ASSESSMENT

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Exemplary</th>
<th>Acceptable</th>
<th>Not Yet Ready</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Presents accurate, focused and factual news details.</td>
<td>1. Presents accurate, specific, factual details.</td>
<td>1. Needs more specific, accurate, factual detail.</td>
<td></td>
</tr>
<tr>
<td>2. Answers all 5 W's + H questions.</td>
<td>2. Answers relevant 5 W's + H questions.</td>
<td>2. Needs to supply answers to 5 W's + H questions.</td>
<td></td>
</tr>
<tr>
<td>3. Uses quotations to enliven/make readable.</td>
<td>3. Uses at least one direct quotation.</td>
<td>3. Needs to provide at least one direct quotation.</td>
<td></td>
</tr>
<tr>
<td>4. Attributes to person or source of information.</td>
<td>4. Attributes to at least one source of information.</td>
<td>4. Needs to cite specific sources.</td>
<td></td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Follows precisely the inverted pyramid.</td>
<td>1. Follows inverted pyramid (80% accuracy).</td>
<td>1. Needs to use inverted pyramid.</td>
<td></td>
</tr>
<tr>
<td>2. Opens with lively lead, using the most important W first.</td>
<td>2. Opens with adequate lead that relates most important detail.</td>
<td>2. Needs relevant lead sentence.</td>
<td></td>
</tr>
<tr>
<td>3. Alternates direct and indirect quotations, focusing on interviewee.</td>
<td>3. Includes at least one direct and one indirect quotation.</td>
<td>3. Needs direct and indirect quotations.</td>
<td></td>
</tr>
<tr>
<td><strong>Correctness (Mechanics/Grammar/Usage)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Uses third person point of view.</td>
<td>1. Uses third person point of view 80% of the time.</td>
<td>1. Needs to use third person point of view.</td>
<td></td>
</tr>
<tr>
<td>2. Varies paragraph beginnings and keeps them short.</td>
<td>2. Varies paragraph openings and keeps them short.</td>
<td>2. Needs relevant lead sentence.</td>
<td></td>
</tr>
<tr>
<td>3. Verb tense agrees with &quot;advance&quot; or &quot;coverage&quot; stories.</td>
<td>3. Subject and verb agreement fits 80% of the time.</td>
<td>3. Needs direct and indirect quotations.</td>
<td></td>
</tr>
<tr>
<td><strong>Time Management and Contributions to Newspaper's Success</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Meets deadline and helps others do so.</td>
<td>1. Meets deadline.</td>
<td>1. Needs to meet deadline.</td>
<td></td>
</tr>
<tr>
<td>2. Expects to rewrite or for editors to alter copy.</td>
<td>2. Expects to revise as needed.</td>
<td>2. Needs to revise to meet criteria for article type.</td>
<td></td>
</tr>
<tr>
<td>3. Keeps promises to deliver story on time.</td>
<td>3. Delivers story on time.</td>
<td>3. Needs to deliver article on time.</td>
<td></td>
</tr>
<tr>
<td>4. Assists other students in improving their writing.</td>
<td>4. Improves own writing by following revision suggestions from editors or advisor.</td>
<td>4. Needs to collaborate to improve his/her own writing.</td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX C: FEATURE ARTICLE RUBRIC FOR ASSESSMENT

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Exemplary</th>
<th>Acceptable</th>
<th>Not Yet Ready</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Shows interviewer's creativity, sense of humor, or sense of audience.</td>
<td>2. Bases information on interviews, observations, etc.</td>
<td>2. Needs to show creativity/unusual approach.</td>
<td></td>
</tr>
<tr>
<td>3. Connects research with current events.</td>
<td>3. Presents historical details that relate to today's news stories.</td>
<td>3. Needs to make connections.</td>
<td></td>
</tr>
<tr>
<td>4. Recreates experience.</td>
<td>4. Recreates experience or presents personality.</td>
<td>4. Needs to relate experience vividly or reveal personality of subject.</td>
<td></td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Demonstrates a creative approach to subject.</td>
<td>1. Uses a moderately creative approach.</td>
<td>1. Needs to show creative yet accurate ideas.</td>
<td></td>
</tr>
<tr>
<td>2. Opens with lively lead, catching readers' interest.</td>
<td>2. Opens with adequate lead that relates directly to the subject.</td>
<td>2. Needs interesting lead sentence.</td>
<td></td>
</tr>
<tr>
<td>3. Alternates direct and indirect quotations, helping the reader identify with subject of feature article.</td>
<td>3. Includes at least one direct and one indirect quotation.</td>
<td>3. Needs direct and indirect quotations.</td>
<td></td>
</tr>
<tr>
<td>4. Ties conclusion closely.</td>
<td>4. Conclusion gives &quot;punch line&quot; or clincher.</td>
<td>4. Needs to tie conclusion in with rest of story.</td>
<td></td>
</tr>
<tr>
<td><strong>Correctness (Mechanics/ Grammar/Usage)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Uses third person point of view.</td>
<td>1. Uses third person point of view 80% of the time.</td>
<td>1. Needs to use third person point of view.</td>
<td></td>
</tr>
<tr>
<td>2. Varies paragraph beginnings and keeps paragraphs short.</td>
<td>2. Varies paragraph openings and keeps them short.</td>
<td>2. Needs relevant lead sentence.</td>
<td></td>
</tr>
<tr>
<td>3. Verb tense agrees with &quot;advance&quot; or &quot;coverage&quot; stories</td>
<td>3. Subject and verb agreement fits 80% of the time.</td>
<td>3. Needs direct and indirect quotations.</td>
<td></td>
</tr>
<tr>
<td><strong>Time Management and Contributions to Newspaper's Success</strong></td>
<td>1. Meets deadline and helps others do so.</td>
<td>1. Needs to meet deadline.</td>
<td></td>
</tr>
<tr>
<td>1. Meets deadline and helps others do so.</td>
<td>2. Expects to revise as needed.</td>
<td>2. Needs to revise to meet criteria for article type.</td>
<td></td>
</tr>
<tr>
<td>2. Expects to rewrite or for editors to alter copy.</td>
<td>3. Delivers story on time.</td>
<td>3. Needs to deliver article on time.</td>
<td></td>
</tr>
<tr>
<td>3. Keeps promises to deliver story on time.</td>
<td>4. Improves own writing by following revision suggestions from editors or advisor.</td>
<td>4. Needs to collaborate to improve own writing.</td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX D. EDITORIAL RUBRIC FOR ASSESSMENT

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Exemplary</th>
<th>Acceptable</th>
<th>Not Yet Ready</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td>1. Makes a point without preaching.</td>
<td>1. Adequately makes a point.</td>
<td>1. Needs to make a point.</td>
</tr>
<tr>
<td></td>
<td>2. Shows writers' sense of timeliness.</td>
<td>2. Relates to season or other recent event.</td>
<td>2. Needs to select timely subject.</td>
</tr>
<tr>
<td></td>
<td>3. Ties to major news story or issue encouraging reader response.</td>
<td>3. Ties to theme of monthly issue.</td>
<td>3. Needs tie-in to current issue.</td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td>1. Sets tone that commends, informs, explains, persuades or entertains.</td>
<td>1. Introduces content to which the reader can relate.</td>
<td>1. Needs to introduce topic clearly.</td>
</tr>
<tr>
<td></td>
<td>2. Opens with &quot;sales pitch&quot; statement that convinces reader to continue.</td>
<td>2. Demonstrates awareness of problem by citing specific facts.</td>
<td>2. Needs to conduct research/interviews to find appropriate supporting details.</td>
</tr>
<tr>
<td><strong>Correctness (Mechanics/ Grammar/Usage)</strong></td>
<td>1. Uses third person point of view.</td>
<td>1. Uses third person point of view 80% of the time.</td>
<td>1. Needs to use third person point of view.</td>
</tr>
<tr>
<td></td>
<td>2. Varies paragraph beginnings and keeps them short.</td>
<td>2. Varies paragraph openings and keeps them short.</td>
<td>2. Needs relevant lead sentence.</td>
</tr>
<tr>
<td></td>
<td>3. Verb tense agrees with &quot;advance&quot; or &quot;coverage&quot; stories.</td>
<td>3. Subject and verb agreement fits 80% of the time.</td>
<td>3. Needs direct and indirect quotations.</td>
</tr>
<tr>
<td><strong>Time Management and Contributions to Newspaper's Success</strong></td>
<td>1. Meets deadline and helps others do so.</td>
<td>1. Meets deadline.</td>
<td>1. Needs to meet deadline.</td>
</tr>
<tr>
<td></td>
<td>2. Expects to rewrite or for editors to alter copy.</td>
<td>2. Expects to revise as needed.</td>
<td>2. Needs to revise to meet criteria for article type.</td>
</tr>
<tr>
<td></td>
<td>3. Keeps promises to deliver story on time.</td>
<td>3. Delivers story on time.</td>
<td>3. Needs to deliver article on time.</td>
</tr>
<tr>
<td></td>
<td>4. Assists other students in improving their writing.</td>
<td>4. Improves own writing by following revision suggestions from editors or advisor.</td>
<td>4. Needs to collaborate to improve own writing.</td>
</tr>
</tbody>
</table>
## APPENDIX E. COLLABORATIVE GROUP WORK RUBRIC

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Exemplary</th>
<th>Acceptable</th>
<th>Marginal</th>
</tr>
</thead>
</table>
| **Participation** (assumes collaborative group member responsibilities) | 1. Volunteers to be facilitator, recorder, reporter, or time manager.  
2. Contributes willingly to discussion.  
3. Understands topic thoroughly. | 1. Serves as facilitator, recorder, reporter, or time manager when asked.  
2. Contributes democratically to discussion.  
3. Understands topic. | 1. Lets others assume participation roles.  
2. Contributes reluctantly or seldom to discussion.  
3. Shows little understanding of the topic. |
| **On Task** | 1. Stays focused on topic.  
2. Presents relevant ideas in a clear, organized manner.  
3. Speaks clearly for an appropriate length of time. | 1. Stays focused 85% of the time.  
2. Shares ideas in logical order.  
3. Speaks appropriately. | 1. Stays focused 65% or less of the time.  
2. Shares ideas with difficulty  
3. Monopolizes or appears reluctant to discuss topics with the group. |
| **Accepts Others’ Ideas** | 1. Listens attentively to understand others’ ideas, opinions, and viewpoints.  
2. Responds to others but does not interrupt.  
3. Suggests solutions to problems as alternatives rather than absolutes. | 1. Listens to understand others’ ideas, opinions, and viewpoints 85% of the time.  
2. Responds to others but does not interrupt and suggests solutions to problems 85% of the time. | 1. Listens to understand others’ ideas, opinions, and viewpoints 65% of the time.  
2. Responds to others but sometimes interrupts.  
3. Does not suggest solutions to problems. |
| **Appropriate Vocal Expression** | 1. Speaks clearly in positive, friendly voice.  
2. Uses courtesy words and speaks standard English.  
3. Assists Limited English Proficiency students in understanding class work by mentoring them or helping them in and out of class with academic work. | 1. Speaks clearly and respectfully in a moderate voice.  
2. Speaks standard English.  
3. Assists Limited English Proficiency students in understanding class work. | 1. Speaks disagreeably, disrespectfully, or loudly.  
2. Speaks in ways that are unacceptable in school.  
3. Does not help others by explaining class projects. |
# APPENDIX E. COLLABORATIVE GROUP WORK RUBRIC

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Exemplary</th>
<th>Acceptable</th>
<th>Marginal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participation</strong> (assumes collaborative group member responsibilities)</td>
<td><strong>Volunteers to be facilitator, recorder, reporter, or time manager.</strong></td>
<td><strong>Serves as facilitator, recorder, reporter, or time manager when asked.</strong></td>
<td><strong>Lets others assume participation roles.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Contributes willingly to discussion.</strong></td>
<td><strong>Contributes democratically to discussion.</strong></td>
<td><strong>Contributes reluctantly or seldom to discussion.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Understands topic thoroughly.</strong></td>
<td><strong>Understands topic.</strong></td>
<td><strong>Shows little understanding of the topic.</strong></td>
</tr>
<tr>
<td><strong>On Task</strong></td>
<td><strong>Stays focused on topic.</strong></td>
<td><strong>Stays focused 85% of the time.</strong></td>
<td><strong>Stays focused 65% or less of the time.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Presents relevant ideas in a clear, organized manner.</strong></td>
<td><strong>Shares ideas in logical order.</strong></td>
<td><strong>Shares ideas with difficulty</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Speaks clearly for an appropriate length of time.</strong></td>
<td><strong>Speaks appropriately.</strong></td>
<td><strong>Monopolizes or appears reluctant to discuss topics with the group.</strong></td>
</tr>
<tr>
<td><strong>Accepts Others' Ideas</strong></td>
<td><strong>Listens attentively to understand others' ideas, opinions, and viewpoints.</strong></td>
<td><strong>Responds to others but does not interrupt.</strong></td>
<td><strong>Responds to others but sometimes interrupts.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Responds to others but does not interrupt.</strong></td>
<td><strong>Responds solutions to problems as alternatives rather than absolutes.</strong></td>
<td><strong>Responds solutions to problems.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Speaks clearly and respectfully in a moderate voice.</strong></td>
<td><strong>Speaks clearly and respectfully in a moderate voice.</strong></td>
<td><strong>Speaks disagreeably, disrespectfully, or loudly.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Uses courtesy words and speaks standard English.</strong></td>
<td><strong>Speaks standard English.</strong></td>
<td><strong>Speaks in ways that are unacceptable in school.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Assists Limited English Proficiency students in understanding class work by mentoring them or helping them in and out of class with academic work.</strong></td>
<td><strong>Assists Limited English Proficiency students in understanding class work.</strong></td>
<td><strong>Does not help others by explaining class projects.</strong></td>
</tr>
</tbody>
</table>

| **Appropriate Vocal Expression** | **Speaks clearly in positive, friendly voice.**                          | **Speaks clearly and respectfully in a moderate voice.**                  | **Speaks disagreeably, disrespectfully, or loudly.**                     |
|                                  | **Uses courtesy words and speaks standard English.**                     | **Speaks standard English.**                                                | **Speaks in ways that are unacceptable in school.**                     |
|                                  | **Assists Limited English Proficiency students in understanding class work by mentoring them or helping them in and out of class with academic work.** | **Assists Limited English Proficiency students in understanding class work.** | **Does not help others by explaining class projects.**                  |
APPENDIX F. WRITER SELF-PERCEPTION SCALE

Listed below are statements about writing. Please read each statement carefully. Then circle the letters that show how much you agree or disagree with the statement. Use the following scale:

SA = Strongly Agree  A = Agree  U = Undecided  D = Disagree  SD = Strongly Disagree

1. I write better than other kids in my class.  SA  A  U  D  SD
2. I like how writing makes me feel inside.  SA  A  U  D  SD
3. Writing is easier for me than it used to be.  SA  A  U  D  SD
4. When I write, my organization is better than others in my class.  SA  A  U  D  SD
5. People in my family think I am a good writer.  SA  A  U  D  SD
6. I am getting better at writing.  SA  A  U  D  SD
7. When I write, I feel calm.  SA  A  U  D  SD
8. My writing is more interesting than my classmates' writing.  SA  A  U  D  SD
9. My teacher thinks my writing is fine.  SA  A  U  D  SD
10. Other kids think I am a good writer.  SA  A  U  D  SD
11. My sentences and paragraphs fit together as well as others in class.  SA  A  U  D  SD
12. I need less help to write well than I used to.  SA  A  U  D  SD
13. People in my family think I write well.  SA  A  U  D  SD
14. I write better now than I could before.  SA  A  U  D  SD
15. I think I am a good writer.  SA  A  U  D  SD
16. I put sentences in better order than the other kids.  SA  A  U  D  SD
17. My writing has improved.  SA  A  U  D  SD
18. My writing is better than before.  SA  A  U  D  SD
19. It's easier to write well now than it used to be.  SA  A  U  D  SD
20. The organization of my writing has really improved.  SA  A  U  D  SD
21. The sentences I use in my writing stick to a topic more than the ones other kids use.  SA  A  U  D  SD
22. The words I use in my writing are better than ones I used to use.  SA  A  U  D  SD
23. I write more often than other kids.  SA  A  U  D  SD
24. I am relaxed when I write.  SA  A  U  D  SD
25. My descriptions are more interesting than before.  SA  A  U  D  SD
26. The words I use in my writing are better than the ones others use.  SA  A  U  D  SD
27. I feel comfortable when I write.  SA  A  U  D  SD
28. My teacher thinks I am a good writer.  SA  A  U  D  SD
29. My sentences stick to the topic better now.  SA  A  U  D  SD
30. My writing seems clearer than my classmates' writing.  SA  A  U  D  SD
31. When I write, the sentences and paragraphs fit better than before.  SA  A  U  D  SD
32. Writing makes me feel good.  SA  A  U  D  SD
33. The order of my sentences makes better sense now.  SA  A  U  D  SD
34. My classmates would say I write well.  SA  A  U  D  SD
35. I choose my words more carefully now.  SA  A  U  D  SD
### APPENDIX G. RUBRIC ASSESSMENT FOR POWERPOINT AND HYPERSTUDIO

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Exemplary</th>
<th>Acceptable</th>
<th>Marginal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organization</strong></td>
<td>Information is clear and easy to read and to follow.</td>
<td>Information is generally clear and somewhat easy to follow.</td>
<td>Information is disorganized and difficult to follow.</td>
</tr>
<tr>
<td><strong>Content Of Stack</strong></td>
<td>Stack (slide show) includes richly detailed directions and/or information about limited topic.</td>
<td>Stack includes basic directions and/or information about a limited topic.</td>
<td>Stack includes some direction and/or information about a topic.</td>
</tr>
<tr>
<td><strong>Content Of Individual Cards or Slides</strong></td>
<td>• Cards colorfully and clearly show background and related clip art.</td>
<td>• Cards show background and related clip art.</td>
<td>• Cards show background and related clip art, but may not include two buttons per card.</td>
</tr>
<tr>
<td></td>
<td>• Two buttons on HyperStudio card 1 go to cards 2 and 3, etc.</td>
<td>• Two buttons on card 1 go to cards 2, 3, etc.</td>
<td>• Text object gives directions and/or information about topic.</td>
</tr>
<tr>
<td></td>
<td>• Text object gives directions and/or information about topic and includes animation, sound, and Internet link.</td>
<td>• Text object gives basic directions and/or information about topic.</td>
<td>• Buttons work returning to card 1, etc.</td>
</tr>
<tr>
<td></td>
<td>• Buttons work to return to card 1.</td>
<td>• Buttons work returning to card 1, etc.</td>
<td>• Buttons need to work.</td>
</tr>
<tr>
<td><strong>Collaborative Effort</strong></td>
<td>• Shows extra effort, creativity and thought.</td>
<td>• Shows effort and thought.</td>
<td>• Shows little effort and thought.</td>
</tr>
<tr>
<td></td>
<td>• Exceptionally well planned.</td>
<td>• Well planned (not last minute).</td>
<td>• Evidence of little planning (last minute effort).</td>
</tr>
<tr>
<td></td>
<td>• Contributes high quality, relevant information.</td>
<td>• Works well with group.</td>
<td>• Fails to participate and/or cooperate with group.</td>
</tr>
<tr>
<td></td>
<td>• Facilitates teamwork.</td>
<td>• Participates positively to finish presentation.</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX H. MY REFLECTIVE JOURNAL SAMPLE PAGE

August 25, 1999: I hope to create a context for shared cultural (Mexican American, African American, and Anglo) experience with online publishing in my classroom using seven computers, each with Internet access. Through interviewing every fourth student, I hope to understand the eighth-grade writers' backgrounds and prior experiences and then invite them to participate in curriculum decision making with me.

My goals for this class (the online journalism group) are, first, to facilitate students working together to establish democratic classroom rules. These students do not come into the room quietly. We will try the community and trust-building activities that our adult staff designed for the nontraditional first week of school. Then, we will have the school belief statement to use as a credo for students' behavior. If they help write it, the eighth graders will feel ownership for not only the belief statement, but also for their own responsible behaviors. With ownership usually goes a sense of power, and it seems to me that this group demonstrates a high need to feel in control. When Miranda told me that I should write only one item on the board at a time, I thought, "How strange!" In retrospect, it doesn't seem strange at all. It works—teaching to one objective at a time! If these eighth graders have difficulty focusing (paying attention) in class, we must devise other means of helping them narrow their focus so that the time they spend in publications is quality time. I believe that asking the students to define the departmental needs of a newspaper and then to volunteer to staff those departments is one way that I can foster commitment in a democratic decision-making setting. It is also a way for me to discover what they already know about journalism.

Next, we will discuss the need for classroom rules and consequences. We might decide from time to time to re-evaluate our rules and update them in meaningful ways.
REFERENCES


Satran, D. Computers in homes hit 50 percent. (1999, March 21). *The Des Moines Register*, p. 3G.


