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LITERATURE AND TECHNOLOGY IN THREE ELEMENTARY CLASSROOMS: CONTEXTS AND CONNECTIONS

By

Sheryl K. Rop

A DISSERTATION

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2001

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ABSTRACT

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Two trends have separately contributed to significant changes in elementary education in recent decades. Embedded in the whole language movement and animated by interest in integrated, thematic, or project-based instruction, children's literature has become increasingly important in the elementary classroom over the last several decades. In a parallel movement, more recent in origin but much more powerful in its momentum, computer technology is also playing an increasingly larger role in the elementary curriculum. The purpose of this study was to explore and describe the embodiment and intersection of these two phenomena in three elementary classrooms. This ethnographic study was conducted during the spring and fall in the classrooms of three teachers who were self-described as having literature-rich and technology-rich classrooms. The classrooms included a primary, a third grade and a fifth grade classroom.

Findings indicate that literature and technology have unique, locally constructed meanings and roles. The three teachers exhibited divergent understandings of the term literature and differing purposes for the use of children's trade books in their classrooms. While students in all three classrooms regularly interacted with many children's books, in

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only one classroom was the interaction of a predominantly literary nature. The teachers used literature, respectively, as a pedagogical tool, as an enriched textbook, and as a literary endeavor offering life experiences. The teachers also differed significantly in their understandings of the role of technology in the process of teaching and learning within their classrooms, using it, respectively, as a management tool, as an ensign of participation in the technology culture, and as a set of possibilities for individual exploration and expression. Findings also indicate that although there were variations in the relationship between literature and technology across the classrooms, substantive connections between literature and technology were few and limited.

DEDICATION

This work is dedicated to my family, who were unfailingly supportive for longer than I had any right to expect.

And especially to Chuck, without whom . . .

ACKNOWLEDGEMENTS

I want to acknowledge the contributions of many colleagues whose ideas, questions and examples enriched both the process and the finished work in uncounted ways. I also want to thank the three extraordinarily committed teachers and their delightful students who permitted me to become part of their worlds for a time. Special thanks, of course, to my committee members P. David Pearson, Cheryl Rosaen, Laura Apol, Nell K. Duke, and Yong Zhao who each contributed immeasurably in their unique ways, offering possibilities, insights, challenges, and encouragement throughout this long process. An extra measure of thanks to David, who "never publicly doubted" that I would finish, and whose pleasure and enthusiasm at each small step made the next one seem possible.

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CHAPTER 1

THE CONTEXT OF THE STUDY

The Issues

Two trends have separately contributed to significant changes in elementary education over the last several decades. Embedded in the whole language movement and spurred on by the increasing focus on integrated, thematic, or project-based instruction, children's literature has been given an increasing amount of attention in the professional literature over the last several decades. Once relegated to after-lunch "story time" or offered as a quiet choice for students who finished their seatwork early, literature has been reconstructed as a major component of the elementary curriculum. Literature Circles, Book Club, and literature-based instruction are just some of the forms this interest has taken. Even schools and classrooms that would be reluctant to define themselves as "whole language" have been infused with trade books which frequently have a significant curricular function. Teachers' journals are filled with suggestions about how to incorporate literature into every subject matter including math and the burgeoning trade market in children's books has moved in tandem with this trend. In spite of the recent pressures towards increased standardized testing and the inevitable shift toward test-driven curricula that carries strong tendencies to marginalize literature, enthusiasm for the value of literature in elementary classrooms generally runs high. Claims are often made that through literature, students discover the magic and power of language, deepen their understandings of themselves and other people and cultures, expand their abilities to

communicate powerfully, broaden their conceptions of the possibilities of life, and escape into the pleasures of the future or the past.

In a parallel movement, more recent in origin but also much more prominent in public attention and much more powerful in its momentum, computer technology is also playing an increasingly larger role in the elementary curriculum. The interest in this innovation is not limited to education professionals. Politicians, policymakers, community leaders and parents are all determinedly promoting technology in education. Interestingly, some of the same powers that have been claimed for literature are now frequently associated with the Internet-linked computer--the ability to enhance communication, to cross boundaries of time and space, to deepen interpersonal understandings, to bring the world close and to expand horizons. Technology advocates believe in the limitless power of telecommunications to make personal connections across the globe and to provide the world's storehouse of information at one's fingertips; they see opportunities to erase the limitations of time and space; they envision an interactive, poly-vocal, truly democratized, hypertext world. In order for children to participate in this birthright of the new age, the promoters want technology to be central to the educational process. While it must be acknowledged that this movement has been notable for a gap between rhetoric and reality, that gap is gradually closing. And, in contrast with the perhaps tenuous hold literature has on elementary curricula due to the push for high stakes testing, one of the most striking characteristics of technology in education is its perceived inexorability. From the devoted technophiles who see the phenomena as the savior of education to the technophobes who see it as a threat to all that is best in life there is nearly unanimous

acknowledgement that its place and influence in education, as in society, will only continue to increase.

This study addresses the intersection of these two phenomena in classroom practice. While those who call for large-scale changes in the context of education wrought by the infusion of technology themselves call for critical examination, it is my position that these effects need particularly to be examined in light of their impact on children's engagement with literature in the classroom. We know surprisingly little about the ways that literature is actually used in elementary classrooms and about the ways computer impact elementary classroom cultures. We do know that a complex of emotionally charged and conflicting relationships exist between computers and books. We also know that, from a limited set of resources, technology makes large demands on time, attention, energy and budgets. Thus it becomes important to notice the consequences of these demands on other curricular area such as literature use.

This study describes the attitudes and practices surrounding literature and technology in three elementary classrooms. It looks at each phenomenon separately, noticing the way it is represented and instantiated; it looks at them together noticing the ways they support, conflict and/or ignore each other and whether these effects are deliberate or involuntary. Finally, the study explores the implications of these findings for the future of both literature and technology in elementary classrooms.

The Relationship between Literature and Technology in the Classroom

The assumption of a relationship between technology and literature in the classroom is based on a range of connections and indicators that run from peripheral to profound.

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One of these indicators is a sheer similarity of function: it is fair to say that at the simplest level a book and a computer is each a medium for the presentation of text and pictures. That both books and computers have infinitely more complex meanings and functions than the simple transmission of text and pictures does not change this basic similarity. On the face of it, the computer has the potential to replicate the basic functions of the book. This simplistic connection bears just a hint of the complex and sometimes contentious relationship between the book and the computer and the advocates for each. The classroom, for generations, has been the realm of the book. Now a newcomer is moving in. (See Bruce, 1997, for a perspective on inaccuracy of the concept of the book as antitechnology) This highly simplistic understatement of the situation does not negate the fact that this phenomenon has profound implications that are now being worked out in various ways in classroom across the country.

A second, related indicator is that recent technological developments have been making aggressive incursions into the broader domain of books while at the same time expanding ways to think about literature and experience it. A large number of undertakings, perhaps most notably the Gutenberg Project, have been making public domain literature available on-line. Other projects have embedded the great (and sometimes not so great) classics into webs of historical, critical, or intertextual contexts through hypertext and Internet linkages. The emerging "ebook" market is now supported by major publishing houses and explored by public libraries. Whether this develops into a market that appeals to a wide range of consumers or remains for some time to come as a technology for the determined technophile remains to be seen. None-the-less changes in the publication and delivery of literature through new technologies are well on their way

into our culture. Meanwhile, hypertext literature is calling into question some of our basic assumptions about what literature is, about definitions of reading and writing, and about the relationships between authors and readers. And, in lower elementary classrooms CD-ROM books are raising questions about what we understand by the term children's literature. These developments, by their very existence, create a relationship between the computer and the book that cannot be ignored.

A third factor is that wide-ranging conversations in both the popular and academic press continue to construct an inevitable relationship between computers and books. Various pronouncements are made about the relationship, ranging from the confident superiority of technophiles that computer technology will replace the traditional book as we know it (Bolter, 1993; Lanham, 1994), to the fretting or laments of confirmed bibliophiles who believe that whatever the ultimate fate of the book as artifact, reading and literature as we know it will not survive intact (Birkerts, 1994; Postman, 1993; Slouka, 1996) to the equanimity of those who believe that there may be room in the technoworld for both (Eco, 1996; Duguid, 1996; Tuman, 1992). Each sphere has entrenched constituencies. The computer revolution has behind it the long-recognized inevitability of technology to create a place for itself. It taps into the American obsession that newer and faster means better, and it has the impetus of inexorable market forces. In addition, it has the compelling advantage of being the latest educational bandwagon, one which parents, educators, government officials and the business community have all been able to climb aboard. Children's literature--at least currently in the field referring to stories contained within the covers of books--on the other hand, bears with it the weight of the long-held, but vague beliefs we have as a society for the

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"mystical and spiritual, healing and hermeneutic powers" of the book (Luke, 1992). These beliefs in the power of the book, especially for the development of children, are deeply embedded in the history, even the genesis, of American education. We do not need to be convinced that reading books is good for children. The status of children's literature has also been reinforced in recent years by the impetus of the whole language, or literature-based, curricular changes that, while controversial, have had a deep impact on elementary education.

Additional powerful evidence for a relationship between technology and literature in education can be seen in a visit to most elementary school libraries. These rooms in many, perhaps most cases are no longer called libraries but rather library media centers, or merely media centers. The librarian is now most commonly called the media specialist, and a computer laboratory is most frequently housed within, or adjacent to, the room that houses the books. Many children, then, no longer go to the library but to the media center and what they do there may have little or nothing to do with books or literature.

A broader and deeper aspect of the relationship between books and computers is the broad and complex relationship between technology and literacy which itself is nested in the role and meaning of technology in today's society. These issues will be addressed more fully below. But they contribute to making the context for the relationship between books and computers in elementary classrooms into a complex, encompassing and multifaceted issue. Ultimately, it seems impossible to pretend computers and books do not have a direct relationship with each other, and simplistic to imagine that each might reside in the elementary classroom culture without touching and shaping the other.

History and Development of the Research Question

I began this endeavor with the purpose of seeing what affects technology might have on interactions with literature in elementary classrooms. I began by imagining that I would examine three exemplary classrooms that were each technology-rich and literature-rich. My initial hopes were that I would find teachers who had been using literature extensively for some time and had more recently become interested in incorporating technology into their teaching, thus giving them a perspective on some of the changes that accompanied technology integration. To this end I formulated definitions and criteria about what would constitute the categories, literature-rich classrooms and technology-rich classrooms based on the phenomena being present, being supported by policy, demonstrating substantial practice, and showing a progression of use. (This statement of criteria is included in Appendix 1 of this document.)

In the event, however, when I eventually identified 3 classrooms as research sites they much more fully exhibited the complexity, limitations, and possibilities of real life than my carefully defined criteria. (This process and the resulting participants will be described fully in the next chapter.) The three teachers I finally worked with were self-identified as fitting my guidelines in various ways and were willing to interact with me in this research. In fact, I found myself observing in classrooms that exhibit highly differing conceptions of what literature is and what role it should play, and divergent ideas about and instantiations of technology in their classrooms. The classrooms range across the elementary school years--a first, a third, and a fifth grade. The classrooms possess significantly differing technological resources. The students exist in differing socioeconomic and educational contexts. The teachers represent a diversity of age,

experience, gender, race, personalities, attitudes and pedagogical perspectives. In other words, these are neither typical nor ideal classrooms, if such things even exist. These are real classrooms inhabited by real people with the consequent strengths and limitations, idealisms and disillusionments, successes and failures, triumphs and disappointments.

The result of this process was a reshaping of the research questions to conform to the realities of the research situations:

RQ 1: What is the meaning and role of literature in the classrooms of teachers who identify themselves as having literature-rich environments?

RQ 2: What is the meaning and role of technology in the classrooms of teachers who identify themselves as having technology-rich environments?

RQ 3: What is the relationship between the literature and the technology in these classrooms?

Conceptualizing the Phenomena

As an observer of contemporary culture can attest, technology can have an enormous range of meanings. Since nearly everything we use in everyday life, including our language, is actually a form of technology, it is necessary to establish a set of common understandings at the outset of this discussion. Although generically the term technology, as represented in classrooms today, can be applied to the alphabet itself as well as the paper and pencil that still predominate, this contradicts common usage of the term. Pea (2000) suggests that in the context of education, technology is commonly understood to mean whatever are "the most advanced technologies available for teaching and learning in a particular era." When the promotion of technology in classrooms is discussed, we, as educators, parents, students, and citizens assume that we each, at least approximately, understand what the other means. Generally we mean, first of all, computers in schools.

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Beyond that we may mean school and district intranets, Internet access, and a number of specific instantiations including Internet-connected computers, scanners, digital cameras and including the current software which enables such uses—word processing, hypertext environments, web-based applications, current, digital technologies.

It must also be recognized that technology has a meaning and value in current culture that goes far beyond referencing the "stuff" of which it is comprised. It includes associative meanings of what it is to be a school, or to be a teacher who does or does not use technology; it also includes the many and conflicting ideas about how technology should and should not be used. Some of these latter meanings will become apparent through this research. But as a starting point, as a lowest common denominator, and for the purposes of this report, we will understand technology as the physical presence of computers in classrooms. This includes the accompanying accoutrements of connections, peripherals and software. In also includes technology use-- some form of incorporation of this equipment in the formal classroom day.

Similarly, literature as a category is a slippery concept. Three definitions from antiquity offer instruction in the difficulties. Plato called it "an imitation (in words) of an imitation (in matter or material existence) of an idea that exists originally in the mind of God. As an imitation twice removed from true reality, it is inferior, deceptive, and dangerous, largely because audiences imitate what they see and read." Longinius, much more approvingly, defined it as, "written work that causes or fails to cause the experience of the sublime--awe attached to terror." While Horace saw it as " an imitation of events or objects. It ought to delight and instruct readers." Interestingly all three incorporate as part of the definition what it does to the reader. In "Literature—S.O.S.!" Louise

Rosenblatt (1991), who has spent her life thinking about readers and literature, also emphasizes the slipperiness of the term as used in elementary classrooms and finally locates it, not in the physical entity itself, nor in what it does to the reader, but in what the reader does *with* it. While Rosenblatt's understanding of the term will ultimately provide a standard by which to evaluate children's interactions with books, at least at the beginning we will adopt a simpler, physically-based definition.

In defining the way the term is used here, it is perhaps easiest to say what we do not mean. The concept as used in this research does not include textbooks, workbooks or other material produced for primarily instructional or reference purposes; nor does it include CD-ROM books, web-based materials or other text represented on a computer screen or other electronic format. It is used, at least in the descriptive stages of this report, to refer to children's trade books--books created and published for children in traditional paper formats. As with technology, this understanding serves as a simplest common denominator, referring to the physical reality that we are calling literature. Differing ideas about the enacted meanings of literature, as an experience between reader and text, will be part of the discussion of the findings of this research.

When we juxtapose literature and technology we are creating an additional set of complications. Certainly, as Bruce (1997) reminds us, literature today does not exist apart from technology. Sophisticated technologies are used in the production of literature, from the word processing programs used by many authors, to the emails exchanged with their editors, to the web sites many of them maintain, to the complex machinery used in the production of books. Additionally, the World Wide Web holds myriad bits of data, which translate, on our computer screens as literature. These include the revered classics

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of the Gutenberg project, digital images of original manuscripts from the distant past, new formulations of hypertext literature currently being created, and current best-sellers available for downloading to ebooks and PDAs such as the Palm Pilot. Consequently, extricating the concept of literature from the realm of technology is admittedly, at many levels, an artificial exercise. However, for the purposes of this research, based on the assumptions delineated above, we will imagine literature to be not-technology.

The Research Context

Technology and Society

This research, examining literature and technology in elementary classrooms, is situated within a complex web of issues, ideas, elements and spheres. In order to understand this context is it necessary to identify some of these elements, and explore some of the ways they relate to each other and to the research itself. One of these elements is the broad issue of the role of technology in society. This is a comprehensive and controversial question that is currently being widely discussed across the boundaries of religion, science, history, political science, literature studies, sociology, psychology, education, as well as popular politics and popular opinion. This issue resides at the confluence of human emotions and aspirations, academic traditions and disciplines, historical, social and religious beliefs and realities, personal habits and cultural assumptions. It bears upon feelings about self, mind and otherness (Turkle, 1984). It touches unarticulated beliefs about the relationship between technologies and humanity; it foregrounds questions, hopes and fears about individuality, community, and privacy

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(Tuman, 1992); it challenges long-held beliefs about knowledge, authority and reality (Birkerts, 1995); and it highlights difficult questions about power, agency and equity.

This issue has a history which goes back well before the current "information age." Nardi and O'Day (1999) present a discussion of the prescient critique of technology's impact on society offered by the film *Metropolis* created by Fritz Lang in 1927. Created at a time when talking movies were themselves only a nascent technology, Lang used this early science fiction film to present a picture of technology's power to allure and to dehumanize that speaks to current concerns. Writers in the first two-thirds of the last century such as Ellul, Mumford, Huxley, Orwell and McLuhan expressed serious misgivings about the effects of the burgeoning technological advances on a humane society, exploring the troubling questions in both expository and narrative genres. While these writers were raising cautions about a future in a technological world, the forward motion of technological progress, of course, went forward ever faster, and has all along been received with ever growing enthusiasm by large segments of society.

More recently there has been a spate of writing by unabashed enthusiasts. One such believer is Negroponte (1995), who envisions a utopian future in which the difficulties of life will be immediately remedied by an unending supply of digital servants. Bolter (1993) believes that the culture of technology is engaged in re-defining knowledge and self, individual and community. He finds the new definitions helpful and fitting. He sees hypertext as an appropriate metaphor for community in a postmodern world--flexible, impermanent, possessing a "new tolerance for multiple, even conflicting narratives (p. 146)." He also sees in hypertext both a harbinger of and catalyst for social and philosophical improvements for society. Another is Turkle (1995) who sees in the

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computer opportunities for human beings to understand and define ourselves in new ways, although recognizing some darker sides to the picture. Aronowitz (1992), recognizing the frequent unblinking acceptance of technology in the realm of theorists of technoculture, identifies this perspective as "post-critical"(121); Sven Birkerts (1996) identifies it as "a lack of what might be called existential questioning (216)."

There are others that are currently engaged in that existential questioning. Those who, while being firm advocates of technology, also emphasize the importance of recognizing that a humane technological future demands careful choices and holds both gains and losses. Two of these, Nardi and O'Day (1999), call themselves "critical friends of technology." In their book, *Information Ecologies: Using technology with heart*, they express concern about the way that unbridled enthusiasm for the novelty and promise of technology results in an absence of thoughtfulness and deliberation in its adoption. They worry about the way individuals easily relinquish responsibility to computers and they attempt to highlight the way that the meanings and roles of technology are locally constructed. Rochlin (1997) has similar concerns at an institutional level. Taking an organizational approach, he attempts to highlight the long-term costs of the dependency on technology that has become an unexamined assumption. He does not deny that many benefits have accrued to individuals, groups and society from the swift penetration of technology into nearly every realm of modern life, but urges attention to the deep, subtle and large-scale consequences.

There are also resisters, technophobes, if you will, who believe, sometimes for widely divergent reasons, that our headlong rush toward the technological future bodes ill for humanity. Roszak (1994) stakes out his ground unequivocally, choosing in the title of

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his book to call himself a neo-Luddite. He believes that the increasing sweep of technology is creating as many problems as it solves. He especially worries that as a society we have come to embrace utopian beliefs about the ability of technology to solve all our ills, while, in fact, he suggests, technology is eroding much of what we value in a humane society.

Stoll (1996), another resister, focuses primarily on what he sees as the differences between the promise and the reality of the Internet. He believes that technology promises much but delivers little of real value at far too high a cost. Postman (1993) believes we have surrendered to "Technopoly," which he defines as the "deification of technology, which means that the culture seeks its authorization in technology, finds its satisfactions in technology, and takes its orders from technology" (p. 70). Birkerts (1994) also believes that technology is creating a different, less humane world, decrying the "reweaving of the entire social and cultural web" which is presently occurring. These individuals, in spite of determined resistance, acknowledge their cause as lost—they admit to recognizing that technology will not be vanquished.

There are three particularly salient issues that underlie this discussion—the inevitability of technology, the invisibility of technology, and the degree of determinism inherent in it. These three ideas interpenetrate but remain distinguishable. Inevitability refers to a belief that technology is ultimately irresistible, that technological capabilities inevitably increase and inevitably become realities. Although attitudes about it vary from eager anticipation to horror, across the various groups highlighted above no one really disputes that the rise and incursion of technology is a uni-directional process, that technology is irresistible. Goodson (1996) identifies this as "the inevitability theory."

Although Nardi and O'Day express concern about the "rhetoric of inevitability," they imply that it is not the inevitability, the progressive growth of technology per se, that is of concern. They rather see the rhetoric itself as being dangerous by creating a climate which discourages deliberate use and thus encourages technological determinism by default.

Beliefs about the degree of determinism inherent in technology differ widely, however. The breakdown, somewhat predictably, generally follows the lines of enthusiasm. Technology advocates tend to have optimistic views about human agency in relation to technology. Bolter (2001), although earlier scorning the very idea of determinism as a scare tactic, has more recently come to address the tendency more seriously. Beliefs about the inherent power of technology to shape human life and action are a primary concern of the technophobes. Postman (1993) believes technology creates its own imperatives and, at the same time creates a wide-ranging social system to reinforce its imperatives (p.105)." Nardi and O'Day (1999), in contrast, believe that technology is really only deterministic if we allow it to be. Thus their book is an attempt to combat the unexamined technology adoption which they believe surrenders autonomy to the machine. Birkerts (1994), although not citing determinism, finds the idea of careful and selective adoption unrealistic since he believes technology creates undetectable but momentous changes in the world with the result that we no longer have a "ledge" to stand on to get a clear perspective from which to make decisions.

Intersecting with both of these ideas is the concept of invisibility, a characteristic of technology that appears in two guises—as a threat and as a goal. Some, like Birkerts (1994) find this to be an inescapable and ominous characteristic of technology. Like the

frog in the frying pan, the climate changes so subtly that no one notices. Postman (1993) sees invisibility in a different way. He believes that "Technopoly"—technology as a thought-world-- prevails in a culture by making alternatives to itself invisible and consequently irrelevant. Rochlin (1997) worries that the infinite effects of technology, becoming invisibly embedded in a vast network of social and organizational tasks, escape the curb of thoughtful monitoring. Nardi and O'Day (1999) see invisibility as an avoidable tendency of technology. They suggest that technology can permeate a culture and cause unintended consequences only when people fail to attend to technology's affordances, assumptions, and impacts. However, the idea of invisibility also carries different connotations in relation to design. In this arena invisibility is a goal, an inherent characteristic of technology designed well and used well, so that rather than calling attention to itself it supports the purposes of the user (Bruce 1997; Zhao, 1998).

Technology and Literacy

This research on literature and technology in elementary classrooms is located within one of the prominent currents within this maelstrom--the confluence of technology and literacy. While being an integral part of the conversation about the impact of technology on our sense of who we are as a society and as individuals, it focuses particularly on the changing understandings of the nature and function of literacy in a post-typographic society. Technology proponents see in the new affordances opportunities and challenges to create new meanings for literacy—or rather literacies. This new usage reflects this broadening vision of the kinds of skills which individuals need to be able to negotiate in order to be competent citizens and consumers in the information age. According to

Reinking (1996), whether we choose to like it or not, we are in the process of having not only our ways of reading and writing; and our understandings of reading, writing, and text redefined; but our very ways of being redefined and reshaped, an idea widely supported (Tuman, 1992a, Bolter, 1993, Turkle, 1984).

Bruce (1997) cautions against accepting technology and literacy as two distinct realms. He claims that "the assumption that technology and literacy are separate, autonomous realms serves to distance us from the concrete reality of literacy." He views literacy as dynamic, as a situated sociotechnical process, a perspective he calls transactional. As such, he finds literacy today to be inextricably interwoven with technology. Like Bruce, many of the issues that engage Bolter (2001) have to do with the broad social implications of technology and literacy practices. He suggests that the new affordances of hypertext are particularly powerful and important in a postmodern age:

> The computer provides the only kind of unity now possible in our culture: unity at the operational level. Hypertextual publication can accommodate all the mutually incomprehensible languages that the intellectual world now speaks, and this unification of technique must serve as the consolation for the lost unity of purpose (236).

Birkerts (1994), however, makes an articulate case that particular humanistic qualities of mind and life, embedded in the print culture, will be irrevocably lost or changed as the "silken web" of the electronic culture wraps itself ever more seamlessly around us. He observes that interactive technology is, paradoxically, anti-contextual. As it breaks down barriers of time, space, genre, and disciplines, crossing borders endlessly and seamlessly, the user finally "loses a sense of the horizon." Humanistic knowledge, in contrast, he argues, seeks to construct a comprehensible narrative of human history and life.

Essential components of that narrative are a sense of "pastness"--an understanding of the density of time, and a sense of otherness. It is his contention that electronic media restructures our perceptions in such a way that these awarenesses are lost. For Birkerts, the new literacy practices enabled by the new technologies come at an unacceptably high cost in depth of thinking, learning and perception and human connections.

Technology and Education

It is in the field of education, of course, that the issues about technology, society, and literacy most sharply come to bear, and where we come more closely to the focus of this research in elementary classrooms. It is perhaps most striking to notice that, while there has been a significant amount of debate about the pros and cons of technology's role in society, as indicated above, there seems to be a curious disconnect between this on-going and thoughtful discussion and the push for technology in education. While the cautionary discourse seems to go unheard, the utopian rhetoric of the technophiles seems to have been appropriated by educational policy makers, school personnel and parents alike. Political and governmental leaders and organizations have been particularly enthusiastic. A recent report from the U. S. Department of Education's Web-based Education Commission says:

> The question is no longer if the Internet can be used to transform learning in new and powerful ways. The Commission has found that it can. Nor is the question should we invest the time, the energy, and the money necessary to fulfill its promise in defining and shaping new learning opportunity. The Commission believes that we should. . The World Wide Web is a tool that empowers society to school the illiterate, bring job training to the unskilled, open a universe of wondrous images and knowledge to all students, and enrich the understanding of the lifelong learner.

> The opportunity is at hand. The power and the promise are here. It is now time to move from promise to practice.

Clearly, when it comes to technology and schools, as much as possible as soon as possible is the order of the day. Pea (2000) declares that computers and communication tools are "essential to education for the future" and that "it's the responsibility of educators . . . to find designs for their effective use or fall drastically our of step with society " (p.3). At a practical level the first attention has been applied to getting schools wired and supplied with hardware. Research and development has focused on ways to help teachers integrate technology in all areas of curriculum, not always with careful attention to the quality or effects of the integration. Most of the attention in the area of technology and literacy in education has come from the unequivocally enthusiastic technology advocates. Consequently it has focused on the potential of technology to enhance the multiple aspects of literacy instruction--utilizing electronic environments as a context for learning and for expanding experiences with reading and writing. Exploration of the literature on technology and literacy in elementary classrooms reveals few suggestions that there are aspects of literacy learning to which technology might not provide a new and improved approach.

A substantial amount of research has attended to ways of helping teachers learn about and use technology with both teacher education and the K-12 classroom as sites (Blanton, Moorman, & Trathan, 1998; Huberman, 1995; Willis & Mehlinger, 1996; US Congress Office of Technology Assessment, 1995; Levin, Waugh, Brown, & Clift, 1994; Merseth, 1992; Zhao, in press). This research indicates that such change is a challenge on many levels. Some of this change requires the overcoming of technical limitations such as teachers' limited technological expertise, limited access to technology and to

technical support; some of this change is profound, requiring teachers to rethink their professional identities and their deep-seated conceptions of teaching and learning (Becker, 1999; Blackstock, 1992; Dwyer, 1996; Sheingold & Hadley, 1990; Sandholtz, Ringstaff & Dwyer, 1997). More recent work has refined our understandings these processes, highlighting the contexts and characteristics that best support teacher technology adoption (Zhao, in press; Hughes, 2000).

Technology and Literacy Education

Some of the research on technology in education has more closely approached the focus of this study, literature use in elementary classrooms, by addressing its immediate context, literacy in education. There has been groundbreaking work done by some literacy researchers on elementary age children's interactions with computers. Some have examined various aspects of electronic text (Reinking, 1994; Leu & Reinking, 1996; Reinking & Leu, 1996, Labbo, 1996). Some have explored the effects of computer use on emergent literacy (Olson & Sulzby, 1990; Labbo & Kuhn, 1998; Labbo, Reinking, & McKenna, 1998), on early reading (McKenna 1998), on reading-writing connections (Leu, 1994; Matthew, 1997; Keifer, Hale, & Templeton, 1998; Reinking and Watkins, 1996), and on gender issues (Nicholson & others, 1998). Much of this research focuses on reading development with interactive books. In general the results of this research suggests that interactive books on computer, most generally CD-ROM books, can provide scaffolding for some aspects of reading development such as letter and word identification, and can contribute to reading comprehension skills and vocabulary development. Some particular attention has been paid to children with difficulties in

reading development, finding generally that electronic books can also be effective in supporting learning for such students.

Some scholars have also attended to technology uses within the classroom context. Goodson and Mangan (1996) explored the ways that beliefs about computer inevitability have shaped computer use in schools. Conceptual work on classifying kinds of technology uses in classrooms has been done by several scholars. Bruce & Levin (1997) provide a review of taxonomies of technology use that highlights the ways that taxonomies reflect or privilege certain theoretical or pedagogical stances. Means (1994) provides a taxonomy based on the ways that technologies are used for instruction. She identifies technology used *as a tutor*, in which instruction, information or demonstrations proceed in a manner determined by the system; technology used *to explore*, in which instruction, information or demonstrations proceed in a manner determined by the user; technology used *as a tool*, such as word processing, data storage and retrieval; and technology used *to communicate*, which she describes as a system that allows students and teachers to send information to each other through networks or technologies. Bruce and Levin (1997, 2001), in an attempt to created a child-centered taxonomy, based their categories on Dewey's identification of the four natural impulses children have toward learning—inquiry, communication, construction and expression.

Others have attended to the relationship between traditional classroom tasks and technology-associated tasks. Wood (1999) examined differences in the ways that three elementary teachers used technology in literacy instruction, finding three levels of reading and writing activities—*traditional*, print-based activities; *technology-embellished* activities, in which the nature of the activity remains traditional, but a technology

component, such as using a word processor to do a writing task, is added; and *technology-transformed* activities, in which the technology affordances have enabled entirely new goals and interactions. She viewed these categories, not as sequential or developmental but rather as three different but equal perspectives among which the teachers transitioned across any given day, based resources available and on their decisions about teaching and learning goals. Hughes' (2000) research, in exploring the technology use of a set of teachers in high school classrooms, created a detailed, three-part taxonomy of use, identifying technology use as a *replacement* for a traditional practice—using technology as a different means to the same end; as *amplification* of traditional practice—a focus on improving effectiveness or "streamlining"; and as a *transformation* of practice—in which the technology use involved a transformation of one of the three components --instructor method, student learning processes and curricular goals—used in classifying particular practices.

A thread that has run through much of the recent work is a recognition of the importance of contextual factors in understanding technology use in education-- the recognition that understanding technology in education goes well beyond identifying what technology uses occur in classrooms; rather, that understanding the pedagogical perspectives and goals of teachers and examining technology use in its classroom context is essential in understanding technology use in classrooms (Bruce, 1996; Mitra, 1998; Wood, 1999, Hughes, 2000).

Children's Literature

Because this current study is centered on children's literature, it is important to identify some central beliefs about the relationship between children and literature. T.

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Hughes writes, "a simple tale, told at the right moment, transforms a person's life with the order its pattern brings to incoherent energies" (Hughes, 1995. p. ix). This is not a recent idea. Dalgliesh (1937) noted that "Primitive people used literature . . . not only as a means of recreation but for educational ends. On down through the ages this abiding faith in literature for its supposed spiritual or cultural value still persists. . . " (p. vii.). As a society we have believed for generations in the importance of literature to children's growth and development, the importance of being read to and of reading, the delight and formative language experience of rhythms, rhymes, songs and poetry. We recognize the impact that stories can have in developing understandings that reflect and shape children's sense of themselves as individuals and in community and that nourish their minds and their souls (Huck, 2000; Cullinan, 1994; Nodelman, 1995; Au, 1995; Chambers, 1993, Obbink, 1990).

The importance of literature in the education of children also runs strongly through current standards of practice in language arts instruction (Marshall 2000; NCTE Standards 1996). The first two of the NCTE/IRA standards particularly highlight the various purposes for literature in the curriculum:

1) Students read a wide range of print and nonprint texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.

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2) Students read a wide range of literature from many periods in many genres to build an understanding of the many dimensions (e.g., philosophical, ethical, aesthetic) of human experience.

However, one of the conundrums of the rise of interest in literature in the classroom is the way in which it is used in the curriculum. Rosenblatt (1995) highlighted the irony of literature's rise to prominence while its essential nature as an art form was frequently being devalued by its use as an instructional tool. Although she did not present an empirical basis for her concern, she worried that literature, in becoming a central part of the curriculum, had come to be regarded much as textbook. She strongly cautioned that, whatever other tasks might be assigned to the reading of literature, "The enjoyment of literature remains as ever the source from which all its other values spring. If we are to ever help young people to come fully into their literary heritage, of which we are trustees, we must cleave to this sense of literature as first of all a form of art (Rosenblatt, 1938, p. v)."

Children's literature as a field of scholarship, retaining attention on the purely literary aspects of children's literature, has generally maintained an identity apart from the arena of literacy instruction and the teaching of reading (Walmsley, 1992). Charlotte Huck has been an exception, a leading figure in the field of children's literature who has long directed the attention of the field to specifically classroom concerns, urging that literature *be* the reading curriculum. Her stance is indicative of the realities of children's literature at the practical level. As Rosenblatt (1991) noticed, practitioners have always tended to blend literature use into the pressing curricular demands of reading instruction. The connections between literature and curriculum have been built up primarily from the opposite direction, from literacy educators moving toward an interest in literature as an

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effective tool for language arts development (Raphael, 1998), and others who have done significant work in emphasizing for classroom teachers the importance of crafting opportunities for children to explore and respond to literature as literature (Short & others, 1999; Short & others, 2000; Eeds & Wells, 1989).

Children's Literature and Technology

Given the limited evidence of attention to classroom practice in children's literature scholarship, it is unsurprising to also find limited work on possible relationships between technology and literature use. In the broader field of education there is endless discussion about technology in education, as described above and an ongoing dialogue about the relationship between literacy and technology; the children's literature community seems to remain curiously disconnected from these issues. In general there has been a marked absence of attention to effects of technology on elementary classroom contexts from children's literature scholars who might be expected to help teachers think about these complicated issues. A simple ERIC search of two prominent language arts journals for teachers, *The Reading Teacher* and *Language Arts* for 1998-2001 using the search term *literature* with *technology*, *computers* or *electronic* produced 3 articles in *The Reading Teacher* and none in *Language Arts*. A similar ERIC search of three leading children's literature journals, *Children's Literature in Education*, Journal *of Children's Literature* and *The New Advocate* from 1998 to 2001, this time leaving out literature as an unnecessary qualification but using the other three terms--*technology*, *computers* or *electronic*--identifies 1 pertinent article in *Children's Literature in Education* (James, 1999) and six—all from a special Winter 2000 issue—in The *New Advocate*.

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Table 1: ERIC search for years 1998-2001			
Journal	Search Terms	#	Author and date of publication
The Reading Teacher	Literature with technology or computers or electronic	3	Sullivan, J. (1998) Lapp, D. and others (1999) Karchmer, R. (2000).
Language Arts	Literature with: technology or computers or electronic	0	
Children's Literature in Education	technology or computers or electronic	1	James (1999)
The New Advocate	technology or computers or electronic	*6	Bishop, R. (2000) Carter, B. (2000) Labbo, L. D. & D. Reinking (2000) Pinkney, A. (2000) Rogers, T. and others (2000) Smith, K.& M. Zarnowski (2000)
Journal of Children's Literature	technology or computers or electronic	0	
All from Winter 2000 special issue: The Role of Literature in Students' Lives in the Next Millennium.			

Similarly, two prominent textbooks for preparing pre-service teachers to make decisions about children's literature in the classroom are silent about technology's presence, influence and potential. In Cullinan and Galda's 1995 3rd edition of *Literature and the Child*, technology appears as an entry in the index with one reference, a sidebar "Teaching Idea" related to science fiction rather than technology in the classroom. Huck's (and others, 2000) seventh edition of *Children's Literature in the Elementary School* list no technology connection in the index except for a reference for computer-generated art in picture books. Likewise, Nodelman's (1995) *Pleasures of Children's*

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Literature, also a frequently used textbook for higher education, indexes no references to computer technologies. An exception is a recent textbook by Savage (2000), *For the Love of Literature* which contains a chapter on "Media, Technology and Children's Literature." This features a discussion of CD-ROM books, a list of suggested web-sites, and a description of a unit on Judy Blume's *Tales of a Fourth Grade Nothing* which links technology with the literature.

Generally, then, an excursion into the scholarship on children's literature reveals little awareness that the context in which literature is experienced by children in classrooms is currently undergoing significant changes in some areas, and similar changes are being called for in classrooms across the country. And when work has occasionally been published on technology issues in children's literature journals, such as the special issue of *The New Advocate*, it most frequently takes the form of discussions, opinion pieces, and description of activities or resources, rather than research.

Similar to the pattern described above, in which work addressing issues of classroom practice in children's literature has come from literacy educators rather than from children's literature scholars, research on technology and children's literature has come from the technology community. Addressing more closely the specific interests of this study's focus on children, technology and literature, there is a limited body of research that has attended to interactions with these books as aesthetic literature experiences (James, 1999). Chu's (1995) work on reader response in electronic environments suggested that that careful attention to the ways in which the context is designed may allow thoughtful responses to literature in multimedia and hypertext environments. It is not clear, however, how encounters with interactive books affect children's interactions

with or motivation for print literature. In addition to the literature on CD-ROM books some have done work on using technology applications with print-based literature. Lapp (1999) described using a range of media to enable fourth graders to learn from and respond to literature. Reinking and Watkins (1996) researched and favorably reported on using multimedia book reports to influence students' interest in reading. Leu (1994) discussed the potential for supporting literature experiences, specifically reading and writing connections with hypermedia and multimedia environments.

Within this rich context there are certain works, some of which have already been mentioned, which have had a particularly powerful impact on this current research. Perhaps the most generative has been Nardi and O'Day's (1999) work in *Information ecologies: Using technology with heart.* In explicating their conception of information ecologies, they offer this description of the poets' work from *A Midsummer Night's Dream*:

> And as imagination bodies forth
> The forms of things unknown, the poet's pen
> Turns them to shapes, and gives to airy nothings
> A local habitation and a name. (Quoted on p.54)

The authors offer this notion of "a local habitation and a name" as a way of thinking about the interactive, creative and situated meanings that are constructed for technologies by communities of users. This idea can serve as a way of thinking about both literature and technology in elementary classrooms. Although I do not believe that either books or computers begin as "airy nothings" —in fact, they bring with them deep and complex histories, expectations, and affordances-- none the less, their meanings, functions and significances are locally constructed within each classroom. The ways that they "inhabit" each classroom are unique and are constructed within the complex of personalities,

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pressures, goals and expectations that make up the classroom. They are given "names' not by the poet's pen in this case, but by the meanings attached to them by the classroom participants. This research is an attempt to discover the different ways that computers and books are "named" in different classroom ecologies, and to explore and describe the local "habitations" of these two phenomena—the intersecting and complex webs of meaning in which they reside in three elementary classrooms.

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CHAPTER 2

METHODOLOGY

This study attempts to provide a documented portrayal of the ways in which literature and computers are part of life in three elementary classrooms. My primary goal has been to understand and present the meanings that literature and computer activities have within each of these three classrooms; a secondary goal has been to explore the differences in the actions and meanings surrounding literature and computers across the three classrooms. This research primarily involved observation of classroom life, interviews and informal conversations with the teachers, interviews with a subset of students in each class, and an interview with each school library media specialist.

Three questions (Identified in Chapter 1) guided this research.

1. What is the meaning and role of literature in the classrooms of teachers who identify themselves as having literature-rich and technology-rich environments?
2. What is the meaning and role of technology in the classrooms of teachers who identify themselves as having literature-rich and technology-rich environments?
3. What is the relationship between the literature engagement and the technology use in these classrooms?

Research Design

This research has its focus on discovering meanings and patterns of action surrounding technology and literature for teachers and students in classrooms—a comprehensive picture of classroom culture as well as of the details of which that culture

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is created. As such it is located within the traditions of qualitative research. Crewel (1998) defines qualitative research as "an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting" (p. 15). Erickson (1990) states that he prefers the term interpretive, noting that some sorts of quantification may play a role in the work, but particularly because of "the key feature of . . .the interest in human meaning in social life and its elucidation and exposition by the researcher (p. 78)." He emphasizes the centrality in qualitative or interpretive research of attempts to identify the local meanings, the participants' perspectives. It is these local meanings about the uses of technology and literature in classrooms that are the focus of this study.

Within the realm of qualitative inquiry, this research is specifically case study, a form of inquiry that examines a particular situated phenomenon. Stake (2001) emphasizes that case study embodies the "epistemology of the particular." Yin (1989) defines case study as inquiry that "investigates a contemporary phenomenon within its context; addresses a situation in which the boundaries between phenomenon and context are not clearly evident; and uses multiple sources of evidence" (p. 23). A defining characteristic of case study is its "boundedness" (Stake, 1995); defining the boundaries is a process of answering the question, What is my case? and of defining the largest unit of analysis (Yin, 1993). In this research the case, and largest unit of analysis, consists of one elementary classroom.

The study presented here, with the goal of looking at literature and technology use in a set of classrooms, can be further described as an instrumental and collective case study.

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Stake (2001) distinguishes an instrumental case study as one that, rather than arising from intrinsic interest in a particular case, "the case is used to facilitate our understanding of something else (, p.437)." He identifies as collective a set of cases in which there is "important coordination between the individual studies (p.5)." In this study each case, each classroom is first carefully delineated after which the coordination among the cases is examined for patterns of similarity and difference, and for the light that each throws on the other. Although the emphasis is on an attempt to understand the local meanings, Stake (1995) reminds us that in qualitative case study "ultimately the interpretations of the researcher are likely to emphasized more that the interpretations of those people studied,"(p. 37). He cautions that the researcher must try to "preserve the *multiple realities*, the different and even contradictory views of what is happening" (p. 53).

Situating Myself in the Research

A significant aspect of qualitative research is the researcher herself. It has become a commonplace to acknowledge the enormous impact on research of the assumptions, perspectives, life experiences of the person who engages to interpret someone else's world. An additional underlying assumption is that the researcher is entering a culture as an outsider, attempting to understand participant meanings. However, like many educational researchers, I have spent many years as a classroom teacher and additional years entering classrooms with teacher education students. To me a classroom is a familiar place. Thus I came to this research with a broad and deep set of understandings and beliefs about how classrooms are constructed, about the dynamics which operate in them, and about the various pressures and realities that surround school life. I also have

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developed attitudes and perspectives that tend toward evaluating educational contexts and decisions in certain ways. I realized that this could be both an advantage and a disadvantage. It could give me a head start on knowing how to look at the classroom; it could also create a false and superficial sense of understanding. Every classroom is a unique culture. It is that uniqueness which the researcher must access, and too strong a sense of familiarity can easily get in the way. The only defense against this seemed to me to always remember the danger and to take nothing for granted.

An additional factor of my research perspective is my orientation to the two phenomena under examination—literature and technology. It seems important to acknowledge that my foremost allegiance is to literature. It is probably most accurate to say that I am passionate about children engaging with books; while I am interested in ways that technology can enrich the educational process. I came to this research with a set of informally constructed assumptions: that while teachers may value children's books in the classroom there are many pressures which limit the experiences which children have with literature; and that pressures in education have tended toward blind enthusiasm about technology without enough attention to purposes and effects. I also confess to carrying into this research an unexamined fear that, in general, enthusiasm for technology is a threat to the development of a disposition toward literature engagement in children. These assumptions, predispositions, and understandings are of course inextricably bound up in this research.

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Selecting a Site

The site selection for this research was a challenging process and in fact contributed significantly to my understanding of the broader context in which the classrooms examined here exist. Although I was interested in observing classrooms in action, the interest of the teachers in the two areas of research focus—literature and technology--was crucial. Thus my search for classrooms was really a search for teachers with the set of characteristics I was interested in, criteria identified by Yin (1993) as having "topical relevance." I developed a statement describing these characteristics:

> I am interested in talking with elementary teachers who have both literature-rich and technology-rich classrooms. By this I mean that they are very enthusiastic about literature and involved in using it extensively in their teaching. It also means that they are very interested in technology, must have a set of computers in their classroom and must be currently using them with their students. It does not mean that they need to have achieved any particular level of technology expertise.

I approached this from both the literature and technology angles, using phone calls and email to contact principals, language arts/literacy coordinators, and technology coordinators in the part of the state in which I was located. I also contacted teacher education instructors of language arts at local colleges and universities. I was looking for three classrooms to include in my research. Stake (1995) discusses the difficulty of defending the representational value of set of cases because of the small numbers and emphasizes that instead balance and variety should guide site selection, with highest priority given to the extent that a site can contribute to opportunities to learn. Following Stake, I believed that three classrooms, exhibiting a balance across economic and grade levels and a variety of technology resources and pedagogical orientations could provide the broadest opportunity to learn. Three sites also provided the security of having more than one case remaining if, for any reason, one of the sites didn't work out.

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Almost immediately it became clear that finding three teachers who met both these criteria would be challenging; my focus swiftly changed from addressing simply "topical relevance" to recognizing the importance that "feasibility and access (Yin, 1993)" would play in site selection. It seemed that teachers who met either of the criteria separately were apparently not all that common. I discovered that a difficulty with the technology requirement was the preference in elementary schools to put computers into labs rather than classrooms. I was directed to a number of teachers who were hailed as technology pioneers in their schools but who, although they may have been doing great things with technology, did so in a scheduled computer lab context and had only a 'teacher's' computer in their classroom. Other classrooms may have had a set of classroom computers but were not connected to the Internet, a criteria I was unwilling to relinquish as it seemed as though a teacher without Internet access would think differently, and in a more limited way, about the potential of computer use than one who had Internet access. In the event, it turned out that Internet access in the classrooms I did select, although present in all three, was functioning poorly enough in one to seriously limit use, and was not an option for students in another class due to district policies.

On the literature front the search was no less challenging. Here it became clear that teachers who were using literature extensively were either extremely few and far between, or were working invisibly. Very few suggestions came my way, and, with one exception, none of those I did identify as intensive literature users were also using computers. The one exception was a second grade classroom that appeared to be actively integrating student computer use, including extensive Internet use, with a curriculum strongly focused on literature. Unfortunately the teacher felt overwhelmed by an

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exceptionally challenging and needy class and felt unable to accommodate the intrusions necessitated by the research process. Eventually I was forced to move my search to an area mid-state, around a major university. Here, using the same searching procedures as previously, I eventually identified the three classrooms that are the focus of this research. In my first contact with each teacher, which was by email, I included the description, presented above, and asked if he or she felt it described him or her accurately. Each indicated that the description fit.

Participants

As I had hoped, the elementary classrooms that became the sites for this research include a range of differences. I was interested in looking at how literature and technology use might take on different configurations at the different grade levels. I also hoped to include differences in demographic profiles. This I was able to achieve to a certain extent. Although there are no representations of either rural or major urban center contexts, the schools do represent both a lower income city district and two schools in a suburban district that range in economic level.

One classroom was a first grade the first year, but became a first-second combination the second as the teacher agreed to take on a split necessitated by the population numbers. This classroom was located in lower income neighborhood near the center of a mid-sized mid-western city. Another of the classrooms was a third grade in an affluent suburban neighborhood. The third was a fifth grade in the same affluent suburban district but was located in a more transitional neighborhood and was classified as a Chapter 1 school. As

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such it included students from more of a range of income levels although a high proportion still came from affluent or very comfortably middle-class homes.

The teachers of these three classrooms also represent something of a range. Karen, the teacher from the urban school is a white Caucasian American woman in her thirties. Clarice, the third grade teacher, is an African American woman in her forties. Carl, the fifth grade teacher, is a white Caucasian American man near retirement age. All three have essentially been teachers since they finished their undergraduate education, although Clarice took a number of years off while her children were young.

Each school, teacher, classroom and set of students and will be described in detail in the introduction to the chapter reporting on the research in that classroom.

Research Processes

Data Sources

I spent a period of approximately 5 weeks in the spring of the year and equal amount of time in the fall visiting each classroom several times a week. The breaking up of the data collection process into two sections falling into two different school years enabled me to see the classroom in action with two different sets of students. This helped eliminate the possibility that certain practices were enacted as a result of the dynamics of a certain group of students.

There are primarily three categories of data for this study. The first of these is observations of class activities. These observations were made over a 10-week period of which 5 weeks occurred in the spring of the year and 5 weeks in the following fall in the new school year. Initially I concentrated my attention on each classroom successively,

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visiting each classroom a few days in a row to become familiar with the setting and to enable the students to become familiar with my presence, then moving on to the next classroom to accomplish the same initiatory process. After this had been accomplished I spent the remainder of the spring research period alternating among the three classrooms. I sometimes spent extended periods of time observing the normal course of the day; I sometimes came specifically to observe a particular event such as computer lab, or literature discussion. I generally tried to spend approximately equal times in each, although the schedule was influenced by the schedule of events in each classroom and somewhat by my outside responsibilities. During the middle phase of the spring period I spent several consecutive, concentrated days in each classroom to assure that I was seeing the full pattern of the school days and the variations that naturally occurred in them. The toward the end of the spring research period I returned to an intermittent pattern of alternating visits, this time highly focused on observing events that were particularly pertinent to the research questions.

In the fall I followed essentially the same pattern, although one of the teachers asked me to put off beginning my visits until 4 or 5 weeks into the school year. She had taken on a split grade level after the school year had already been in session for a few days and felt she wanted some time to get her bearings before the research began again. Consequently, research in this class began later in the fall and extended somewhat beyond the data collection in the other classes.

During the observation I took extensive field notes. As consistently as possible I took time immediately after the observation session to write reflections and to reassess the observation data. At intervals I cross-checked issues and observations with a checklist for

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each classroom that essentially asked, using a detailed list of classroom activities: What have I seen? How often? What do I need to see? When is it most likely to occur? Similarly, using the results of the on-going coding of the observation data, at regular intervals I made lists of categories that were surfacing and cross-checked the categories across the three classrooms to ascertain whether issues arising in one classroom might suggest new lines of thought to pursue in the others.

A second source of data was from formal and informal interviews. I conducted a formal interview with each teacher near the beginning of the research. These interviews were tape-recorded and the tapes were transcribed. I had planned to conduct two more similar interviews with each teacher, but two of the teachers asked if the interviews could be reshaped to fit into the school day, preferring in one case to have a series of shorter conversations in the classroom during times that the students were busy working, and in the other case to have two longer conversations in the classroom while the intern was in charge of the students. These interviews, then, were recorded in field notes rather than tapes and transcripts. With the third teacher I conducted the second interview in the manner described above, while the third was done, like the first, more formally--outside the classroom and was audio taped.

I also conducted interviews with a set of students in each classroom. These students were selected in collaboration with the teacher, the goal being to talk with students that represented a range of interests and abilities-- avid readers, avid technology users, students who were interested in both, students who were not very interested in either. I talked with at least six students from each classroom. Some of these interviews were conducted during the spring, some during the fall.

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Additionally, I interviewed the library aide in each school asking about children's experiences with literature that occurred in relationship with the library. Two of the three schools had computer labs. As neither of these included an on-site professional, the library aide also played an informal role in running the lab so I also discussed their role in this capacity and their observations about the relationship between literature and technology. These interviews were tape-recorded and the tapes were transcribed

A third source of data was artifacts. Among these were class schedules, assignment descriptions, sets of assignment questions, book report forms and technology policy memos. These were examined for ways in which they supported or contrasted with the evidence from the observations and interviews.

In addition to these three data sets, I also engaged in a set of informal, supportive data collection procedures in each school, trying to get a sense of how it felt and functioned. I wandered the hallways, looked into open classroom doors, noticed bulletin boards, posters, notices, and art displays. I paid attention to what changed and what stayed the same in the physical surroundings. I observed students, teachers and parents as they come and went through the hallways and in and out of the office. I chatted with secretaries and with students from other classes; I watched students in the library and in the computer labs.

Two of the classrooms had teacher education interns during the period of research but they were not included as a formal part of the research process for two reasons. The first was that since I was interested in the way that the teacher shaped the classroom in an ongoing way, the transient nature of interns was not part of the focus of my research, although I did keep my attention tuned to notice ways in which interns actions and

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decisions might seem to change or impact the customary patterns of the classroom. The other reason they were only incidentally included was because, due to the timing of the research, the teaching activities of the interns were limited. In the spring, when I began the research process, the interns had completed most of their teaching time and were primarily engaged with working on university-based, end of the year tasks. Although they were frequently present in the classroom, they spent a great deal of time doing their own work on the teachers' computers. In the fall they were just beginning their placement and their activities were, again limited. Although I sometimes observed them teaching, these also tended to be the times that the teachers would take to talk to me about the ongoing activities. I did, however, talked informally with all them at various times about their perspective on particular events, but did not interview them in an organized way.

Data Analysis

Data analysis proceeded along two parallel lines. On the one hand I treated each classroom as an individual case, as indeed it was. However, I also used the both the set of cases and each of the individual cases to test the analysis in the others, moving across them to use features noticed in one to highlight presence or absence of similar features in another. In the initial stages of analysis I developed coding categories for each classroom independently of the others to enable the fullest attention to the particularities of each situation. Since I was engaged with all three simultaneously, the purity of this effort was probably limited, but it did serve to draw my attention to the necessity for

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seeing each classroom as a unique case. At the same time, as mentioned above, I used the categories from each to inform my ongoing data collection at all three sites.

Preliminary Processes

In the beginning of the analysis process, which began in the second or third week of the data collection process, I worked with my original paper fieldnotes and the tapes of the initial teacher interviews to begin to think about what patterns and puzzles, relationships and inconsistencies (Hammersley, 1995) might be appearing. As I began to receive from my transcriber Word documents of my field notes and the initial interview tapes, I also created paper copies of these transcripts. I then began to work back and forth between the electronic and paper documents, doing successive layers of coding on the paper copies, then doing word searches and cut and paste functions in Word to create corresponding layers of electronic documentation. Some of this was simply an extraction of data corresponding to a certain category, topic, or type of occurrence, such as a pulling out all the occasions in the field notes when children were observed interacting with computers during free time, or a grouping of all the comments of one of the teachers about the value of literature. Some of this took the form of more structured writing; in an iterative process, listening to tapes, reading and rereading transcripts, reviewing developing coding processes, I created an evolving series of portrayals, or memos, focusing on technology use, or literature use, or profiling the teacher's perspective toward each of these, or identifying distinctive classroom patterns.

At that point I also created both paper and electronic documents files for each classroom and one for the cross-classroom connections. The paper files, held in ring-

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bound notebooks, contained the successive copies of coded transcripts, notes and diagrams created in the process of developing categories and dimensions, and data in the form of paper artifacts. The electronic files were comprised of Word documents containing the transcribed field notes, transcripts of the taped interviews of both teachers and students, typed notes from meetings with committee members, and successive layers of profiles and memos. Although undoubtedly it would have been more efficient to manage the data only electronically, I found I could not comfortably give up a sense of control and of being in touch with the big picture which I received from physically doing the coding on paper and of having paper copies which reflected successive stages of coding. Likewise I could not have managed to test the effects of the coding without being able to pull together and sort the coded chunks electronically.

Much of this work was done during the summer hiatus in data collection. The return to the classrooms in the fall provided an opportunity to test the preliminary assumptions I was making and to provide for member checking of data from the earlier period. It also provided an opportunity to triangulate data from a different temporal point as well as from the altered context provided by the new set of students in each classroom (Hammersley, 1995). This analysis process continued during and after the second period of data collection. The categories and themes which gradually arose from this process evolved into the metaphors and sub-metaphors which are used in the following chapters to describe the ways that literature and technology "inhabit" (Nardi, 2000) each classroom and to highlight the salient features of each.

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Analysis Tools

There were several tools, some provided by the literature base, (description of these has been provided in the previous chapter) some that I devised in process, which aided this analysis. Some I used very directly. From the work on literature engagement came Louise Rosenblatt's (1938) conception of aesthetic and efferent stances toward literature which I used both in a micro sense to think about individual instances of literature use, and in a macro sense to think about the overall orientation toward literature predominant in each classroom, although ultimately I found there were also literature uses that lay outside the purview of this continuum. From the literature on technology came Means' (1994) classification system for technology uses in classrooms which, while providing a somewhat decontextualized framework, provided a useful way to notice the focus, range and diversity within classrooms and across classrooms. Another perspective was provided by Goodson & Mangan's definitions of common ideologies associated with classroom computer use, which was useful in thinking about the influences of teachers' beliefs about technology on their usages. I also adapted Hughes' (2001) typology which classifies technology uses by their relationship to non-technological alternatives and provided a valuable tool for thinking about the various instantiations of technology in relation to curricular goals. I used her understandings of *replacement*, *amplification*, and *transformation* in an informal way to assess technology use in the three classrooms.

Other tools provided a background for this work. Among these were several additional taxonomies of technology uses. Bruce & Levin's (2001) list of categories identifies a more complete set of usages than that of Means'. Although the categories were not effective for carefully distinguishing between the more limited uses represented

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in this research, they provided a context for comparison. Another of these background tools was Bruce's (1997) list of some common stances toward educational technology which, although, as he mentions, is incomplete, provided a useful way to think about each teachers' perspective.

Each of these, while useful in its realm, was specific to either literature or technology, was directed at a specific characteristic or set of characteristics of literature or technology use, and were most useful for looking at each case independently and for developing the resultant metaphors for each. However, I also needed to explore the coordination among the cases, to describe them in a way that reflected differences and similarities across them. During the middle of the data collection period I began to ask myself in each case: What is it that makes this classroom like this? What is it that makes the other classrooms so different from this? What are the essential issues that are instantiated so differently in each case? I felt the need of one tool that could enable both narrow and broad views of both technology and literature use across all three classroom. I needed it to help identify, describe and analyze individual activities occurring in each classroom as well as help create generalizations about the patterns of use in each classroom. I began to design a rubric that could help answer these questions. As I developed the initial categories and descriptive terms I continually tested them against what the various data were revealing and against my sense of what I was seeing in each classroom, checking to see how each category fit the various activities in both literature and technology in each classroom, as well as the overall impact of activities in each literature and technology use in each classroom. In crossing the boundaries among classrooms as well as between literature and technology use, the categories in some places corresponded to the coding categories

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and in some ways differed. Although I continually spot-checked the rubric against the data and against my other on-going analysis processes, this was an attempt to take step back from the data to develop a sense of the big picture. Thus this was a spiraling process of stepping back away from the data, trying to define my own sense of what was important in the context, then returning to the data to test where the rubric was and was not accurately and completely capturing the essentials, making necessary adjustments to the rubric, then stepping back again. Moving forward and backward in this way, my goal was to develop a rubric that fit my overall and developing sense of the big picture but also was true to the test of a close look at the data. A major factor in the development of the categories was my attempt to shape a rubric that could capture what was important in each classroom in regard to both literature use and technology use.

Gradually, over time, with a great deal of sifting, shifting, discarding and substitution, I developed the rubric, described below, that seemed to enable me to capture the essential characteristics of both literature and technology use in all three classrooms. Ultimately it was shaped by my understanding of the broader research context, by my efforts to find a pattern that would enable a parallel perspective on both literature and technology use, and by my developing understanding of the data.

This rubric is constructed of three categories that generally can be applied either to a particular activity or to the classroom activities in a more holistic sense: Degree of integration, participation structures, curricular purposes and outcomes. Each of these categories contains three pairs of descriptive terms designed to isolate a particular dimension of the category. The pairs are designed to be a continuum so as to enable them to represent relative degrees of difference; at the ends most pairs reflect oppositional

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characteristics. In spite of the artificiality of trying to extract a characteristic from its context, and the imperfect conceptualization of these dimensions, this proved to be a valuable tool for capturing, examining and comparing both the literature experiences and the technology experiences in the classrooms. Following the rubric itself, I describe each analysis category in greater detail.

Table 2: The Rubric: Literature/technology activities in classroom

Category 1: Degree of integration
Discrete .....Integrated
Central .....Peripheral
Planned ... .Spontaneous
Category 2: Participation Structures
Whole Group.....Individual
Independent ..... Collaborative
Teacher controlled.....Student controlled
Category 3: Curricular Purposes And Outcomes
Product-oriented ....Process-oriented
School focus.....Life focus
Use value.....Intrinsic value

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Category 1: Degree of integration

Discrete .....Integrated
Central .....Peripheral
Planned .... Spontaneous

This category identifies the ways in which literature or technology activities are temporally and spatially related to the events of the rest of the curriculum: When do such events occur? How frequently do they occur? To what extent are these kinds of activities integrated into other events of the school day? Several students using the Internet to look up an airline fare while working on a math assignment is an example of a highly integrated technology activity; individual students picking up and reading the assigned chapter in the class novel when they have finished their other work is a literature activity with temporal integration. In contrast, a Literature Circle discussion which occurs once a week, or a weekly computer lab practice of typing skills are both examples of entirely discrete activities. This category includes an aspect of frequency — technology activities which occur intermittently all day long every day in a classroom indicate a high degree of integration in the school day even if they are not conceptually integrated across subject matters.

The second dimension of this category identifies the centrality of the literature or technology activities to the over-all curriculum. It reflects the significance of particular activities to the curriculum well as the extent to which literature or technology activities in the aggregate play a central or peripheral role in the curriculum. The creation of science booklets in Hyperstudio™, based on text already written with pencil and paper

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would be a case of a technology activity that is peripheral to the curriculum. The use of TELE-Web, a web-based environment which supports wide range of activities, to work with the weekly spelling list-- doing exercises with and learning the words-- is an example of a technology activity which is central to the curriculum.

This category also includes a dimension of spontaneity—whether literature and technology activities only occur on those occasions in which they have deliberately been planned into the curriculum, or whether they occur unexpectedly at the initiative of either the teacher or the students. This dimension reflects the extent to which thinking about, referring to, using, interacting with either literature or technology seems to "come naturally" to the classroom participants. When a teacher interrupts several students working independently to show them digital pictures taken of a recent field trip, or when a teacher is reminded in a class discussion of a book she found that she tells the students she will bring in for them, literature and technology show themselves, through the spontaneous occurrence, to be an integral part of the individual's life and to contribute to a different meaning for the phenomenon in the classroom than if it were only used in planned ways.

Category 2: Participation Structures

Whole group.....Individual
Collaborative ..... Independent
Teacher controlled..... . Student controlled

This category identifies the way the literature and technology activities are structured--the ways that students interact and who makes those decisions.

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The first dimension indicates the physical organization for work. This may range from the whole class participating jointly in the activity, through small groups, to students working in pairs, to each student working independently.

A corresponding dimension is the nature of the work itself—whether each student is ultimately doing the real work alone, the work which will be assessed, or whether students are collaborating in creating a joint product or are being assessed as a group. A necessary indicator of a collaborative activity in this rubric is joint responsibility for both the process and the product. Thus, a whole group or small group discussion which culminates in each student doing a worksheet or writing in a journal about the results of the discussion is not, essentially, a collaborative, but an independent activity. Similarly, an entire class engaged in Type to Learn is participating in a whole group independent activity.

The third dimension in the category of participation structures identifies who initiates and designs the activity as well as who is responsible for defining the outcome. A class assignment to type spelling words into the TELE-Web environment is, by design, a teacher controlled technology activity, while a student choosing to create a story in TELE-Web during free time is a student controlled technology activity. Two students choosing to partner-read during indoor recess is a student controlled literature activity. A student requesting to create a PowerPoint social studies report rather than a paper and pencil essay is an example of an activity somewhere near the center of the spectrum, in that the teacher has control over the assigned task (create a social studies report) while the student has initiated and controls the medium of the report and they jointly define the

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outcome—presumably the teacher has communicated a standard of what constitutes "report-ness" which will define how the student will shape her product.

Category 3: Curricular purposes and outcomes

Product-oriented .....Process-oriented
School focus.....Life focus
Use value.....Intrinsic value

This category, more than the others, reflects in the last two dimensions not only the researcher-as-observer perspective on the purposes of literature and technology activities in each classroom, but also the views that the participants have expressed in interviews and conversations.

The first dimension identifies the extent to which it seems that the emphasis in the activity lies in the process or experience itself or in creating a product for a public (i.e. parent or administration) audience. An activity in which small groups write and perform skits for the class as a response to reading a book is classified as an example of a highly process-focused activity as is the email communication between elementary students and their high school partners. In each case, no final product is created by the activity to be taken home or displayed at school. This makes it clear that, for the teacher, the value of the activity lies in the doing of it. A class discussion of a literature excerpt which is directed toward writing correct definitions of vocabulary words in a formal report booklet is an example of a highly product-oriented activity, as is using the computer to type a story which the student has previously written on paper, since in both cases the emphasis is on creating a product that is properly done for 'public' display. A Type-to-Learn

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session can be either product-oriented or process-oriented depending on the extent to which the teacher might emphasize, record and evaluate the level at which each child is typing as opposed to emphasizing the amount of time and concentration exhibited in practicing the skills. Similarly, a literature discussion in which the discussion itself is the central focus of the activity would be classified as process-oriented; a literature discussion in which the final focus appears to be on correctly answering a set of written questions would be classified as product-oriented.

A second, related dimension reflects the type of learning the activity is designed to create or enhance, what is sometimes referred to as authenticity. In some cases this may be judged to inhere in the activity itself: When a literature discussion focuses on answering comprehension questions or understanding plot development I consider it to have a school focus; when it is focused on a discussion assessing issues of personal responsibility by a character in the story, or is primarily concerned with enjoying the story and relating it to students lives I consider it to have a life focus. In other cases the purpose may differ as a function of participants' perceptions. When a student says that teachers and parents want them to learn technology because most jobs in the future will require technology, they are expressing the perception of a life focus for the learning; when a teacher says that she is introducing her students to Book Club because the teachers in fourth grade will use that method, she is expressing a school focus.

The third dimension in this category evaluates the way literature or technology itself is valued in the activity. The use of either literature or technology may focus either on valuing it for its own merits, or on using it to accomplish goals entirely unrelated to the phenomenon itself. Thus, students engaged with Type-to-Learn present an example of a

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technology activity that reflects an intrinsic valuing of technology, as does a teacher's creation of a task designed to help students learn to use Hyperstudio. A class session which focuses on the discussion of a story is an example of valuing literature for its own sake as is a class silent reading time, such as a D.E.A.R. (Drop Everything And Read) session. Reading a biography of Thomas Edison to chart the development of various inventions would be an example of a using literature to accomplish tasks unrelated to literature itself. Similarly, using a computer-based encyclopedia to find out about the habitat of jackrabbits is an example of using technology for its value in accomplishing a task that does not have technology use as a focus.

Researcher Perspective

A classroom in action is an organic and dynamic entity, shaped by and imbued with the cumulative hopes and fears and expectations of the participants. The lived experience for each participant is colored by his or her individual beliefs, experiences, needs, distractions and predilections; each resident of these cultures has his or her own story to tell. As one who was a visitor in these classrooms, the stories I tell, the portraits I create can only be my own. My desire, however, is to convince the reader that I have represented these three living, evolving, complex cultures and each of these unique individuals accurately, honestly and insightfully. I do, therefore, hope that the evidence provided in the stories will convince the reader that the portraits have validity, that they do accurately represent the view from this perspective.

My desire is also to represent these classroom communities and the people of which they are constituted both as kindly and as truthfully as possible. The three teachers

represented here are exceptionally committed and talented people, who bring to their classrooms passionate concern for their students and a strong commitment to their own professional development; each of the students represented here are unique and precious children. It is my intention in this work to honor them for who they are and for the efforts they make to learn and grow.

None-the-less these are imperfect individuals who, like myself as researcher and us as readers, have limitations and weaknesses, who exhibit inconsistencies and contradictions in their beliefs and behaviors, who hold some opinions that differ widely from each other and most likely from many of us, who make some decisions that we as observers might take exception to. This look at these classrooms and their practices and inhabitants is, finally, a process of research, and as such carries an obligation to honestly see warts as well as wisdom, to observe inconsistencies as well as insights. It is my hope that in openly identifying and discussing the practices of these classrooms and the perspectives of the participants we may each increase our knowledge, wisdom and understanding.

PROLOGUE TO THE FINDINGS

Overview

The following four chapters (Chapters 3-6) present the findings of this research. In each of the first three chapters (3, 4, & 5 respectively) I present a detailed look at one of the three classrooms, its characteristics, participants and patterns. In each case I will first orient the reader by presenting a picture of the setting and the participants and of typical patterns of actions and interactions within the classroom. This introductory tour is

followed by the main focus of the chapter—a close look at the patterns and characteristics pertaining particularly to the roles of literature and technology in that classroom. Some of these literature or technology sections will be preceded by vignettes to provide a fuller sense of the workings of the classroom in regard to either literature or technology use. These three chapters are followed by a fourth chapter (Chapter 6) in which I look across the classrooms at the ways that the actions and meanings of literature and technology are similar and different in these three settings. An additional, final chapter (Chapter 7) provides conclusions and implications of the research.

In these four chapters, my first goal is representational. I create for the reader a layered and living portrait of each of three highly distinctive classrooms. Although the ultimate focus for this work is the portrayal of the ways that technology and literature, both as artifacts and practices, both separately and together, are part of the life of these classrooms, these artifacts and practices are situated within a network of local frameworks, behaviors and meanings. Thus a crucial part of this representation is contextual. Therefore, in each of three chapters (Chapters 3-5) I begin with a wide-angle lens, backgrounding each portrait with description of the local community and school within which the classroom is nested. Narrowing the focus to the classroom itself, I introduce the students and, more extensively, the teacher. I go on to picture the classroom as a physical space and then as an enacted community. Finally, against this backdrop I center a portrayal of the way students and teachers in each classroom interact around technology and literature. This portrayal is accented with a series of stories of classroom interactions and is anchored by a set of metaphors that I use to capture and highlight the salient characteristics of each classroom.

My second goal is analytical and interpretive. Through this research I have been engaged in thinking about the following questions, introduced in the last chapter:

RQ 1: What is the meaning and role of literature in the classrooms of teachers who identify themselves as having literature-rich environments?

RQ 2: What is the meaning and role of technology in the classrooms of teachers who identify themselves as having technology-rich environments?

RQ 3: What is the relationship between the literature and the technology in these classrooms?

My thinking, then, has centered on noticing what characteristics, behaviors, patterns and assumptions about literature and technology are present in these classrooms, how these factors shape and impact students' literature and technology experiences, attitudes and abilities, and the relationships which might exist between literature and technology experiences. I analyze some of these qualities and characteristics for the reader, demonstrate some important connections, and draw some final conclusions about what kinds of issues are important in thinking about and using literature and technology--both separately and in relation to each other--in elementary classrooms.

A Note about Terminology

In the following chapters I repeatedly use the terms "literature" and "technology." I also use alternatives such as "books," "reading," and "computers." As discussed previously, each of these words is weighted with technical and commonplace understandings, layers of meanings, and, in come cases, contradictory interpretations. It is important to identify more specifically the meanings that each of these terms holds here.

In these first three chapters (Chapters 3-5) the reader will notice a very loose and somewhat shifting meaning in my use of the term "literature." As a starting point,

without in any way addressing issues of quality, I will assume that the term means trade books that are written and published for children. For the most part, this means fiction. However, literature also includes biography and also non-fiction books in some limited ways. It does not include reference books (except in one unusual case when a child reported reading a dictionary for pleasure), instructional or technical manuals or similar functional reading. Additionally, in each of the next three chapters I shape this deliberately loose operational definition to my sense of the participants' use of the term "literature." I try to use the term the way the teacher used it in the classroom.

It must be recognized that in my conversations with the students I unavoidably shaped their assumptions by my introduction of the topic. I generally started out telling them I wanted to talk about books for a while. I asked them about "reading books" and "reading stories" letting them determine what that meant for them. Because my purpose was not to explore precisely what the extents and limits of the term might mean for them, but rather to talk about their experiences and perspectives on those experiences, I did not define what I meant by those words. In addition, children never asked me what I meant or indicated that they were confused about the meaning I intended by the language I used. I did not use the word "literature" with them because I felt that term might call for a definition and/or make them cautious or unsure of what I expected from them.

In all of the classes the teacher asks the children to "read" for a time at home each night. They seemed to share a similar understanding of what this expectation entailed. None of them suggested, for example, that they browsed the Internet during this reading time, read the instructions for a project they might be building, nor read recipes. None of the students mentioned comic books, newspapers or magazines as their preferred reading

matter. From this I did not make an assumption about whether or not the children read these materials. I did not assume they would or would not consider this "reading." Rather, it suggested to me that they shared a clear understanding that the school-generated definition of reading includes only stories printed between two covers.

The common use of the term "technology" across these settings is less complex but also rather flexible and vague. For two of the classrooms, the word is loosely synonymous with the term "computer." Except for viewing videos occasionally, or listening to audiotapes, in these classrooms students' technology experiences take place at a computer keyboard. However, in the third classroom, the use of technology, although still generally computer-based, was clearly broader and most commonly incorporated scanning, taking digital photo and creation of video, both digital and analogue. This broader understanding of technology in the third classroom generated many early discussions with the teacher and also shaped my conversations with his students.

Although this situated use of language will pertain to the three chapters dealing with the individual classrooms, in the next, cross-classroom chapter (Chapter 6) I will carefully examine these differing understandings, noticing the way the definitions and purposes of literature and technology held by the three teachers are played out in these classrooms and are related to the corresponding uses of literature and technology in each classroom.

CHAPTER 3

COLLINS CLASSROOM

Setting and Participants

The School

Collins Elementary School occupies a small city block in the center of a mid-sized midwestern city. The surrounding neighborhood of small frame houses shows suggestions of absentee landlords. On visits to the school one is may expect to be greeted on the street by a well-dressed father dropping off his children in a shiny new SUV or a polite but vague gentleman with a bottle in a paper bag meandering along the sidewalk. To the west the playground is bordered by a fairly major artery through the city, although the entire year and a half of my interaction with the school the road going north from the school corner was closed for repairs. Directly across the street is a charter school that serves as a safety valve for unhappy parents. Students are occasionally transferred there from Collins, but according to the Collins teachers, are as likely to be transferred back again when the attraction wears off, by then even further behind their classmates.

Many students in this school live in difficult circumstances. Of the approximately 275 students about 85% receive free or reduced lunch. The neighborhood population is highly transient in the way of families for whom meeting the rent on time can be a difficult issue; a class may easily have a 50% turnover in the course of a school year. It is not uncommon for students to be in school, transfer, and return to the same class as the family adapts to various stresses. At the end of the day, this school, like so many others is surrounded by lines of cars waiting to pick students up. However, it is not uncommon

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that when the last of the cars has come and gone, a student will still be standing forlornly waiting to be claimed. Frequently these students are not sure who it was who was supposed to be coming for them -- Grandma, or maybe an uncle who attends the nearby public high school, or maybe dad.

The main door to the school from the parking lot is a rather forbidding set of battered brown metal window-less doors. However, once inside, a visitor is greeted by a spacious entryway and an array of windows overlooking a bright courtyard around which the main section of the building is constructed. The wide hallways are immaculately kept and arrayed by a number of posters proclaiming the powers of education, the efficacy of hard work, the commitment of teachers, and the importance of respect and civility.

Unlike more affluent school districts, in this school there are no weekly "specials" except physical education and library to give the teachers a planning break—no music, no art, and no recess supervision. If the students go outside for recess, a break that is frequently skipped here, the teacher goes along to supervise. Even lunchtime is not much of a break for most teachers. Students are supervised in the gym while they eat. But, because of problems on the playground a program of planned activities was begun and most teachers thus supervise a set of students doing games or crafts or mini-courses during the lunch recess.

The Teacher

Karen Hudson is a Caucasian woman in her mid-thirties. She has been teaching since she graduated from college with short breaks for maternity leaves. She has been at Collins for 8 years with the exception of one year, a year she didn't enjoy, when she was

forced by personnel cutbacks to move to another school. When the opportunity came the following year, she returned to Collins with relief.

Karen's enthusiasm for Collins is very closely tied to her enthusiasm for technology. When she first started teaching there she had no technology background. She summed up her skills as: "I could turn on a computer and turn off a computer and that's about all."

But when she saw some of the things going in the building, especially the newly begun Accelerated Reader program she became very interested. Since she needed graduate hours at that time anyway, she decided to take educational technology courses at the nearby university. "And that just really, really got me going and it got me into the masters program, which I got my masters in the Ed. Tech. and I've just been going on since."

She has gone on to take a leadership role in the school. Since she enjoys the technical side of computers—loves taking them apart and putting them together, she says-- she is responsible for maintaining the computers and server in the lower elementary wing. She also serves as general trouble-shooter for the teachers in her wing and is part of the school technology committee.

Karen likes the busy pace of a first grade classroom and enjoys the really obvious progress the children make in learning to read. However, she admits to struggling with the management issues and watching her teach it is possible to see how that is a challenge for her. The style of her classroom includes a great deal of independent activities-- keeping students going on seatwork, on computer activities, keeping track of who should be doing what. Keeping all these little people on task is very busy and she feels she drops the ball a lot. This is one of the things she most likes about computers—she feels,

that although using computers heavily has its own management challenges, they also provide her a lot of tools for managing other aspects of her teaching and her students learning.

The Classroom

Karen Hudson's classroom is at the end of the hallway beside the doors to the north street access. Since the only other street access door, on the east side, is reserved for bus pickup, this is where the students who come by car are dropped off in the morning and wait to be picked up after school. As a result, there is a great deal of chaos outside this door at the beginning and end of each school day.

Karen's classroom is large and bright. The windows, like those in so many older school buildings, have been partially filled in and reduced in size in an efficiency upgrade. However they stretch across the entire west wall and still provide ample sunlight. Above the windows a series of brightly colored pennants remind students to: Stop And Think. Ask For What You Need; Say YES to Books. Talk it out. Think About Your Choices. Storage closets, a work counter at student height including a sink, and boys and girls bathrooms line the wall adjacent to the hallway. Karen has placed her desk and filing cabinets in front of that counter facing into the room, so a student using that space will pass directly behind her desk. Bookcases used for teacher storage line the opposite wall under the windows, and in front of those she has positioned the half-circle table she uses for reading groups and other work with students.

Both the north and south walls feature large chalkboards in the center flanked by bulletin boards. On the north wall the bulletin board near the windows features a teacher-

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made birthday tree with fruit bearing each child's name and birthday. The opposite board, adjacent to the girls bathroom which occupies the corner, is a magnetic "word wall." The wall above the board on the south wall bears a large computer-generated sign announcing "Happiness is Learning" and purchased posters reminding students to: Respect Other People's Property, Remember to Say Please and Thank You, and to Always Put Things Away When You Are Finished. A door in this wall opens to the adjacent classroom. Although the large chalkboards in the center of these facing walls contain the usual array of student papers, and procedural charts, the center portion of each remains open and shows signs of regular use as an informal teaching tool.

The first year of my visits Karen was a first grade teacher. The following year she volunteered to take a first/second split class. To accommodate the change she made some changes in her room arrangement. Student desks the first year were grouped in "tables" of three or four desks pushed together. The second year, to facilitate teaching separately to each grade, the desks were arranged in pairs, side-by-side. The pairs were then arranged roughly in rows facing the board, the first graders on one side, the second graders on the other.

The computers are located in the north corner of the room under the windows. An enclosed bay is created by a set of low bookcases placed perpendicular to the window wall and a table holding two computers placed perpendicular to the north wall. A space is left open for egress to the space. Within that bay a table against the north wall and another table perpendicular to the window wall hold computers. Against the north wall a tall bookcase is filled with older looking books, erratically arranged. Although students

occasionally were seen to fuss with the books during computer times, I never saw them read or used in any other way.

On the north wall, on the outside of the computer space, and facing against it, was a computer table holding Karen's computer, a new (at that time) Mac G-3. This was a central work position for her—from here she could see activities in the computer corner and oversee students at their desks. Beside her was the floor space used for group reading and talking activities.

The overall appearance of the room is of a very functional space with little concession to appearance. Although it seemed well organized, tidiness did not seem to be a major concern. Scattered or messy areas tended to remain that way until they were needed for another purpose.

The Students

There were approximately 16 students in this class most of the time I was there. The school was currently funded under a grant limiting class size to 17, which with a contract exception for overload effectively limiting the size to 19. Karen explained that the numbers varied, sometimes from week to week, reflecting the transient lives in the neighborhood. By the spring of the first year I visited, only 9 of her students had been there all year; she saw 24 students come and go. At my first visit to the classroom she pointed out one child who had recently returned from a stint of living in another part of the city with her grandmother while the family went through some difficult times, and another child who had returned to the school after having been pulled out the previous year and sent to the charter school across the street. At the spring of the year the first

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grade students ranged in age from 6 to 9 and in reading level from .9 to 5.3. Holding students back is common practice at this school, one Karen supports. Pointing out a happy, intently working boy she told me that the previous year he had had a terrible time in her class. He was well behind the other students and acted out his frustration. She kept him back and now reported he had caught up, was doing very well with his reading and was like a different child.

During the time when I was present, a little less than half of the students were children of color, mostly African American, with one or two Hispanic or Asian Americans, the remainder were Caucasian Americans. All but one of the students during that time were fluent English speakers; Arabic was Jon's first language. Although in conversation he protested to me that he spoke little English, in fact he seemed to understand nearly all that was spoken to him and spoke fairly fluently.

In addition to the challenges inherent in organizing a group of six year olds who are just learning the social conventions of schooling, Karen explained that the atmosphere of the class reflected the high proportion of these students who lived in families she described as having difficulty functioning successfully, what she called, "the lack of skill of parents, on knowing how to be parents." Karen mentioned that she had no phone number for contacting the parents of several students. Karen reported that this class was an exceptionally difficult one to manage, explaining that a number of her students had limited social skills. I observed recurrent, almost on-going episodes of tension, arguing, and petty or significant misbehavior. The school counselor made weekly visits to work with students to help them get along with each other. In addition to these ongoing tensions, there were periodic episodes in which individual children acted out. Karen

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consistently attributed these events to specific stresses in the students' personal lives, telling me stories about family breakups, unexpected moves, or family members' brushes with the law as explanation for the disruptive classroom behaviors. She explained to me that she found these kinds of challenges to be part of the everyday life of this classroom.

During the second year of my visits, when the class was a first-second split, the tenor of the class was much more peaceful. Because of the difficulties of teaching a split grade Karen had been allowed to select the students she wanted for her class. She had, naturally, selected the students she knew as the most mature, well-behaved and independent workers. Four of these second-grade students were her students the previous year.

The Classroom in Action

The day in this classroom begins peacefully with reading. Generally Karen will begin with a whole group activity, such as reading the current story from the basal together, frequently in round-robin fashion, after which she will begin to work with small groups. From this point on for the rest of the day the this classroom in action is of a flurry of busyness. Much of the work of the classroom is independently done on the computer or at the students' desks and the students vary widely in the amount of supervision and prompting they require to do this work. As a result, a constant, two-way stream of questions, instructions, redirections, evaluations, and explanations between Karen and the students punctuates whatever work she is engaged in at any time.

The reading activities take up the majority, if not all of the morning. While Karen works with changing groups of students, the rest of the class works on their own doing

seatwork or working on the computers. Karen's job is not only to work with the student in front of her, but also to continually scan the room to see what needs attention. She serves as something of a traffic cop-- re-directing, making suggestions, giving directions, and dishing out reprimands or threats, as needed. For part of her day she has an aide to help with this management, a para-professional named Mrs. Ventis, whose time is shared with the teacher next door. Mrs. Ventis has been with Karen for a number of years, knows the students as well as Karen's style, and is quietly competent.

Accelerated Reader is a major focus of activity in this classroom. Although parts of each student's day are given over to it, it is of necessity an individual activity. Consequently it provides a continual undercurrent of computer activity in the classroom.

There is a number of other computer activities which are a large part of what happens in this classroom. The class does Accelerated Math™ as a major component of the mathematics curriculum. Karen also uses the WiggleWorks™ program extensively in the language arts curriculum, primarily having students read the stories contained in the program and then having them write a story in response. Additionally, just as my time in her classroom was ending, Karen began a new computer activity. As a participant in the grant-funded TELE-Web project at the nearby university she was provided access to a web-based environment which had a range of capabilities for creating, storing, accessing, and exchanging student work. Karen was excited to be part of this project, not only because it gave her three new computers for her classroom, but also because she saw great organizational benefits in its use for her and her students. They were beginning to use it for writing spelling sentences, creating stories, and she anticipated using it for a number of other tasks. Between these activities, the computers in the classroom are in

almost constant use during class work times. Students rotate between desk work and computer work, sometimes on their own volition, sometimes under specific direction from Karen or Mrs. Ventis.

Interspersed among these on-going pursuits is a set of more formal, whole group activities. Karen calls the whole class together several times a week to introduce and test spelling words. She also will call them together on the rug area for lessons on phonics, or mini-lessons about a math or reading concept that has proved troublesome to a number of students. Additionally, although there are only the two specials-- library and physical education--provided by the district, the teachers of the lower elementary wing have coordinated some specialized instruction among themselves. Consequently, on most days Karen's students will go to a neighboring room for science or social studies, while those students come to her room for math. The class may be interrupted in their individualized work.

There is also a twice-weekly Accelerated Reader event that engages the whole class. An important part of the Accelerated Reader program for Karen has been her collaboration with a third grade teacher, Mrs. Long. They created a Buddy Reading program, in which Karen's students each partner read with a third grade student. Twice a week the first graders go to Mrs. Long's classroom to where they and their third grade partners exclusively read books which have been coded for Accelerated Reader and for which tests have been created. If possible the first graders read to their third grade partners who provide an audience and decoding help when needed; in some cases the older students read to the younger. The third graders also are available to help the younger students with the Accelerated Reader testing.

These events then, are whole-group episodes within the web of individualized activity, much of it computer-related which makes up this classroom in action.

Literature Use in the Classroom

Literature Vignette #1: First Grade Reading Group

It is 9:00 o'clock in the morning on a drizzly fall day. Karen has been interacting with students who are working on the computers. Another set of students is doing a worksheet at their desks. Taking a stack of books from the shelf beside the windows, she goes to the corner of the room nearest the door, known as "the rug" even though the whole room is carpeted. Here, in from of the blackboard there is a stand for Big Books, an adult sized chair and plenty of floor space for the children to sit. She calls out, "All first graders on the rug, over here for reading." The children gather and settle on the floor cross-legged with a minimum of pushing and fussing. There are 9 of them today. Karen passes out copies of *The Foot Book.* They started the book on the previous day, so she asks the students, "What page do we start on?" A chorus of voices responds with different answers. They finally agree on a page. "Eyes up, 1...2...3. I see Madison's and Mariah's. I do not see April's eyes. We're going to read *The Foot Book.* Put your finger under the first word."

The students begin to read each taking a turn in round robin fashion. The students hold their books with varying degrees of competence and attention. When their attention wanders Karen touches a child or says a name softly. She interrupts Trent when he miscalls 'foot' as 'feet' and gives a mini-lesson on the blackboard on oo and ee being singular and plural forms. The reading progresses painstakingly. "Oops Charlie, you

read it backwards. Let's try that again." When it is Madison's turn Karen gets on the floor beside her to put her finger under the words for Cameron. "You have to point." She places Madison's finger under the words and tracks with her. Later, when it is April's turn, Karen again gets down beside the student and holds her finger under each word. April reads haltingly. Karen praises her: "You see how April is figuring out that word? She is counting the feet to see how many there are."

When they have finished the book Karen says, "Really good work. Now we're going back to the beginning and we're going to read this together." The students page back, looking for the first page of text. "I see Trent has his finger under the first word." April has trouble finding the page and looks over at Charlie's book to see what it should look like. When everyone seems to be ready, she begins reading and the students chorus along with her. All are deeply engaged in pointing to and pronouncing each word. Rhonda laughs when they read "pig feet." When they finish, Karen asks, how many feet do you think there are in this book? There is a chorus of answers from 14 to 400. "Do you have an estimate Charlie?" Writing on the board Karen records each child's guess. Then she says: "Close your books and put them behind you. Trent had a good idea that we should count them. But we're going to count them on my big book." She draws their attention to the big book on the chart stand beside her. After counting the feet on each page aloud together the students are dismissed to their seats.

Literature Vignette #2: Martina at Reading Buddies

As the students walk in pairs toward Mrs. Long' room for Reading Buddies, Karen sends two students to get the tubs of books which have been left behind. The third

graders are busy chatting and walking around the room, and interacting with the adults in the room. Mrs. Long, the third grade teacher is there, of course. A middle-aged African American man, who Karen later tells me is a community volunteer, has a group of students gathered around him, several holding his hand or touching his shirt. The students gather at a round table covered with books and shuffle through the choices. The first graders gradually find their partners with a lot of discussion and encouragement from the adults. The male volunteer leaves shortly after the session begins. The two teachers, Karen and Mrs. Long, move about the room trying to keep students on task. On the board, a sign says:

Accelerated Reader:

1. I will read.
2. I will test.
3. I will stay in my seat.
4. I will raise my hand.

In spite of these guidelines the room is in constant motion. At any given moment there are perhaps 4 or 5 pairs of students actually reading together and 3 or 4 student pairs at the computers doing the Accelerated Reader testing. Other students are selecting books, or chatting in various places around the room. At times there are also pairs of students in line waiting to use the computers for testing. Mrs. Long stops by a pair of boys. Calvin, the third grader, is reading to DeShong, a first grader with very limit literacy skills. "Calvin, are you helping him look at the words too?" Calvin looks up, "Yeah." "Not when you're hold the book way up like that." Calvin puts the book down in DeShong's line of vision. DeShong glances at it briefly and looks away. Kendra, a

third grader finishes reading to Zack, a first grader. They move together to the computers for the testing. He sits at the keyboard; she sits in a chair behind him. Martina's third grade partner is called out of the room and Karen takes his place. Martina gets stuck on a work and looks up at Karen. Karen draws her attention to the illustrations—"What do you think happens when. . . she points to the picture, then points to the words and says "w f w...." putting her fingers under each letter. Mrs. Long looks across the room. "Boys, I need to see some reading over there," she calls. A first grader drifts to the sink in the classroom. Karen looks over, "Chad Reynolds, are you reading a book?" He smiles sheepishly and heads toward the book table. At one point a boy appears to be wandering across the room. Mrs. Long says, "Zack, what are you doing?" He replies, "I took a test." Mrs. Long says, "How did you do? He does not look at her or respond and Mrs. Long addresses her student, his third grade partner, "Kendra, what did he get? Kendra responds, "80." Mrs. Long replies, "Oh." Nate shows no indication of attending to this conversation. As students leave the computer area one of the teachers usually notices checks on the student's the score asking, "What did you get?" or "How did you do?"

In the opposite corner, Martina's partner returns and replaces Karen, who comes over to me. We watch the pair for a few moments. Martina reads slowly, painstakingly sounding out words, sometimes waiting for help from her partner. She is clearly getting the sense of the story, miscalling "I am grateful" as "I am glad." Karen says, "Martina has picked a book at 2.8. She is really reading at 2.4 so it's challenging her. But she's picking up some of the stuff." Martina sprawls over the book while she reads and stops frequently to yawn or to say she's thirsty. But she also stops to tell her partner with a

laugh, "The sand and the witch, sand-witch, get it?" Karen moves away and calls across the room, "OK can we have more people reading?"

There is a lineup of students waiting to test. In the computer corner Karen says, "How did you do?" to Traci who is just finishing up her test. Traci holds her book over the screen where the score is being displayed. Her partner says, "She got 60. 'Too big' with 'could eat them.'" Karen explains to me that the question asks, "Why were they afraid of the fox?" and Traci selected, 'He was too big' rather than the correct answer, 'He could eat them.'"

As we return to the other side of the room Martina looks at Karen, "Can we go now?" Karen says, "Come on Martina, you chose a long book, but you can do it." Martina yawns and returns to reading. Mrs. Long stops to talk to a pair of students chatting by the book table. "Let's read, OK?" They begin ruffling through the books as if they are looking for a selection. Karen calls to the students in the computer corner, "It nearly time to go, let's see if we can get some of that testing finished." She tells me that the school goal is 7000 Accelerated Reader points. At this stage in spring they have 1,500 points to go so she is encouraging her students to read as many books as possible. If they meet the goal they will have an all-school ice cream party. As the first grade students are called to line up at the door Travis asks Karen if he can keep his book with him to finish it. When she agrees, he rips a piece of paper toweling off the roll, crumples it and puts it in the book. Several other students also ask to take their books along to read in class.

On the way back to the first grade room Martina walks beside me. "I like books," she announces, "Books are my favorite things." "Did you like this book?" I ask. She

replies, "It was funny. She always wanted to be first but a witch came along and taught her not to."

Literature as Pedagogical Tool

A metaphor that effectively captures the use of literature in Karen's classroom is that of literature as pedagogical tool. The primary focus of the work in this classroom according to Karen is reading instruction; consequently literature use is almost entirely shaped to fit that purpose. Accelerated Reader is a primary context in which children in this classroom engage with literature; the other is the basal series, which is comprised of a collection of trade books. For students in this class reading literature is about developing decoding and comprehension skills, testing successfully on a large number of Accelerated Reader books, and increasing their reading level in the Accelerated Reader program. This over-arching metaphor of literature as pedagogical tool is described in terms of three sub-metaphors which each capture an essential aspect of the larger metaphor.

1. "The number one thing we care about": Focusing literature use on reading instruction.
2. "I don't think this is a blue dot book": Integrating literature use with technology.
3. "Honestly? It stinks": Shaping literature use to fit curricular and policy pressures.

1. "The Number One Thing We Care about": Focusing Literature Use on Reading Instruction.

The primary role that literature serves in the Collins first grade classroom is as a tool to support reading instruction. Karen says frankly, "The number one thing we care about

is the kids learning to read." This is unsurprising in a primary classroom, and it is also unsurprising then, to discover students' interactions with literature in this classroom are single-mindedly shaped to fit this goal. This results in what Karen calls "the mechanical side" of literature playing the preeminent role.

There are essentially four components that make up the reading instruction in this classroom. Two of these, work with the interactive stories of the computer-based WiggleWorks program and reading from controlled vocabulary Wright Group books, Karen considers too "mechanical" to be considered literature. The other two components, which Karen considers to be examples of literature use, are working with the basal reader and participating in the Accelerated Reader™ program. Of these four, Accelerated Reader is clearly the centerpiece; this is what Karen talks about enthusiastically when asked about her reading program, this is what she refers to when she talks about her kids and books. In the Accelerated Reader program her students regularly read books for Accelerated Reader selected each week from the library by the students themselves, take the associated computer-based tests for a percentage score, and periodically take reading level tests. Karen likes Accelerated Reader for a lot of reasons but important among them is the way she believes it helps students to spend time reading; she believes this increased access to print is an important way to support the goal of increasing their reading skills. The emphasis in this reading, activity is clearly not what Rosenblatt identifies as aesthetic—the lived-through experience of the book. It is, however, not clear that the experience of Accelerated Reader exemplifies an efferent stance either. The tests are primarily comprehension questions and these might be categorized as efferent—suggesting an emphasis on content, or information the student

"carries away" from the reading experience. However, conversation about Accelerated Reader books is rarely about the content of the book itself; rather it tends to focus on numbers. The question students are invariably asked after completing the Accelerated Reader reading-testing cycle is, "What did you get?" The student's answer will also be a number—"80" or "70%." The response from the Mrs. Long or Karen, please or displeased, will be predicated on the goal of at least 80%. Numbers are also used to evaluate book choices. In Vignette # 1 above, Karen says of the book Martina is struggling to read, "She picked up a book at 2.8, she is reading at 2.4." This focus on numbers, rather than on the book itself seems to place this usage somewhere outside the frame of reference afforded by the aesthetic-efferent continuum.

Karen generally believes that the focus on numbers works to the students' benefit. She recognizes that it encourages them to read more and more carefully, becoming "monitors of themselves." She believes that the children realize, "Oh, I'm only getting 74%. If I wanta go to the store, I need to make sure I'm reading better." and that this awareness encourages them to take control over improving their work. She also believes it gives them a sense of satisfaction. She reports that they "have a record of saying, look, these are the books that I've read throughout the whole school year. This is, you know, how many points I've earned. This is my average. This is what I've done." She is convinced that they feel a great sense of accomplishment from knowing their point level.

The language patterns surrounding Accelerated Reader are strongly coded in a way that emphasizes the functional nature of the enterprise. These work as a sort of shorthand, a set of linguistic tools that facilitate the necessary conversational exchanges about the Accelerated Reader interactions. These linguistic tools are associated with the

three parts of the Accelerated Reader experience—selecting books, taking tests, and acquiring points and rewards. Selecting books means two things, selecting Accelerated Reader books, which means books for which there is a test available, and selecting books at the right level, so questions about book selection generally ask three things—Is this a test book? What level are you/is the book? and Did you do this one yet? The level is indicated by a colored dot on the spine of the book. So when a child hands Karen a book to take to Reading Buddies and Karen says, "You know what, that's not a blue dot book." her voice carries a gentle reprimand. Both teacher and student are aware of that "a blue dot book" is what's needed for this activity. At Reading Buddies when Karen asks, "DeShawn, what's your level?" they both understand that she's looking for a book for him to read. Similarly, when Karen tells Rhonda to read a book since she has finished her work, Rhonda knows, without being told, that this means an Accelerated Reader book. She asks if I will read with her. After searching through a pile, she stops to browse a book. Seeing her interest, I ask if she would like us to read that one. She says, "No, I did this one already." In Accelerated Reader there are no points for re-reading a book since a test successfully passed cannot be re-taken.

The language patterns surrounding the Accelerated Reader testing are even more limited. A typical exchange is, "What did you get?" "80" "O.K., good." When Accelerated Reader is on the agenda and a student gets up from a computer the nearby teacher, Karen, Mrs. Long, or Mrs. Ventis will usually notice and inquire about the results of the test. The child's response, in my experiences, was almost invariably limited to the percent correct which the computer screen has reported, "80%" or, "I got 70." are the answers. If the student has done well—75% or above is considered acceptable—the

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adult may respond with an affirmation; if the student has 70% or less, there will usually be an expression of concern. On one occasion Pedro was finishing a test as the rest of the class was going to the lunchroom. When he got up from the computer Karen asked, "How did you do?' Pedro responded chattily, "I got 7 out of 10, 70%. That's really good." Karen said, "Hmm. Could be better. You need 75% to go to the store." Pedro stopped in the doorway, looked back at her, his face registering a dramatic "OOPS" look.

The third component of the Accelerated Reader program—acquiring points and rewards—also is communicated through these shorthand language patterns as seen in the exchange above. Each student accumulates individual points that can be traded as currency in the school Accelerated Reader store. In addition, certain markers are set out for individual classes, or for the school as a whole, which when met are rewarded with such things as ice cream or pizza parties. On one occasion, Travis, who had finished his work said to Karen, "Shall I go do Accelerated Math?" She replied, "Why don't you read a book so we can have ice cream." "Read a book' in this case was clearly understood by both of them to mean 'read an Accelerated Reader book, take a test and get a good score so we can meet the monthly point goal which will mean we can have an ice cream party.'

Occasionally in the fall of the year the new first graders were less certain of the procedures. Having finished his work, Travis came to the computer corner and asked, "Can I do Accelerated Reader?" Karen replied, "You have to read a book first." He said, "Oh. OK." He picked up a book lying nearby, asking, "Is this a test book? "

It is important to note that these patterns were not local to the classroom, but are part of the Accelerated Reader culture in the school. I observed the same patterns in Mrs. Long third grade classroom in the hallways and in the library. While I was visiting with

the librarian a student came in heading for the computer. Sharon glanced over at her and asked, "Are you testing?" The student nodded, proceeded to the computer, took her test and left without further acknowledgement. The effect of this language use is to define the literature itself as a tool to accomplish the more important tasks of testing and point gathering.

The students also regularly read stories from the Houghton Mifflin basal reader, most frequently orally in whole- or small- group settings. Karen states that she considers this to be "real" literature, "It's, the reading series its not a basal, really a basal. It's actual books and they're thrown together and so the kids are actually getting real literature." The students encounter these stories in various formats—in Karen's Big Books which they use primarily for choral reading, in some individual copies, and in the basal texts themselves primarily read in round robin fashion. She seems to see the whole group interaction with the basal stories as lending itself somewhat to being a literature experience, saying, "I look at the focus of literature being in... reading, reading series, whole group, introducing them to different kinds of literature as a whole class. . . So I like to push the literature and the quality of stories and reading as the whole group focus." She contrasts this with small group which she describes as "mechanically teaching kids to read."

However, like the conversation surrounding Accelerated Reader, the conversation surrounding the basal stories does not really map well onto the efferent -- aesthetic criteria toward the literature, but rather a functional use of the text as a tool for the mechanics of reading instruction—decoding, vocabulary and comprehension skills, "DeShong, you said drum before you saw the word - how did you know that? You were

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using picture clues, weren't you?" "What can you tell me about scooter? Yes, it has the double o we have been talking about."

There are occasional asides in which Karen makes an opportunity to praise reading for pleasure or to notice the aesthetic aspects of a piece of literature. However, the occasions are notable for their infrequency and are clearly that--asides. One day as we entered the classroom from Mrs. Long' room Chauntea was sitting in her desk reading a book she had brought from Buddy Reading. Karen took the opportunity to put in a plug for the pleasure of reading. She asked, in a whole-class voice, "Chauntea, are you turning into a bookworm? Who can tell me what a bookworm is? " A student answered, "Someone who looooooves to read!" Karen replied, "Yes, someone who always has their nose in a book. It's good to be a bookworm." On another occasion Chad commented, "I have enough books." Karen responded, again in a voice clearly directed at the whole class, "Chad you never have enough books. From someone who knows, you can never have enough books." She also paused in her discussion of a phonics principle during reading to attend briefly to an aesthetic aspect of a book, asking, "How do you think that fish is feeling?" After a brief pause for a couple students to respond she returned immediately to the double o spelling rule. On one occasion Karen worked for several days on teaching students the beginnings of narrative construction. In preparation for a story each child would write, the class discussed and reviewed basic literary elements—character, setting, problem and solution. Karen led them through a process of questioning to make sure they included these elements — "Who is my story about?" Who are the other *characters* in my story?" However, this set of lessons, at least on that day, did not include references to real literature as examples.

The children's library experiences, although outside the classroom, and outside of Karen's control, tend to reinforce the functional purposes for reading, the conception that literature is primarily, if not exclusively about acquiring reading skills. The weekly library time begins with a teaching session on some aspect of using the library, such as the alphabetical arrangement of the fiction. This is followed by story time, but, at least during the times I observed, the story time also became reading instruction time. On one occasion she introduced the book she was going to read, *Who'll be my Friends*, there was an indication that this was going to be an authentic literary experience. She indicated that she wanted them to listen with the intention of eliciting a personal response and perhaps an intertextual connection: "I'll read this story - then you will tell me what part you like and which part reminds you of something." She showed them the cover illustration and asked, "Who looks like they don't have a friend?" She went on to mention the author, "The book is by Sid Hoff." Kim said excitedly, "That's the same author of my book that you gave me." As the reading proceeded, however, the emphasis turned to reading instruction. Sharon interrupted her reading of the story a few times to ask comprehension questions. When she finished, instead of giving students the opportunity to give response she had indicated before reading, she asked a factual question: "Who was the first friend Freddy tried to make?" and then put them to work practicing sequencing with story strips she had prepared. This experience then, provides a consistent link with the focus Karen identifies in the classroom—that the purpose of literature reading instruction.

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2. "I Don't Think This Is a Blue Dot Book": Integrating Literature Use with Technology.

Since student encounters with literature in this classroom are almost entirely shaped toward the development of reading skills, it is virtually impossible to talk about literature engagement without talking about reading instruction. And given the grade level and focus of the school, it is unsurprising that reading instruction occupies a major portion of the work time in this classroom. Every morning begins with various kinds of reading activities using the basal story for the week. Much of this involves whole class or small group round robin and choral readings of the story interspersed with mini-lessons on phonics, decoding strategies, and vocabulary work. There was also basal-related work is framed as 'seatwork', designed to be done independently either on paper or in the Internet-based TELE-Web. These tasks, common lower elementary reading instruction work such as answering comprehension questions about the story, writing sentences using vocabulary words from the story, summarizing, or creating an adapted version of the story were done in pencil and paper format during the first year of my visit. The second year, since Karen had the TELE-Web environment available for her use, she would frequently input such assignments for the students to access individually and work on as they had time or opportunity. Karen preferred this electronic format, believing it gave her more control since she could access the work whenever she had time to check it.

In spring of the first year she had been excited about the possibilities of TELE-Web: "I can see some big changes as far as spelling and some of the things that the kids have done paper pencil, like word families and that and rhyming things. They could do very easily on the computers." The following fall, when she was actually beginning to use the environment she was just as pleased, reporting, "I don't really like them to sit around and

do seatwork at lot. So they do TELE." She also found the students to be enthusiastic, some of them preferring work on TELE-Web assignments to going out for recess.

Most of this work, however central to the reading development of the students, was only peripherally related to the literature, either the library books or the basal stories, themselves. Accelerated Reader, an ongoing part of the classroom day, by definition connects literature with technology. For every book that a student reads he or she will take a computer-based comprehension test. Karen values this literature-technology relationship for several reasons. First of all she believes it motivates kids to read. She describes this motivation in terms of classroom and school-wide goals which are met by rewards such as ice cream parties, as well as individual motivation achieved by drawings and the Accelerated Reader store where prizes may be purchased with points. She says, "When the kids reach the goals they have, they really enjoy the, the rewards with it and we've seen along the way that these kids are picking up the interest to read.

The librarian supports this idea, citing the high circulation numbers generated by the Accelerated Reader program. She recently had 3,000 books circulate in one week. She checked a local branch library and discovered that the average branch library only had approximately 1,000 books circulate in a week. "It really gets the books moving. I think if they're reading that's great."

Karen also believes the computer-literature connection inherent in Accelerated Reader gives kids important control over their learning. She believes its main purpose is to help "students to become aware of where they're reading and for them to set their own personal goals with direction of teachers and staff members." It also allows her as a teacher to access data about each student's progress easily. She reports with obvious

pride and satisfaction, "We can put the kids on the computer and usually within 5 to 10 minutes of a kid sitting on the computer, we can have an accurate reading level." This reading level provides feedback for teacher, students and parents. Karen believes the feedback produced by the technology motivates students, satisfies parents, and provides her with invaluable resources for making and defending curricular decisions.

3. "Honestly? It Stinks": Shaping Literature Use to Fit Curricular and Policy Pressures.

While Karen is happy about the contact with literature that happens for her students in Accelerated Reader and other contexts, she is somewhat conflicted about the idea of literature and her students' experiences with it. She expresses two differing ideas about what literature is. At one level she defines it by its form or nature—some things are literature, some aren't. She doesn't consider the WiggleWorks stories her kids read as literature—identifying them as "mechanical." Similarly, the controlled vocabulary Wright Books, used with her small reading groups are not literature in her mind. She does identify the library books used for Accelerated Reader as literature, saying she "pull[s] in a lot of literature with Accelerated Reader." As we have seen, she also considers the Houghton Mifflin basal as "real" literature: "It's, the reading series its not a basal, really a basal. It's actual books and they're thrown together and so the kids are actually getting real literature [quoted above]" So, at this level her definition of literature seems to be a traditional trade book for children whether encountered in the traditional form or collected in a basal series.

However, there is another level at which Karen defines literature by the purposes for using it. She exhibits a reading of the term literature that differentiates between books

that receive attention for their own sake and books used for purposes of reading instruction. There is a suggestion of this in her statement about WiggleWorks not being literature: ". . .that's still kind of on the mechanical side of it, of teaching kids to read." She explains this understanding most clearly, however, when she frankly discusses the limited attention she gives to literature as literature.

When asked directly about her students experiences with literature *as* literature she responds, "Honestly? This answer stinks. But my goal with literature is to follow the district's core curriculum guide." She goes on to explain the intense pressure this district curriculum and the state standardized testing puts on her and the other teachers: "It stinks because everything is [state standardized test] oriented. ...We're getting locked in very rigid on what we're expected to do with the kids." Basically, our core curriculum guide is what we're supposed to teach the kids and what the kids are supposed to come out of 1st grade, 2nd grade knowing. It's aligned to [to the state test] so focus is mainly [on the test].

These pressures that keep her focused on what she calls the "mechanics" show no signs of diminishing. Rather, she reports, they continue to increase. She pages through a thick curriculum notebook showing me all the marked pages which indicate the material she is supposed to cover. She finds the quantity of these expectations to be overwhelming, driving out any inclination she might have for activities like the "enrichment' she believes more literature engagement could offer. She does find that some of the district goals could, in theory, support the use of literature but because there is so much she is expected to accomplish she feels time does not permit. Running through the thick notebook containing the topics included in the district goals she says:

"You can draw a lot of good literature into this but . . . if it's not in the curriculum guide, it's sometimes hard to pull it in with the time we're given to do everything we have to do."

She also indicates that, in her view, many of the requirements couldn't be taught effectively in the context of real literature engagement. She sees a lot of the learning that her students need to acquire as "mechanical skills" such as ". . .learning to read, learning to do ABC order, they're learning rhyming words, they're learning word families, they're learning to chunk, you know." She doesn't believe all of these "mesh with good literature" and she understands that because of curricular expectations she's "kind of set with the topics."

So, ultimately, although she believes experiences with literature for the sake of literature can offer students "variety" and "a more enriched environment" and although she is not happy to neglect the benefits she believes literature experiences can offer, she admits that such an emphasis is not her priority under the circumstances, commenting, "the literature is not so much what I look for in mechanically teaching kids to read." She comforts herself that the basal stories and the Accelerated Reader reading do bring students into contact with books and stories that she defines as "real' literature. The bottom line for Karen, however, is a position she feels forced into by the curriculum and standardized testing: "If it's not on [the state standardized test], we usually don't teach it unfortunately. . . And honestly, that stinks."

Summary: Literature as Pedagogical Tool

Literature in this classroom serves almost entirely as a tool for reading instruction. To understand the role of literature in Karen's classroom it is necessary to understand it in the context of the whole school. That reading instruction is the primary focus of the instructional program in Karen's first and second grade classroom is unsurprising; however because of district concern for standardized scores and state scorecards it is an exceptionally strong concern in the whole building. Accelerated Reader is the centerpiece of this attention to reading, is a high-profile point of pride for the whole school, powerfully embedded its identity and culture. To those who are responsible for shaping this culture the measurable results of this program--meeting goals, increasing scores--says something powerful and positive about them that they value. It also gives them a way to assess whether they are doing right by their students. The computer connection is an integral part of this agenda. It is no coincidence that computers and Accelerated Reader came to this school together. Although the computers' role in Accelerated Reader is essentially a more efficient way to do pencil and paper tasks—multiple-choice testing and the production of simple statistical data, the magnitude of the tasks would be unmanageable without the computer. Beyond that practicality is the undeniable cachet of the technology connection—an important connection to have in education.

Karen is especially committed to Accelerated Reader. She impressed by the quantity of reading that occurs in Accelerated Reader, by the program's capacity to produce scores. She likes the computer connection because of its efficiency and organizational power, and the independence it can give students. Reading, however, as Karen admits, in

the final analysis, isn't literature engagement, although she feels that the students are getting some literature experiences from reading all the Accelerated Reader books and from the basal stories. Some student responses support her optimism—there are students, like Martina in Vignette #2, who are authentically engaging with the texts. Karen is not happy about the lack of time to provide some of the benefits of literature *as* literature for her students, but is firm and resigned about her obligation to meet the district and state expectations for her students' instruction.

Technology Use in the Classroom

Technology Vignette: WiggleWorks Writing Session

It is early afternoon on a warm spring day. As many students as possible are gathered in the computer corner; the others are standing nearby. They are going to be assigned the task of reading a WiggleWorks story and writing their own variation. Since there are only three computers that will run WiggleWorks Karen tells me she has decided to try pairing students at each computer. She begins by introducing the students to the task. "Last week we read *Peanut Butter Rhino*." Maya interrupts, "We took a test on it." Karen nods. "Peanut Butter Rhino is a book in WiggleWorks. We're going to do something different this time. I'm going to partner you." There is a chorus of "Yeah!" Karen continues, "Mrs. R [the counselor who has been coming in to do sessions on getting along with each other, a particular challenge for this group according to Karen] has been working on having you work together so we're going to try it." She runs through directions on how to find WiggleWorks and open it to the story. As she talks she demonstrates on one computer. You can choose 'read aloud' or 'read'. Then you will go

into writing—you guys know, click 'Write.' The program makes a noise. Karen reads, "once I squished a ---..." The kids respond, "Peanut Butter." Karen continues, "When you're finished writing you can make a picture. And I will be printing them off for you—one for you and one for your partner. She gets three pairs of students started on the computers: "This will be a tight squeeze here on this computer. I want two at each." She tells the students who are waiting for turns at the computer that they will listen to and read books on tape. Four kids have to agree on the book and tape selection, so there is some arguing and jostling until they are settled down. Meanwhile she announces, "I will be doing reading groups." She calls off the names of the students who are to come with her to the reading table. Since it is only divided from the computer area by a bookshelf she can simultaneously keep an eye on the students working there.

Travis and Scott are at one computer. Travis is controlling the mouse. They begin reading the story aloud, sometimes together, sometimes one or the other taking over. They become stuck on the word 'delicious.' Travis turns to me and asks what it is. With natural teacher instincts I ask him what sound it starts with. Instead of answering he turns back to the computer with a laugh, clicks on the word and the computer reads it for him. They continue reading. They laugh together about peanut butter on ham. Travis clicks 'squished' which the computer reads with emphasis and expression: "SQUISHED?" He clicks it several times and they laugh together each time. When they finish reading they say quite loudly, "We're done. What do we do?" Karen notices from the reading table and comes over. "What were the directions?" With no further instruction they access the writing option. Scott has the keyboard. There has been no discussion about control; each has taken over what he was closest to. With much

discussion Scott types "Once I squished a banana." They decide a 'bug' is funnier than 'banana' so Scott retypes it. Travis says "and I had to change my pants." Scott says, "OK." Travis takes over the keyboard and types the words. A voice on the loudspeaker calls Travis to the office for an in-school suspension that he has apparently forgotten. As he leaves Karen places Travis at the computer in his place. Scott says loudly, "Can I draw my picture now?" He deletes 'bug' and retypes 'banana.' Then he and Travis sort through the clip art, select a banana and paste it on their page. Meanwhile the students as the next computer have heard the sentence and copied it onto their screen and are themselves looking through the clip art when Karen has come by. She tells them, "You guys need more than one sentence." Travis and Scott hear this, exchange a look and delete their banana. Scott also deletes "banana" and Travis types it over again, then begins typing squished again. Scott types a few changes also. At Scott's prompting they access the part of the program called "My Book" and begin coloring the pictures. As Scott browses the book options there is a brief power struggle as Travis reaches for the mouse, "Here let me show you how to get into. . " Scott interrupts, "No, I'm trying to. . . " He pulls the mouse away and turns to Karen, "Teacher.. ." Karen says, "You have to write more," as she moves off toward the reading table. Scott takes the keyboard and types "peanut" and a few other words, then returns to paging randomly through the clip art. Cory is picking up books on the bookshelf next to him. Karen returns, "OK, Scott, read it to me. What do you have?" He begins reading and she interrupts, "Why do you have peanut butter ich peanut butter? You better erase that."

Technology as Management Tool

In this classroom technology means computers. The computers in this Collins lower elementary classroom are central to the functioning of the instruction and the school day. The metaphor of technology as management tool captures the role that the computers in this classroom play. They are valued most for their capacity to contain and manage assignments and to provide feedback for students and teacher. In the following section I will describe the way that computers serve as managers in this classroom through a discussion of the following three supporting points, each of which highlights a salient aspect of the way that technology is used as a manger in this classroom.

1. Computer as teacher's aide: Using computers to extend and enhance instructional capacity.
2. Computer infusion: Computers at the center of classroom culture.
3 "Press a button. A number comes out": Using computers to empower teacher and students with data.

1. Computer as teacher's aide: Using computers to extend and enhance instructional capacity

Computers are an essential part of a classroom for Karen. Once she became accustomed to them, which was about 7 years ago upon first coming to Collins school, she came to regard them as virtually indispensable. During the year she spent away from Collins she was in a classroom without technology. She found it extremely challenging, and experience she called "a killer . . . like jumping into an ice-cold lake." So many of the tasks she had to do became much more difficult for her. She managed to adapt, but when she had the opportunity to change schools after one year, it was the computer interest and facilities that drew her back to Collins.

There are a number of ways that Karen feels computers extend her capacities, helping her do her job better and more easily. One of this is in planning and preparation. She keeps all her lesson plans on her Mac G-3. When she plans from week to week and from year to year, she instantly has access to what she has done before. In many cases " copy and paste from one week to another" saves her a lot of time in lesson plan creation. She also uses the computer for preparing teaching materials. She makes vocabulary flash cards, classroom signs, and worksheets.

Karen also values the data storage capacity of computers. When asked what were some of the qualities she valued in computers, she identified "the record keeping, Accelerated Reader, WiggleWorks, Accelerated Math, maintain records, test scores and things like that via the computer so it's not so much paper and pencil and hand." She also keeps computer files of previous student work. On one occasion she was describing for me a book students had created. She instinctively turned to her computer beside her an opened the file to show me. She likes the feeling of having this information all at her fingertips.

Ongoing organization and management of student work is another important way that she uses computers to extend her capacity. There are several ways that ways she used computers helps manage student work. One of theses is the way it enables her to individualize instruction—to keep a number of students busy at different tasks at the same time. Observing the classroom one is struck by the continual flurry of activity. Except for selected whole-class activities, there will usually be a wide range of activities going on at any one time. A snapshot of any one moment in the classroom might show Karen busy with a small group of students at the semi-circle reading table, one student

sitting at Karen's computer taking an Accelerated Reader assessment test, while another stands by either watching or waiting, two students conferring at the word wall trying to find a needed word for the journal entry they are writing, several students finishing their math papers at their desks. In the computer corner, two students might be working on their spelling lists in TELE-Web while another work on Accelerated Math assignment. One student might be puzzling over how to tell if he finished his vocabulary words in TELE-Web while beside them a girl might be helping a classmate browse the clip art to illustrate a WiggleWorks story. Next to them another student is finishing an Accelerated Reader test. It is impossible for Karen to imagine conducting the work of her classroom without the flexibility made possible this technology. It enables the work itself, but it also enables both her and the students to keep track of the work. It's always "in" there and both the student and Karen can access it to see what has been done and what needs doing. It is helpful to her that the computer helps her keep track of what her students have actually been doing while she is busy elsewhere. When one student reported having finished a task, she said, "Shall I look?" The student sighed and returned to the computer. She said to me, "They can't tell me they're done if they're not because the computer will tell me."

The computer also takes up a lot of assessment and reporting tasks that would be much more time consuming without technology. Some of the management tasks the computer does for her are so time consuming that she believes they would be impossible in a computer-less classroom. The testing associated with Accelerated Reader is one of those examples. Reflecting on the amount of work associated with maintaining Accelerated Reader activities for her 16 students by hand she shakes her head: "16

different kids, reading different books, testing them, first of all, we'd have to hand write all these tests for these books, we'd have to hand score them and total them." Without the computer she is sure "we'd just get too bogged down and just say forget it."

She cites Accelerated Reader and Accelerated Math particularly, as containing features that help her do her job by facilitating assessment. These programs produce student reports on demand that are valuable feedback for her as well as a resource for supporting teaching decisions. She also finds these reports to be a very valuable tool in dealing with parent questions and with questions about holding students back at the end of the year. During my time in her classroom she was dealing with one such issue. She was having difficulty convincing a mother that her son would benefit from an additional year of first grade. She remarked that she felt much more comfortable pressing her case in the upcoming meeting because she had the Accelerated Reader report to back her up. She also uses this capacity at the end of every marking period. She includes a printout of the student's Accelerated Reader report with every report card.

Another way that Karen believes computers help her do her job better is in the power she believes they assert on student motivation and self-control. It was one of the first things that struck her when she was beginning to learn about technology in the classroom. She reported: ". . .I saw how kids responded with technology. The motivation they got when they got their hands on the equipment and actually were able to use it." She doesn't claim to understand why, but she finds a big difference in the kinds of work her students produce by hand as opposed to that done on the computer. As evidence she told me several stories. In the second year of my visits she was just beginning to get started with the TELE-Web project. When she gave the students an extended period of time to

write a story in their journals Trent wrote only "A river is blue." and made a simple drawing of a blue river. Later, when Trent was having his turn on the computer using the TELE-Web environment to type his story he quickly extended it to a whole paragraph. In another example she gave, Travis had a paper and pencil assignment to unscramble 6 sentences, writing them correctly with appropriate capital letters and punctuation. Travis made 6 mistakes on his paper. A bit later, doing an identical assignment with different sentences Karen had entered into the TELE-Web environment, she noticed that he had made no errors except to use an exclamation mark instead of a question mark. She was not sure whether she thought these differences could be attributed to motivation or to other factors, but she was impressed and considered this as strong evidence of the value of computers for such assignments.

Ironically, the computer use which helps Karen and the students manage their learning also creates management problems for Karen. When she talks about how computers make her life easier she also mentions that there are ways it makes her life harder. She says, "Man, management of how you use the computers is a big issue." I was surprised by the emphasis she places on these problems, citing them, in fact, as one of her major teaching challenges: "The biggest hang-up is management."

There are two aspects of computer use that Karen finds challenging. The first of these, maintaining the equipment is the least troublesome for her. She values her skill in this and the independence it provides, noting, "the more self sufficient you are and the less you need to rely on other people, the better your equipment's going to work." Since she "love[s] tearing them apart and putting them together" this is not intimidating for her, but still is an ongoing task.

The more difficult challenge for Karen is the management of student use of computers. Ensuring that everyone gets equal turns, keeping kids on task while they are working with the computers, and ensuring that the students treat the computers properly are all parts of this challenge. Observing the classroom it is easy to see the difficulties of logistics and management inherent in having student use computers the way Karen uses them in her classroom. She struggles with it constantly and doesn't believe she has any real answers. She finds that what works for her one year does not necessarily work with another set of students. When asked about how she imagines technology use in her classroom will look in five years, she says she expects to still be working on the management issues. She admits, "I don't think I'll ever be totally comfortable with the management of technology. You know, with getting kids on and that. I can't see that happening because it's different, you know, different kids each year. . ." Still, the payoff for her is emphatically worth the struggles. She tried teaching without technology and hopes never to have to try it again.

2. Computer infusion: Computers at the center of classroom culture.

Computers in this classroom are a central on-going part of the activities of the classroom. They are used in relationship with the two central curricular pieces, math and reading. Although there are a set of regular activities with these subject matters which do not involve the computer directly, a substantial part of both subjects have computer components, either directly or through related assignments which will be done on the computer. The reading instruction, described in more detail above, has essentially four curricular pieces and the computer is used in at least some connection with three of these.

Controlled vocabulary Wright Group books are one part of the reading curriculum for which there is no computer connection. The other three components all have at least some computer connection. The basal work has a computer connection through various kinds of related assignments that are done on the computer, frequently in the TELE-Web environment. Examples of these have previously been mentioned—spelling and vocabulary work, comprehension questions, writing summaries and creating stories. The WiggleWorks program is another component of the reading instruction. These computer-based stories and related activities engage students in various ways reading interactive storybooks and a write/draw capacity. The fourth part, Accelerated Reader, of course, is entirely embedded in its computer context. This is the most prominent part of the reading curriculum and student interactions with it run throughout the school day. Accelerated Math is also part of the curriculum, and the two of these account for a large amount of on going computer use in the classroom. The addition of TELE-Web in the fall of the second year added a new set of possibilities for computer integration as Karen began to find tasks her students had been doing with paper and pencil and transferring the assignments to the TELE-Web environment.

There is no "computer time," in here as there is in many elementary classrooms; rather the computer is used intermittently throughout the day for a continually changing set of tasks. Students take their turns as the computers become available; to make the maximum use of the computers this rotation goes on much of that day. This means that students will be working on a variety of different tasks at different times, a logistical challenge mentioned above. This also means that students expect that they will work independently on computers at different times during each day. It is important to her

that student take control of their own learning in this way. She believes computers are a great aide in this if used correctly. For Karen this independence represents the highest level of technology use. She identifies three different levels,

> I really see three levels of technology in classrooms. Level one is basically where they're playing games. They're for, okay, you're finished. Go play on the computer if you're done. . . It's not where the kids are taking any value in what they're doing. It's the computers are more of a toy. The second level is where the teacher takes control of the computers, lesson plans, presentations, using it over the TV for lessons, things like that. And the third level is where the kids really take control of the computers, where they're taking, they're using the computers and maintaining their accelerated reader, their WiggleWorks. They may be making books on Hyperstudio, where the kids are really getting involved and actually using the equipment and pressing their abilities to use the computers.

Achieving this third level has been her goal.

Computer use, then, is in an assumption in this classroom. When Karen began an ABC book-writing project with her students in fall, she spoke apologetically to me about her students writing the text on paper before working on the computer. She considers this a compromise she has to make at the beginning of the year, saying that their typing skills at this stage are so limited that, in original writing, they forget what they are wanted to say before they find the letter. In the same event I observed Karen giving instructions for the students on how they would make the book. While she was talking a student got up and returned with a stack of the "good" paper. She asked him what he was doing. He said, "Paper, for the books." She said, "Oh no, we don't need that paper, we're making them on the computer." She had not stated this during the explanation, apparently expecting the children would make that assumption. It was probably because it was early in the school year and they were not yet fully accustomed to this classroom that they didn't.

Students clearly enjoy working on the computer. As mentioned above, Karen reported to me that sometimes they would rather work on the computer than go out for recess. The appeal computers hold is also apparent because doing assignments on the computer functions as privilege that can be revoked for misbehavior. This is unsurprising, since Karen faces the ongoing challenge of matching 16 students with 7 computers. One example of this discipline came when Kylie had spent 20 minutes at the computer presumably writing spelling sentences. Karen looked at her screen and noticed that she had nothing written. Very impatiently she said, "You have been here 20 minutes and you have no sentences. You are off TELE. You go to your seat and write your sentences on your paper." Kylie was clearly unhappy about the edict. It was a frequent and fairly effective threat to tell unproductive students that if they didn't get busy they would have to work with paper and pencil instead of the computer. Most of the them clearly preferred doing their assignments on the computer, although I once observed Susanna sitting at the computer saying to herself, "I don't have to do any more TELE, ha ha ha."

Karen also expressed strong interest in adding roles for the computer. The first year I was visiting the classroom she talked a great deal about her hopes to participate in the TELE-Web project. In the fall when I returned she was just getting started with it, gradually incorporating more assignments and activities in it. She sees a great deal of potential in this web-based computer environment for the kinds of computer usage she prefers, looking forward to adding tasks that students currently did on paper, "spelling, . . . like word families . . . rhyming things"

Indeed, in the short time she had been using it before I left she had begun to use it for spelling, importing the spelling list for each week and having students write sentences in

TELE-Web using the sentences. She had also put vocabulary work from the basal stories into it, and assigned writing topics for story construction. When asked about her plans for the future she indicated other uses, both extensions of what she was currently doing and new activities. She would like to see an after school or lunchtime computer club. She also named having her students learn to type more quickly, getting more class books done on in Hyperstudio, and "more publishing with the writing." In spring she also expressed interest in using the Internet with students, something she had thus far been unable to do because of district policy. In fall the Internet was accessible for her students, and being used for TELE-Web access. She wondered about the possibilities of other Internet activities in her classroom, but saw that decisions about using were very personal: "You have to figure out how it fits in with your personal style. What may work for me may not work for other people."

She also wondered how it would work with her students, seeing both pros and cons in Internet use. She saw a valuable potential in opening up the world for them. She observed how little her students knew about the wide world in which they lived and commented, " I can see the Internet bringing some of the different places in the world closer to them." On the other hand she recognized the limitations of her students' reading levels, typing skills and inexperience with the world, but thought that perhaps near the end of the year they might be able to do some limited web searching.

3. "Press a button. A number comes out:" Using computers to empower teacher and students with data

Although there are a number of reasons for Karen's enthusiasm about using computers in her classroom, conversation with her suggests that she feels the primary

power of the computer use in her classroom is in its capacity to provide data about learning, both for her and for her students.

Karen considers the kinds of data that her classroom computer use can offer to be a valuable resource in doing her work. Numbers matter in Karen's world. The school [State standardized test] scores are a constant presence and a continual source of district and school pressure. They loom large on her horizon at all times. She says, ". . .everything is [state standardized test] oriented. This whole thing [the curriculum] is for good . . . scores." Although she concedes, "I'm not against [the testing] and I'm not against looking at where kids are in that," she feels that the standardized scores are too powerful and compare the students at Collins with "the rich districts." She talks about the pride they have at Collins at the gains they have achieved "even though we don't please the state with our scores." In this environment, numbers are her best defense.

Her primary source of numbers is Accelerated Reader, which is doubly important because, as we have seen, reading achievement is her central goal. She indicates that she likes being able to "push a button" and get a reading level on a child, or a record of a pattern of progress. If there is a question about how successful her students are, the scores are there to provide evidence. If parents have questions about student progress or problems she can pull a report from the computer and show the evidence. She also has scores to back up her decisions, such as in the case of the student she wanted held back, described above. There is also the access to student work available to her from TELE-Web and other student work on the computers. This helps her in an ongoing way keep track of student work patterns and progress.

Although Karen values, uses and relies on the data available to her through the computer component of her classroom, evidence suggests that her ultimate valuing of this data is as a tool for students to use to develop responsibility for their own learning. She believes strongly that this kind of information is power for her students. Accelerated Reader is the centerpiece of this focus on the power of computer-generated data. When Karen talks about Accelerated Reader or Accelerated Math she emphasizes the way that knowing how they are doing is important for students' growth. She believes that technology has the power to motivate them, and to help them make responsible decisions. There are several different kinds of information that students get from Accelerated Reader. The first is the score on the individual test. Karen likes the immediacy of this feedback for students: "[K]ids get instant feedback. You know, they finish a test and their score pops up." She like that it tells them how many of the questions they got correct, that it shows them the specific questions they got wrong with the correct answers "so they can go back and instantly review it." She also likes that they can get their work printed out. She believes this data is valuable for the students because it "allows kids to set goals, personal goals." She believes these goals, interacting with the rewards built into the Accelerated Reader program, help students change their behaviors, improve their scores.

The other kind of information that students get from the Accelerated Reader program is their reading level, which helps them choose which books to read. Karen encourages them to read beyond their level to challenge themselves, as Martina did in the vignette above. They also get regular reports from the Accelerated Reader testing which updates the score and show the progress they have made. She believes this data is powerful for

students, reporting that the students are "really excited" in anticipation of learning their scores. She says of the days each marking period that she prints out the report, "I know there's gonna be kids sitting over there, looking—there's me, you know.

Ultimately she believes that access to this data also helps builds students' confidence. She reports that they say: "Look, these are the books that I've read throughout the whole school year. This is, you know, how many points I've earned. This is my average. This is what I've done." She believes they feel a great sense of accomplishment from this.

Similarly, she believes that the new experience of working in the TELE-Web environment can help students become more responsible. Since their own work and assignments are stored in their file and displayed for them when they access the program, they can check to see what work they have to do, how far they have progressed in each assignment. The enables them to make decisions about what to do. Karen tries to develop this capacity in them by not always telling them what to work on--"I like to give them some freedom to decide." --- but by frequently asking them what work they have to do. As constant refrain in this classroom is Karen checking with students about what work they should be doing. "Scott, what do you have to finish yet?" "Travis King, do you owe me a TELE-Web assignment?" "Maya, did you finish your summary? You go check." She knows that, although the students need reminding frequently, they can check a central source and find out what work they have done and what still needs completion.

Summary: Technology as Management Tool

Karen is entirely committed to using computers in her classroom; they function at the core of her beliefs and practices about teaching. When she first encountered computers

she immediately saw that they serve in powerful ways to help accomplish what she wanted as a teacher. She likes what they contribute to her classroom, to her students' learning; she even likes their guts--reveling in pulling them apart and putting them back together. The most powerful uses she finds for them are in managing assignments and providing feedback both for herself and for her students, uses that serve, according to the categories based on Hughes (2000) primarily as either *replacement* for traditional practices, such as having students write their assignments in TELE-Web, or as *amplification*, as when she is able to streamline the process of planning by cutting and pasting lesson plans on her computer, or to produce student score reports for Accelerated Reader. It is important to notice, however, that Karen believes that the kinds of information that her computer programs provide not only enable her to do her job better, but more importantly, help students become more responsible, goal-oriented learners—an effect that she would identify as transformative

The Relationship between Literature and Technology in the Classroom

The previous discussions have presented a clear picture of the intimate relationship between literature use and technology in this classroom— a relationship so close it is impossible to talk about one without talking about the other. There are, of course, parts of each area that do not overlap. We have seen how certain aspects of literature use, using Karen's definition of her basal stories as "real literature" only have peripheral technology connections. We have also seen that technology use extends well beyond use with literature and reading instruction. But in general, literature and technology in this classroom are inextricable.

The nature of this relationship between literature and technology is a focus on management and authority. It is the almost entirely functional use of literature that makes this kind of technology role useful. Since the primary purpose of literature is for reading instruction, the primary focus in the technology component is in helping to manage the reading instruction. At one level this is simply mechanical. The program holds and scores the tests the students take on each book they read. It also holds and scores the periodic reading level tests they take. It makes this information available in a convenient, understandable format, which is then useful for both teachers and students. They know if they need to read more carefully so that they can answer the comprehension questions more accurately. The students know what color dots to look for on the books they read—what level they are reading at. Karen also can help make a judgement about a student's book selection levels –is he challenging himself enough, is she getting discouraged by selecting books a too high a level, are these students consistently reading below their capacity.

However, there is also a powerful sense of authority in the way the computer relates to the students in this program. When the computer tells the students how they did on their test it is essentially telling them if they read correctly; when the computer prints out a score it is essentially telling them if that reading "counted." An insufficient percentage—a score below 75%-- on the comprehension questions tells them that in reading that book, they accomplished nothing—they will get no points to exchange at the store. The additional function of the computer relationship to the reading in Accelerated Reader, to provide a reading level, is also an instantiation of power and authority. Essentially it provides the student with a definition of himself or herself. The computer

printout of the monthly reading scores tells the student, in Karen's words, "that's me." It tells each of them what kind of a reader he or she is. Since reading is really what school is about in first or second grade, this is powerful information.

This relationship then, has aspects that are appealing and useful to Karen as a teacher. It also has aspects that may be less obvious but which must be assumed to exert strong impact on students' sense of self, and their understandings of both literature and technology.

Chapter Summary

We have seen that literature in Karen's classroom serves as an important tool for reading instruction. Karen takes pride in her Accelerated Reader program and credits this in part for her success in teaching children to read. The computer helps Karen manage information about student scores and learning progress. She describes the efficiency, organizational power, and the independence the computer can give her students. Although Karen states that reading instruction isn't literature engagement, she feels that the students are getting some literature experiences from reading the Accelerated Reader books and from the basal stories. Although her students do spend large amounts of time reading, Karen is somewhat frustrated by limited experiences her students have with literature *as* literature.

For these and other reasons, Karen is entirely committed to computers in her classroom. She explains that they fit her identity as a teacher and they serve her in powerful ways to help accomplish her goals. She even likes playing with them--pulling them apart and putting them back together. Asked about their most significant

contribution, she will describe how they help her manage assignments and help her provide feedback for herself and for her students. She feels that computers help her to do her job better. More importantly, she believes they help students become more responsible, goal-oriented learners.

We have also seen that there is an intimate, inextricable relationship between literature use and technology in this classroom. The nature of this relationship is connected to management and authority. While the primary function of literature is reading instruction, the primary function of technology component is helping to manage the reading instruction. This relationship serves both teachers and students. It helps students with comprehension as well as helping both students and teacher keep track of progress through the reading levels. Karen can also actively monitor if an individual is challenging herself enough or perhaps too much.

However, all of this raises questions about power and authority. When the computer program informs a student about reading performance, it is essentially declaring whether he or she read correctly and if the reading "counted." Essentially the computer serves to provide the student a definition of himself or herself as reader. Since reading is really what school is about in first or second grade, this is powerful information. This relationship between literature and computer is appealing and useful to the teacher, but it also includes significant implications about students' sense of self as well as their relationship to literature and technology.

CHAPTER 4

BROUGHTON CLASSROOM

Setting and Participants

The School

Broughton School stands on a small rise overlooking a wooded wetlands area across the facing road. The road is designated as a Scenic Route and runs north and south through rural and semi-rural areas, in places thickly wooded, in others providing views of fields and wetlands. The long, low school building is surrounded by an expansive green playground, which is bordered on the north and west by a recent incursion of substantial subdivision homes. To the south, set into large wooded lots, new houses are mixed with comfortable ranch style homes from the 60s and 70s and the occasional older home.

The school district is one of the most affluent in the metropolitan area. Broughton's student body reflects that economic level, including only 1% of students who qualify for free or reduced lunch. Parents of many of these students are business executives and professionals with high expectations for the education of their children.

The building dates from the 70's although it has clearly been continuously updated and well maintained. The hallways are broad and attractive with displays of student art projects and posters. The five entrance areas to the outdoors are surrounded by glass and let a lot of natural light into the space. In the classroom areas, the hallway, already broad, is further widened by a series of bays set into the walls on either side, one corresponding to each classroom. These bays, 2-3 feet deep and approximately 12 feet long, are provided in most cases with several long low tables and serve as display space for

projects as well as work space for students who need to work outside the class, for tutoring sessions, or for small group projects. I frequently observed student reading in this area—either with other students or with a parent aide. These areas also sometimes serve as storage space for student belongings that don't fit into the classroom storage areas--a scooter, roller blades, and a box apparently containing a large "show and tell" contribution are several items that I observed lying in these spaces. The walls of the bays serve as a showcase for student work, recent art projects or written reports. A few are adorned with purchased posters.

The school includes a spacious and attractive library, visible through the wall of windows which separates it from the main hallway. The computer lab is a room set within the library space. Although there is a door into a back hallway, the normal access is through the library itself. The wall separating the library and lab has large windows; the other computer lab walls are windowless.

The Classroom

Clarice Telman's third grade classroom is about halfway down the main hallway on the left side. Ahead a set of double doors surrounded by a wall of glass spills light up the hallway. A laminated cardboard sign on the doorframe announces "Mrs. Telman." Entering the classroom one is struck by the sense of light. The entire west wall is made up of windows, from about waist height to the ceiling, which overlook the playground. The light is reflected from the pale yellow walls and creates the sense of a large, bright space. Strung across the top of the windows are laminated figures of children about 3 feet tall. Although each cutout child is identical in shape, it is clear that the children have

"made themselves." Skin is colored a variety of shades of pale and dark. Each child figure has yarn hair in a range of colors, lengths and styles. Eyes come in all colors and shapes, drawn and colored with a range of skills.

A second immediate impression of the classroom is how full it is. There seems to be no floor space, no wall space, no surface either horizontal or vertical, that is not being used to capacity. Although not particularly tidy, the room portrays a sense of order, but it feels stuffed full of stuff. Many of the objects that cover the surfaces are themselves designed for keeping order. Several milk crates hold files of student papers and student writing journals. The tops of the bookcases hold racks of books, globes, and aquarium, and boxes of materials. The walls are as highly used as the horizontal surfaces. The whiteboard that reaches across most of the north wall is almost entirely covered with charts and notices. These include a chart of the student tasks for the week and a poster of the daily schedule. This whiteboard is flanked by two bulletin boards. The one of the left, nearest the windows is changed periodically to support the current unit. The one on the right remains all year as a birthday chart. It is a large poster of a tree with an arrangement of apples on which student names and birthdays are written. The tree and the apples are laminated so that they can be reused each year. Other space on the walls is utilized for inspirational charts: "Attitude is a little thing that makes a BIG difference," or as a source of subject matter information: "Genres of literature."

The window wall holds a set of three bays created by bookcases. The north bay is the "reading corner." This is a U-shaped space created by the north wall of the classroom, by a low bookcase against the window wall, and by two low bookcases perpendicular to the wall, one facing into the reading corner, one facing the next bay and showing its backside

to the reading space. The bookcases facing into the reading corner hold a selection of children's picture books. One of the shelves under the windows is a display shelf on which picture books are displayed face out. They are stacked 3 or 4 deep so that parts of a number of books are visible. Chapter books are mostly held in a variety of wire racks on the top of the bookcases.

The center of the reading corner holds a round table. There are chairs around the table, but it is not generally used for sitting at except for a twice-weekly small group event, Center Time. As needed, such as at the beginning of a new unit of study, it is used for display of books or other materials. When Clarice came back from a trip to Williamsburg with Colonial toys and other artifacts for the students to examine, they were laid out on the reading table. During the "Moving West" unit the student-built log cabins were displayed on here. At other times, books are laid on the table in a haphazard manner. The bay is rather small. Even for the children, there is little room to walk around the table to get to the bookcases. If the chairs at the table had been occupied (although, other than "center time," I never saw more than one child sit there at a time, and rarely did that occur) it would be difficult for other students to get to the books.

The south bay, occupying the southwest corner of the room, was the computer corner the first year. Six trapezoidal tables were pushed together to form a hexagon. Each table held a computer, essentially making a circle of computers. This, like the reading corner, was a very cramped space. The teacher's desk space jutted out from the south wall, essentially making a partial wall on the fourth, and "open" side of the bay making the space seem even smaller. Although it was possible for two chairs to be placed by a single

computer, in fact this was frequently done, it resulted in a crowded space through which it was difficult to pass.

The second year of my visits Clarice moved the computers into the middle bay, which provided more room. She also placed them in a rectangle on straight tables, putting two computers side by side on the longer tables perpendicular to the window wall, one computer on each of the end tables. The classroom has 7 computers: Clarice's, in her desk area, is a fairly new Macintosh, a computer that the students do not use. The six student computers in the computer bay are a set of older PCs.

The function of the third of the bays was less clearly defined. The bookcases which made up the waist-high "walls" of the bay were filled tightly with books, both trade books to be used at particular times in the year, copies of the current social studies textbook, and teacher materials. There was a sense that this was storage space--there was not evidence of an attempt to make the books accessible to the students. Two rectangular tables were pushed together in the center of this bay, making a square table that would seat a maximum of 6 children. This table was used for the small groups of Center Time but rarely otherwise.

In any available corner of the room large plastic boxes are stacked. Each box is filled with trade books. These are primarily soft cover books, many individual titles but also multiple copies for all-class use. More of these large boxes are stacked on the other side of the classroom near the bathroom door; others are stacked on top of cupboards and under tables. These are the books that Clarice uses with the various themes studied across the year.

Along the wall backing on to the hallway, to the left of the door is a set of locker-like cupboards. Each student has a space there for hanging up a jacket and backpack. Further along the wall is a counter and sink and at the far end of that wall a door opens into the bathroom. A tall bookcase walls this doorway off from the rest of the room. This bookcase is filled with file boxes and containers of classroom materials.

There is very little space anywhere in this room where one could imagine students could work independently on a project. While there is some limited workspace available on the floor, there is no unused area anywhere in the room where projects in process could be left out. Any space would need to be "officially" designated, such as an occasion when the reading table was used for log cabin construction projects. There is virtually no chalkboard space to write on. Clarice has occasionally written a bit between the posters, but students were never observed doing this. I noticed that even during indoor recess, a time when in my experience students frequently ask to use black or white boards, no one made the request here. It is apparently not an option.

The students sit at tables, rather than desks. This means that they have no "hidden" space in which to store things at their seat. Each group of tables holds a set of materials--a rack for folders and a cup for pens. For most of my time in the room the tables were arranged in groups of 4 or 5. However, in mid-fall the tables were arranged in a square around the center of the space for a certain activity. Clarice reported that she liked the open feeling of this arrangement and decided to keep it, at least for a while. This meant that students did not face each other as a group, but rather a group was defined as the set of students whose desks made up one side of the square, resulting in four groups of 6

students each. These groups are used for management purposes in the same way that the table groups had been.

The center of the square is just large enough for the students to sit in a circle on the carpeted floor. A round rug portraying a map of the world is laid over the carpet in this space. Students gather in this space for "morning meeting" and also used it for small group activities

The Students

There were 22 students in Clarice's class in the 2000-2001 school year, 19 the previous year. These students are generally from stable, fairly affluent families. The majority of students are Caucasian American. The 2000-2001 class included 4 international students whose parents were affiliated with the nearby university while the previous class included 3 such students. Neither class included any minority American students. All the children that I interviewed reported having an extensive collection of their own books at home, and all read regularly. In addition, most of them reported reading as one of the activities their parents did with their leisure time. They all also reported having at least 1, in several cases a number of computers in the their homes which they used at least occasionally.

The students as a group are bright, cheerful, and pleasant. Their generally affluent upbringing is apparent in their conversation about the details of their lives. These are students who take for granted the expensive accoutrements of modern life—their conversation is sprinkled with references that reveal homes with multiple computers and high-tech toys such as DVD players, and cars with video equipment and GPS systems.

These students have parents who have high expectations for their children's success in life, who value but expect a quality education for their kids. They are willing and able to invest themselves in their children's lives, taking them to soccer practices, ballet classes, and enrolling them in educational activities such as a space workshop or an art fair. Like any classroom full of children they represent wide variances in home lives, in academic interest and ability and in social skills, but in general this is a class filled with children who anticipate doing well in school, who expect authority figures to be kind and helpful, who find life to be filled with security and possibility.

The Teacher

Clarice Telman is an African American woman in her mid forties. She has been a teacher for most of her adult life, although she spent a number of child-raising years working part time at other jobs. Clarice has been a classroom teacher at Broughton Elementary School for the past 5 years, the first two in second grade, the last 3 in third grade. Prior to this she taught music in Broughton and several other schools in the district for 8 years. During her years as a music teacher she obtained a masters degree in education. She is an energetic and enthusiastic teacher whose commitment to her students' learning is obvious.

Her original degree was in music education, and she was a music teacher in several schools in the district, including Broughton, before she became a classroom teacher. Clarice reports that it was an enthusiasm for literature that she "caught" during work on her Masters degree which she cites a one of the factors that interested her in classroom teaching. The other, primary factor she describes as a restless interest in new challenges.

She is known in the district as a technology innovator. When the district began making efforts to integrate technology in the district, Clarice saw this as the coming thing and committed herself to learning how to use it on her own time.

Clarice's manner with her students is a complex mixture, as the situation demands, of nurturing mother, forbidding school-marm, a dramatic rhetorical style reminiscent of a Black preacher, with a bit of playful ham thrown in. She is always calm and poised unless she is pretending to be flustered for dramatic effect. Running through it all is the sense of a quiet, confident spirit and a manner that manages to be at once slightly formal and distinctly warm. Her speech is also is slightly formal, carefully structured, and precisely articulated.

Clarice is self-described as good fit for a study such as this because she identifies her love of literature and her use of technology as two important parts of her identity as a teacher. Other issues, which are also important parts of how she sees herself as a teacher, are her love of music, and her theme-based teaching, which she describes also as "discovery learning."

The Classroom in Action

When the students arrive for class each day, the chart stand holds a new message for them. It is usually composed of a cheerful greeting, some praise, and some highlights of the day. One day's neatly hand-printed message, posted during a unit on light and shadow, read:

Good morning, Awesome Shadow Team!

Welcome back to another day.

Hmmm... that reminds me. We'll be discussing Night and Day today.

We also have centers this morning.

Get to Work!

*Sponge: DOL

What did you learn at the nature center?

What did you know before you went?

*Sponge is a daily scheduled time that can be used to absorb extra work—unfinished tasks from previous days or extra activities. In fact it is usually used for Daily Oral Language activities.

Clarice has organized the class to facilitate smooth and uncomplicated but highly structured progression of the daily schedule. There are students assigned to do the daily chores. These names are listed on a chart on the front board and change weekly. Students appear to be very aware of their responsibilities. When the students finish a worksheet and Clarice says, "Supply people. Please collect." There is no fuss or confusion-- a set of students get up and collect the papers and bring them to Clarice without questions. The students are organized into teams for some of the cleanup work, so that Clarice can say, "Who has Round One?" and a set of students respond by getting up to wash tables at the end of the day.

Folders or teacher-made construction paper-covered booklets are an important organizing method for student work. Most subjects or activities have an associated folder. Because of the theme-based curriculum, language arts is woven into the topic which usually centers on either a science-based unit (soil, nutrition), or a social studies based unit (friendship, a biography unit entitled "Do you Know Them? Settling of the Continent, Moving West, etc). So generally each child will have a theme folder, a math

folder, and a journal, which students write in daily. These are kept in a box stand in the center of the table group. There are writing workshop and literature circle folders as well, but as they are used only once a week they are kept in a separate file box near Clarice's desk.

Clarice has organized all the materials the students use—each folder has a place, either in a stand in the center of the table group or an assigned file location somewhere in the room, the books being used for Literature Circles have a spot on a bookshelf, papers which are completed go into a special file box. The various boxes around the room that are for student use are labeled, and when boxes around the room are assigned to hold student materials, such as when Clarice introduced the writing workshop files several weeks into the school year, this use is announced to the students. There seems to be an unspoken understanding that items and space not specifically identified as for the students' use are off limits for them. I never saw this boundary trespassed, challenged, or questioned.

Days in this classroom proceed virtually seamlessly. The schedule for each day is posted on the board. Clarice expects the students to be aware of the sequence of events, and as the day proceeds to pay attention to what is happening next. She indicates this frequently by saying "and now it is time to..." pausing briefly and waits for the children to fill in. If they hesitate, she answers herself, but very slowly and indicating with her voice that they recite the response with her. Gaps between activities are virtually non-existent, partly as a result of the ways students are prepared and partly because the transitions between activities frequently have formalized cues to facilitate smooth transfers. Because Clarice serves as a Collaborating Teacher for the teacher education

program of the nearby university she has a student intern present much of the school year. Consequently transitions between activities are often handled in tandem. For example, one morning while Clarice led students in telling about their Spring Break activities, her student intern, Miss Burton quietly pulled out a group of 4 students and got them started with the computers for "Center Time" which was the next activity. If students are out of the room for a special class, such a physical education, Clarice or the intern will lay out supplies for the next activity before they get back so that everyone is ready to start. If it is a familiar activity the students are expected to get started immediately upon sitting down. If they don't settle in immediately Clarice will remind them with a quiet rhetorical question such as "What should you be doing?" or a statement such as "I am so pleased to see how quickly table 3 has gotten to work." Or, "Jordan and Kyle are showing their sense of responsibility by getting right on with the task." She will usually follow this with a number of other student names or table groups as soon as they comply so that she praises most of them before she has finished this sequence.

Sometimes transitions themselves involve an activity. One of the formalized cues to signal a change of activity is a song called "Seeds of Change". Typically, Clarice will start to sing, cueing the students to join in and move to the next activity which will either have been quietly announced or which they are expected to know about by custom. One discussion session ended with Clarice reading from a story connected to their current unit of study. She tells them that she will read while they get ready for math. First she starts them singing "Seeds of Change" which they do while they, without additional instruction, move back to their places. Then she says, "Supply people pass out drawing paper." Clarice resumes reading the book in a somewhat louder voice as two students begin to

pass out the materials and the rest of the class sits down. Similarly, cleanup at the end of the day is conducted while the class is involved with a whole-group activity--most commonly a story will be read to the students, but on occasion the class will sing, or a partner movement game may be conducted during the clean-up activity.

The classroom in action, then, is entirely shaped by Clarice's talk. From the beginning of the day to the end she orchestrates the student's action and talk through her talk, which rather than giving directives, provides cues and prompts for expected behaviors. Except for Center Time, which occurs twice a week, most of the on-task time is comprised of whole-class activity, such as everyone doing math quietly, or writing in journals, or of whole class verbal interaction. Although her talk includes a great deal of the I-R-E patterns which commonly characterize teacher talk, Clarice also relies heavily on rhetorical questions and stylized exchanges which suggest a call and response pattern. When she wants individual students to answer questions Clarice frequently uses a set of tongue depressor sticks with student names on them. She will ask a question, then select a stick and call that child's name to answer. She varies this with asking questions and selecting a child who raises his or her hand. Her policy is that students who call out instead of waiting to be called on do not get to answer. Although in fact, as in most classrooms, in the heat of a lively exchange the students who call out the answer frequently do get attention and the consequent reward of getting to answer.

* * * * *

Against this backdrop then, I will examine more closely the assumptions, expectations and patterns of interaction through which literature and technology are embedded in this classroom context. We will look separately at the literature engagement

and then the technology engagement, finally looking the relationship exists between them. The sections on Literature Engagement and Technology Engagement will each begin with a pair of vignettes. These are designed, not necessarily to support a particular point in the analysis, but rather to provide a context for the reader of the general way that literature and technology activities occur in this classroom. The vignettes capture some typical moments of this classroom—moments in time that portray some of the customs and particularities and practices surrounding literature in this unique culture. These vignettes are followed by a discussion of three assertions I am making about literature or technology in the classroom and the evidence on which the assertions are based.

Literature Use in the Classroom

Literature Vignette #1: "Moving West" Theme Literature Discussion

It's a warm and sunny Wednesday morning. The children have just come in from recess. According to the daily schedule the time period between recess and lunch today is devoted to working on the current theme, "Moving West." As the students take their seats Clarice announces that she will read the second half of the Daniel Boone biography they had started on a previous day. She is reading about the kidnapping of Jemima Boone by the Shawnee. As she reads she walks among the children's tables. She points to a spot on the wall map to identify a location mentioned, and briefly touches the head of Jay who is playing with a pencil on his desk. She stops abruptly--stops both reading and moving. "How did Jemima Boone get herself rescued?" Several children reply, without raising their hands, that Jemima ripped off pieces of her skirt and dropped them for a trail. Clarice tilts her head dramatically, "And what fairy tale is that like?" Several

children remember that it is Hansel and Gretel. "That's right, children." She moves to the front wall. "They were rescued in 1776. What else happened in 1776?" She speaks briskly and emphatically, with a dramatically questioning look and posture, clearly indicating she expects them to have the correct answer. When no one answers she moves to the table in the reading corner where she has placed some items she brought back from a trip to Williamsburg. Without answering the question, she holds up a reproduction of the Declaration of Independence. The students come from their chairs and gather around her in the corner to see. In the general chatter she responds to a few student comments, reminds them where she got the reproduction. She then raises her voice, changes her tone and returns to reading the biography while the children cluster around her. After a few pages she closes the book with her finger in the page and says, "The Declaration was signed and we became . . " at the end of this phrase she raises her voice and freezes her body in a listening posture, a cue to the children that they are supposed to finish the sentence. There are a range of answers—"colonies", "free", etc. The answer she is looking for is "a nation." After a brief pause she says, in the same tone "we became. . . a nation." Continuing in this tone she says, "We were no longer . . ." but this time she waits only a quick beat and then finishes very slowly, ". . .a colony." Several children pick up on her words and finish with her.

She moves toward the other end of the room saying, "All right, I'll continue reading while you put your tables back." She starts them singing a song, "Seeds of Change," which is usually a cue for a major shift of activities, but in this case marks a re-organizational interlude in the reading and discussion of the biography. After the table moving Clarice announces, "Supply people, pass out green books." [These are the

teacher-made workbooks, called journals which accompany each unit. This one is called "Settling the Land." Several pages in it will be devoted to answering questions and recording information about this book she is reading them.] She then returns to reading the biography, raising her voice above the inevitable chat accompanying the passing out of material and a few students still arranging their tables and chairs. She stops reading. "They took Daniel back to Ohio. Let's look at the map. Where is Ohio?" She points to it both in the map in the book, which she holds up, but also the map on the board.

After reading a bit more, Clarice stops to recap with them: "What was the battle all about?" Meanwhile she has been walking to the end of the room by her desk, where she picks up the set of name sticks. She selects a stick, makes a funny face and says, "Oh, Carrie's lucky, she's not here today." She calls on Tyler, who has his hand, up and he answers the question. Selecting another stick she asks, "Whose land was it anyway? James?" he responds that it was Indian land. Clarice agrees. Then her voice changes, "In your opinion, in your opinion [she exaggerates the last two words for emphasis and repeats them once more] in your opinion, had Daniel settled on land that had not been settled, would it have been different, Andrew?" Andrew agreed, and added, "They were mad because it was theirs." Clarice replied, "Yes, that's right." She called on a few more students to answer and then concluded, "Now these are peoples' opinions. They are all different. Are any of them wrong or right?" The children chorused together with her, "No."

She read a bit further, then stopped. "Why were the Indians having such a hard time winning the battle?" Cole answered that they didn't have good weapons. Clarice says, "This is one of those inference type questions. Where do you get the information from?"

To his answer that "he just knew" she says, "Yes, from prior knowledge. Where else?" No one has an answer. She shows them the picture in the book of Daniel Boone standing over son. He has a gun, the nearby Indian has tomahawk. She says, "The pictures in the book also give us information." Returning to reading the book aloud, she read one sentence: "Boone's son Israel was killed that year." Clarice, stopped, looked at the class. How many children has Daniel lost now?" They discuss this together for a time. Then Clarice looks at the clock and says, "People, it's time to get ready for lunch."

Literature Vignette #2: Center Time Literature Session

It is Tuesday morning, Center Time. A group of five students are seated in the center bay around the rectangular red table. Max and James are sitting together on one side, Michelle and Jenny are facing them, Kelly is on the classroom end of the table. It is their turn for literature center, which this morning means reading from the book "The Pilgrims of Plymouth" and filling out a related vocabulary page in their reading journal. Michelle is busy organizing the group, "OK, were doing the chapter 'Womenfolk'". Students fumble for the page in the book, some open their journals, others leave them lying on the table. As they arrange their things and make a few comments, Michelle says authoritatively, "OK" Kelly, you can start." Kelly accepts this direction and begins reading in a soft, hesitant voice. When she gets stuck on the work 'usually', Michelle says, in a teacherly voice, "Sound it out." Kelly successfully does so, and continues to read. A bit later she again is stumped again and Michelle asks, "What does it sound like?" As Kelly finishes her page there is a brief procedural discussion among the children about who should read next. Max says to Kelly, "You can popcorn someone."

This means the reader gets to choose the next reader. Kelly looks across the table and says, "James" and James begins to read the next page. When James gets stuck on a "eerie" Michelle is silent, but Max interjects with the correct word.

When James finishes his page he "popcorns" Michelle and she reads her page fluently and expressively. As she finishes and looks up, Kelly says, "Swine is a vocabulary word." There is a great rustling of journal pages and juggling of books as the children turn their journals to the correct page. The table is not large enough for them to each lay their book out beside their journal so they shift materials, most hold the book in their laps while positioning the journal for writing. Michelle announces, "We have to find the sentence." She seems to mean that they need to find the sentence in the story which contains the word swine, probably to use the context for meaning. But Max says, "Swine is a butter, I know it." Without comment the students all bend their heads to their journals and write Max's definition.

Max begins to read the next page. Kelly interrupts him, "We have more words. " The students all transfer their attention to the vocabulary page. James says, "Cure."

Michelle says, "Cure means to help a sickness." Max corrects her, " Treat at sickness." Michelle agrees, "OK to treat a sickness." Her voice indicates that she is reciting the correct answer for the other students and everyone quickly writes the answer. Michelle says, "The next one is plantation. This time the students, with the exception of Max, all turn to the Pilgrim book to help with the meaning. Max has a book about snakes partially under his journal and is looking at the pictures. The girls' eyes are on their books; James has his Pilgrim book turned to the correct page, but his eyes are on Max's book. He shows James a particularly interesting picture, "Look at that!" James turns

from his Pilgrim book to look on at the pictures in Max's book. As Michelle reads the sentence from the book which contains the word plantation Max pulls his attention back to the task at hand. There is a brief discussion about the meaning. Max says, "It means community," a meaning which, indeed, fits the sentence. Kelly says, "A piece of land." There is a general discussion among Max, Michelle and Kelly and they agree to each write what they think is correct. Jenny and James make no comment but also write in their journals when the rest do. Max pulls his Pilgrim book up over his snake book and continues reading his page aloud.

Jenny has not spoken, but her eyes are always on the page when someone is reading, and as they agree about definitions she too has been busily writing. Max comes to the word 'poultice' and James says, "That's one." They turn to their journals again and pick up their pencils. Max says he is sure that poultice means "some kind of priest." There is a bit of hesitation from the other students and, in fact, this makes no sense in the context, but they have not referred to the book and Max's insistence prevails. The students again bend silently over their vocabulary page and when they have finished Max goes on. As Max finishes the page he popcorns Jenny and goes back, openly this time, to his snake book.

There is a brief pause and some table talk before Jenny begins. When Michelle says, "OK lets go on" there is a general turn of attention to the book. But before Jenny can begin Max says, a bit apologetically, "Hey can I just show you guys something a minute?" James, who has been looking at the book also, interjects with a laugh, "I think you are going to say EEEWWW!" This comment evidently reflects his impression of

how girls will react, since he and Max, who are already interested in the picture are the only boys in the group.

Michelle looks annoyed, "You aren't supposed to," she tells Max. But he places the opened snake book in the center of the table facing Michelle and Jenny. The picture shows a large snake in the process of swallowing a small animal. They all look at the picture and Kelly and Jenny make faces, but rather than making a response to the picture itself, Michelle says, "You aren't supposed to be . . " Max interrupts defensively, "I'm just showing it to you a minute." In her most efficient teacher voice Michelle responds, "Well that's very nice but we have to go on."

Jenny promptly begins reading her page at a brisk pace. The buzzer rings, signifying time to move to the next center and the students get up. They leave the Pilgrim books on the table for the next group and bring their journals to their desks as they head for the math activity on the floor in the center of the room.

* * * * * *

These vignettes provide a context for a closer examination of the role of literature in this classroom. The following over-arching metaphor and three supporting sub-metaphors will guide this discussion.

Literature as Enriched Textbook

A metaphor that effectively captures the meaning and function of literature in this classroom is that of literature as an enriched textbook. Like the common conception of a textbook, literature here is regarded the primary source of knowledge and information. It is positioned by the teacher as a source of rich context, and as knowledge accompanied

by pleasure. This broad metaphor entails 3 subordinate metaphors, each of which captures a significant aspect of the central metaphor.

1) Literature as source: Using literature as the central, teacher-directed resource for content
learning and language arts skills instruction.

2) Literature as motif: Providing a rhythm for classroom life.

3) Learning as lifestyle: Envisioning literature as a source of knowledge and pleasure.

1. Literature as Source: Using Literature as the Central, Teacher-Directed Resource for Content Learning and Language Arts Skills Instruction.

Literature use is central to the curriculum in this classroom. It is used as the primary resource to acquire information about the current theme and as a basis for ongoing reading strategies and language arts instruction. Clarice considers her use of literature to be central to her conception of teaching. She can trace the development of her interest in two distinct steps. First, she describes how, while she was still a music teacher, she became interested in children's literature through the influence of a professor she had in a graduate course: "[S]he turned me on to the literature, the prose, even the illustrations in the book. That some books are worth purchasing and sharing with children merely for their illustrations and what wonderful art that's there." She began immediately to incorporate children's literature into her music units.

The second step came as she decided to make the change to being a classroom teacher. She wondered how to conceptualize the kind of teacher she wanted to be. She reported wondering: "How do I set up this classroom to resemble me?. . . so that it's me friendly?" She believed that if it felt right to her, then it would feel "friendly" to students. She also tried to define the kind of teacher she was, realizing that she " wasn't

comfortable teaching a lesson as it is out of the book." She saw herself as a person who needs "to explore, . . .to answer many questions, . . .to look at things from the whole picture rather than from page to page and how many more things could be done with this activity rather than just what the book said." At this point she discovered the work of Reggie Routman and felt she had found what she was looking for, an approach that sounded like something she could do. She was excited about the discovery, reporting to me, "when I read her books, then I said 'I can do it. I need a classroom that looks like this'." She used Routman's books to help her plan how to set up her room physically and how to think about the ways that she wanted to use literature in her teaching. She used Routman's work to give her examples of what her classroom could look like. For her this included ideas about "sight vocabulary, fluent reading, literature extension activities." She also went back to the Routman books for reassurance, to use it as "a benchmark to tell me I'm right on target." She would try some of the ideas, but reported, "if I wasn't sure what it looked like, what often happened is I did it and then I came back to see... Oh, yeah, well, this was okay." She sums up the effects of this learning experience by saying, " it's been very exciting to take them from wherever they are and begin to turn them on to literature."

The framework for this use of literature is Clarice's theme-based unit instruction, designed to weave together nearly all parts of the curriculum into a series of changing topics across the school year. The themed units alternate between a social studies and a science focus and always incorporate the reading and language arts instruction. The central theme activities are scheduled for each day, either whole-class theme work, or, on Tuesdays and Thursdays, the small group work of Center Time which also is primarily

focused on the theme. The literature students read for this work serves as a textbook might, providing information, although the information is contextualized by its narrative context. The literature is used to expand the learning by providing a picture, for example, of the lives of people who settled the west (*Sign of the Beaver, The Pilgrims of Plymouth*), or of the American scientists who made discoveries about electricity or transportation (*The Wizard of Menlo Park*), or they may learn about the personal consequences of slavery by reading *Susie King Taylor: Desire to be free.*

Significant portions of each day are devoted to this theme work. (See Table 3, p.141) The core of each themed unit is comprised of two kinds of instructional events. The first of these are the whole-group teacher-directed, reading and learning sessions, which occur at least three times a week, usually in the morning theme time. The afternoon theme time may include the same kind of discussion, but frequently will be used for a more hands-on aspect of the theme such as creating log cabins, or models of soil levels. These discussion sessions are predominantly oral, interactive events in which Clarice leads the students through a reading passage, as described above, or through a initial discussion or review of the main points of some theme-related concept. In the latter case, the points will in most cases be brought out by reference to previous literature selections the class has encountered. While the session itself is oral, it may include a written follow-up such as a crossword puzzle, or questions to answer. The second set of events, the twice weekly Center Times, are primarily small-group and, although including an oral component, are primarily focused on accomplishing some written task. Vignette #2 is an example of one such session. Usually one of the centers will involve a similar literature-based task, requiring students to read a passage aloud together and answer questions in

their theme books. In most cases, then, the work of theme time, whether whole group or small group, written or oral, will either be based on some kind of literature experience such as working through and getting information from the literature, or will strongly incorporate references to related books read previously. Examples of this are students using the knowledge gained by reading stories about Pilgrims to create a report about their lives, or using the information extracted from books about pioneer experiences to build a model covered wagon, or developing language arts skills by writing a summary of a literature selection related to the theme.

The whole-class oral discussions are the centerpiece of the theme work. This is where the primary information the students are expected to learn is introduced, where the emphasis of the content is shaped, and where the extension activities are introduced. Because literature is used as the source of content area learning, these discussions are in most cases either centrally or peripherally based on the literature being read for the theme. Discussions about the literature are not generally designed to solicit personal response or to support open-ended conversation. Rather, because the literature plays a central content-learning curricular focus the conversation about books is used to draw students' attention to social studies or science information. or, if the focus takes a strategic bent, to help them understand how the text works to provide them with information, a concern common to middle-grades reading instruction. Thus, *Edison: The Wizard of Menlo Park* is used to prompt a discussion designed to help students learn comprehension strategies-- "How do you get the information you need about the title? You ask yourself questions: 'WHO is the wizard of Menlo Park? WHERE is Menlo Park?'" Conversely, the discussion about the death of Daniel's son in the Daniel Boone

biography was directed toward learning about Indian-White relationships and the impact of differing weaponry. The facts and terminology emphasized in these discussions will then become part of a written assignment or, occasionally, a project.

Center Time, occurring twice a week, is the other major context for theme work. In Center Time students are divided into four groups which then rotate among four types of activities. Three of these activities are standard. Two of them are reading groups, one which does oral reading of a theme-related book with Clarice, and a student-only reading group in which students read a book aloud together and answer questions in their theme book on the reading. The third standard session is a computer-based. The fourth activity is more flexible, sometimes a theme related craft, or a math assignment. At least two of the Center activities, then, always involve spending time reading a book selected by Clarice to amplify the current unit. One such student group is depicted in Vignette #1 above. In that example the related task was writing definitions for a set of vocabulary words contained in the book *The Pilgrims of Plymouth*; on other occasions it might be discovering some facts about the theme, or answering questions about the people involved. Generally the work is guided by a set of questions in the theme journal created by Clarice. Each student writes his or her answers in the booklet itself. Occasionally, usually near the beginning or end of the unit, the product will be notes for a booklet of information about the theme. Sometimes Center Time may incorporate more than one piece of literature. One day during a science-based unit on light and shadow, one of the Center activities was to continue reading a biography of Thomas Edison and answer questions in the theme journal, while another Center activity was to read the poem "I Have a Little Shadow" by Robert Louis Stevenson and do an accompanying craft.

Although deeply embedded in the social studies or science-based themed unit, language arts instruction is a continual, prominent presence. Clarice is always teaching reading, writing, listening and thinking skills through the trade books which are the primary reading material and source of information for each unit. As is to be expected in a third grade classroom, the development of more effective reading strategies is a primary concern. In Clarice's classroom this emphasis is played out in the context of the literature use--during class discussion Clarice indexes nearly all question and answer exchanges, regardless of subject matter, to the source of the information or the type of information the question is asking. She will frequently say: "Notice that the answer is *right there*. [Emphasis hers.] By this emphasis she identifies this as a category of question, familiar to the students, that asks one to search the text for the specific answer. Or she may ask, "Does it ask you 'what is your opinion about who Thomas Edison is?' " By this question she emphasizes that a "right there" answer does not call for the student to give an opinion, but rather to locate a fact from the text. This sort of reminder is woven throughout all the work of the day, continually weaving reading and think strategies into all the reading experiences of the students. One mother, a weekly classroom helper commented, "She is just great. She's so thorough. She teaches reading all day long. If the kids don't get it one way, she makes sure they get it another." Clarice herself identifies this as important to her idea of teaching reading: "... I like to dispel the myth that when we open up a [reading] book, it's reading time, because it can occur any time. ."

The theme-based learning at the core of the curriculum is highly dependent on Clarice's store of books. She has acquired, from class book orders, from school budget

funds and her personal expenditure, large numbers of trade books connected with each of the themes. From these she selects each year the ones she will use. In most cases she has multiple copies, either for the whole class or for the smaller groups of Center Time, and all students usually read the same books. If she wants to use a book for a particular theme but has only one copy, she will read to the students. The biography of Daniel Boone used in Vignette #2 is an example of this. This use focus strongly constrains the genres of the literature students are exposed to. Biography is a prominent genre, because of its tendency to include historical information; historical fiction is also common. Fantasy does not generally fit well into these purposes although Clarice explained using *Gooseberry Park* in a peripheral context because it incorporated environmental issues.

Although in most cases, as described, the whole group theme work time incorporates work with a piece of literature there are times in which, rather than literature, this theme work will be based on a social studies textbook. Clarice uses the text in an occasional, supplementary manner rather than as the basic text of the unit. She says, "...I knew that I wasn't comfortable teaching a lesson as it is out of the book. I'm just, that's not me. I need to explore, I need to answer many questions." Clarice emphasizes how important it is to her that student can "get some answers by reading . . .not just from textbooks but reading from all sources and realizing that information can come from many different sources."

The literature activities engaged in by the students in this classroom are at all times strongly shaped Clarice through selection of reading materials, through design of written assignments and through the highly mediated discussion of literature. One of the most powerful instruments of this directed teaching is the discourse patterns, discussed above,

that Clarice employs in the whole-class discussions that play a prominent part in the instructional experiences of these children.

Literature-based discussions conducted in whole-class sessions of theme work are highly orchestrated interactions in which Clarice leads the students through an interwoven set of learning activities. This instructional time will frequently follow the model illustrated by Vignette #2 in which Clarice, using what I came to think of as her "choir director" style, leads the class through the introduction of new material, rehearses previous material, and conducts side trips to notice important connections. This will include storytelling, recitation, response, and read-aloud by either Clarice or various children or both. She will draw students' attention to content \, research skills, and comprehension strategies. These sessions are enlivened by her dramatic interchanges and are punctuated by the call and response patterns she uses to reinforce particular concepts and language. When the session is focused on the reading of a piece of literature related to the theme, as the session in Vignette #2 involving the Daniel Boone biography, Clarice's read-aloud will be interspersed with this patterned interaction. In this classroom choir, Clarice serves as both director and soloist, but other solo parts are frequently decided by recourse to the tongue-depressor sticks which Clarice will pick up and carry with her and choral response is a central feature of the performance. Through it all, her voice, facial expressions and body serve dramatically as her director's baton — indicating clearly who is to respond, when to respond, as well as her evaluation of the response.

This control also plays itself out in other ways. One of these is the design of the written materials, primarily the journals, which underlie various aspects of instruction.

The journal is essentially a teacher-created workbook, comprised of set of written exercises related to an instructional unit. One accompanies every themed unit and every book used for Literature Circles. The booklets serve as a step-by-step guide for the students' work across a period of time. These workbooks, then, shape the children's experiences with the literature, defining the focus of their attention, providing a definition of what is important about the literature experience, and establishing criteria about what is a satisfactory result of the activity.

Teacher control also is also played out in the selection of the literature which children use in class. Because Clarice prefers to have the theme run consistently across the students' school day, literature used even in the non-theme times and in more informal contexts is selected by her to fit this pattern. Thus, the reading done in D.E.A.R. (Drop Everything And Read) time in this classroom is also normally both selected by Clarice and read by either her or the intern. For example, during the "Moving West" unit she read *The Sign of the Beaver*. When I asked Ian what happens during D.E.A.R. time he reported, "Well, usually it's the teacher reading [after lunch] but sometimes, very few times, it's us reading." Other students consistently reported the same perception. When asked what D.E.A.R. was for, Jenny said, "It's when teacher reads to us." Occasionally during this time period students will be assigned to read to each other in pairs from multiple copies of a unit-related book. One such example was a period of several days in which the D.E.A.R session was spent in paired reading of "The Wild Wild West."

Student control of activities involving literature is exercised in a few opportunities of book selection and free time reading. Each year, Clarice implements one unit that provides for student choice. This unit involves each student selecting a famous person

they would like to study. For this she allows the students to select a biography either from her large plastic tub of biographies or, subject to her approval, from home, the public library or other sources. Student control of activities involving literature is also exercised during occasional periods allotted to independent seatwork such as writing in journals, or working on a report. Then those students who have completed work before the allotted time may have time to read. Generally this happens to a limited group of especially able students. One girl, Nakisha, was frequently able to read for short periods of time since she always completed her work well before the others were done and reading was her most common choice for a free time activity. A few other students occasionally took the opportunity afforded by free time to read. Michelle, another child who frequently was one of the first students finished with any task, reported: "I usually keep the books I read in my cubby and then when I get free time, I like grab some friends or something to read with me." These occasions allow most of the students at least an occasional opportunity to choose to read, and to select their own books.

2. Literature as Motif: Providing a Rhythm for Classroom Life.

As we have seen, literature is at the center of most of the core work of the curriculum, the theme time in this third grade classroom. However, Clarice's vision of literature in the classroom extends beyond using literature in the themed instruction; it also plays important roles in the on-going patterns of classroom life. Literature also runs as a common, recurring thread throughout the other parts of the day and week, both formally and informally, for the students of this classroom.

There are two formal events, apart from Theme Time, which feature literature use—the daily D.E.A.R. (Drop Everything And Read) Time, described above, and Literature Circles, a weekly event. Literature Circles is one of the activities in her classroom of which Clarice is particularly proud. She traces the development of her interest in the idea as part of the process of learning she did as she changed to classroom teaching. Literature Circles became part of this vision. The final step toward that came from a conference she attended 4 or 5 years ago at which the "literature process" was explained. She indicated that she has been doing Literature Circles ever since.

Literature Circles in this classroom are held once a week. Students are divided into four groups, roughly by ability level, which are led by Clarice, her current intern, and two parent volunteers. The students are given a journal with a set of questions for each book. The books are selected by Clarice to tie in with the theme. The sessions generally proceed with round-robin oral reading interspersed with Clarice's supplying prompts or clarifications as she feels they are needed and with teacher-led discussion directed toward checking and supporting comprehension and answering the questions in the journal.

In addition to these formally scheduled events, literature permeates the classroom in other ways. First of all, the books themselves are a prominent physical presence in the room. They fill the shelves all around the room, and they fill the many storage boxes stacked in the corners of the room. The boxes on the students' tables contain the books being used as well as the journals and theme books, which are the basis of written work associated with the books they are using for the theme.

Literature also marks the transitions of the day. Coming in from lunch recess, the students will settle in for D.E.A.R., which is usually a teacher-read story time At the end

of the day, as students are cleaning up and packing up, once again, story-reading is usually part of the transition from school to home. As time for the final bell approaches Clarice or the intern will read a chapter of a book to the class. This book will be primarily "for fun" in Clarice's words, but will still, from her perspective, connect to the theme. During a science-based theme on ecosystems the book used during this time was *Gooseberry Park*, a talking-animal fantasy which included the impact of a serious storm on the animals' lives. This reading time follows a pattern that is common in this classroom-- a transitional activity that shares a time with other necessary duties. Before the reading starts Clarice will give a set of instructions to the class regarding preparation for going home, she will cue the children assigned to do clean-up chores, and then she or the intern will begin to read. Although this activity, coming at the end of the school day when there is a sense that the work of the day is completed and when everyone's attention is on going home, would seem not to be instructional time, it is clear that students are expected to be quiet and listen, whether they are cleaning up the room, getting their things together in preparation for departure, or sitting at their desks waiting. The reading is frequently interrupted to ask students questions about the text—"Why was he afraid of the wind?" "Who knows what it means to skulk?" In spite of the many distractions going on in the room, a majority of the students consistently seem to be listening and raise their hands eagerly to answer the questions.

There are also a limited number of subversive inclusions of literature in the classroom day, injected by a few students who "steal" some time for their own reading. One example of that is clear in Vignette #1 above. Max found time, even within the structure of a small group reading session, to explore his snake book. On another

occasion, Brian put a book of his choice into his social studies textbook during a work session. This was an unusual occurrence in my experience with this class. Although students were undoubtedly off-task on many occasions, as in any class, those episodes rarely included being engaged with unauthorized reading materials. However, another such event occurred during the end-of-day reading. As Emily, the student intern, read a chapter of *Gooseberry Park*, Devon, whose back was towards Emily, spent the time reading her own copy of *Amber Brown*.

The use of literature, then, occurs regularly and often in this classroom. Table 3 is a schedule of the weekly class activities from the first year. The second year, although events were somewhat rearranged, the schedule included the same activities with relatively the same frequency and duration. The highlighted areas demonstrate the parts of the day in which activities are either regularly or frequently literature-related.

Table 3: Typical Classroom Schedule Showing Literature-Related Events

Time of Day	Monday	Tuesday	Wednesday	Thursday	Friday
8:30-9:00	Sponge: Journal	Sponge DOL	Sponge	Sponge DOL	Sponge
9:00-9:30	Math	Penmanship	Theme	Math	Math
9:30-10:00	Music/Snack VIP	Center Time	Art VIP Talent	Centers	Music/Snack
10:00-10:30					
10:30-11:00	Theme	Gym/snack	Math	Gym/snack	Theme
11:00-11:30		Centers	Theme	Centers	
11:30-12:00					
12:00-12:30	Lunch	Lunch	Lunch	Lunch	Lunch
12:30-1:00	D.E.A.R.	D.E.A.R.	D.E.A.R.	Spelling Test	Library &
1:00-1:30	Theme	Theme	Theme	Writer's Workshop	Computer Lab
1:30-2:00					
2:00-2:30	Recess	Recess	Recess	Recess	Recess
2:30-3:00	Theme	Theme	Literature Circles	Theme	Theme
3:00-3:30					
3:30-3:35	Clean-up	Clean-up	Clean-up	Clean-up	Clean-up

The chart also demonstrates that there are specific but limited parts of the day in which literature engagement most likely will not occur. Math period is one of those times. Mathematics is not one of Clarice's favorite subjects. She laughs about conversations she had with her family before she went into the classroom, "So my common thing was, and we were laughing at home, they'll read, they'll love science. Uhhhh, if they spell, it will be because they spell, if they do math, it will be because the curriculum says they do will math." Her math instruction tends to be worksheet-based, rarely woven into the current theme, and generally unembellished with literature. There are also the usual "specials" which bring students out of the classroom to work with

other teachers—Physical Education, Music and Art—which are not literature-related. An additional out-of–classroom event that is literature-related, library time, will be discussed below.

3. Learning as Lifestyle: Envisioning Literature as a Source of Knowledge and Pleasure.

Clarice has two primary goals that thread through her descriptions of her decisions about literature use. She wants students to learn to get information from literature, to use it as a more interesting and engaging sort of textbook. She also wants students to enjoy literature. For Clarice these two goals appear to be inextricably intertwined, although they do not necessarily receive equal attention.

As described above, her desire to help students learn to acquire information from books permeates every aspect of her use of literature in her classroom. Her strongest commitment is to help students understand how much they can learn from reading trade books. This is clear from watching her teach as well as from talking with her. She describes herself as saying repeatedly to her students, "Well, where are you going to go find out more? What kind of a book are you gonna look at to find out more information about that?" Her other curricular use of literature, the on-going language arts instruction, is also based on this belief about the importance of learning--the skills and strategies instruction is designed to enable more effective access to and facility with knowledge.

There is evidence that students, unsurprisingly, are aware of the use aspect of Clarice's interest in literature. Some students' conversation suggests that they have absorbed the idea that the primary purpose of literature is to teach reading skills, or to learn information, or to do work. For example, Tom assumed learning "more stuff" is the

reason Clarice wants them to read a lot. He said, "She would probably [want me to] read cuz she thinks it's, you read a book and you learn. Read a book, you learn more. Read another book, you learn much." When asked about her teacher's reasons for wanting her to read, another student, Laurie replies that she believes Clarice is "trying to make [us] practice so [we] can get better at reading and stuff." When Ian is asked why reading is important he responds: "Well, you use it, you need to use it a lot to, and you need to develop enough skills so that you can read hard chapter books." These students, then, identify reading as an activity designed to teach them to read and learn.

However, despite the fact that most of the tasks Clarice gives her students to do with literature emphasize its use value as a source of information or learning, in practice as well as in conversation Clarice indicates that deriving pleasure from literature is also an essential goal for her. When she describes how her interest in children's literature developed she talks about "loving" it. She also emphasizes the pleasure she wants her students to derive from books: "I search hard to try to show them nonfiction, fiction, so something for fun that has to do with that subject matter." She uses the word 'fun' frequently when talking about kids and books as well as in talking to her students about new books. Listening to her passionate description of her journey as a teacher toward emphasizing literature it is impossible to imagine Clarice as Mr. Gradgrind. She wants facts, but not bare facts; one of the attractions of literature for her is how it contextualizes the knowledge. For Clarice, literature can serve to provide a wealth of information about the world, one of the foremost reasons she finds children's literature so exciting. She find excitement and pleasure in using Edison's life as a backdrop for learning about electricity, or in using the animal culture of *Gooseberry Park* to reinforce environmental

concepts. She returns from travel during school breaks excited about books she has picked up for her students. Her enthusiasm and pleasure as she talks to her students about these things is clearly genuine. She loves any opportunity to learn and books are a major source of such opportunities.

She also talks enthusiastically about the children's personal emotional experiences of reading. She thinks buddy reading—in this case two children taking turns reading aloud to each other—contributes an important social aspect to the reading experience. Additionally, in an conversation about connections between computers and literature, which will be discussed below, she emphasized the emotional pleasure of "curling up with a book" and expressed a concern that such pleasures of reading might be lost in the digital context. In a description of the importance of the aspect of reading she says: "you read a page and I read a page, and then champion that book and all celebrate the fact that I read it!" In this reference, Clarice illustrates the interweaving of her beliefs about reading—this description includes a perceived emotional connection between readers and book, a celebration of the value of reading in general, and a sense of accomplishment for a task completed.

To spend even a few hours in her classroom is to discover that enjoying books is important to her. Her enthusiasm for books is continually displayed in her interactions with the students. Even so, the enthusiasm is more for the learning derive from the books than for the intrinsic pleasure of literature. However, there are occasions in which I observed Clarice interacting with students around books purely for fun. Although much of the conversation and written work associated with Literature Circles as described above, is focused on helping students learn how to read and understand what they read

better, in most of the Literature Circle sessions there were times in which, under Clarice's aegis, the group interactions were taken over by excitement about the story itself, enthusiastic (and occasionally silly) conversation about the characters or events, and intense exchanges focusing on students' emotional and personal responses to the events or characters. One such conversation was about *The Courage of Sarah Noble.* Students were asking questions about Sarah's attachment to her cloak. Clarice was trying to help them think about what it might feel like to be in a strange and place, away from all that was familiar and then be told that Indians in the area were attacking settlers. Someone referred to Linus' blanket as comparable to her cloak. They discussed whether Sarah was a "wimp," as Tom put it, to be afraid. Students argued energetically on both sides. Clarice asked, " If you heard that would you go?" Arianna shuddered and said, "No!" Katie said, "I would! I would! I'm brave!" In another conversation, the group was reading *The Best School Year Ever.* Clarice took a break from the reading to re-tell the events with drama, humor and teasing. The group then had an extended and boisterous discussion about a series of pranks occurring in the current chapter. Several people got out of their seats to spontaneously act out responses and Clarice was an enthusiastic participant in the rowdiness.

These students, then, while attributing utilitarian purposes to their teacher's desire for them to spend time with literature, also observe her aesthetic pleasure in learning with books, and experience occasional moments in school reading that are given over to pure enjoyment. Some of these students express the pleasure literature contributes to their lives, although they don't necessarily tie these explanations to Clarice's goals or to their classroom experiences. Tom talked enthusiastically about the Matt Christopher books he

likes to read for pleasure at home and about how much he enjoys a collection of "old books" from his mother. Lauri identifies one of her own reasons for reading as the pleasure of getting scared: ". . . well, because I, I get really, they're sometimes really interesting and they're like mystery books and stuff like that. I love reading those because, or scary books, scary stories." Of 11 students from the class interviewed for this research, all but 2 talked enthusiastically about their personal experiences with literature. However, some of the students distinctly disassociated reading for pleasure from their experiences in the classroom. Tom S stated that he didn't like to read in school. When asked why, the following exchange ensued:

Tom: I would consider it fun if I got to choose the book.

Interviewer: Oh, so that makes a big difference?

Tom: That makes a really big difference.

Since literature in the classroom was selected by Clarice, except for free time reading, his school reading enjoyment was limited. Ian didn't bring the book he was enjoying at home with him to school to read stating, "I need more time to read it so that's why I'd rather have it at home than at school." Erica also expressed frustration with the time limitations of reading in school. She felt they prevented her from being able to really engage with the story: "It, it's [the book she was currently reading] very good but I just don't get a lot of time to read it so I'm all messed up and I don't know what's going on." She explained that "really getting into it" is what made reading fun, and that required certain amounts of time and concentration, which were not often available in the classroom. Tom had the opposite perspective. He emphatically reported not enjoying reading at home: "No. Cuz I don't like, cuz the books I read sometimes they have like the hardest words. One had like

physical features or something, but harder. And I didn't know how to pronounce it." But he liked the round robin method of reading in Literature Circles and partner reading formats on other occasions in school because they provided access to the story with less hard work and discouragement for him: "I like it a lot, cuz then you don't have to read as much but you're still kinda reading." Additionally, for him, the discussions in Literature Circle provided an opportunity to understand the story better: "Cuz sometimes I forget what they write and then other people remember so then they kinda remember and they're kinda like telling you parts of it.

However, despite evidence in Clarice's talk about her belief in the aesthetic pleasures of literature, and her modeling of enthusiasm for books, she also continually emphasizes the value she sees in using literature for content learning. Ultimately, then, her passion for literature inextricably combines her enthusiasm for developing "a love for reading" with her enthusiasm for developing "a love for learning," -- phrases she uses interchangeably. When asked why literature is important to her in her teaching she responded by combining the two ideas: "One of the things that I want to help the students develop is a real thirst or a passion for reading, learning, and to get some answers by reading."

Summary: Literature as Enriched Textbook

Literature occupies a central role in this classroom, carrying a significant portion of the content learning and serving as a thread that ties together the school day. It has prominent roles both in the transmission of content and in reading instruction. It functions, then, essentially as a textbook, but to Clarice's way of thinking provides much

more richness, context and interest than a traditional textbook. This use of literature is central to Clarice's sense of what an elementary classroom should be and to the way that Clarice thinks about herself as a teacher. The primary feature of literature, the characteristic that guides the choices that Clarice makes and the feature to which the students' attention is continually drawn, is its content—what the book is about is what matters most. The pedagogical style described in this chapter and which Clarice calls her "discovery" method is predicated on an interactive flow between a topic and a set of resources which can contribute to the understanding of the topic. The literary features of a book, the quality of art represented by books receives little attention in this classroom; thus the stances she encourages in her students are strongly efferent. In addition, there are the strategic functions, the attention to reading and information gathering tactics, that run through all of the classroom interactions with books. These, like the reading instruction functions observed in Karen's classroom, are not effectively captured by the efferent—aesthetic concept. It is only in occasional attention to the emotional impact of a story or the quality of students' response during Literature Circles students attend to the aesthetic affordances of literature.

Clarice evidences no sense of contradiction between the meaning of literature she espouses and the use of literature in her classroom. She has set up the curriculum and the classroom as she says, "to resemble me." She uses literature in her classroom in ways she is most comfortable with; the major use is as a source of information--Clarice is passionate about literature because she is passionate about learning. She says, "One of the things that I want to help the students develop is a real thirst or a passion for reading, learning, and to get some answers by reading." However, there is an implicit conflict

between the way Clarice talks about literature and the way she uses it. This conflict can be identified by the ends of Rosenblatt's (1976) spectrum. While Clarice's practice, the use of "literature as enriched textbook" emphasizes the efferent side of Rosenblatt's spectrum, Clarice's views about literature, as reflected in the comments offered during our interviews, clearly also stress the value of the aesthetic aspects of literature. When asked informally for her purposes with literature in her classroom she lists 3 goals— 1) "reading from all sources and realizing that information can come from many different sources" 2) "Turn them onto the enjoyment of reading" 3) "show them that there are many different kinds of books that they will encounter." The first and last of these are specifically efferent tasks, the first emphasizing literature as one of the places one might get information, the last seeming to emphasize the different expectations one might bring to different genres. The middle goal clearly is aesthetic. In this list Clarice differentiates among goals, but in further explication she indicates that she generally hopes all three of these run continuously through her school day: "I hope it's coming out all day long in everything that I do." Although there are occasions, as described above, when time is taken out for the pure enjoyment of a story, the overall use of literature in this class must be described as either strongly efferent, or in more functional uses that essentially sidestep Rosenblatt's criteria.

It would be unfair, however, to suggest that literature in this classroom lacks an affective component. To the contrary, Clarice considers learning to be exciting and emotionally engaging. Thus, her heavily efferent use of books does not suggest a mechanical or perfunctory orientation to the literature. Clarice communicates a strong sense of excitement and enthusiasm about books, primarily about the information and

learning potential of books, in her interactions with the students. For Clarice the trade books used are imbued with pleasure and excitement by virtue of containing knowledge and presenting it in what she considers an enriched context.

It would also be unfair to suggest that the highly efferent orientation to literature use in her classroom leaves no room for an aesthetic component. When she takes a break in the literature circle discussion to get silly or serious with the students about identifying with the Herdman kids or imagining how they themselves might have felt in Sarah Noble's place it is clear that Clarice values and enjoys these books as literature. But when the moment is over, the group returns to answering the comprehension questions in the journal and discussing how to use context clues to figure out difficult words. These are the tasks that receive emphasis and get formally assessed. The aesthetic aspect is important as a goal to her-- she is convincing about that, but for the most part, it remains an unrealized goal.

Technology Use in the Classroom

Technology Vignette #1: Computer Lab

It is Friday afternoon and time for the scheduled visit to the library and computer lab. This combined activity is identified variously as "going to IMC" (Instructional Media Center) and "going to the library". The 10-15 minute library portion of the time comes first, then the students who have finished checking out their books come into the lab and sit down at a computer. The lab is an internal room, accessed from within the library. Since it has no exterior wall, it is lighted only by the overhead florescent fixtures although two large windows overlook the library space. The computers are set on long

folding tables arranged in the shape of a capital E with the open end facing the blackboard wall at one side. Each computer has a stool in front of it. In preparation for this session Clarice has brought a chart-sized tablet from the classroom and placed it on the chalk tray. The first sheet says: NUTRIENTS.

As the students come in Clarice, the intern Emily, and the mother of one of the students circulate, helping students get settled, and as it is still early in the school year, making sure students have their passwords and understand how to log in. After the students log in and access the class files most of them immediately open a program called Type to Learn and begin busily typing.

Clarice takes a moment to explain to me that this is the normal start-up procedure—it fills the transitional time as students finish selecting books in the library, check them out, and make their way into the lab. She normally continues this activity until everyone has had some time working on their typing skills. Clarice feels that lack of typing ability hinders computer use and so is eager to have students develop this skill.

When all of the students have had some time practicing with Type to Learn, Clarice calls their attention to the primary task at hand for today. "People, we have a lot to do today, so we should get started." (This is the second time students have heard this phrase here. As the group entered the library area a bit earlier, the library aide, Mrs. Blackburn had greeted them with a similar phrase: "Well, I know you have a lot to do today [in the computer lab] so I will only keep you a minute.") The task for today is to begin translating the notes they have brought about nutrients into a book format.

Clarice begins by talking to the students about the computer program. She runs through the process for opening KidsWorks™. "We're using it because it's great for

making little books." She also asks, "How many of you remember how to use the stamps in KidsWorks? Some of you might know it better than me because I haven't used it for a long time." [Later she explains to me that this is the program used for write/draw activities in 2nd grade, so the students should be familiar with it from last year. However, a few months into the school year she teaches her classes Hyperstudio, a program she feels has more advanced capabilities, so she hasn't used KidsWorks since the first part of last school year.] While she is talking the parent aide and Emily circulate among the students, talking in whisper to students who are having trouble finding or opening the program.

Clarice then calls the students to sit on the floor by the chart, instructing them to take with them the notes they have brought to the lab. She turns to a clean page and together they work at creating an introductory statement for the booklets. "What do we know about nutrients, people? You have your notes. Nutrients are. . ." Tyler says, "Good for your body." Clarice replies, "Yes but nutrients are--, there is a name for what nutrients are, look at your notes." Someone says, "Elements?" She says, "Yes, Nutrients are the elements. . ." She writes the phrase while she talks, then asks, "What do they do?" Other students respond with various suggestions. The teacher prompt--student suggestion —teacher refinement pattern continues until they have shaped a statement that says: Nutrients are the elements our body use to get energy and be healthy. Clarice asks, "Is that good? Is there anything else?" A student asks, "Do we have to write this down?" Clarice responds: "Why are we doing this?" Meredith says, "To help you think?" Clarice responds by addressing the initial question, "Do we have to write this down?" "Yes, you're going to use your typing skills." Turning to the chart, she says,

"That's page 1." She rips the sheet off and tapes it to the board then turns again to the chart tablet. "Page 2. What are the nutrients? The nutrients are. . ." Various students call out suggestions; Clarice ignores the few erroneous suggestions, nods her head emphatically at the correct answers and writes them on the chart: Fats, proteins, dietary fiber, carbohydrates, water. "What else do we need to know? We've got page 2 of the book. What's on page 3?" She answers her own question. "Fats. What do we know about fats? Who's in the fat group?" (students have previously been assigned one of the nutrients to research.) This process continues until the class has constructed the main pages of the book. The students are then sent to back to their computers.

As they prepare to start the next phase, Clarice reminds them of the notes they have brought with them, "Some of you won't need these charts. For the rest of you, there is the chart. Now turn on KidsWorks Deluxe and make your title page. These will all be the same. The next page will tell us what the nutrients are. Here's your first page up here. Here's page number 2."

Most of the students begin busily typing. Again Clarice, Emily, and the parent volunteer circulate, answering questions, looking at screens to see if kids are on task, asking questions to focus those who need it. Clarice stops by the table I am sitting at and looks pleased about the work the students are doing. "Templates make this so rich," she comments. Andrew has tipped his stool back so that it is resting on 2 legs. Emily moves him gently down, "If you can't sit on four legs you will be standing." I watch Rodney who types "My Facts" and then begins trolling the program library for graphics. When Clarice comes by he manages to be looking at a blank page 2. She asks, "Do you have page 1 done? Let's look." She takes the mouse and clicks back to page 1 where she

reads aloud, "My facts." She looks at him. "No. What's it supposed to say?" She highlights the words with the cursor. He looks at her without expression and does not respond. She takes his head in her hands and gently turns his face to the chart on the board. "What's it supposed to say?" He begins typing the words from the chart onto his page and Clarice moves on. Emily bends over to read Jenny's screen and says, "Don't forget 'The'. '*The* nutrients are.'"

After about 10 minutes of busy typing Clarice tells the class it is time to leave. "Put your work in your file on the server. We're going to 'Save as' and then 'A'." She corrects herself, "There's no 'save as'; its 'save story'. And you're going to have to name it. I want you to call it Nut. Save story, close. Then log out. It's time to go people." There is a brief flurry of questions as students complete this process. One by one they head for the doorway to the library where they line up. As we move into the hallway, the mom who has been helping chats with Clarice . "I have to take Alexander (her younger son) to the doctor now to have his leg x-rayed. He was dancing to music and hurt his leg. Kyle, her son in Clarice's class corrects her. "No mom, no. It wasn't music. It was music from a computer game." His mom laughs, " Oh, it wasn't music, it was music from a computer game."

Technology Vignette # 2: Oregon Trail at Center Time

It is a bright spring Thursday morning and the beginning of Center Time. Clarice is introducing the centers for the students. Since the class is well into the unit of Moving West the students understand without her saying so that the computer segment of Center Time will involve working with Oregon Trail™. The students have just finished working

on a crossword puzzle related to the unit and have gotten stuck on the river that was the staging point for the pioneers. Clarice tells them to remember to check out the answer when they are doing Oregon Trail. She also preps them with some questions. Who stayed, who went on? Some people decided to say in Independence or Abilene. Some people made it to here---she points to the map—but it was so hard they turned back. Was there anybody in your community that decided to go back, to stay--Independence or Abilene or to go to Santa Fe?"

The first group goes to the computers, seating themselves at five of the six computers. One is apparently down, so Kelly sits by Arianna. James says to Arianna, "How do you do this one?" She is busy with her own computer and doesn't respond. He says to the students in general, "How do you find Oregon?" This time several students give him some instructions. He says again, "I can't find it. Arianna, help." Again she doesn't respond. He is becoming agitated. "Kelly, help. I'll give you five bucks." Arianna says, "Sure you will." James responds, "No, really." A discussion ensues about whether James really has five dollars. Finally Arianna tells him that the computer he is at doesn't have Oregon Trail on it. "You can play with Eric ," she suggests. James moves his stool beside Eric who makes no comment. They wait for the program to load and then begin discussing strategies. Eric maintains control of the mouse, and as time goes on James's participation diminishes from conversation with Eric about the program to observation, and finally he become distracted by the fish tank behind him. Arianna's computer suddenly plays the music for "Oh dear what can the matter be" pretty loudly. She says, "Sorry!" really loudly herself and glances across the classroom. Kelly and Arianna are also sharing a computer. Arianna controls the mouse, but the two girl interact intensively

about the program. They negotiate the choices and decisions—"I think we need more flour." "I don't know, how much flour do we eat?" and discuss each event—"Is she going to get sick?" "I don't think so." Arianna also provides a continual commentary on the progression—"Now we're going out of town. . ." They both use the plural pronoun—saying "we" and "our" consistently rather than "I" or "my."

Near the end of the session Tom leaves his computer and sits by Nashita who has been working quietly by herself. He begins giving her advice: "Make sure you check that out. You have to go down to the river now." She glances at him briefly but continues working without comment. Suddenly the fire bell rings. The interruption creates limited excitement since the news of this impending drill had leaked at recess, but the students leave the computers abruptly to line up at the door.

* * * * * *

Against the backdrop provided by these vignettes we will more closely examine the roles and meanings that technology holds in this classroom.

Technology as Ensign

A metaphor that effectively captures the meaning and function of technology in Clarice's third grade classroom is that of technology as ensign. An ensign is a symbol of identity and affiliation. It serves the purpose of making both insiders and outsiders aware of intentions and authority. It can be used to stake out territory and an identity. Unlike the central function literature plays in this classroom, the presence of technology has limited immediate practical impact, but serves a powerful representative role. It serves to identify both students and teacher with the current educational technology

movement; it serves also to forge a connection for students with the possibilities represented by technology. As in the discussion of literature, the overarching metaphor can be usefully unpacked by emphasizing three sub-metaphors, each of which captures a significant aspect of this central metaphor.

1): "Making it fit:" establishing a role for the computer as production and content tool.

2) "Fitting it in:" Establishing a niche in curriculum and schedule for computer use.

3) Technology as opportunity: Envisioning classroom computer use as a link to knowledge and enrichment potential.

1. <u>"Making It Fit": Establishing a Role in the Classroom for the Computer as Production and Content Tool.</u>

We have seen in the discussion on literature that it is important to Clarice that her classroom and the way it works "fits" her. When she began teaching in a self-contained classroom she worked hard to make her classroom what she called "me friendly," believing that if she was "comfortable" with it the students would be also. Once she could see that technology was "where we are going," it became important to her to add this feature to her classroom. This meant that she needed to find technology uses that also "fit" her and her classroom.

In this classroom, as in Karen's classroom, 'technology' essentially means the computer. All of the technology use observed as a regular part of classroom activity was computer use. There were three primary uses of the computer in evidence in this classroom—the creation of Hyperstudio booklets or other word processing tasks (early in the semester they use KidsWorks Deluxe for these same tasks, interactive CD ROM use, and educational games. This making of report booklets is one of the primary computer

activities conducted in this class. It has a history that goes back to Clarice's initial forays into computer use. She describes originally learning and using other programs to make booklets, first an early KidsWorks version, then when she felt they "had outgrown it" she moved them on to Microsoft Publisher™, and then, more recently she changed to Hyperstudio.

Making the little books was a good fit with her theme-based curriculum from the beginning, and so she continued to use it, refining it as she became aware of software she considered more effective. She began to use the KidsWorks Deluxe program and Hyperstudio that she continues to use now.

Within the book activity, the computer serves a single role—a production tool. The booklet that will be, when completed, a 4-8 page "quarto" format frequently illustrated with clip art, begins as a paper and pencil task. The text of each booklet is first written out by hand by each student. Some of this writing takes place during a weekly event called "writer's workshop" for which Clarice has a parent volunteer come in to help. One of the tasks of the volunteer is to proofread the text of the booklets before the student begins to type it into Hyperstudio. Although constructing report booklets is a major computer lab activity, it is spread out into computer sessions of Center Time and occasionally, as needed, beyond that to free time in class.

Bruce and Levin (1997, 2001) identify four categories, adapted from Dewey, of use for computer technologies: inquiry, communication, construction, and expression. The computer uses in this third grade classroom fall into the category of Communication, specifically Document Preparation (word processing and desktop publishing) for the Hyperstudio products, and Teaching Media (instructional simulations and drill and

practice systems) for the Oregon Trail program and for the educational games. Document Preparation seems a rather indirect example of communication use, particularly in this case when the Hyperstudio products are printed out and to be shared. In fact, however, communication is very much on Clarice's mind in using Hyperstudio in the way she does. Ironically, however, she emphasizes the step of printing a paper copy from the computer as key to the communication. Since it is important to Clarice to emphasize social interaction while learning, she finds creating products on the computer which can then be printed out and used in a social context to be an effective way to accomplish these communication goals.

C: So . . . if we're writing our journals on the computer, using the computer for that piece, then we need to come back and share our journals. So I will make sure that in the same sense that they write it on paper, if they do it [on the computer] they've got a printed copy and they'll come back and interact with one another. I would not like to lose that piece, the human part of it.

I: So it sounds like physically your vision of the computer would be still pretty heavily reliant on a printer and paper so that you could keep. . .

C: Uh huh. That human connection.

Thus creating paper booklets on the computer works well from her perspective. It accomplishes several goals for her. The students have an opportunity to experience using the computer, which is important to her; the booklets can be printed out in a polished-looking form, which she feels is more satisfying to the students than a hand-made booklet; but especially, the booklets can be shared--read to the class and taken home to be read to family members. By using the computer to create products that can then be held in the hand and read or shared together face-to-face she is more comfortable that this social aspect of learning is not being limited.

The other major use of computers is for content exploration. Primarily that means the use of the Oregon Trail interactive CD during the "Moving West" thematic unit, although other CD-ROMs are used occasionally. During one of my last days in the class Clarice was looking forward to introducing them to a CD-ROM related to the upcoming unit on underwater life. One or two students also reported using a computer-based encyclopedia to access information for a report. This use of the computer fits well with Clarice's emphasis on knowledge acquisition. When she says, "One of the things that I want to help the students develop is a real thirst or a passion for reading, learning, and to get some answers by reading. Reading not just from textbooks but reading from all sources and realizing that information can come from many different sources" [quoted above], it is easy to see how not only literature, but also computers can fill the bill for her needs. The quasi-narrative format of the Oregon Trail program especially, provides the kind of contextualized, "enriched textbook" qualities that she values in literature.

The nature of the computer use in the classroom is consonant with Clarice's over-all teaching style, in which she serves much as a choir director. Although Clarice reports student discovery as an important tenet of her teaching philosophy, she takes a strong role in orchestrating the experiences of the students; this is clearly "guided" discovery. Thus, as illustrated in Vignette #1 above, the primary work activity during computer lab sessions was done according to her explicit instructions. In many cases, Clarice created a template for the report booklet so that students shared a cover graphic, knew how many pages they need to create, and sometimes had an expectation of what kinds of information should go on each page. Students were frequently permitted to use the draw

program to illustrate parts of the booklet at their own discretion after the writing was completed.

The activities of Center Time also demonstrate the way that computer interactions were clearly directed for students most of the time. Frequently their task would be to work on the current booklet being produced. At other times they were to spend the time practicing math skills with Math Blaster™ or use one of the other educational games. The interactions with Oregon Trail, although individualized to some extent by the nature of the program, were also to some extent shaped by assigned tasks. An example of this is the occasion described in Vignette #2 in which students were given a set of questions to answer about their simulated journey including the missing information about the river: "What are we going to be looking for people? We're going to be looking for the river."

Options for students to initiate and shape computer experiences was generally limited to the Center Times when students were given a choice of playing one of the educational computer games or exploring an educational CD, and to the indoor recesses when students could choose whether or not to use the computer, and if so, what game or CD to use and whether or not to participate with a partner. Only one student was observed in two incidents of spontaneous computer activity. The first was an injection into a class discussion of a book about Columbus. Tom raised his hand during the discussion and kept it up for more than five minutes, waiting to be called on. When Clarice acknowledged him, he reported that he had found pictures of the Pinta, the Nina and the Santa Maria on the Internet. He also described the purpose of the website that contained the pictures. On another occasion, during Center Time computer activity, as Tom was typing up a booklet this time containing a story he had written he paused in his typing,

swiftly opened and consulted a web page, then returned to his typing. When I asked him about the incident later he reported that he had accessed the Pokemon web page to check out the spelling of the name of one of the characters which he had included in his story. This was a discrepant occurrence-- I observed no similar usages of the Internet during my time in the class.

Although the production and content uses were clearly the regular and dominant kinds of computer interactions utilized in this classroom, there was evidence of a few other kinds of technology use. These, however, were examples of teacher rather than student use. I observed a few uses of videotapes and although this technology probably meets neither Pea's description of "new technologies," nor Clarice's implicit definition of technology-as-computer, at least one example provides an interesting glimpse into an adaptation of newer, computer-based technology to a more low-tech use. During an exhibit at a local mall celebrating the area schools a video display of students' Native American reports was created. A single class report had been compiled from students' individual Hyperstudio reports. Clarice reported to the students that, since Hyperstudio did not have the capability of automatically advance through the set of slides, the school technology coordinator had videotaped the computer screen while someone clicked through the report. The resulting video would be shown at the exhibit. The students were very excited about having their work on public exhibit and pleased when Clarice showed them videotape. In a previous year Clarice had videotaped the students' models of covered wagons, moving in a line across the grass as if in a wagon train. The students of her current class were excited to hear about this and enjoyed watching the videotape. During my time in the class Clarice also videotaped students' oral nutrition reports and,

while the students thought it was fun to see themselves on tape, Clarice explained to me why she had taped them, "We're working on poise and eye contact, we've been talking about it a lot. They're getting much better at it, but we need to continue working on that."

Clarice reported a few other technology uses from previous years. She mentioned scanning some students work in a previous year and creating a CD-ROM. She also reported attempting a key-pals project with a parent's help in a previous year. She reported that the students enjoyed it but were somewhat disappointed, as their partners were not as responsive as her students wished. The chart in Appendix •• lists all observed and reported kinds of technology use for the classroom.

2. "Fitting It in": Establishing a Niche in Curriculum and Schedule for Computer Use.

As discussed at length above, the central learning of this classroom occurs in largely in whole-group, highly verbal contexts. Technology, or computer use, is not woven into the substance of this pattern. The computer use in the classroom, rather, is a way to accomplish several distinct tasks that support, but are not central to, the learning and life of the students. The computer activities in this classroom are instantiations of Clarice's commitment to provide technology experiences for her students. When she first described a booklet project to me she stated, "that's how I get my Hyperstudio in." This comment clearly suggested her determination to find ways to fit technology into her classroom. The most prominent way in which this is done is the booklets. These are primarily associated with the theme work, which itself is a central curricular feature. However, the computer activities themselves do not bear a significant role in the content

learning goals that dominate her theme units. The production of the booklets is not a case of central curricular integration because, although the booklet represents the culmination of a learning that is an important part of the curricular theme, by the time it becomes a computer activity, the learning is complete; the conceptual aspects of the booklet have been dealt with and the computer is used primarily as a tool to represent their learning rather than to facilitate it. The use of the Oregon Trail interactive CD-ROMs also cannot be considered central to the curriculum, for several reasons. This use only occurs during a specific part of the curriculum—the "Moving West" theme that lasts approximately 3 weeks. During this time it occupies the most of the Center Time computer sessions, however, this is, for each student, only two 20 minute sessions each week, a relatively small proportion of the theme work for that unit. The other computer activities, such as the educational games also take supportive rather than central roles in the curriculum.

In another contrast with the literature activities, which run throughout the life of the classroom, computer interactions primarily occur in a discrete set of three time slots. One of these is the weekly visit to the computer lab. This scheduled visit is combined with the visit to the library. After the students have checked out a book they proceed into the computer lab which is a room contained within the library/media center space. As they enter, they go to a computer, sign in and then spend some time working on Type to Learn until everyone is in the lab and ready to start. At that point the main activity of the session begins. At the beginning of the school year and at a few times during the year the computer lab session is a time for computer instruction. According to Clarice most of the students have worked on the computers in 2nd grade and use them at home. This assessment is supported by conversations with students, many of whom describe in detail

the kinds of computers they have at home and the kinds of activities they use them for. In spite of this, initial computer lab sessions at the beginning of the year are hectic with the process of helping students remember the password and file storage processes of the school system and re-familiarizing them with the commonly used school programs. They come to third grade familiar with KidsWorks Deluxe, which is used initially to create booklets. A bit later in the year Clarice introduces them to Hyperstudio, which is then used throughout the year to create report booklets. The other two niches dedicated to computer use are the twice-weekly Center Time sessions. During the Center Times, described above, a computer activity is always one of the three or four center activities in which each student participates. Each child will move to the computer bay with his or her group as part of the Center Time rotation and spend 15 or 20 minutes working on a computer. At the end of this time period either an alarm will sound or Clarice will announce the end of the time period and the whole group will move to the next center. The computer activity, which varies from time to time, may or may not be connected to the theme. As described above, this time will be used for working on report booklets if there is one in process, or for interacting with a theme-related CD-ROM such as Oregon Trail during the Moving West unit. At other Center Time computer sessions the students may type some other product related to the theme or are free to choose from computer games which Clarice considers educational such as Math Blaster, Logical Journey™, and Pinball Science™.

Technology use in this classroom, then, occurs primarily at the three scheduled times during the week described above—the two days a week devoted to Center Time and the weekly computer lab session associated with the library visit. At times the computer use

spills outside these scheduled slots. When students need extra time to finish typing project they were encouraged to do so when they had finished other work. At times, when the backlog of catch-up typing became larger, Clarice or the intern would pull students from ongoing activities to spend time at the computers finishing their projects. Another exception to the pattern of scheduled use of computers was the children's indoor recess time. When inclement weather dictated indoor recess students we free to use the computers. This was a popular activity –there was invariably a rush to claim one of the six computers as soon as the students were released for recess.

2. Technology as Opportunity: Envisioning Classroom Computer Use as a Link to Knowledge and Enrichment Potential.

Clarice is deeply committed to the idea of providing technology experience for her students. Her commitment led her to begin to learn about computers long before most of the other teachers in her school. She reports that "when the district put money in it [buying each teacher a classroom computer] and I thought, okay, if this is where we're going, then I want to be on the cutting edge and so illegal or not, I took mine home over the weekend and I kept my nose in that thing until I had it mastered." She spent a lot of personal time in those early day learning programs: "of course, I was spending quite a few more hours than I would have had I gone to the typewriter, but it was all in the process of learning." She exemplifies what Goodson calls "the inevitability thesis," believing strongly that computers are "where we're going."

In describing what she believes is the value of computers she mentions a wide range of uses, some of which she uses regularly, some which are not observable in her classroom: drill and practice, remediation, writing, editing, Internet experiences. She

wishes she had more computers in the classroom so student could have access to them more frequently.

One of these ideas about the value of computers is similar to a reason she gives for her enthusiasm for literature—the idea of enrichment. The computer as enrichment resource is one of three common assumptions identified by Goodson and Mangan (1996) as recurrent arguments in support of the importance of computers in education. In Clarice's case, she believes that the Internet "gives them a broader learning experience because there we've got the whole world coming into the classroom via the Internet, by many of the programs here that the school has already put on the network." She describes wanting to use it herself, to " be able to come back to them and say 'guess what I found last night when I was out there [on the Internet], fooling around. And I found something really neat that I want you to try'. . ." She also describes wanting to use it during class: "I could say to them I'm not sure about that. Why don't we go on the Internet and look that up."

Clarice, indeed, is firmly convinced about the general importance of computer skills for kids and is proud that she has made the effort to provide these experiences for her students: "I would say that the children who are here because we use it frequently are more computer literate than a lot of the others. That's a judgmental thing on my part but. . ."

Despite her enthusiasm, however, she has some mixed feelings about some applications. She worries about the social development of her students and feels that computer use can, in some ways, be isolating. When asked whether she feels there are any drawbacks to computer use she says, "We may, if we're losing anything, it's the one

to one people connection because computing is isolated. It's me and the screen as opposed to me and interacting with another person. And yes, there are interactive activities on the computer where you interact but we're losing the people skill on a one to one basis, being able to converse."

It may be this hesitation which accounts for the differences between the ideas she expresses about computer use and the actual computer uses observed in her classroom. It is also significant that the computer use during this research period seemed to be consistent with that of previous years, the continuation of an ongoing pattern; there was no evidence of the development of significantly new technology uses from one year to the next. The kinds of computer activities that Clarice used had a history—she reported to me how she had developed them over recent years and described the satisfaction they gave to her she gave no evidence of being in a hurry to change them. Although she used personal trips and other experiences to search for new CD ROMs that might enrich students' understanding or experiences with the curricular topics, the basic patterns of technology use in the classroom pleased her. On my first day in her class at the beginning of the second school year I asked brightly, "Well are you planning any great new technology projects this year?" Clarice replied: "No. Why would I re-invent the wheel?"

So, although her computer use is not revolutionary, nor central to her curricular focus or instructional methods, computer use clearly seemed to occupy a central representational role for Clarice. It is highly central to her conception of her classroom and of herself as a teacher. She is pleased by her reputation as a technology-savvy teacher. She recognizes that distinction and identifies herself and two other teachers in

the district as particularly interested in technology. She has also worked very hard to acquire more computers than the district policies would supply. She describes her efforts with understandable pride and tells how she has also been able to influence other teachers in their technology use through modeling: " [T]he more I created and put things up that I had done, other teachers were asking so, you know, it evolved." She believes that she benefited from this role, reporting that, "teaching other people how to do it enriched my learning." She also believes that this had an impact on the school, connecting her early technology activity to the presence of the current lab.

Technology use also seems to hold an important representational role for her colleagues and parents. Clarice's classroom was referred to me as a possible site for this research by several other teachers in the district who had heard of her reputation as a technology-using teacher. She reported with satisfaction that when parents indicate that they want their children to be involved with computers, the students are placed in her class--having a classroom in which computers are used is vitally important to her.

Summary: Technology as Ensign

Technology, which in this context essentially means computers, holds a meaning in this classroom which goes beyond the implications of its use; it serves as a standard of identification for Clarice and her classroom. As an actual enterprise, it is used in this classroom in ways that, according to our adaptive use of Hughes' taxonomy, are primarily *replacement* or *amplification* uses—using the computer to type and draw booklets, replacing handwork, or using the Oregon Trail CD to replace activity sheets, literature use, or textbooks to help students understand the circumstances of pioneer life.

Unlike the literature, which is threaded throughout this classroom both physically and conceptually, computers are used in several specific contexts, during a set of assigned time slots to accomplish a limited number of specific tasks. As a concept, however, technology seems to hold an important representational function and meaning. It is important to Clarice to know, and to have it known, that she is engaged with technology, since she believes it is becoming increasingly important in education and in life. She likes it that those students whose parents express interest in technology experiences for their children are put into her class. To Clarice, incorporating computers into her classroom and her students' work patterns represents being on the "cutting edge", being part of "where things are going." However, this is not simply an image issue for her at all: It is important to her also, that her students are gaining experiences with computers because she believes this will help them both in future schooling and in life. But neither is this simply a "basic skills' issue for her: To Clarice, computers, like books, also represent access to a whole world of enriching knowledge and experience that she is anxious to have available for her students. She does not want her students to be left behind or left out and she has put a lot of effort into developing her own computer skills so that she can include this in her classroom experiences.

She recognizes and accepts the important role which computers have come to play in conceptions of education today and has committed significant energy and time into becoming part of that movement. She believes in the benefits that her students will gain from being computer literate and would not feel she was doing her best for them if she did not find ways to incorporate computer use into their life in her classroom.

There seems to be a tension between her style of teaching, which is very much teacher-hands-on and teacher-directed, and this latter kind of technology affordance—enrichment-- that she talks about most enthusiastically. The Internet, for example, is not an active part of her classroom computer use. The free-form, student-directed dynamic which would be required to actively incorporate the Internet in her teaching would necessitate for Clarice a substantial re-thinking, or *transformation* of the way she approaches her teaching.

Relationship between Literature and Technology in This Classroom

In assessing the relationship between technology and literature this classroom, one is pushed toward the quick answer that there is none. They each have their own roles and there is very little noticeable intersection between the very prominent and integral literature use, and the circumscribed and specific technology use.

Yet, there are two ways in which literature and computer use are related in this classroom. One of these has already been alluded to. Clarice holds some very similar views about what each can contribute to students' lives—the conception of enrichment. Since a great deal of her enthusiasm about literature is focused on its potential to present information and develop knowledge, it is hardly surprising that she discusses the Internet in some of the same ways that she uses to talk about literature—it is "rich," provides a "broader learning experience," and it connects them to the "whole world." These sound very much like the kinds of values she sees literature providing. Similarly, the use of Oregon Trail in the "Moving West" theme is very similar to the ways she uses literature

to develop her themes, providing the kind of contextualized, "enriched textbook" qualities that she values in literature.

There is another, very subtle relationship which may be created by a characteristic of the larger school context. The class' weekly library session and their weekly computer lab experience share one space-- the computer lab is accessed from within the library—and one time slot. The combined session was a decision made by the faculty some years in the past to ease scheduling difficulties; the division of this time between books and computers is in each case a decision made by the classroom teacher. When Clarice's students prepare for this event, they line up with the books they need to return and with the work in their hands that they will do in the computer lab. On a typical day they will gather first on the rug in the library for a short session during which the library aide will talk briefly with them, sometimes about management issues, sometimes about new books, sometimes talking with individual students about books they need to return. This gathering will not include a story time, something that happens with only the kindergarten through second grade classes. Mrs. Blackburn, the aide, believes that third graders will not be interested in listening to a story, so instead she spends a short time just talking with them. She is very aware that the library time is shared with the computer lab time and she reported that she is careful not to impinge on the computer lab work time. On one such occasion she greeted the students with, "I know you have a lot of work to do today [in the computer lab] so I will only keep you for a minute." By this experience, the computer is given implicit precedence.

Part of the context in which these students experience library/computer time has been shaped by district policies. Mrs. Blackburn's recounting of the history of her job reveals

the relationship. When she began her job ten years ago she was the assistant to a full-time librarian. A few years later the librarian positions were cut back to a one day per week visit by a rotating librarian, leaving the aide as the only staff. She also reports a concurrent change: "So at the time they cut back the librarians, they were adding a lot of computers, too, . . ." The computer labs were created at this time of library funding cutbacks. She finds this unsurprising as she believes that computers "are a fact of life." Mrs. Blackburn believes there is also a strong competition between computers and books for the attention of children and, like Sven Birkirts, she has no doubt about which is in the lead: "I think that they find the interactive learning more fun than just sitting down and reading a book." She reported a parent had, the week before we talked, noticed the relationship from observing her 2nd grade son's class. The mother said, " Isn't it a shame they only spend 10 minutes in the library and the rest of the time in the computer lab. And what's happening to literature now and that sort of thing. Mrs. Blackburn's feeling is that the change is inevitable, commenting about the prominence of computers as opposed to books, "I feel like it's like a locomotive. We can't stop it."

Mrs. Blackburn's description of the competition between computers and literature reflect her observations of children. She makes it clear, however, that the teacher has control over the way the library/computer time is used. Thus the privileging of computer use over literature engagement in the way the time is spent during the library/computer session must be regarded as a function of Clarice's decision making. This is an interesting contrast with the privileging of literature over technology in the classroom in terms of time and attention.

Chapter Summary

Finally then, what is most important to notice about the way that literature and technology "inhabit," to use Nardi and O'Day's term, this classroom? There are several points worth noting. Clarice likes literature—she loves the books themselves, she loves the way the stories bring the world to her students. This is not diminished by the fact that she primarily sees and uses them in efferent ways. She is passionate about learning and in her perspective the books are a rich resource for learning. One might almost say, in contrast, that Clarice likes the *idea* of technology. When she describes her discovery of children's literature one hears a sort of vital personal awakening; when she describes her initial foray into technology one hears her acceptance of an irresistible force—"if this is where we are going" then she wants to be part of it. Although she is pleased by the polish Hyperstudio gives the students booklets, and believes that Oregon Trail gives her students a valuable insight into the pioneer experience, she is not particularly interested in exploring new ways of using technology, in "reinvent[ing] the wheel." Rather, she tends to look for new resources to use with the same technologies. As I was leaving her classroom she was excited about introducing her students to a new CD-ROM she had found about ocean exploration which would fit with an upcoming theme. Although she talks about valuing technology for the same reasons she values literature—for knowledge acquisition and enrichment, in fact she rarely uses technology in ways that most effectively enable those effects, rarely, for example, using the Internet. And on the occasions in which she might be said to use computers for knowledge and enrichment—interactive CD-ROMs—she is using it most similarly to her literature use. Computer use, in itself, seems to represents for her the potential and power which is

attributed to computers in education, and seems for her to provide an identity she is proud to have known.

It is also important to notice that both the literature use and the technology use have been incorporated into the pedagogical style and classroom culture that Clarice is most comfortable with. Although the influences that contributed to her adoption of these ideas came from the outside, she has precisely shaped each of these phenomena to fit her decisions about what she wants her classroom to be like. It is useful to note the ways that either literature or technology are not regularly used in this classroom. Literature is rarely used *as literature*, as an aesthetic experience, as a basis for personal response or for critical discussion. Technology is rarely used in all its capacity for creative expression, the free-form information resources of the web, the flexible capacity for communication across time and space. These kinds of uses require different pedagogical approaches, however. To actively engage students with literature and technology in these flexible and interactive ways requires a degree of flexibility, uncertainty and student control that is clearly not comfortable for Clarice. Both fit her; she has made them "me-friendly!"

CHAPTER 5:

CHAPPELL CREEK

Setting and Participants

The School

Chappell Creek School stands in the middle of more than 40 acres of trees, ponds, and marshy areas. The very attractive building stands on a corner in a setting that hovers between the area's rural past and its clearly imminent suburbanized future. The road which runs along the side of the property meanders north through a comfortably affluent quasi-rural, wooded area--a mixture of older but substantial frame homes with white board fences, stables and small pastures are interspersed among the trees with newer brick and frame houses on spacious lots. The drive circling up to the front entrance of the school is for the convenience of visitors and parents dropping off and picking up children--the buses pull up at a side entrance. Within the circle drive is what appears to be a teaching garden. One wing of the u-shaped building houses the primary classrooms as evidenced by a separately fenced play area with brightly colored climbing toys and swings, clearly sized for younger students. The other wing provides the main access to the building and houses the school offices. The courtyard between the two wings is set about with picnic tables, clearly for student use.

The building looks new, airy, upscale, and well cared for. Inside, high ceilings, spacious attractively carpeted hallways, extensive use of glass, and walls that are decorated with student work, art prints, and inspirational posters promote a feeling that this is a purposeful place in which people and property are respected and valued. The library, which is visible through a partial wall of glass from the main hallway, is large,

spacious, well stocked and attractive. The bookshelves in the interior of the room are low, allowing the entire room to be visible and providing a surface where new or featured books are displayed. Through a window at the back of one side of the room the computer lab is visible. It is accessible through a doorway near the librarian's desk. The interlocked design of the rooms makes it possible for a librarian working at the desk to at least partially monitor both areas at once, although only the front part of the lab is visible from this point.

Consonant with the location of the school in a transitional area, the community from which the students are drawn is a mixture of highly affluent and more moderate middle and working class families. The school qualifies as a Chapter 1 school with 13% of students qualifying for free or reduced lunch. The school offers all three of the common "specials" for its students—physical education, music, art, taught by specialized teachers. In addition there is an extensive strings program. Each class has weekly scheduled times for library and for computer lab sessions. The mission statement of the school, posted on the web site says:

> We believe that children will learn better if:
>
> They are provided adequate time within a safe, positive, nurturing environment.
>
> The learning environment offers opportunities for freedom, power, fun, and belonging.
>
> Their educator holds high expectations for self and students.
>
> School and classroom rules are consistent with expected outcomes and reflect student responsibilities for choices.
>
> They are provided with intellectual, personal, social, emotional, and physical learning experiences that stimulate use of higher-level thinking skills and creativity.

The atmosphere of the school supports the feeling that these goals connect closely with the expectations and behaviors of the staff and students.

The building is structured so that each grade level, K-5, is situated in its own "pod," a cul-de-sac that runs off the central hallways. A pod is composed of three classrooms, boys and girls bathrooms, a large common area, student lockers and a workroom for teachers. The cul-de-sacs, lit by windows and skylights, create communal spaces where various individual and group activities may take place. They also provide private access to the outdoors.

The Classroom

Carl's classroom, in the fifth grade pod located at the end of the main hallway, is spacious, uncrowded and attractively arranged. Student desks are arranged off-center in the room, along one wall and ranging two-thirds of the way across the room, in well-spaced clusters of 4 or 5 desks. The far side of the room holds a reading corner, a piano, a table with several computers and the teacher's desk area. This latter is a rather large square in the corner of the room created by two desks at right angles to each other with bookcases along the two wall sides of the square. Each desk has a computer on it. Here Carl and his intern have their work centers although neither of them spends a great deal of time in this space during class hours.

A reading corner occupies a large square area in the southwest corner of the room. It is comprised of a long couch, several sets of bookshelves containing both reference books (a set of encyclopedias, a number of dictionaries) and fiction (see notes for more details). An oriental-style area rug over the carpet and several attractive framed posters on the

wall, one of Monticello, the other of musical instruments, contribute to the pleasant, almost home-like atmosphere. The northwest corner of the room opens into a large bay, which serves as the computer corner. One wall of the bay is lined with cabinets, counter and sink, the other with windows, the only windows in the room. Arranged along the window wall are tables and desks that hold 8 computers of various vintages. The walls of the room nearest the student desks contain several bulletin boards. One shows computer-printed pictures of each student with his or her name underneath. Another holds small posters identifying the various genres of literature and basic literary elements.

Despite the clustered arrangement of desks, the room clearly has a "front" both physically and operationally. A large dry-erase board covers most of the east wall. This board usually shows signs of use--holding students efforts at math problems, or either Carl's or the intern's writing obviously done in the context of a lesson. It also posts a smattering of administrative papers--a class schedule, a list of student duties, etc. There is usually also a brief moral, quotation or aphorism. One day there were two, written in a student's hand, "wisdom is the ability to know what to ignore" and "laugh as much as you can." In front of the board is a small round table used for various purposes from holding papers to student-teacher conferences to student group work. What really marks this area as the front of the room, however, is the presence of a tall director's chair. This is Carl's seat, from which he conducts class discussions, observes student activity, and basically supervises the room. Although he does move around the room a fair amount, this, even more than his desk, is his base of operations.

The Students

The first year, of the 23 students, there was one African-American boy, and one Korean girl whose family was affiliated with the university, and one quadriplegic girl who had a full-time aide with her. The rest of the students were Caucasian-American. The second year the class of 26 included one Asian girl and one Mid-Eastern boy, both of whose parents were affiliated with the university, while the rest of the class was Caucasian-American. As a group they were bright, attractive, and well behaved. Both sets of students I observed struck me as being particularly confident, verbal and respectful of each other.

The students from this class that I talked with all reported having extensive collections of their own books at home, frequently purchasing books at a bookstore or having them purchased for them, and all read regularly. All the students I interviewed reported having public library cards, but several mentioned that they usually either checked out books from the school library or read books they or their friends owned. Only one boy said he didn't like to read. In addition, most of them reported reading as one of the activities their parents did with their leisure time. All the students I talked with had one or more computers at home that they reported was used by at least one of their parents regularly and that all of them reported using used at least occasionally.

The Teacher

Carl Roberts is an energetic, cheerful man near retirement age. He has been a teacher all his life. He mentions several times that he is financially secure enough so that he doesn't need to work, but that he continues because he loves it. He also makes a point to

mention that he has had several opportunities to go into administration but prefers the classroom. This enjoyment is evident in the way he talks about his work and in his interactions with the students. It is also part of what he believes teaching is all about. When asked how he would describe his "ideal teacher," the person he hopes and tries to be he identifies enthusiasm as an important quality as well as being someone that "kinda tries new things and kind of enjoys being with people and enjoys being with children.. ."

Observation of Carl as work reveals that he is also someone who is always busy, and always looking for new challenges. He values these qualities in his students also, commenting, " some of my busiest kids are the ones who do the greatest." He also values compassion and community, claiming these as goals he works to develop in his students. In spring he mentioned that he was pleased that his current class evidenced a strong sense of both these virtues, a situation he attributed at least partly to the experience of having a seriously handicapped student as part of their class: "We have, you know, Katherine in the classroom, our quadriplegic, and I have noticed a very different sense of being in my classroom this year because she's been with these kids since kindergarten. And I've noticed more of a sense of community."

He also prizes informality balanced with an underlying structure in the classroom, claiming as another quality of a good teacher "[t]hat they knew where they wanted to go, that had things planned out but that ran a very relaxed situation.

His interactions with the students are characterized by respect and good humor. He treats them almost as adults, discussing procedures, providing choices, and asking for opinions and suggestions. His authority lies below the surface, but is always present and almost never challenged.

He seems to have a very collaborative approach to his job, engaging in relationships with a number of people. He and other fifth grade teacher have coordinated their teaching so that Carl teaches the science to both classes, and Sherry teaches social studies to both. He also has a teaching intern from the nearby university, a practice he has engaged in for a number of years. He also frequently does other collaborative projects, a recent one involved both fifth grades with the teacher and students of a literature class at the district high school.

The Classroom in Action

The classroom in action is a pleasant, informal, respectful and mostly jovial place. Events of the day, which include frequent out-of-classroom activities, occur smoothly and with little teacher intervention unless students are noisy or unruly. The students change classes with the other fifth grade class for social studies, go to the gym, library, computer lab, and lunchroom with minimum fuss and supervision. Subsets of students leave for strings instruction, remedial reading (called HOTS) and other occasional activities with little discussion. Other adults are frequently in and out of the classroom for various reasons with little attention from the students or disruption of activities.

Instruction in the classroom mirrors the same smooth variability. Whole-group instruction alternates with small group activities or independent work time. Various types of instruction are frequently interspersed--a whole group literature discussion may be interrupted to allow for table-group talk on a specific subject or individual journal writing after with the whole group discussion may be resumed. Or independent math seatwork may be interrupted by a whole-group lesson about a problem which Carl noticed causing

difficulty for a number of students. Formal small group instruction, however, does not appear to be used; in my visits I never observed either Carl or the intern formally teaching to a small group of students. Informally, however, both of them were frequently seen to quietly engage a group of students who had come up to them to ask a question on a similar matter.

The classroom is a very verbal, articulate place. Although there are inevitably periods of silence which certain kinds of individual work is being done, a lot of sanctioned talking goes on most of the time in this class. While students are coming and going they chat among themselves and are only infrequently admonished if the talk is loud, or is accompanied by rowdy behavior. As students go about their business, preparing to leave the room, or coming in from another place, Carl will frequently be chatting with a subset of them about their recent activities, or school events, or personal interests, or current news events. He inquires about students lives--did you move into your new house yet, are you going to Korea this year again, are you busy getting ready for your mom's wedding? Often Carl's comments will be directed at a specific student, but in a public voice that includes everyone, and allows any to contribute to the conversation. In fact most of his informal, personal conversations with students are conducted in this public manner.

The classroom is also a very active place. In addition to the frequent movement in and out of the room for scheduled events, students move about a great deal. Although the table groups are clearly the students' bases of operations, they also move freely around the room to talk, consult, work together on projects, and to chat. Frequently, when part of the class is out the room, students were permitted, without discussion, to sit in an

empty seat during the ensuing lesson and work time. The reading corner is used without restraint during free times or informal working sessions, but students need permission to read there during assigned reading times. During free time it is used more for game playing than for reading, and in fact, it is used more for other activities than for reading—students usually read at their own desks. This active room is part of Carl's plan. He described some his guiding principles when thinking about his room: "ease of movement for them, ease of movement for me." He wants open spaces available so children can work on the floor, either individually or in groups. The key descriptive ideas that come through when he talks about his room are "comfortable and relaxed."

Carl's relationship with the students conveys a sense of collegiality. Although he is clearly in charge and does not hesitate to pull rank when needed, in general he tends to treat the students as colleagues. His talk with and to students is striking for its "adultness". This is partially accounted for by the fact that Carl has virtually no "teacher's voice." His language, vocabulary, and inflection are essentially the same for informal conversation with students, for formal instructional conversation, and for his professional interaction with adults. This tone is at all times casual but well-spoken, and is frequently laced with humor. The subject matter of his informal conversation with students tends to be the kinds of topics one would chat about with adults--family plans of students, personal activities, and discussion or explication technology uses, and of historical, scientific or cultural ideas. He engages in a lot of brief teasing and joking with the students in the course of all his conversation, including during instructional time. On one occasion when students were making suggestions for a writing topic list on the board, the girl who is doing the writing raised her hand. She had earlier been scolded for talking

too much and this time Carl said, laughing, "No that's why I have you up here--to keep you quiet." At another time, during a science class Carl said, " Ah, OK. Let's have a little individual accountability. Don't raise your hands. I'll call on you.. Ah, Nicole is playing 'Let's not make eye contact with the teacher, so he won't call on me.' So let's ask Nicole."

The students in turn are mostly respectful, often witty and playful. The students interact a great deal with the lively interchanges typical of this age group. When one student names the band 'N SYNC for the category of famous persons, Chloe, the scribe at the board, writes "n stink" and there is an appreciative response from a number of the students. On another occasion the class was playing 20 questions. It had been established that the answer was a man-made object. A student guessed 'Los Angeles." The student leader said, "No, that's not man-made." Carl interrupted with a laugh, " Excuse me, Los Angeles is not man-made? And God said, 'Let there be Los Angeles, and it was so?'" Everyone laughed. From the back of the class a girl said, "Let there be light, and---Los Angeles!" These injections of humor are enjoyed for a moment but the serious work goes on virtually without disruption. The students appear to treat each other well--there is almost no squabbling or arguing that needs to be contained by the teacher. Occasionally an attempt at teasing may go too far and a student may appeal to Carl for redress.

Lessons also frequently begin and end with casual, almost playful chat. But Carl also often uses these informal times to make connections between the lesson and the larger world. He may mention that the character in the book under discussion reminds him of an historical character, or ask how many of the students saw a movie or television program which relates to the topic or remind the students of some earlier work that they have done

which relates and briefly make and solicit comments about the connections. He may also discuss some topic of interest that is unrelated to the lesson. Carl also uses these transition times for quick math or thinking games such as 20 questions or a quick run of mental math. This kind of "sidebar" teaching occurs intermittently throughout the day in this classroom and contributes to making in a place where students are assumed to find learning, ideas, and events of the real world interesting and important.

Literature Vignette: Literature Use in the Classroom

Carl is seated in his director's chair at the front of the room as the students come into the room from the other fifth grade classroom where they have been having Social Studies. They take their seats in an orderly way, but they are chatting and laughing among themselves. "OK, people," he calls over the noise. As they settle down he asks them to take out their copies of *The Bridge to Terabithia* and turn to Chapter 10, "The Perfect Day." They have been assigned to read this chapter in which one of the main characters is told that his friend is dead. Carl asks the students for a show of hands if they think Leslie really died. Most of the students raise their hands. He cautions, "If you read ahead, please be courteous and don't say anything if you already know the answer." He asks the students who think she died, how they think this happened. There are a range of random responses such as "maybe she was sick" or "maybe she got hit by a car."

Although Kyle and Chrissie appear to be paging through their books searching for specific sections and a few other students are more desultorily browsing in the book, most students have their books lying closed on their desks during this discussion. As they continue to discuss what this message might mean and what might be coming next

in the story, Carl probes their responses with questions like, "What makes you think that? Or "Can you explain why you decided that?" He specifically draws their attention to the text, asking "What hints has the author given us that lead to this?" Eric remembers that the rope was mentioned previously. Carl reminds them that the author has been telling them about Leslie's effect on Jess.

Carl then draws their attention to the next chapter. "What is the chapter called?" The students pick up their books and turn to the page. The chapter is entitled, "No!" and Carl pauses while several students read it aloud. "'NO!'" he repeats. "What might that mean? What do we expect is going to happen here?" This last is rhetorical—he settles into his seat and begins reading the chapter aloud. The students seem to understand that they are to follow along in their books, as each picks up the book and appears to attend carefully to reading along. Intermittently Carl pauses at the end of a passage, says a student's name and that individual will take up the oral reading. After a page or so, Carl will say quietly "Thank you" and either begin to read again himself or mention another student's name. The students are consistently attentive and appear to be engaged in the story. In only one case does a student called on in this manner need to be helped to find his place.

When they have finished the chapter, the students are quite quiet. Carl talks a bit about how Jess refuses to accept Leslie's death. During this time, Kendall has his hand up, and from the back of the room, near his seat I hear him say, "Something like that happened to me" Carl does not appear to hear him, and Kendall repeats it several times in a quiet voice, waving his hand in the air. Finally Carl calls on him and Kendall says again, "Something like that happened to me." He goes on the say that when his grandma died he refused to accept it. "When my grandpa told me I kept saying 'No, she can't be

dead. I was just in the mode of 'No! No! it can't be true." Carl responds, "Yes, it's easy to be in that mode when we don't want it to be true."

Carl turns to the class and tells them they will now be writing in their literature journals. At the end of each chapter they have been writing journal entries as if they were one of the characters in the story writing in his or her diary, reflecting on events as they occur. There is flurry of distress—students talking to each other and Carl—he at first can't quite understand what it is about. As the talk gets more organized it turns out that a number of students are upset that they are being asked to write in their literature journals, which are public in nature and are frequently read aloud in class. They are asking instead whether they may write this assignment in their private journals, which they are not expected to share. Carl is clearly surprised by the emotion this has generated but instantly agrees. "Yes, you may write in your private journals if you prefer. I didn't realize you were so into it."

This is followed by another a flutter of distress about how they will continue writing; it turns out that they have nearly all, with Brandon the one exception, been writing as Leslie, the character who died. Carl asks who has some ideas about how they might proceed. Cara says, "We could write 'I am dead' like she is an angel looking down." Another student suggests that another character, Maybelle, could write in Leslie's journal for her. Carl leaves it to them to decide how to handle the difficulty and adds that if they feel it necessary they may change to a different character. As the students settle into their writing, Carl interrupts briefly from the library corner where he has been tidying up. He holds up a book entitled Dive, showing a scuba diver underwater between towering rock walls. "What should this remind us of?" he asks. Chloe say quickly, "Bridge to

Teribithia." Given the context, it is an obvious answer and Carl's face reflects amusement. "Why?" he asks. "Uh, because Leslie likes to swim?" she answers. Carl says, "Remember, she talked about scuba diving?" The students return to their writing.

Literature as Serious Pleasure.

A metaphor that effectively captures the meaning and function of literature in this classroom is that of literature as a serious pleasure. Unlike the 2 conceptions of literature we have seen thus far which valued literature primarily for the non-literary uses it could serve, literature here is regarded is valued primarily for its own sake *as literature*. It is treated as a specific school subject, a role that serves to emphasize it but which could also serve to make it academic. Rather, the overall impact of the way literature is experienced in this class tends toward shaping a purpose for literature that transcends this academic use, that emphasizes literature engagement as a pursuit deeply connected to pleasure, but also to the serious purposes of understanding others and one's own life. The overall metaphor of literature as serious pleasure is described through three supporting concepts, each of which captures a significant aspect of the meaning that literature engagement has in this classroom.

1) "Literature is the real subject matter": Giving literature a place in the curriculum.
2) "And I have only read 100 of them. I've still got gobs more to go.": Infusing a classroom with enthusiasm for literature.
3) Remembering *The Kid in the Red Jacket*: Envisioning literature as a part of life.

1. "Literature Is the Real Subject Matter": Giving Literature a Place in the Curriculum.

In this 5th grade classroom, literature has a substantial and official curricular role. This is based on the district curriculum and supported by the ethos of the school. On the schedule for this classroom 6 hours a week are blocked out for language arts. But for language arts in this classroom, as Carl says, "literature is the real subject matter." Literature—reading and talking about books—and writing are the major components of the language arts curriculum and the writing component is itself frequently related to the literature. Furthermore, the schedule also includes a 15 minute period each day during which Carl or the intern read to the students, and two half-hour periods a week during which the students read silently. Altogether means that each week students in this class are spending a substantial amount of time reading, writing, talking and thinking about literature.

Carl reports that literature has always been important in his teaching: "I've used probably literature my whole time of teaching. I love it." As a result of his personal interest he is enthusiastic about making sure that students grow to appreciate literature. He says, "I want the kids to love books." But his ideas about what that means include some specific expectations. He wants his students to "have a whole different experience," from reading, to "learn new things," and to enjoy "thinking about [books]." But the phrase that he repeats most is, "I want them to experience the books."

This focus on literature as important is supported by the district curriculum and by the culture of the school. In spite of his strong interest, he claims not to have played a leadership role in literature promotion in his school, primarily because it hasn't been needed, citing a history of "really strong reading or language arts consultants" in the

district. Additionally, he feels that there is a fairly strong literature interest in general in the building, stating, ". . and we all, I think everybody in the school sits down and reads to the kids every day just for the love of it." There are also more organized literature interactions across the grades, a book buddy program that gets students reading with partners from other grades. All in all, Carl thinks literature in his building is "pretty big."

To some extent Carl sees this literature emphasis as a luxury available to him and his students because of his grade level. He has been teaching 5th grade for about 26 years and is strongly aware of the time and energy that goes into reading instruction in the lower grades. Although he believes that literature is important in the lower grades in this school, he feels that the attention to literature is much stronger in the higher grades because the lower grades have a greater burden teaching basic reading skills. He believes the K-3 teachers "are pretty basal oriented" because of this. Even in 4th grade, though, he feels there is still a distinct pressure for developing basic reading skills that he mostly escapes. He says, " I mean, they have to worry more about teaching more reading as we think of teaching reading then we do because most of the time, by the time we get them, they're pretty decent." He feels that he reaps the benefits of this because his students mostly have their reading skills fairly well honed and he can concentrate on the part he loves best, reading and talking about books. And because of the earlier introduction to literature, he reports, students come to him with a good start in literature so that he's "able to at least kind of pick up and go through it a lot deeper." He believes the students also share that delight-- that after what he sees as the hard work of learning to read they can concentrate on the literature itself: "You know, but it's, they start in 4th

grade and I think sometimes the kids say is this for real? You know, are we allowed to do this?"

Literature is a very social event as experienced as part of the curriculum in this classroom. A common pattern during literature time alternates between Carl reading to the students and the students taking turns reading some passages aloud, interspersed with whole group discussion, student discussion within table groups, and students writing responses to an issue or book passage in their journals. The sessions often proceed informally. In most cases the chapter or section which is the focus of the lesson will have been assigned to be read by the students previously. The class will then re-read parts orally; Carl will stop the reading periodically to raise questions—"Why do you think he reacted that way?" "What do you think the school year will be like for them?" "Where did you hear about that idea before?" These questions will invariably provoke a discussion among his very verbal students. The table group discussions are another site for interaction. Frequently when Carl stops to ask a question he will say, "OK, I want you to take a few minutes and talk about this with your table group." After a 3-5 minute time lapse he will may call them together to report on their discussion, or to go on with the whole class reading discussion section, or perhaps to write their response to the question or the discussion in their journals.

Writing is a also significant part of the literature response which occurs in this classroom. Students have a journal associated with each book the class is doing together in which they are frequently asked to write, sometimes briefly, sometimes more extensively, during literature time. They may be asked to answer a question from character's point of view, summarize a chapter, or write a prediction. In addition, the

weekly writing class is frequently related to the literature being studied. On the class website a student describes this time: "Every Monday, in writing, we write regarding a book we are reading or we write a play to stretch our imaginations."

The focus of literature engagement during language arts instruction is strongly aesthetic. He calls on students to respond emotionally to the story, frequently asking them to talk or write about how they might feel in a certain character's position, or taking a stance on an issue the story is dealing with. He offers quick asides to draw them more closely into the book, as in this quick exchange using a comparison with their classroom to connect them to the way the classroom room in the story must feel to the characters:

> How many kids are in the class? [Students answer "30"]
>
> How many do we have?" ["19"]
>
> Think of an extra 11 or 12 desks in our classroom. And this is a pretty big classroom.

He also works to draw students' attention to the author's craft, " how an author writes a book and maybe what they have in mind." He reports that attention to the language arts curriculum can mostly be achieved without losing touch with the literature itself. Although Carl says, "We have to get all the stuff in, but I can usually do that in the process of talking about the literature." These points are often made by drawing intertextual connections. In one discussion, trying to help them get a clearer feeling for a character, as well as to clarify a work meaning he asked, "Can you think of someone who might speak a little 'prissily?'" He asked them to think about some of the other books they had read and find a character that might fit this description, and students responded with a discussion about different characters in previously read books that might qualify.

He gives examples of trying to balance out the necessary strategic readings required by more technical language arts issues with the efferent stance he encourages when he uses the literature for content purposes in social studies or science with continued attention to the literature as an aesthetic experience: "We go through and we talk about sentence structure. The cat jumped and then I'll say, hey, didn't this author put this in a beautiful way and show them what they can do with words." I observed and example of this interweaving in a discussion about *The Bridge From Terabithia.* Carl interrupted his oral reading of the book to notice an exceptional passage, using it to both draw students' attention to the beauty and power of the language and accomplishing a very functional task—working on the skills students need to score well on the state standardized test:

> Look what the author did there. She could have said, 'The class was surprised.' [Instead] she paints a picture for us. Remember we talked about the [state standardized test] and about how to add descriptive detail?"

Although the normal pattern of literature engagement in this classroom is characterized by scheduled class sessions reading, talking and writing about a piece of literature, there are also periodic special events featuring literature which spill over into other parts of the school days. One of these that occurred during the research period was a collaborative British Literature project which Carl and the other 5th grade teacher organized with a literature teacher at the high school. The 5th grade students were organized into groups which read 10 different fantasy selections by British authors. Books included were *The Red Wall*, *The Hobbit*, several Harry Potter books and three book of the Narnia series. One of the activities related to this unit was an email exchange between the high school students and the fifth graders, discussing the readings. Two culminating activities had students in each group creating a large wall mural expressing

their conception of their book, and presenting short plays written, acted and directed by the students in each group capturing a significant or representative aspect of the story.

Another such project was a whole-school literature fair in which students made varying kinds of presentations for a parent audience representing books they had chosen and read. Carl expected all his students to participate in the well-attended evening event, and his student's presentations included plays, readings, and a number of PowerPoint and Hyperstudio presentations.

In addition to the role of literature as literature in the curriculum, there are also occasions when literature is included in other subject areas, examples of more clearly efferent curricular uses of literature as content resource. Carl reports that he sometimes uses literature as a resource for content instruction in science and social studies, citing both nonfiction and fiction examples, books on solar energy, biographies of Paul Revere and Columbus, and *The Devil's Arithmetic*. When asked the ways he uses the books with social studies he describes an approach that combines efferent and aesthetic uses, saying he uses the books "mainly for literature" but also for "content", for "to show what it would be like to have lived during that time, a role for literature that his also feels is important. Thus, in giving literature an important and official place in the learning that goes on in this classroom Carl says he hopes that students will learn to value literature as a source of personal meaning, creativity and as a way to learn about the world and experience life.

2. "And I Have Only Read 100 of Them. I've Still Got Gobs More to Go:" Infusing a Classroom with Enthusiasm for Literature.

Although the impact of this substantial amount of time spent on literature cannot really be assessed, there is a climate of enthusiasm for literature in the classroom. An important part of this is that Carl's goals regarding literature for his students are not limited to meeting curriculum standards or getting impressive scores on standardized testing, important though these may be. Rather, an important part of what is trying to accomplish had to do with teaching students about the pleasure and satisfaction that literature can bring, goals much more convincing to students because they are allied to immediate, personal experiences. Carl says he want to "make it something that they personally have gotten out of the book. I want them to evaluate books and say hey, I liked this book because..."

Carl's own enthusiasm, of course, is an important part of this. He reports that literature is a big part of his life and always has been. He says, "Literature for the whole time has been something that I love. I used to read before I had kids probably a book a night." He brings this love of reading into the classroom in a number of ways beyond the curricular role of literature: "And I would come in very enthusiastic, oh, I read this book. You have to read this book. You know, and just used it constantly." During silent reading, which he spends reading his own choices of literature, students will sometimes comment that they have seen their parents reading the same book. This talk about books has even led to his lending his books to parents on occasion. He sees that these interactions have an impact on the students also, encouraging them to engage in dialogue about their own outside reading. He reports that "the kids see it and the kids will bring it in and they'll say hey, I started reading such and such a book. . . . And yeah, so they see

me coming saying, oh, I read the neatest book this weekend. So... I think yeah [it spills over].

Carl also recognizes that his task is made easier because many of his students bring an interest in literature from home. Many of his students have parents who are themselves avid readers. He reports the support and interest parents evidence in their students' reading, and in their education in general. It was a group of parents that organized the literature fair described above, and a large group of parents who came out in the evening to enjoy it. This influence is apparent in talking with students in this class. Many of the students comfortably discuss the kinds of reading they see their parents do, and family reading habits feed into the students' own reading. One student, Cloe, reported that her sister kept her supplied with more books than she could read: "she hands me down a whole bunch of books she's done with that I probably would like. And I have only read 100 of them. I've still got gobs more to go." Her enthusiasm for reading extended to school where she reported reading whenever she had the chance and preferring to finds friends who would read the same books "so I can talk to them about it." Many students reported their parents bought them books, took them to the bookstore and the public library and themselves read for pleasure, reinforcing the value of literature that Carl works to encourage.

The classroom atmosphere creates a favorable climate for such exchanges to occur. It is a very verbal, engaged atmosphere, an atmosphere that encourages both learning and talk about learning. It is an atmosphere Carl deliberately works to create. The emphasis he places on a relaxed and comfortable atmosphere in his classroom is important in this regard.

The respectful banter and spontaneous fun which is part of the culture of this classroom also infuses the talk about literature. On one occasion, while recapping a previous discussion of *The Bridge to Terabithia* Carl asked, "OK, who was the fastest kid in the class?" When the students answered that it was Leslie, a character in the story, he pretended disbelief, "But she's a girl. How can she be the fastest in the class?" There was an immediate clamor of outrage from the girls in the class. Carl laughed, but the response was stronger than he expected and he said, "You do know that I was kidding about that. I just wanted to make sure." Despite the frequently insouciant atmosphere, it is expected that time in the classroom will be spent usefully—during one lull in class activity several girls were playing a game in the reading corner. Carl approached them and said, "Excuse me ladies, but could you tell me the educational value of that game? I'd like you to find something more useful to do." But the combination of informal respect, repartee and focus on serious learning creates a comfortable atmosphere of high expectations. In this climate, reading and talk about enjoying books is very much at home.

Another of the ways in which Carl injects enthusiasm for literature into the classroom atmosphere is in his interactions with his interns. He reported that a few years ago he had been talking with his intern about literature all year and had successfully "got him hooked." Carl described his dismay that the young man had "not even read the Narnia series and had read none of these things." Carl reported that he spent from $25 to $50 dollars each book order that year, buying the intern books for his own library and getting him hooked on reading children's books. They still communicate occasionally and Carl

said with delight, "He calls me on the phone now—Oh when was it? This summer. And he says, 'Hey, I loved Harry Potter."

He had a similar experience the next year, helping that year's intern get interested in literature, an experience he again enjoyed, and which has a behind-the-scenes impact on the classroom. He tries to get students interested in some of the same ways, such as reading just enough of a book to get the class intrigued, then making sure there are some copies in the room for students who got hooked.

One of the extra activities that Carl saw creating enthusiasm among the students was the email exchange with the high school students in the British Literature unit. When he read the messages he was struck by the level of engagement and excitement they indicated. He saw his students begging their discussion partners to tell them what happened next, or asking why the partner thought a character acted in a certain way, or empathizing with a character's troubles. This evidence of engagement supports his commitment to literature project such as this.

Books are just *around* in this classroom. Students frequently are seen reading between subject matters, when they have finished their work, while they are waiting for a transition—to go to music or for the lunch bell to ring. When a table group finishes an assignment early two students begin chatting, two other pick up books and begin to read. Nicole tells me in a conversation: "I read like if we're changing from one subject to another and everybody's being really noisy, I just take out a book and say I'm gonna read. I just want to." Some students read when they shouldn't. One day while most students are working on completing a social studies project, Carl scolds Laura, who he says, "has been sitting there reading for two days." Students are comfortable expressing

their own opinions about their reading. In one discussion about character development Chrissi changed the subject by injecting a comment on style, "I have something to say. This author starts a lot of sentences with 'and' and 'but'." Students also have their own conversations about books. Carl overhears them reporting on plots, or telling each other, "You have to read this book!" What is interesting to him is that these kinds of behaviors are not limited to a small set of bookworms, although the class includes a couple of those too, but rather that most of the students show evidence of an interest in literature in this manner at least part of the time. Carl identifies several students that he says need to be "forced" to read; the rest of the class are, at least part of the time, enthusiastic, independent readers.

3. Remembering *The Kid in the Red Jacket*: Envisioning Literature as a Part of Life.

One of the most powerful characteristics of the literature engagement in this classroom is the strength of its representation, not as a school task, despite the legitimate references to [State standardized test]tests and sentence structure, but as an endeavor valuable to a thoughtful and rich life, both for fifth graders and for adults. This is a primary goal in Carl's decisions about how to use literature. Based on the important role that literature has had in his life, he believes a connection to and an understanding of literature can help his students' lives.

One of these effects, he says, is that he thinks literature experiences can help his students " be more in tune to life." He found that students' readings of *The Red Wall* caused an episode of identification and empathy which he found valuable when one of the mice in the book was crushed under a haywagon. The resulting "deeper discussion"

suggested to him that the students had made some strong human connections that enriched their emotional understanding.

This stance is consistent with Carl's perspective on his role as teacher. He says that teaching goes far beyond communicating knowledge but is about ". . seeing people develop as people not just as learners." He wants this conception of helping students "develop as people" to come through in all the subject matters. Social studies is one example of his desire to have what they learn in school really help students learn about, connect with, and care about people, issues, and life in general. When he talks about his desires for his students' learning of history he is passionate:

> I think that they should get a thrill for seeing . . [t]hat's there's real human beings that happened to be living at that time and that they helped build our society . . . are and they helped hurt the society.. How their thought process worked, what happened to them because of what they did. And just get an overall feel for the country and just the love of living.

He believes that literature is an especially powerful tool for this and uses historical fiction as a counterpart to his students' social studies education.

Another of the ways that Carl makes connections between life and literature is by using details of the students' lives to help them connect with the story. The brief episode, mentioned earlier, in which he calls their attention to the probably crowded feel of the classroom in *The Bridge to Terabithia*, is one such example. Another, similar occasion, occurred in a reading of *The View from the Cherry Tree*. Before the class started the section he worked to create an emotional connections between the personal lives of a number of students and the household chaos the main character was experiencing by asking Anya about the situation at her house before her mother's recent wedding, by referring to Ian's family's preparations for a trip to South Africa, and Chrissie's family's

upcoming move. He sums up, "Well, Rob [the character in the story] is feeling like he could do anything and no one would notice."

Another of the ways that he uses literature to connect to students' lives is through the book choices he makes for the "teacher-read" time in the schedule: "I choose books that I read to the children outside of the trade books that we use, that I read to them for purposes." One of these purposes is to use literature to help them thing about human relationships. He gives the example of using Blubber to talk to his students about how it feels when someone is mean to them, and how that meanness can get passed along. He then uses those discussions to build on in everyday classroom life, explaining, "Something happens outside and I'll say something to them, do you remember that book that we read? And they say oh, yeah, and so we have discussions going from there." On these occasions, rather than helping them think about their lives to help them connect to the book he is trying to help them use the book to think their lives, and important contribution literature can make to life in his eyes.

The occasion described in the vignette above, illustrates a time when a students made a powerful emotional connection to his own life. When Kendall heard the title of the chapter, "No!" indicating the character's resistance to the death of his friend, Kendall was powerfully reminded of his own grief. Carl says he is gratified when literature speaks to children's lives and states that his hope is that students will eventually make these connections spontaneously, as they go about their lives. And although he says that maybe, "[t]hat's pie in the sky," in actuality he does see it happen sometimes, although he feels it takes time, and those connections don't usually happen until the end of the year. He reported an experience the previous year in which a new student joined the

class and the other students were reminded of a similar experience in *The Kid with the Red Jacket*, a book the class had read together earlier in the year. He said, "I said to some of them one day near to the end of the year, 'You guys are really doing a nice job [welcoming the new student]. Why are you, you know, being so nice? Just tell me because, you know, I'm curious.' He was surprised and delighted when they said, "Oh, we remembered what the kid in the red jacket went through."

Summary : Literature as Serious Pleasure

Literature in this classroom is both the focus of a strong curricular program and is infused into the atmosphere of the classroom. The way that literature is treated here underscores its intrinsic power and interest—literature treated as literature. This attention on literature as pleasure emphasizes an aesthetic stance, although it can also take a more efferent focus to help students learn lessons about life. Literature is also used to some extent in more clearly efferent roles, in some specific language arts instruction and as a content resource, although Carl indicates a concern, even in such use, to keep the focus on 'the literature aspects." The factors which contribute to this kind of literature usage are the teacher's strong personal and professional interest in literature, a supportive district and school climate, and family attitudes which bolster literature engagement. The relaxed but intellectually challenging classroom atmosphere provides a context which nurtures the expression of this interest. Carl's goals for literature use include encouraging students to understand and enjoy literature, to use it to learn about life in a broad sense, and to think about their own lives.

Technology Use in the Classroom

Technology Vignette 1: Computer Lab

It's 2:45 on Tuesday afternoon and time to go to the weekly Computer Lab. Carl has written on the board:

Lab

2 Type to Learn
10 minutes email
Try to type something in Word 97 for British lit
Social studies reports

Carl addresses the class, "OK when we go to lab, you will be so courteous in the hallways, won't you?" They file quietly out of the room and down to the computer lab. Students quickly take seats at the machines. The computers are arranged on zig-zag shaped tables so that each student is seated beside another computer rather than another student, an arrangement clearly designed to cut down on interaction. Linda says, "I can't get into my school email." Carl asks, "How many have never gotten in?" About 7 hands go up. He responds, "I'll take over your passwords and we'll see what we can do." He comes over to me and talks about the amount of difficulty he has had with the district server and the frustration he feels about students not being able to do the work they need to do.

Several students come over to where Carl is standing. He says, with an edge of annoyance, "I haven't asked anybody to—" he interrupts himself "go over, quietly sit down at your machine and get to work." He then addresses the whole class, "What if you have a problem with your machine, what do you do?" Travis says, "You raise your hand." Carl says, "Yes! And you don't talk to your neighbor." After this reprimand, most of the student settle down to work. Jon raises his hand to tell Carl he can't log on.

Carl gives patient instructions, "You have to type your username, the I gave you. No, 'dot-stu'." But Carl also is having trouble and he works with Sam for 15 minutes trying to get him logged on, his work occasionally interrupted by questions from the busily working students. Finally Carl sends Sam back to the classroom to work on a computer there. Carl works with several different students who are having trouble with passwords or with finding their previous work on the district server. Other students have questions about changing fonts, or want to report on their Type-To-Learn progress. He interrupts the quiet students to remind them not to look at their keyboards. "We'll have to start you at the beginning if you keep looking at your fingers." After a half hour of this work, there students begin to show signs of restlessness, talking, moving to each others' computers. "OK people, just about 5 minutes left. Stay with it; you're doing great." A few minutes later he announces that it is time to return to class. There is a flurry of talk, activity and questions as student try to save their work and log off their computers. They line up at the door and walk quietly back to the classroom.

Technology Vignette 2: In the Classroom

About half of the class is gone to orchestra. From his high stool at the front of the room Carl announces to the remaining students, "Do I have something special for you sweet ones! Take out a sheet of paper." There is a chorus of half-hearted groans which he acknowledges with a mischievous smile. "All right. Someone has given you about a million dollars. You may not put it all in the stock market. You must spend it, but not all of it in one spot. What will you do with it?" There are a number of suggestions. Anya wants to bring her grandmothers and her cousins from South Africa. Chloe wants to go

to Paris but doesn't know how much it would cost. Carl says, "Well maybe we can extend this thing until tomorrow and you can look it up on the Internet." As the students talk among themselves, complaining about not knowing how much things cost, Carl heads for the back of the room, sits down at his desk and turns to his computer. The students continue to make joking and serious comments about what they might use the money for, but repeatedly express frustration that they don't know how much anything costs. After ignoring them for a short time, Carl addresses the class: "Kids, where do you think you could find out about how much things cost?" There are several suggestions—the Internet, the newspaper, catalogues. Carl says, "Michael write those ideas on the board." As he gets up, Chloe gets up too and heads for the board. Carl says, "Asseyez-vous, s'il vous plait" and she returns to her seat. Chrissie announces, "If I had a million dollars I would pay someone to come here for me and I would go home." Carl responds, "And what would you do at home?" "Play Nintendo," is her answer. Carl, busy with his computer, says to the girls who were asking about travel, "OK I'm looking up the airlines on the Internet now." A few minutes later, while a group of students wait around his desk and chat, he says, "I'm not getting through on this. I guess I'll go in another way." Anya announces that she doesn't have a computer at home. Carl makes a phone call, presumably to check out the computer problem, because during the conversation he says, "I'm using Netscape, do you want me to use Internet Explorer?" He continues working with the computer and finally announces, "I think I'm getting in now." As Carl waits for the web pages to load he picks up a laptop from his desk, turns to the students standing around his desk and asks, "Do you know who dropped this? The hinge is broken. We need to be really careful with this. But I have a feeling this was

really an accident. But it still works, so that's good." Anya asks, "How much do computers cost? Carl responds, "Well the one across the hall cost $3,400 but that is a good, good machine." Mike has picked up a digital camera from Carl's desk and is looking it over. He asks, "How do you do this?" Carl, looking first skeptical, then surprised says, "Mike you don't really know how to use it?" With a quick change of tone he says reassuringly, "That's OK. If you don't know we'll teach you." Mr. O'Neill, the student intern has been talking at his desk across the room with a group of students who are trying to understand the concept of one million dollars. Anya takes the camera from Mike and the two go over to Mr. O'Neill's desk, giggling as they take a picture of him. Across the room the two men discuss whether they can get a quote from Travelocity without signing up for an account. Carl interjects, "Ah, Chloe, you wanted airline prices too, didn't you. I think I've got it!"

A girl comes from the other fifth grade across the hall and asks, "Can someone come and take a digital picture of us for Social Studies?" Mr. O'Neill dispatches Nicole to do it but a few minutes later both girls are back—"Mr. O'Neill, can we take more than one, her head is floating?" He responds that they may take more, but they'll only print one. As Nicole returns with the camera Carl asks, "How have you usually been getting your pictures off the disk? In Word?" "No," she responds, "in PowerPoint." Carl tells her to bring the camera over and he'll show her how. "See, go to insert, go to picture . . ." he runs through the process with her. "Then you print."

As the other students begin to return from their specials, Carl holds up the laptop and addresses one of the returning boys, Brendon. "Did Miss Conlon tell you how this happened? I'm not even suggesting you did it." Brendon shakes his head.

"OK people," Carl addresses the returned students, "Strings, Did you have fun? We did too except someone gave us something and have to get rid of it—which could be a problem if we have to use the Internet. All right, let's get to our book now. "

Technology as Exploration

A metaphor which effectively captures the meaning and function of technology in Carl's fifth grade classroom is that of technology as exploration. Technology here provides ways to accomplish a range of necessary tasks and provides a range of options for enriching learning and life within the classroom and beyond. The orientation toward technology provides a context in which technology affordances change as needs change, as interests change, as abilities develop, as technology changes. It also provides a meta-perspective which encourages attention to the role that technology plays in learning and life. This larger metaphor can be effectively explicated using the following three sub-metaphors, each of which support the understanding of one aspect of the role of technology as exploration in this classroom.

Technology as Exploration.

1) "Technology is not a subject matter": Weaving technology into the fabric of classroom life.

2) Technology as evolving repertoire: Using classroom technologies to explore expanding choices for teaching and learning.

3) "Learning a life skill": Envisioning classroom technology use as a pattern for life-long technology use.

1. Technology Is Not a Subject Matter:" Weaving Technology into the Fabric of Classroom Life.

Technology has an interesting, elusive presence in this classroom. There is probably no aspect of the classroom, in regard to time, space, or curricular focus from which technology is excluded entirely. Yet, although it is important, it is not central; although it is prominent, it is almost never the focus of concentrated instructional attention, although it may frequently be the focus of informal attention either as a result of not functioning properly or by virtue of providing a new and exciting application. As Carl says emphatically, "Technology is not a subject matter." Rather, it is woven, somewhat unevenly, into the ongoing classroom activities as a way of accomplishing work that needs doing by either students or teacher or as a way of enriching a moment or an experience.

Technology has a prominent presence in this classroom primarily because Carl has, as he says, "embraced it." Early on he became "a cheerleader for technology " in his school, a role that continues to the present, he reports. He says his room is a center for technology activities: "[M]y room is the room that if there is a problem, the technology people come into it. They use it as kind of a guinea pig type room." This role is visible to the observer. School residents-- children and adult alike--make frequent stops in Carl's room, to borrow a piece of technology, to ask a question, to bring something in that they can't make work. He has also been involved in working with an after-school computer clubhouse in the school as part of a project administered through the nearby university.

This enthusiasm for technology is visibly an integral part of the daily functioning of this classroom. A particular two-hour observation session resulted in observation of the following technology-related activities: Dan, the intern, showed a group of students the

new screen saver he had installed—a photograph of the students at work. Carl helped a girl to transfer a picture from one disk to another for her mother. A math assignment prompted a discussion of airfares to South Africa, a question Carl went to the Internet to resolve. A student worked on typing a story for language arts; another student worked at finishing up a PowerPoint book report. While pacing the room conducting a class science discussion Carl printed out and handed to me without comment a humorous digital picture taken of a student on a class field trip. The principal came in to tell Carl she had good news for him about the budget, news related to a new computer he had requested. During a work session a student came in from another class to ask Carl to come and take a digital photograph of a presentation that was going on—a task he dispatched a student to do.

Despite Carl's strong interest in technology, the examples above illustrate that in no way is it only, or even primarily, a teacher activity in this classroom. Consonant with the over-all tenor of the classroom, students take very independent roles with technology use. When the class went on a special Civil War reenactment field trip Carl took the digital camera along to record some of their experiences. He laughed when he told me that "the kids, just took it from me and took most of the pictures though." Many of his students are competent and confident technology users. When plays created by the students were being videotaped, a student ran one of the two cameras. This boy's right to control that camera was challenged by a girl in the class who wanted equal time: "Hey can I be camera person too?" These example also indicate another characteristic of technology use in this class—that it is also, frequently, an optional, student-initiated activity.

There are a limited set of activities that each student must do with the computer—all students go to computer lab once a week where they spend time practicing keyboarding skills with Type to Learn, and learn basic research skills using SIRS, various reference materials, and search engines. On other occasions they may use the time to type up assignments. In the early days of computer usage this lab time was used to teach students particular programs, such as Word or PowerPoint. Now students come in knowing the programs, or if they don't, a fellow student will quickly show them in the course of working on a project. They all also have some required computer-based work. Carl says all the students are expected to use the Internet to research projects and that he frequently requires assignments to be done in a word processing program. Beyond those requirements, the technology in the classroom is there as an option, as a possibility; there are usually on-going technology activities that provide impetus and ideas. Carl, the interns and or technology savvy students provide models for other students to emulate.

The classroom, both physically and in terms of its atmosphere, supports this informal ebb and flow of technology activities. As a physical space the classroom has facilities for both independent and collaborative technology use. The computer bay, a workspace extruding from the corner of the classroom, has a counter all along one side, which holds the scanner and other equipment and is available for project use. The several stand-alone computers placed around the room are surrounded by space for students to gather and by ample floor space to spread out a group of children and their work. The classroom climate, described at some length in the section on literature above, also is conducive to independent, student initiated and group projects. The informal interactions, the relaxed but business-like schedule permit students to be working on a variety of different tasks

without interfering with or distracting each other. It also enables a mostly smooth management of available computer time. Carl says of himself, " I am not the kind that if we are doing math, and somebody needs to use the computer to do language arts or to write a story and the computer's available, fine, then you do the math at another time." He also praises his students abilities to handle this kind of atmosphere, "[M]ost of the time, the kids get themselves . . . they set up a schedule for themselves."

This independent, free-form kind of technology use both relies on and encourages independent student activities. This can create management concerns. Carl reports that the district network has a very powerful firewall and so he has no hesitation having students access the Internet on their own. He confesses however, that he would like to have software to enable him to access each screen on his own computer to keep an eye on what is going on. For a brief period of time he permitted students to access their email in class, but put a stop to it because he felt it was not an appropriate use of classroom time. He also had students trying to use Instant Messenger and also prohibited that. When two girls came to him during a free time and asked if they could use it, he said, "Instant Messenger isn't something I want you to use." They asked why and he answered, "Because I don't have enough control over it."

The facility with technology exhibited by so many of the students, while at least in part a product of the classroom activities, is supported by the home lives of many of the students. Carl reports that only one of his students the first year I was there, and none of them the second, had no computers at home. Conversation with students reveals that many of them have family members who are active technology users. Nicole noted that her mother fixed computers as a part-time job; Kyle reported that his father was a

computer programmer. Many of the others described extensive informal personal uses of computers by family members—mothers hooked on computer games, or searching the Internet for recipes, a brother who "designs stuff on the computer," family members who use email extensively, or who spend leisure time surfing the Internet. The students themselves described home computer use that in most cases is limited to one or two applications they most commonly engage in, among them game playing, emailing, creating greeting cards, and designing web pages.

As part of his interest in making technology part of the ongoing life of the classroom, Carl would like the computers themselves to be more integrated into the physical space. In frustration at having to wait for a computer one day a student said, "We should each have one at our desk." Carl protested that there would be no room for other work if there were a computer for each student, but in fact reports that he would like students to have easier physical access. He suggested that an ideal would be to have the computers he now has in the computer bay distributed across the room, perhaps one for each table group, so the students had freer access. He would, however, in a perfect world, have both, saying that ideally his classroom would include both the integrated computers and a mini-lab available as a separate quiet work space

2. Technology as Evolving Repertoire: Using Classroom Technologies to Explore Expanding Choices for Teaching and Learning

It is impossible to spend much time either observing in this classroom or talking with Carl without noticing that the technology use here has been and continues to be in a process of continual change and evolution. This began with his initial resistance to computers in the early days of the promotion of computers in classrooms. He reports that

he " was one of these people who were sure that no stupid computer was gonna be able to replace a teacher. And I kind of fought it." The initial technology impetus for Carl came from the district's efforts to join the nascent movement toward technology in education. Initially he remained unconvinced, reporting, "They brought up this fact that hey, we could use these computers and so I thought, yeah, right." However, he decided, "I had to give it a try and so I thought, okay, I'll try this." To his surprise, he immediately began to become interested, reporting, "I've always liked to type and so I realized I could use the keyboard, so I started using it for my own typing and my own personal experiences."

Carl describes his early understandings of educational technology as focusing on teacher uses: "So then I could see that and it was mainly for me however and for teachers." Then, as computers for students became available in his school he began to think about student uses: "And then I could see some of the value, but back then, the values that we saw were just for multiplication and drill and practice. . .and typing." Gradually he began to see different and more interesting uses—a result of changes in himself and his teaching context as well as in the technology itself. His move to the new Chappell Creek School was one of these significant changes. Every classroom had a computer "but they weren't hooked up and nobody knew how to use them." One day, wanting to get a project typed up for a parent open house, he just dug in, called the director of technology to help and "spent just about an entire day trying to hook my computer up." That was a turning point for him. He says, "From then . . .I just embraced it."

This new school with its large computer lab also increased the possibilities, and his computer use increased, his excitement did also. He says, "I could see how it was

helping me, I could see how it was helping the kids. And then as the Internet came along, I was able to more and more go into it." It also helped that the principal in the new school was "was just totally supportive of the whole thing." That administrator has moved on but Carl reports the current principal is also "very supportive of [technology]." Carl describes this is an important contributing factor to the role of technology in this school, believing that, "the building administrator makes a big difference."

Carl reports that early on he took a leadership role in developing the interest in technology within the school, describing himself as "kinda like the cheerleader for technology." He used little experiences to try to connect other teachers with technology—sending teachers an email with a picture he had taken of them, creating PowerPoint presentations for school events. He reports the effects were gradual, a few teachers at a time would come to ask for advice or help. Over time he believes he had a large impact, however: "I really think, and I'm not trying to be smart or proud about this, but that, that would be probably one of my greatest contribution to the school."

A natural aspect of this evolutionary progression was the process of trial and error. There were applications that he was enthusiastic about which later seemed less important. At one point he made a big effort to get teachers to create class web sites, instigating in-service training sessions. He was successful to the extent that at one point, he reports, nearly all the teachers in the school made them. Then he began to rethink this as a goal. He reported, "And all of a sudden, I'm thinking, you know, these things take an awful lot of time and as teachers, I'm not sure we have time to keep up a web site and everything else. So not a whole lot of us do them anymore."

Part of this trial and error learning involved his expectations and the patterns of interaction in his classroom. As he became interested in technology use in the classroom he became aware of a mismatch between his accustomed style and the classroom climate conducive to technology use.

He felt he had to be willing to develop a more flexible and collaborative orientation with colleagues and students. He reports that learning to adapt his style to using technology forced him to "be a little bit more... open with myself." He had to accept that he didn't have to "know everything." He says that previous to this he felt in order to incorporate something in his teaching he had to know how to accomplish it perfectly. He believes using technology forced him to "learn to say, you know, I really don't know. Can we work on this together?"

The motivator, the impetus which drove and continues to drive Carl's evolving sense of the capacities of technology is the excitement of exploration and discovery. For Carl, part of this was the realization of the active, independent role available to students in technology use. As he began to use technologies he thought were interesting he began to think, "I could see it helping them and then I started doing presentations using Power Point for my kids and I thought, you know, they can try these." Students, then, also become part of the evolving process of technology use. Their participation, like his, was fueled by the interest and excitement generated by the necessary exploration. At first he felt the greatest contribution the technology made was in motivation. The liked using the computer, regardless of what they were using it for, some of which he describes as "silly little games and drill and practice". But as technology advanced, Carl began to see more

benefits for student learning and he was amazed by how quickly they were able to learn new uses.

In his work with 5th grade students, Carl also sees technology use evolving in line with individual students' abilities and what he calls "readiness." He believes some students are not ready to engage in some sorts of applications for reasons that have to do with maturity level, ability to focus, and reading ability. So he sees students develop and change in their capacities to be independent technology users and in the kinds of technology uses they are drawn to and feel comfortable with.

Carl sees technology use itself contribute to the process of growth and change. In some cases he feels that just learning the basic technology skills, can, in itself, help students become confident and independent. He saw students teaching their parents applications like PowerPoint. He also saw them stretch the middle school teachers experiences by the skills they took with them. He reports that when three of his students turned in PowerPoint book reports at the beginning of 6th grade, the teachers called him and said, "Okay, Carl, what do I do now?"

Carl also believes some kinds of technology uses help students develop new ways to engage with, think about and see the world—helping them to "visualize differently." He reports in observing students who do a report both in a traditional paper format and in a hypermedia format, that using the technology helps them to learn in a different way, what he calls, helping them learn to think "more visually." He also feels it often increases their sense of engagement. He believes, "Those that did the PowerPoint are children that probably learned more, took more of a part in it."

Carl reports that there are also hindrances to the over-all process of developing technology engagement with his students. One of these is the increasing amounts of time demanded by the rising pressures for standardized testing. The state assessment test, he believes, has particularly damaging effects for the kinds of technology use he values. He says he sees the state standardized test "pushing technology and pushing integration way back into the corners in that you don't have the time to be creative, you don't have the time to integrate everything because if you don't get a good [State standardized test] score..." He feels the tests encourage inflexibility by making teachers too frightened about scores to be creative.

Another of these hindrances to technology use for Carl is technological trouble. Technical problems had been an issue from the beginning of his developing use of technology. One of the first major projects he attempted, a National Geographic pilot project never got off the ground because of modem problems. And such problems were not limited to those early days. An indeed difficulty with getting the computers to work was an on-going theme during my time visiting Carl's room. One the first day I visited, during a work time for social studies, the class was in some disarray because many of the students were expecting to bring PowerPoint presentations about the Civil War to another school on the following day. However, the network was down and no one was able finish working on the projects. Another day as I mentioned I would return later to go to computer lab with the class. Carl's glum response was, "If it's working." He had been seriously hampered in using the computers for major parts of the school year, due primarily to networking problems. He had been frustrated for so long, he told me, he was almost at the point of giving up trying to do any all-class projects. He felt the

unreliability of the computers was a significant damper to technology use in general, because if teachers put effort into planning a lesson using the computer and then frequently find the network to be down so they can't use it, they eventually give up trying.

This discouragement has had a strong influence on the kinds of technology used more recently in the classroom. Some of the more formal, directly instructional uses of technology that Carl had been using have been limited, at least partly a result of his discouragement with the networking problems. In the past Carl has used the TELE-Web environment discussed in an earlier chapter. He found his students especially enjoyed some capabilities it had for working with spelling words—creating crossword puzzles and word games. The Internet-based character of TELE-Web is actually one of its powerful features, but in Carl's case, this was the very feature that made it difficult to use because of his district's network problems. As a result, he reported that he very rarely used it anymore. Informal, spontaneous uses are much less stressful when the integrity of the network is a problem. Likewise, eclectic, student-generated projects can be worked on intermittently, when the computers and connections are functioning properly.

Partially as a result of these factors, the current classroom use involves an undercurrent of a wide range of regular but mostly informal uses. Carl lists a few of these common uses, mentioning that his students use word processing and email all the time and that they enjoy writing "stories on the Macs so they could read it back to them." However, the recent centerpiece of technology use has been multimedia presentations. These are used for book reports, culmination projects for science and social studies units, and for personal expression. Carl himself provides an example of the latter, describing

two current PowerPoint projects he is creating to show his students, a personal trip to his cottage taken from his cat's perspective and a presentation of a recent school Band Day.

In most cases, the presentations students create are also their own choice—they may choose to do a traditional book report or a PowerPoint one. This is an effective technology use in this class because it provides for a wide range of skill levels and degrees of interest-- less technologically savvy kids can do very simple projects, others can layer theirs with audio, video and graphics. Another advantage from Carl's perspective is that this work is not dependent on the network connection, which continues to cause problems. This interest in presentations spins off into interests in scanning, digital photographs, and using sound and video files.

It is interesting to notice that, although technology use may occur in any part of the curriculum or day in this classroom, there is relatively limited use of technology in the kinds of ways people commonly refer to when they talk about integrating technology in classrooms. Although Carl describes some such projects-- a keypals effort a few years previously, collaborative Internet Zoo project for science in the early days of his technology use, a virtual museum tour he says he would like to try with his students-- there is not evidence of extensive, ongoing efforts to incorporate technology use deeply into the subject matter work in an organized manner beyond the use of Encarta™ and the Internet for research purposes and word processing or PowerPoint presentations for final representation of learning. Part of this may be attributed to Carl's frustration with technical difficulties, part of it may be a function of his pedagogy. While he is very interested in new technologies, he may not be as interested in new applications of already existing technologies such as the Internet; and while he is clearly interested in

empowering students to use technology independently he may not be as interested in large-scale applications that require a great deal of teacher direction and group organization.

The one constant about technology use in Carl's classroom is that it is and will be in flux. Although the Internet based uses have recently been more limited, the class engaged in a recent project which included email exchanges with high school students for literature discussion. Another recent use was the videotaping, mentioned earlier, of student skits associated with the British Literature project. In the fall of the year, as I was completing my research Carl was planning to embark on a project with new video-editing equipment he had acquired, hoping to engage the students, "just as soon as I learn a little bit about it myself." As technology changes, as school and classroom circumstances change, so, evidence suggests, the technology in Carl's classroom will continue to evolve.

3. "Learning a Life Skill:" Envisioning Classroom Technology Use as a Pattern for Life-Long Technology Use.

One of the most powerful characteristics of the technology engagement in this classroom is the strength of its representation, not as something that is a required skill to be acquired, not as a school task that needs to be accomplished, but as an endeavor valuable to a rich, effective and interesting life, both for fifth graders and for adults, an endeavor that incorporates both work and play. This belief underlies Carl's personal technology use and his decisions about how to use it in his classroom. Based on the important role that technology now plays in his life, he believes an interest in and a facility with technology can help his students' lives; he also clearly thinks it is just plain

fun and exciting. He indicates two categories of contributions that technology makes. One is "as a necessity"—helping do work that couldn't' be done as well or as easily without out it--- "presentation modes and looking up a resource and being able to just sit down and write and type" are a couple of the necessary uses which come to his mind. The other thing technology can provide is "enrichment, when it expands your horizon." He believes it give people "more opportunities to do things . . .in different ways, to give you more opportunities to open up your world, to be creative while you're still doing things."

This horizon expansion, based on the observation of the activities in this classroom, includes expanding one's ways of thinking to include visual representations, imagining new ways to communicate ideas and learn. But it also includes, in the process, enjoying learning and exploring the possibilities of these ever-changing resources.

When Carl repeatedly mentions that he thinks it will "help them," that technology facility is "a life skill," it seems clear in the context of his use that he is not suggesting that technology use is about meeting a curricular demand, nor is there any suggestion of the vocational imperative identified by Goodson and Mangan (1996). This is not about doing school or about getting a job, this is about living. The complex meaning that these mundane phrases hold becomes clear from his conversation about what it means to be a teacher and the kinds of benefits technology can offer and from observing the ways that he has constructed technology use in this classroom.

A primary aspect of this is the way that Carl clearly indicates to students in a variety of ways that technology use, rather than being confined within school walls, is a part of life. On one occasion, a work session was planned for finishing up Civil War presentations that students wanted to finish in order to share with another school at a

Civil War reenactment. Unfortunately the district computer network was down. Students spent the time frustrated, waiting and continually trying to see if they could access the server on which their projects were stored. Carl used this event to have a discussion with students about technology dependence, He said, "Let's evaluate this. What's going on? A student answered, "We rely too much on technology." Carl responded, "We do rely a lot on technology." Another student said, "It's not very stable; a third volunteered, "Computers stink." Carl said, "I don't know if computers stink, but we do rely on technology a lot. You go to McDonalds and the computers are down, you can't order, you can't get change." There was some general discussion about all the things we depend on technology to do for us, and whether or not this is a good thing. Carl concluded the discussion by following up on his earlier McDonalds remark, "That's why we need to use math facts, when it's time to use your brain, you're stuck. There's a real life reason why we want to keep doing things, not just let computers do things for us."

In addition to directly addressing impacts of technology on life, Carl also demonstrates in his personal life some ways that technology is a natural part of the work and pleasure of life. Students are regaled with stories of his trials and triumphs of personal technology use, as well as seeing him using it continually in the most matter-of–fact, everyday ways. A class discussion about travel finds him at his computer trying to access a website with some information he thinks is relevant and interesting. Another example is the email contact he has from home with a number of students who have initiated the contact. He says he believes that each of the students that email him believe that they are the only one who emails him. He thinks it helps them see him as a person. Similarly, technology moves across the boundaries between home and school for the

students, as exemplified by the student, mentioned above, who brought a disk to transfer a digital picture for her mother, by the PowerPoint presentations students bring home to show their parents, by the digital pictures students bring from home to incorporate in school projects, and by the ways in which Carl says parents report that their children teach them new applications and convince them to buy new or additional computers.

In fact, the limited way in which technology has been integrated in organized instructional ways can be seen to support this representation of technology as a life skill. Students whose experiences with technology at school are focused primarily on technology used intensively in teacher-supervised instruction might come to think of technology as a school task. In this context, with the freedom to choose, and the informal uses that predominate here, students may be considered more likely to develop a sense of technology as a personal, self-directed activity. There is a message about technology use that Carl explicitly tries to communicate to his students by the way he uses it with and around them-- that technology can provide options in life, that because of technology, "they can have some alternatives when they leave."

This message is transmitted also by the ways that students are given alternatives. They can choose, in many cases, whether to use technology and if so, what kinds of technology uses they would like to incorporate. They have a great deal of freedom in choosing when to schedule their computer work and share responsibility for organizing how the computers will be shared. The message about technology providing alternatives is also transmitted by the ways that students have participated with Carl in working around technology malfunctions and limitations. Students in the event described above, waiting for the system to come up to do their Civil War projects, discovered that those

students who had their work stored on a disk were able to proceed with their work on the non-networked computers. Other students decided to use the time to create a traditional poster illustrating their topic. So, notions of flexibility and choices are embedded in the instantiations of technology here.

Ultimately Carl believes that technology use develops confidence and by this 'develops people.' His belief, quoted earlier, that teaching is about "seeing people develop as people not just as learners" is central to the ways that he has incorporated and modeled technology use in the students' classroom lives.

Summary: Technology as Exploration

Technology in this classroom is used, not as a skill to be learned, but as a way to accomplish both necessary and creative tasks. Technology use runs through the life of this classroom in ways that go beyond its limited instructional use. Except for the weekly computer lab sessions, it is almost never the focus of concentrated instructional attention, but rather is integrated somewhat informally into the ongoing classroom activities. It is used to accomplish necessary work such as word processing or reference work, or as a way of exploring its potential for exploration or communication. Enthusiasm for technology is visibly an integral part of the daily functioning of this classroom. Uses change within the classroom as new technologies are available or as students and teacher develop new skills and interests. Carl has strong beliefs about the potential for interest in and facility with technology to enrich life and empower users. Consequently, his goals include helping his student develop a stance toward technology that will enrich and empower their lives.

This kind of use does not lend itself easily to categorization. Like the other classrooms, some of the uses clearly fit our understanding of Hughes' idea of *replacement*—students type writing assignments on the computer rather than hand-writing them, or create PowerPoint posters, rather than using poster paper and markers. Other uses seem to represent to clearly represent *amplification*—the email conversations between the fifth graders and the high school students in the British literature project could conceivably be done by traditional or intra-district mail, but the electronic form provided a much more efficient and timely method, without changing the overall goals of cross-age written literature interaction. However, a difficulty in classifying technology use in this classroom results from the informal nature of that use. The casual ebb and flow of technology uses inside and outside of the classroom creates a context in which the impact of the technology use is greater than the sum of its parts. Although taking a digital picture of students presenting a class project may not seem essentially different from taking a similar picture with a Brownie camera in 1935, nor creating a PowerPoint presentation of a report much different than a written or oral report, the facility and spontaneity with which these things are done, as well as the intertextual nature of many of the applications—combining the digital photo with Internet research, computer-assisted drawings and graphics, scanned photos from textbooks, and original text—results in an effect which certainly at times seems transformative. Additionally, the freedom which Carl provides students to make decisions about when and how to use technology provides an atmosphere of student autonomy that seems to have subtle but real effects on the students' learning processes.

It is also important to notice, as we did with Karen, that Carl believes the computer use experienced in his classroom to be generally transformative, asserting, as quoted above, that creating a PowerPoint book report as opposed to a pencil and paper one enables students to think differently.

Relationship between Literature and Technology

Since literature and technology are both integral parts of life in this classroom and in the lives of the students whose voices are heard here, the two naturally become interrelated. Similar to the way that technology generally plays in this classroom, the two touch in informal, often student-generated ways. In most cases, the nature of the relationship tends to be technology supporting an interest in literature, or providing ways to communicate about literature experiences.

When asked directly, Carl found it difficult to identify specific connections between literature and technology in his classroom. He stated that he couldn't imagine asking his kids to read literature from a computer screen. When asked about the possibility of e-books he says hesitantly, "Well, if I knew they would work . . . " At one point he says, rather definitely, " No, I don't really see any big connections." But then he remembers how his daughter, who was working on a project on feminist literature, was very interested when he showed her how to find some original work on the web. But he doesn't see that as being a realistic option for fifth graders. In fact, although his lack of a ready discussion of connections may suggest that he hasn't directly attempted to make connections, and although the predominant format for the study of literature in his class is

oral discussion and pencil and paper journal response, technology does intersect with literature in his classroom in a number of ways.

Shortly before I came to visit, the school had held the literature fair, mentioned above, which Carl was heavily involved in organizing. His students were expected to participate and a number of them did so in ways that incorporated technology. In fall he organized the collaborative British literature project which incorporated an email collaboration between his students and high school students and which resulted in student-created plays which were recorded on digital video. He also mentioned that students sometimes made their own connections. Giving as an example a student who followed up some comments he made about an author with a web search to discover something about the author's current life, he says, "They do a lot of this on their free time." There are also the frequent PowerPoint presentations, used as a substitute for traditional book reports. Sometimes these are optional; sometimes he assigns students to do a technology-based book report. Students also use other formats for representing a book using technology. One example created as a group report, combined technology with an oral presentation. The students posed a series still pictures from scenes of the book, photographed the scenes with the digital camera, then combined them, as a PowerPoint slide show with real-time oral narration.

Some students in Carl's class also discussed ways that technology and literature intersected in their lives. John discussed his relative interest in reading as opposed to computers, stating that he liked to read when his work was done, but during recess he preferred using the computer if possible, or going outdoors. Nicole reported that the two activities competed for her attention at home:

> But then I decided well, you know, I really haven't read that book in a while. I kinda like this book, you know. So I'll usually do that, just make sure my email's not flooding and then go read a book. But sometimes I just read the book and like three hours later say oh, my gosh, I need to, after I finish like six different books, I say I need to go check my email.

She also discussed an example of the way technology supported her interest in literature. She wrote stories and either submitted them to web sites that published children's original stories or posted them on her own web page. She also used a web site connected to her current favorite book series, Harry Potter. She told me, "In Harry Potter, there's a thing called quidditch where you fly around on the broomsticks, you know. Well, on this one web site, you can actually play quidditch." Students with these kinds of interests make an important contribution to the classroom climate, finding natural, informal, interest-driven connections between literature and technology. Thus, although there are limited formal connections between literature and technology in this classroom, technology is used in a variety of ways to support interest in literature engagement.

Chapter Summary

In this classroom literature *as* literature receives serious focused attention as an important component of the curriculum and of life—as serious pleasure. First of all, students experience literature. As great deal of its role in the language arts time block is devoted to reading, talking, and writing about the experience of the text. Students also learn *about* literature since the language arts instruction is accomplish primarily through the literature experiences of these students. They also learn *through* literature, as it is used in the classroom as a foundation for encountering some of the issues and challenges of life. Additionally, so some extent they also learn *from* literature, as it is occasionally

used to support content area learning, particularly in social studies. Literature also goes beyond being a subject matter; it is incorporated into the life of the classroom through a number of influences: the spill-over from the curriculum, the literature emphasis of the school in general, the personal interest of the teacher, and home lives for most of the students that support this orientation. All of this contributes to make the classroom a place where literature is valued for the pleasure it can give and for the insight it can provide, not just to children in school, but to life as adults.

Technology, in contrast, is not studied, but is used as an opportunity to explore--to find ways to accomplish certain tasks more efficiently, and to provide more interesting, creative or challenging ways to learn and communicate. Technology use in this classroom is frequent and predominantly informal. Although there is a core of required use, for word processing research, technology is used relatively littler for the delivery of the formal curriculum. Rather, much of the technology use is spontaneous and self-directed. Technology is represented in the classroom as an important part of life that can serve both work and pleasure functions in continually changing ways, but also as a phenomenon that calls for thoughtful attention to its use.

The relationship between literature and technology is also informal and changing. There are no formal or direct connections between literature engagement and technology. However, since both of these phenomena are positioned as active, vital aspects of life, both in and out of school, they intersect in a number of ways. Technology is used at various times in various ways by different members of the class to communicate about, learn about, and support interest in literature.

CHAPTER 6

LOOKING ACROSS THE CLASSROOMS

In this chapter we will examine some similarities and differences, patterns and relationships, which exist among the three classrooms' use of literature and technology. In doing so we will revisit some data previously discussed as well as looking at some new data which addresses these issues, looking first at literature use across the classrooms, then at technology use, and finally at the intersection of the two.

Literature across the Three Classrooms

These three classrooms, each described by the teacher as literature-rich, reveal three very different meanings for literature. Although there are multiple uses and meanings for literature within each classroom, the overall sense of literature use in each of these environments can be characterized in distinct ways:

Karen's first grade classroom at Collins: Literature as pedagogical tool

Clarice's third grade classroom at Broughton: Literature as enriched textbook

Carl's fifth grade classroom at Chappell Creek: Literature as life experience

The very different instantiations of literature in these classrooms reflect the fact that literature means very different things to these three teachers. In looking across the three classrooms, comparing and contrasting the roles that literature plays it is useful to establish a touchstone for distinguishing among the various uses and ideas of literature represented by the three classrooms and their three teachers. Using Louise Rosenblatt's conceptions of efferent and aesthetic ways of interacting with books provides a tool that

can clarify some of the differences here. Efferent readings, according to Rosenblatt, are geared toward what one can carry away from the reading—essentially information, by concentrating on the "public, common referents of the words and symbols in the text" (McGee and Tompkins, 1993). Aesthetic readings, in contrast, focus on the lived experience that results from the interaction between the reader and the text. Rosenblatt identifies these two stances, not as binary opposites, but as ends of a single continuum. She contends that both cognition and affect are engaged in all reading experiences, but that the reader takes a particular stance in each reading experience. For each reading the reader can focus attention, in varying degrees at varying times, on the informational value of the text or on the lived experience of reading the text. She identifies "literature" as being text that is engaged aesthetically. We have seen across these three classrooms wide differences in where the emphasis of activities lies on this continuum. We have seen that the comprehension questions of Accelerated Reader are clearly efferent, while Karen herself admits there is virtually no room in her teaching for aesthetic attention to literature; we have seen that Clarice's 'enriched textbook' approach emphasizes efferent stances, while she expresses her commitment to developing her students' aesthetic appreciation of literature; we have seen that Carl's primary emphasis is aesthetic, while he also uses literature for more efferent purposes in content learning and character development. However we have also seen across these three classrooms uses to which literature is put that don't map well onto this framework. Thus we find that Karen's reading skills work, Clarice's continuously interwoven attention to comprehension strategies, and Carl's efforts to enhance his students' test-taking skills are activities using literature in ways that cannot be measured by an efferent-aesthetic continuum. Rather,

they suggest an entirely separate, utilitarian approach to literature use common to these classrooms.

Differing Meanings of Literature

In accounting for these differences, it is necessary, of course to consider the differing demands and capacities represented by they wide range of grade levels. Certainly, curricular focus, time constraints, students conceptual development create dramatically different contexts for literature in first grade, third grade, and fifth grade classrooms. Beginning and early reading instruction in Karen's first and second grade classroom does require significant attention to what she calls the "mechanical side." Expanding students' comprehension, vocabulary and interpretive skills is a primary focus for Clarice, in preparing students for fourth grade, where she feels they will be ready for more sophisticated approaches to text. Carl recognizes the development that permits his students to spend a great deal of time exploring and enjoying literature. These differences cannot be minimized, nor can they be accurately measured. None-the-less, there are differences in the meaning of literature across these three teacher that clearly go well beyond the dictates of their grade levels. Although all three teachers tend to use the words 'books' and 'literature' essentially interchangeably, they exhibit varying degrees of precision in the ways that they think about what literature is and isn't. Karen distinguishes literature in two ways. On the one hand she seems to hold a definition of literature that inheres in the materials themselves. She identifies the Wright Group books and the WiggleWorks stories as not being literature, rather, she says, they are "kind of on the mechanical side of it, of teaching kids to read." She contrasts the library books read

for Accelerated Reader and the basal stories, calling them "real' literature, the basal because it is "real books thrown together." Here she is identifying some characteristic of the text itself as constituting literature or not-literature. She also has a different classification system, one that distinguishes on the basis of use. When she recognizes that reading instruction is what school for her students is all about, and regrets that she doesn't have time for literature, she tacitly acknowledges that literature is something you do with certain kinds of books. This is a perspective that, while certainly not reflecting the depth of Rosenblatt's distinctions, does at least recognize that "literature" requires certain kinds of interactions. Her language suggests that, very approximately, what she calls 'real literature' as opposed to 'books' is reflects something of Rosenblatt's conception of an aesthetic stance. However, other activities in this classroom, as in all three, defy categorization by Rosenblatt's continuum. Using books for direct reading skill instruction, such as the reading of *The Foot Book*, described in the vignette, seems require a stance toward text that is neither efferent nor aesthetic. In this case, Karen is neither encouraging her students to have a "lived experience" with the book nor is she encouraging them to read for content, to learn, for example, about feet. Rather, the text serves as an utilitarian vehicle for learning the technical skills and strategies of the reading process.

Clarice, in contrast to Karen, has a simpler operational definition. It is absolutely clear from her conversation that children's trade books *are* literature for her. She distinguishes between, for example, the social studies textbook and the trade books that she might use for the same purposes—the first is, obviously, a textbook; the trade book used for extracting basically the same information is literature. This evidence suggests

that for Clarice, Rosenblatt's distinction would not be meaningful. Recall, for instance her declaration that she wants students to "develop. . . a real thirst or a passion for reading, learning, and to get some answers by reading." By the emotion and pleasure she associates with using "literature' for learning--or the reading of trade books for content knowledge—she suggests that she conflates the aesthetic and efferent stances toward literature. For Clarice, it seems that an experience with literature can be both highly aesthetic and highly efferent. One might even question whether Clarice believes that a reading experience must have a strong efferent component in order for it to be highly aesthetic. There are also ways in which Clarice, like Karen, uses books in ways that lie outside the efferent-aesthetic continuum. When Clarice interrupts her discussion of content to draw students' attention to reading comprehension strategies she also is using the text as a utilitarian tool, in a stance not addressed by the Rosenblatt continuum.

Carl, like Karen, distinguishes clearly between non-literature—which for him includes textbooks, reference books, and other books primarily used for acquiring content knowledge, or information, and literature, which to him seems to include fiction and biography. To Carl the term 'literature' is used to identify, variously, a way of relating to a book, a type of book, and a pedagogical activity. He and his students "do" literature in class, he "loves" literature himself and hopes the students will also, and he, occasionally "uses" literature. These meanings include both efferent and aesthetic stances toward literature. Additionally, when he uses the literature to teach students vocabulary he thinks they will need for the state standardized test, he is operating outside the aesthetic—efferent continuum.

Differing Purposes for Literature

These teachers also differ in the purposes they claim for using literature with students. Karen sees two purposes— reading instruction, and what she calls "enrichment" and "variety." For her there is tension between the two--she uses it for the first, but regrets neglecting the second purpose. In making this distinction she identifies a literary purpose that at least suggests aesthetic experiences for students, but feels she has no choice but to use it almost exclusively for reading instruction. In identifying this purpose as distinct from "real literature" and concerned with "mechanics" she makes it clear to the observer that the purpose of her practice is highly efferent.

Clarice, in contrast, recognizes no tension in literature use. She sees only one purpose—learning from literature—but she believes that pleasure is part of that experience and that a consequence of that is experience is the likelihood of helping children develop "a passion for literature, a passion for learning." From her perspective her purposes are both efferent and aesthetic. Put differently, she sees no tension between efferent and aesthetic stances or purposes—learning from the literature is tantamount to learning to love it.

Carl's talk and action suggest that for him the purpose of using literature is to provide pleasure and to learn about life. He clearly values an aesthetic stance to literature as a primary goal, as evidenced by the extent to which he provides such experiences for his students. However, although he almost exclusively treats literature *as* literature, he also values efferent readings as a way to value the literature itself. He does this in two ways. As any literature teacher, he uses the literature to teach *about* literature—about the power of language, about literary elements, about authorial voice and style. His determination

to focus on literature out of a personal love for it suggests that this teaching is directed toward developing more nuanced aesthetic responses, yet the process involved clearly efferent reading. The other clearly efferent purpose he claims is to use literature as "almost bibliotherapy." He wants students to 'carry away' some important life lessons from their literature engagement and selects some books for this purpose as well as directing some of the conversation to this goal. These he considers legitimate "literature' purposes, as distinction that become clearer when he talks about also using books occasionally for subject matter content learning. This he identifies this as something other than their authentic use by saying that even when using a piece of literature to contribute to his students' understanding of, for example, the Civil War, "I try to keep the literature aspects as much as I can." Thus the limited amount of tension Carl does recognize is not between efferent and aesthetically focused engagements with literature, but between uses that focus on the literature *as* literature and those that use literature as a resource for content learning

Of the three teachers, Karen is the only one who indicates that her use of literature is constrained by forces she can't control. By her statement that what she does with literature *as* literature "stinks," and her frequent discussion of the pressures of the curriculum and the state assessment, she suggests that she might include other kinds of literature use in other circumstances. There is no evidence from Clarice or Carl that the way they use literature with their students is anything other than the product of their decisions and desires. Rather, both clearly discuss their personal reasons and history as leading logically to the way they have incorporated literature in their classrooms. Interestingly, Carl recognizes the need to develop students' reading skills as a force

which he feels may cause teachers in the lower grades to handle literature differently, stating that he appreciates the luxury of being able to treat literature *as* literature, which for him includes foregrounding its aesthetic pleasures as well incorporating some efferent uses which he values.

These strong differences come partly from the complex differences between the teachers themselves and the contexts in which they teach. However, it is important also to account for the differing purposes inherent in the grade levels represented by these teachers. Karen, with first and second graders, has beginning reading instruction as a primary task and a primary activity of her classroom schedule. This strongly shapes her perception of the role that literature plays in her curriculum; she believes that accomplishing her curriculum, which she needs to do to accomplish the skill development her students need, does not leave time and space for literature qua literature. Clarice's students have the basic skills down fairly well, and so she does not need to spend focused amounts of time on developing those abilities, but she wants to strengthen her third graders' abilities to learn easily and well from various kinds of texts and is highly aware of the more sophisticated language facility that will be expected of them in fourth grade. She is able to weave this kind of instruction into her curricular attention to books as sources of content knowledge. Carl, the teacher with the most literary approach to literature, acknowledges the impact that the advanced reading abilities characteristic of most fifth graders has on his freedom to engage in the kind of literature discussion activities he prefers. It is, of course, impossible to extract this difference in looking across the three teachers; rather we must remember that their approach to literature is

made up of many, intricately intertwined factors, and that the age and abilities of the students they teach is one of those factors.

Literature and Integration

While various kinds of integration are frequently promoted as valuable in education, and literature across the curriculum is commonly seen as a desirable goal, this research raises serious issues around integrating literature into the elementary curriculum. This research supports Rosenblatt's (1991) concern that while the integration of literature into content area studies may bring the subject matter alive, it may also limit or eliminate children's aesthetic experiences with literature. In these classrooms whenever literature served curricular goals beyond itself—in reading instruction in Karen's class, in content learning in Clarice's and occasionally in Carl's, even in learning about literature itself in Carl's class—the aesthetic stance disappears from sight.

Differing Stances

Finally, if we take Rosenblatt's work, exceptions aside, as a standard against which to evaluate the extent to which these classrooms are indeed literature-rich, several issues arise. One of these is Rosenblatt's emphasis on the importance of teachers recognizing and clarifying their purposes for reading and of being aware of the differences between efferent and aesthetic goals. Both Karen and Carl show some indications that such distinctions matter to them. Both distinguish between attention to books as tools to accomplish an academic task and books used as literature. However, a literacy perspective is no guarantee of an aesthetic stance; engaging with literature to learn about

genre and literary elements may enable more nuanced aesthetic reading, but it does not, in itself constitute aesthetic experience according to Rosenblatt. This is a distinction Carl does not make. He includes learning *about* literature, helping students learn lessons about life *from* literature—what he calls "almost bibliography"—along with the *experiencing of* literature in his category of "literature aspects." Karen doesn't tell us enough for us to understand what it is that she feels her students are missing out on in having few experiences with literature as literature. She mentions "variety" and "enrichment" both of which could be conceptualized at any spot on Rosenblatt's continuum, or, indeed, apart from it. Clarice clearly conflates the efferent and aesthetic stances in her discussion of literature engagement. Observation of her classroom practice reveals that she consistently emphasizes a highly efferent stance; it is less clear that her students are experiencing the aesthetic component that she clearly feels is part and parcel of the process of learning from literature.

Technology across the Three Classrooms

These three classrooms, each described by the teacher as technology-rich, also exhibit three very different meanings for technology. Although there are multiple meanings and uses for technology in evidence within each classroom, and within the conversation of each teacher, the overall sense of technology use in each of these environments have been described in one of these three ways:

Karen's first grade classroom at Collins: Technology as management tool

Clarice's third grade classroom at Broughton: Technology as ensign

Carl's fifth grade classroom at Chappell Creek: Technology as exploration.

The metaphors used to capture the essence of technology engagement in each classroom illustrate the marked differences in meaning that technology use holds for these three teachers and within these three classrooms. There are also some similarities that arise in looking across the classrooms. In this section we will discuss some of each. First, it would be best to make a point about terminology. When these teachers use the word "technology" they, like most of us, do not refer to their use of the telephones, overhead projectors, and TVs which appear in these classrooms. Rather, consistent with Pea's (2000) observation about usage, referred to in the first chapter, that "education technologies" commonly refers to the newest technologies available. I found that all three teachers use the word to refer in general to the newest digital technologies—scanners, digital cameras, but particularly computers with the information and telecommunication resources of the Internet. This is the term used most commonly by all three when discussing technology in a broad sense, discussing its power and importance, or its limitations and concerns, its place in society and schools, their feelings and goals for it. We have noted that for Karen and Clarice, the practical meaning of technology is computers, as virtually all technology use in both classrooms was limited to computer use. When discussing actual applications their classrooms both women tended to use the more specific term 'computer.' Carl, the one teacher who incorporated a number of technologies external to the computer, took pains in our first conversation to distinguish the two, telling me he doesn't think of technology as just computers. His terminology in discussing specific applications reflected this broader use, using either term as it fitted. This general similarity of language use however, does not mask the strong differences in the real meaning of technology for these three teachers.

Teacher Technology Identity

A similarity among these teachers is that each is considered a technology leader in his or her school. Indeed, all three take great satisfaction in being known as such. However, they have arrived at these reputations in very different ways, and in fact that leadership role means very different things in the three schools. For Carl and Clarice, this reputation initially came from their early commitment to computers in classrooms. Both of these individuals were early on the scene in their district, spent enormous amounts of personal time learning to use computers, first learning programs they could use themselves and then looking for programs they could use with their students. Both also put a lot of energy and commitment into getting more computers into their classrooms than the school and district were supplying. Both Carl's and Clarice's reputations as technology users have been supported by their participation in activities outside their own schools—both have done some training activities at the district level and Carl is involved with technology connections with the nearby university.

For Karen the interest in computers came more recently. She identifies as the primary impetus joining a school that was intensively pursuing the incorporation of computers into the curriculum primarily for use with Accelerated Reader. This piqued interest resulted in her decision to get her masters degree in educational technology. She is particularly interested in the technical aspects of computers, a specially valuable advantage when working with the eclectic mix of computers in her building, some well past their best years. Her leadership role developed from her willingness to use her technical expertise to support her fellow teachers.

Both Carl and Karen have active roles, both formal and informal, as technology advocates in their schools. Karen has a number of formal roles as the team leader for the technology resources in her wing—the lower elementary grades which means she trouble-shoots, repairs, answers questions, and generally supports technology use for those teachers in her wing. This role has resulted from the need for the staff to provide their own technical support as they have found that they cannot rely on the district to solve problems in a timely manner. So Karen is primarily responsible to keep the computers and server in her wing functioning effectively, as task that, although time-consuming, she enjoys. She also serves on the school technology committee. Carl's roles are primarily informal, except for serving on the school technology committee, and much less technical. He is a person that teachers go to with a quick problem about a program that won't load or a piece of equipment that is not functioning properly; because he is known to be always trying new technologies, people know he'll be interested in helping them solve out a problem. He says the tech people in the building like to "use him as a guinea pig" to experiment with new programs and hardware. Additionally, because there is a range of technologies being used in the building, the kinds of roles Carl plays also vary.

Clarice's position as a technology leader is much more elusive. She is known as someone who pioneered in technology use in her school, she has found some uses that fit very well with the kind of classroom with which she is comfortable, and has been involved in showing other teachers what she has learned. However, I did not observe her serving a day-to-day role as "technology person' in her school. By contrast, one cannot spend much time in either Karen or Carl's room without witnessing someone coming in

to ask for help with some sort of a technology issue. However, in my time in Clarice's room I observed none of that sort of discussion and interaction. Her interest and expertise is not technical; when technical problems occurred in her classroom during my visits, she consulted with the district technology coordinator to solve them. For example, when I entered the classroom for the first time she was on the phone with the coordinator trying to find out why her students' file from the previous day did not appear to be on the server. However several parents and a school staff person volunteered informal comments about her interest in technology, one saying, "It's so great that she gets those kids really using computers."

There is also the sense that technology use in her school, as in her classroom, is growing and changing at a slower pace than at the other two schools and that she is not actively involved in new technology applications. And although in conversation she expressed interest and excitement about new applications of technology in general—her son was on a cross-country trip and had a daily-updated web page to keep friends and family apprised of his activities, in her classroom she continued with the activities that were comfortable for her, that she had developed and used in previous years, emphatically stating that there was no reason "to reinvent the wheel." Both Carl and Karen, in contrast, were branching out into new technology uses, Carl with the collaborative literature project with the high school and the video editing equipment, Karen with her participation in the Tele-web project. These differences are summarized in Table 4.

Table 4: Technology roles within the school

Roles	Teacher		
	Karen	Clarice	Carl
Formal roles	Technical consulting Technical repair School planning		School planning
Informal roles	Technical consulting Collegial consulting University relationship Modeling	Modeling	Technical consulting Collegial consulting University relationships Modeling

Kinds of Technology Use

There are also striking differences in the actual technology applications used in each classroom—differences both of kind of applications and in the degree of variety in applications. Means (1994) offers a useful taxonomy for classifying educational technology applications in classrooms. It identifies uses as a tutor, as exploration, as a tool, as communication. These seem to be effective distinctions for the classrooms here. An abbreviated version of the category descriptions are as follows (Means, 1994, p.11):

Used as a tutor	A system designed to teach by providing information, demonstrations, or simulations in a sequence determined by the system
Used to explore	A system designed to teach by providing information, demonstrations, or simulations when requested by the student. Under student control the system provides the context for student discovery (or guided student discovery) of facts, concepts or procedures.
Applied as a tool	General purposes technological tools for accomplishing such tasks as composition, data storage, or data analysis.
Used to communicate	A system that allows groups of teachers and students to send information and data to each other through networks or other technologies.

I made some adaptations to the taxonomy, primarily by broadening the category of Communication to include some uses that seemed to me to examples of technology used for communication but which did not precisely fit Means' definition. As uses of presentation software such as PowerPoint were not specified in this taxonomy, nor were such things as screensavers designed for classroom computers and videos made for presentation to students and parents. I made a judgement that the purpose of these uses is indeed communication and classified them in that way, Also, the TELE-Web environment, while designed to promote both individual work and collaborative learning that could be categorized here as both communicative and exploration, was actually used here as a tool—to contain work-sheet style student tasks, to write and store assignments and to engage in word searches and crossword puzzles. Consequently, the classification reflects my assessment of the use in the classroom, rather than the potential uses of the technology itself. Table 5 below highlights the applications associated with each classroom. These are either independent student uses, or student uses in which a teacher may have been involved. Applications used only by teachers are not included. They are grouped according to those that were observed during research, those which the teacher or a student reported using during the current school year. The classification according to Means' (1994) taxonomy (delineated in Chapter 1) is indicated the letter in capitals after each application—TT signifying tutorial use, E signifying exploration, T signifying use as a tool, and C representing use for communication.

Table 5: Student Classroom Technology Uses

	Collins (Karen)	Code	Broughton (Clarice)	Code	Chappell Creek (Carl)	Code
Observed	Accelerated Reader	TT	Type-to-Learn	TT	Type-to-Learn	TT
	Accelerated Math	TT	Word processing	T	Word processing	T
	Tele-Web	T	Write/draw booklets	T	Taking digital pictures	T
	WiggleWorks	T	Interactive CD-ROM	TT	Creating screen savers from digital photo	C
	Hyperstudio booklets	T	Internet reference (Tom only)	E	Scanning pictures	T
			Computer games	E	Creating PowerPoint presentations	C
					Email Discussions with H.S students	C
					Video-taping skits	C
					Internet research	E
					Student web pages	C
					Computer games	
Reported as current but not observed			Encarta reference	E	Encarta reference	E
			Informational CD-ROMs	E	SIRS reference	E
					Tele-Web	T
					Email teacher	C
Current Use Totals Observed and reported	Tutor	2	Tutor =	2	Tutor	1
	Tool	3	Tool =	2	Tool	3
	Exploration	0	Exploration =	3	Exploration	3
	Communication	0	Communication	0	Communication	6
Imagined future uses	Internet research	E	Virtual tour	E	Video editing	T
	Keypals	C	Internet research	E	Parents access student records	C
					Students access homework	C
					Web-based science projects	E
					Collaborative research projects	E.C
					Virtual tour	E
Imagined future use totals	Tutor	0	Tutor	0	Tutor	0
	Tool	0	Tool	0	Tool	1
	Exploration	1	Exploration	2	Exploration	3
	Communication	1	Communication	0	Communication	3

The chart enables a look at some differences in usage patterns. The evidence for Karen's current use does not include any applications for exploration or communication,

although in talking about the future she mentions a Keypals project, an example of communication, and suggests possible Internet research with her students, an example of exploration. Clarice's current use reveals an even distribution across 3 of the 4 categories, with no evidence of communication use. Her thoughts about the future use add two more exploration uses but no plans for communication. Carl's pattern of use shows the most variety, representing all four categories. He shows minimal evidence of tutorial use and strong emphasis on communication. His talk about future uses demonstrates no interest in tutorial use, the one tool use he plans—video editing—actually has as its ultimate use communication, and he suggests interest in several more exploration and communication uses. There are quite significant differences in kinds of use between Karen and Clarice, on the one hand, and Carl on the other. His uses demonstrate a much higher proportion of uses that conform to reform-focused expectations about student inquiry and collaboration.

The adaptation of Hughes' taxonomy provides an additional lens through which to compare and contrast the technology uses across these classrooms. As noticed in the individual classroom discussions, all three classrooms exhibit primarily *replacement* and *amplification* uses of technology—word processing substitutes, for example, for a paper and pencil process in answering a set of review questions, or the Accelerated Reader software efficiently scores student comprehension tests and creates statistical information. However, there two different ways that Hughes' standard for *transformative* uses applies to technology use in Carl's classroom. The first is that there are particular activities, most commonly the creation of PowerPoint reports, that have the potential to fit the description of transformative use. For her description of

transformative uses Hughes draws primarily from Pea (1985), identifying the presence of a number of tranformations which she describes as including changes or expansion in the actual mental work, expansion of the number of variables involved in the mental processing, and new opportunities for different forms and types of learning through problem solving (p.37). In Carl's classroom a student, rather than writing a traditional book report, may scan the cover of a book and several illustrations from inside, download a picture of the author's birthplace, type up several pungent quotes both from the book and from a published interview with the author, write a synopsis of several significant scenes from the book and illustrate them with a drawing or graphics program, read, summarize and reference several on-line book reviews, research biographical information about the author, and create an electronic poster advertising the book. Accumulating this material, incorporating it into a coherent PowerPoint presentation that presents a very personal perspective on the book would, in my assessment, "change and expand the actual mental work of reporting on a book (Hughes, 2000, p.37)". However, it must be acknowledged that this is only one kind of PowerPoint book report. A student could just as well plagiarize the main parts of an on-line book report and type them into an outline in PowerPoint as a replacement for writing out the same report on paper. Certainly the technology holds the potential for transformative use, but actual transformation may not necessarily result. Carl himself indicated that he saw the PowerPoint reports as a means for using technology to transform his students thinking, helping them to "visualize differently."

However, it is also possible to make a case for a general transformative role for technology in this classroom, in that by its availability, by the high value placed on it, and

by the freedom students have to experiment with and incorporate technology in most independent or group assignments, "the actual mental work [of the students has been] changed or expanded (Hughes, 2000, p.37)", that because of the range of option available to students to use in ways that they are free to create or collaborate on, that the learning environment in which these students work has been transformed.

Teacher Beliefs about Technology

These variations can be understood much more clearly by looking more closely at the beliefs about technology expressed and demonstrated by each teacher. To implement this examination, I used Goodson's and Mangan's (1996) work on ideological arguments for technology use as a backdrop against which to compare teacher talk about technology with their observed uses of technology in the classroom. Their research explored the incidence of the "computer inevitability thesis"—expressed commonly as, "no matter what you do, computers will be needed" therefore "everybody should become familiar with them" (p.73). Although both Carl and Clarice offer other additional reasons for technology use, the inevitability argument is revealed in their talk. Clarice says, "But if that's where technology is going, I guess I'd have to go along with it." Carl mentions frequently the necessity for students to be comfortable with technology, repeating several times various versions of the statement he made to me in the initial interview—"they'll have to use it."

Goodson and Mangan (1996) also identify sub-categories of the inevitability thesis, stating that technology promoters posit the importance of the computer as (a) a productivity tool, (b) an enrichment resource and (c) as a source of competence and

power in an information society. Clarice incorporates the first two in her attitudes, praising the capacity to produce professional looking booklets and suggesting the power of the Internet for enrichment. Carl discusses all three as important benefits, citing the word processing, creation of signs, cards and printouts from digital pictures as well as CD-ROM creation as a valuable way for students to preserve memories; praising the enrichment potential of the Internet; and emphasizing that technological facility is a valuable skill for students' lives. Karen, in contrast, did not ally herself directly with any ideas suggestive of the inevitability thesis. Although her classroom computer use is suggestive of use as a productivity tool, she emphasizes the direct practical and developmental benefits she believes this kind of computer use offers rather than associating it with vague future benefits to students' lives. Only on one occasion, when she talked briefly about the way the Internet might broaden her students' views of the world, did she reveal a suggestion of the computer as a source of competence and power in an information society.

It is has been noted that there is sometimes a distinction to be made between the ways that teachers talk about the roles of computers and the ways in which each teacher uses them. This is unsurprising, since Mangan & Goodson found these prevalent categories to be ideological rather than practical—representative of the rhetoric of educational technology, not necessarily of it use. While Carl's classroom practice does actually support the three purposes identified by Goodson and Mangan (1996), Clarice's and Karen's classrooms primarily exhibit use of technology as a productivity tool; although they both proclaim the enrichment potential of Internet use—bringing the world into the classroom," their classroom practice does not exhibit evidence of this belief.

Three Kinds of Technology Integration

The ongoing catchword in educational technology is integration; this is generally accepted as the highest goal (e.g. Pea, 2000; Cuban, 2000; Bruce, 2001). The integration standard provides yet another lens through which to compare these three classrooms. These might be summed up by describing them as representational integration, mechanical integration, and cultural integration. For Clarice, as mentioned previously, technology use has an important iconic or semiotic value. It represents something valuable with which she wishes to ally herself and which she wishes to provide for her students. In Clarice's classroom integration means simply that she incorporates technology experiences into the educational experiences of her students; she has made significant efforts over the years to accomplish this. This is not curricular integration, except perhaps for the Oregon Trail sequence, nor is the technology use integrated into the classroom culture but rather the technology use has its own place and function. It could be considered representational integration; using computers in classroom is evidence of participating in the technology its primary importance lies in the fact that it exists.

Carl's and Karen's classrooms exhibit integration in ways that might more conventionally be recognized as such—that is, by technology use that is intertwined across the curriculum and the school day. However, these two classrooms actually offer dramatically different conceptions of technology integration also. The integration in Karen's classroom is best thought of as mechanical integration. The computers are machines. Although their use is intimately intertwined with the instructional activities in

this classroom, it serves in a limited set of rather fixed functions. The computer contains and presents work, provides access for both teacher and students, scores tests, provides feedback for students and teacher—all tasks handled in a mechanical way that functions the same for each student. The integration in Carl's classroom, in contrast, is more organic. The technology is used in dynamic, changing, interactive ways; different individuals use technology for different and changing tasks, often by their own choice, usually in their own ways. It is used in a variety of configurations—individually, collaboratively, for work and play.

The Relationship between Technology and Literature across the Three Classrooms

As noted in the examination of the individual classrooms, all three exhibit at least some relationship between the literature use and technology use. These relationships are very different terms of both nature and degree. In Karen's classroom, with its emphasis on Accelerated Reader, the literature and technology have a very central relationship. The *computer manages the literature use*, controls the choice of reading by the available tests, indicated for the children by the colored dots on the books. It also evaluates the reading, by providing tests to monitor the reading of each book and informs both teacher and student about the appropriate reading level for each student. . Additionally, it provides proof of that evaluation by producing reports of children's level of accomplishment. In Clarice's classroom there is really no direct relationship visible. However, in her conversations with me, as she expressed what each represented to her, she seemed to be constructing what might be described as a parallel symbolic relationship. She expresses *similar beliefs about the benefits of literature and*

technology, that they each, in their own way, carry knowledge, bring the world into the classroom, and enrich learning. She also discusses more complex beliefs about a potential relationship, imagining that if literature engagement were highly integrated computers she would be concerned. In general she sees computer use as isolating while seeing literature use as providing a socializing effect through shared reading and discussion. In Carl's classroom literature and technology are engaged in what might be called a uni-directional supportive relationship. Although he says he sees no real connection between literature and technology, in fact, in his class there are examples of both formal and informal use of *technology in support of literature engagement.* A number of activities surrounding literature—email discussions in the British literature project, PowerPoint book reports, video taping of literature response skits, are enabled by connections with technology.

There are also some interesting attitude differences across the arenas of technology and literature use. All three teachers highly value being known as technology users and are pretty evangelistic about classroom technology use—eager to talk about its virtues and their own histories and experiences with it. It is striking that none of them seems to have similar attitudes about their literature use. When asked directly about it, both Clarice and Carl are enthusiastic about literature. However, it does not seem to be central to the public identity of either. When Carl describes his role as a technology leader in the school and is asked if, since he has been using literature extensively his whole teaching career, he has also played a leadership and "cheerleader" role in this respect, he answers simple that it isn't necessary since the district has good people. And yet, since he believes that literature is not used extensively in the lower grades it seems there might

very well be room for "cheerleading." Similarly Clarice, when discussing her reputation within the school does not mention literature use as one of her public identities. Since Karen does not regard her literature use in reading instruction as "real literature" it is unsurprising that she does not see herself has a literature promoter.

Karen and Clarice, however, are each spontaneous and evangelistic about a classroom characteristic associated with her literature use. Karen's point of pride in her classroom seems to be the Accelerated Reader program. She will talk long and enthusiastically about the benefits she sees for herself and her students. Interest in the schools strong emphasis on Accelerated Reader was an important factor both in getting her initially interested in technology, resulting in her degree in educational technology, and in bringing her to back to Collins as soon as possible after her transfer. The central core of Clarice's use of literature is the in the themed units, also the central core of her curriculum. This approach, what she calls "my discovery learning," is central to her public identity as a teacher, rather than specifically the literature use. When she is describing the reasons parents are interested in having their students in her class, technology use and her discovery learning approach are the qualities she cites. When she discusses her future she wonders if she would like to teacher fifth grade, "and show them how to do my discovery learning." For each of these women, then, their literature use is a component part but not the centerpiece of a characteristic of her classroom that is very central to her identity as a teacher. For Carl, the literature use seems more a personal characteristic that he brings into the classroom as a natural but important component. Perhaps he thinks of it as unexceptional because it has come so naturally from his own interests and has so long been a part of his teaching.

Integrating Literature and Technology

These three classes also differ greatly in the extent to which they integrate literature and technology, but comparisons are virtually meaningless because of the differences among what is meant by literature in each case. Karen has her literature use almost entirely integrated with technology by means of the Accelerated Reader program. As she has herself reported, the valuing of literature *as* literature is virtually absent from this configuration. It hardly makes sense to talk about aesthetic versus efferent stances in this context—the role of literature is almost entirely as a tool for acquiring technical skills. In contrast, in Clarice's classroom there are really no direct links between literature and technology. However, in this classroom there is also limited attention to literature as literature or evidence of the nurturing of an aesthetic stance. Carl's class--the only classroom in which literature *as* literature and literature addressed from an aesthetic stance have a strong presence-- exhibits limited connections between literature and technology. To draw strong conclusions based on these three examples would be injudicious; there may be any number of alternative configurations of technology use and attention to literature. Yet these examples must be seen as a cautionary tale; certain orientations toward technology use can clearly create conditions that favor utilitarian uses of literature.

If we limit our viewpoint to an understanding of literature use as authentic literary experience, we find few meaningful connections between technology and authentic literary experiences in these three classrooms. Only in Carl's classroom are students occasionally truly engaged with literature and technology at the same time. When his

students have email conversations with high school students about a book read by both groups, when the class creates dramatic play responses to literature and videotapes those performances, we do see literature and technology intersecting in authentic ways.

Summary

These three classrooms present three very different instantiations of both literature and technology use and of the relationship of the two within the classroom primarily because the three teachers have very different perspectives, goals, and practices. The Collins classroom demonstrates Karen's interest in literature as a pedagogical tool for reading instruction and in technology as a manager of those interactions with reading. Thus the literature use is functional in a way not captured by the efferent—aesthetic continuum and the technology use is primarily limited to tutoring and tool uses. The Broughton classroom reflects Clarice's interest in using literature across the curriculum as a resource for content learning, a role she believes will help develop a passion for learning and for literature in her students. Her technology use, in contrast, seems designed to assure students interaction and familiarity with computers which she hopes will ultimately enrich their learning. Her literature use with the students is strongly efferent, although the natural delight she has in children's books breaks out in her conversation and in occasional spontaneous aesthetic experiences during literature circles. Her technology use is fairly evenly balanced across tutoring, tool, and exploration uses, but does not extend to communication uses. When she thinks about what she might like to do in the future, she adds more exploratory uses. Carl's classroom at Chappell Creek contrasts strongly with both the others, at least partly because of the way he values both literature and

technology as resources that are valuable outside the classroom. In his concentrated attention to literature as literature, Carl's students spend a significant amount of time engaged aesthetically with literature, although he also uses it for efferent purposes. His technology use also reflects his broader perspective, incorporating uses across the range of categories, but emphasizing communications use.

Although all three teachers have reputations as technology users, those reputations are differently based and differently enacted. Clarice's enactment is the most limited, one might almost say, representational or symbolic. Karen's is the most formally enacted and the most technically inclined. Carl's is primarily informal and socially enacted.

None of the teachers express strong commitments to nurturing connections between technology and literature, although both Karen and Carl make connections, differing strongly in both kind and degree, between the two. Of all three, however, it can be said that the uses of technology and literature make clear sense in the context of the beliefs of the teacher and fit tidily into the overall classroom patterns and atmosphere.

CHAPTER 7

CONCLUSIONS AND IMPLICATIONS

Creating Unique 'Habitations'

Each classroom portrayed here has similar accoutrements: a room, a set of students, a set of computers and a lot of books. There are no dramatic differences among the physical surroundings -- in spite of the differences in economic level represented by the schools, all these rooms are attractive and well-supplied, all have the technology and library resources that they need. Yet, within that similarity, the differences in how both technology and literature have been instantiated are dramatic. Like the poets' pen, these teachers have created, not from airy nothings but from quite similar basic resources, very different "habitations" and "names" for technology and literature within their classrooms. This research makes clear that the term 'literature-rich classroom' or 'technology-rich classroom' has little, if any, inherent meaning--it means very different things in different contexts to different individuals.

Thus, in these three classrooms, all of which have children engaged on a regular basis with technology, the range and varieties of technology use vary widely. We can see from these examples that technology use can be a powerful controlling force in the classroom, it can be a creative, expressive medium, or it can be primarily symbolic. It can be used as a *replacement* for familiar and traditional classroom elements such as a textbook, or paper and pencil work; it can *amplify* traditional practices such as enabling the computer creation of report booklets or facilitating research for a report; or it can *transform*

practice through entirely new affordances such as creating an electronic biography incorporating sound, video and still pictures, text and graphics.

Similarly, in these three very different classrooms, each of which has children reading a lot of books, literature engagement has very different realities. Literature is a number of things beside literature per se—it may be a tool for reading instruction, a "textbook" for content learning, an enrichment resource, and the basis for lessons about life. Even literature that is treated *as* literature may be addressed efferently or aesthetically.

This research reminds us of three key elements that serve as major factors in the shaping of classrooms, and consequently in the shaping of literature and technology use in the classrooms. One of these is the power of biography. When all three of these teachers talk about how they came to shape experiences with literature and technology in their classrooms, they tell stories about their lives—about courses taken, people met, interests pursued. And behind these stories one glimpses very personal and individual hopes, fears, dreams, prides, insecurities—all the stuff of human life and personality. These individual pleasures, concerns, beliefs and predilections of teachers are among the most powerful forces shaping classrooms. Two of these three teachers explicitly say they set out to make their classrooms places that reflected them as individuals that made them comfortable. Clarice's passion for learning intersected with a professor's promotion of children's literature which intersected with her role as a mother of two young children which intersected with her developing sense of her own pedagogical beliefs to all become part of why her students' experiences with literature are shaped the way they are. Carl's love of literature which spilled over into his classroom, his goals for helping students develop as confident independent people, his beliefs about the kind of classroom

atmosphere that best supports learning all intersected with a myriad of other factors to create the kinds of literature experiences that occur in his room. All three describe themselves as people who get bored easily, who like change and challenges. These teachers' desires for certain kinds of public identities also strongly influenced their choices. This is neither surprising nor unexpected, but is never the less a factor that educational observers, policymakers and reformers tend to underestimate.

The other, related, point is the power of pedagogical orientation. Each of these teachers approach both technology and literature in ways that are entirely consonant with their general approach to classroom management and pedagogy. Clarice values a highly teacher-directed classroom and pedagogical style—her students experience both literature and technology in strongly teacher-directed contexts. Karen, while comfortable with a very busy and individualized classroom context, values a different kind of control—the organizing power of information and scores and structured containment for student work; her students' interactions with technology and literature are highly structured by the computer programs used. Carl favors a relaxed, highly verbal, student-centered pedagogy; his students' interactions with both literature and technology exhibit these qualities. Clearly these teachers have shaped these phenomena to fit into life in their classrooms in ways that fit their ideas about good teaching and learning.

An additional reminder is about the power of context. These three case studies demonstrate clearly how the schools and the communities in which classrooms are embedded exert unique influences on the choices teachers make about incorporating literature and technology in their classrooms. Each of these classroom resides its own nest of student concerns, parental beliefs and expectations, district and state curricular

pressures, and individual school climate. Carl's interest in technology is supported within the context of a school in which technology has had a strong and prominent interest, at least partly due to the school coming into being after the onset of the general push toward educational technology. The strong concern for state assessment scores at Collins, on the other hand, provides a powerful impetus toward technology and literature use that is quantifiable. The culture that supports Accelerated Reader in Collins School would have great difficulty accepting and supporting a classroom like Carl's. Economic realities are an important part of these influences. The difficult lives and limited resources of many of the Collins' families impact the lives of children in Karen's classroom in ways that clearly shape her perceptions about what is important and what works for her students. The affluence that makes futures secure at Chappell Creek and Broughton minimizes the common attitude toward educational technology use that Goodson (1996) identifies as vocational. This affluence also fills these classrooms with a high proportion of children who see literature valued in their homes. Any efforts to shape either technology or literature use in any classrooms must identify and account for the strength of such realities.

Standardized Testing Pressures

The pressures of the push for satisfactory scores on state standardized tests by which school districts are evaluated is an issue which arose, unbidden, from the research. Two of these three teachers talked extensively about the restraining and limiting effects of standardized testing on their practice. Interestingly, each saw it impacting a different arena. Karen attributes her lack of time for attention to literature *as* literature to the

burden of testing pressures and the weighty district curriculum design to improve scores. Although it is impossible to know what changes she might make with literature use if she had more freedom, when she pages through her massive curriculum notebook and sighs, one is ready to believe that whatever else that curriculum might be doing, it is not encouraging her to use class time for literature engagement. Carl, on the other hand, claims the strongest impact of these pressures as a deterrent to technology use, claiming teachers in his school aren't able to do anything very interesting with technology until after the standardized tests are finished each year. He emphasizes how much time and attention it takes to plan and implement good technology integration projects. He is very emphatic about the damage he believes the test does to good teaching. Both these teachers identify the testing as a significant negative pressure in their lives, a pressure they both feel impinges strongly on what they consider to be best practice.

It is interesting to note differences across the three teachers in regard to this pressure. Clarice gives no indication that the testing impacts her in any way. Karen discusses it repeatedly, clearly indicating that the testing and the district curriculum pressures that result from it are a constant burden and concern to her. Carl is emphatic, almost angry, about the effects of the testing on practice, but he responds to it as a general concern—speaking of its impact on "teachers" rather than specifically on himself. This raises some important questions for research, exploring teachers' perceptions of this pressure on their practice and professional lives. We need to know more about teachers' beliefs and feelings about the pressures of standardized testing: in what ways do they report changing their practice to accommodate the drive for higher scores; what

evidence is there that practice is indeed impacted; what are teachers' feelings about the benefits and drawbacks of standardized testing?

The implications that this current policy trend has for technology use are discussed by Carl and evidenced by Karen. The quantification model exhibited by Accelerated Reader is resonates strongly with the values of the standardized testing movement. It devalues exemplary, inquiry-based technology practice because such practices do not translate neatly into test scores. And as Carl points out, it does, indeed, take a lot of time and energy to implement inquiry-based, student-centered technology experiences for students; if teachers perceive that test preparation takes up that time, they won't spend it on creative technology integration. None-the-less, it is important to notice that there is no direct evidence produced by this study that standardized testing per se has shaped technology use by any of these three teachers.

Technology and Change

Rhetoric surrounding technology in education has frequently made the assumption that technology in classrooms is a magic pill for reform—take it—put it in schools and classrooms—and reform will happen, a notion Larry Cuban (2000) scorns as "romantic." This research also calls that assumption into question. One of the most powerful pictures created by the stories of these teachers is how firmly each has shaped technology use to fit their personalities, pedagogues and circumstances. These teachers have both selected technology uses that fit their ideas about teaching and shaped applications to fit comfortably into their current practice. Developing a niche is a common early adoption strategy. However, this research is not about technology adoption: the teachers in this

study are not new technology users; they identify themselves as having had interest in and comfort with technology for quite some time. When Clarice and Karen tell their stories about technology adoption they tell about finding technology uses that they instantly recognized as something that would fit them. Carl's technology history is more complex. He reported that his initial encounter with technology necessitated some change in his teaching style, and that his uses have evolved across the years and continue to change. Yet the technology use that is visible in his classroom fits comfortably into what is clearly his accustomed way of shaping a classroom. Although at the time of the research Carl and Karen were moving into new technology uses—Karen into expanded use of TELE-Web, Carl into exploring video editing with his students, there is no evidence to suggest that these uses will disrupt their current practice; rather the new uses seem to be extensions along current paths—primarily *replacement* and *amplification* uses of technology. Although both are trying new technologies, neither is deliberately trying new ways of teaching. Yet there is some evidence to suggest that, in an environment of freedom and exploration such as exists in Carl's classroom, some technology uses may evolve that have transformative potential.

Although researchers continue to explore specific instantiations of exemplary classroom technology use, there is some common agreement about the kind of technology use that is desirable, primarily based on ideas about exemplary teaching and goals for educational reform. Ideas about "computer literacy" have been replaced with broader conceptions of technology used in complex ways to support student-centered, inquiry-based teaching (Pea, 2001; Means, 1994)

For technology use to support educational reform, it must be used in ways that go beyond supporting current practices. Seeing these examples of technology-loving teachers who are fitting technology interestingly but comfortably into their current practice indicates a need for researchers to understand more fully what does and does not encourage teachers to use technology in ways that challenge their comfort zones and expand their current thinking and practice. This research underlines the importance of acknowledging how local meanings shape and influence technology use. There can be no blanket solutions; each of the patterns of technology use we have seen make sense in the context. Any hoped-for changes will also have to make sense in very specific contexts.

There are also implications for teacher educators in this research. The most obvious is that teaching and learning subject matter with technology must be incorporated into pre-service teaching. This is an old saw by this time—nearly all research on technology in classrooms makes the same suggestion. That makes it no less true. In many ways, the teachers in these classrooms were 'found by' certain technology uses—they encountered them, they felt immediately comfortable with them, they continued to use them. Future teachers need to come to their classrooms aware of the wide array of choices available to them, and able to make informed decisions about what technologies to pursue. Increasing the quality, thoughtfulness and creativity of technology uses in classroom teaching requires overcoming the instincts of teachers to find a niche that works and stay with it. Overcoming such instincts requires a number of favorable conditions, but three contributions that pre-service teacher education could make are: a) providing models of exemplary practice that integrates technology with subject matter teaching b) helping students develop a set of conceptual tools with which to evaluate purposes and effects of

technology applications c) enabling students to acquire a vision for the possible—opportunities to imagine, and try out--what technology can contribute to their learning and growth and that of their students.

Literature in the Curriculum

This research does support Rosenblatt's (1991) concern that the aesthetic approach to reading can become lost in the enthusiasm for literature-based teaching in elementary classrooms. The difficulty I experienced in initially finding teachers who claimed to have literature-rich classroom environments, coupled with evidence presented here of the limited use of literature *as* literature in spite of all the children reading many, many books, suggests the possibility that very few children in elementary classrooms today may be experiencing literature as literature and fewer still may be having truly aesthetic experiences with books. This is not to suggest that literature cannot legitimately be used in the curricular ways seen here, but only that it is important to for teachers to notice what kinds of stances they are encouraging students to take in each case, and to provide frequent and substantial opportunities for children to experience literature as well as to learn from and about and with it.

This research also suggests that the tools we currently have to evaluate the nature of classroom engagement with literature are limited. While Rosenblatt's efferent-aesthetic continuum has long provided a standard language for assessing stances toward literature, each of these classrooms included strategic and utilitarian functions for literature that are not effectively capture by continuum. This suggests that, for elementary classrooms at least, we may need more multidimensional ways of capturing the nature of literature use.

While Rosenblatt's (1991) concern was that the literature was being lost in literature-based teaching, currently many consider literature-based teaching to be itself jeopardized by the increased emphasis on basics and standardized testing. Whether one believes that literature - based teaching is still a prominent trend, as it is in Clarice's classroom, or whether one believes that back to the basics test preparation has driven out time for literature, as Karen claims in hers, the news is not good for those of us who value children's interactions with literature as literature.

The problem needs to be addressed on several different levels. At the policy and curriculum level there needs to be recognition of the powerful contributions that literature can make in accomplishing the goals of democratic education. The current climate in literacy policy is desperately damaging to the future of children's aesthetic encounters with literature. In this Gradgrind mentality literature is seen to serve no practical purpose; in reality, as Rosenblatt (1976) says, literature allows the reader "to reap the knowledge of the world, to fathom the resources of the human spirit, to gain insights that will make his own life more comprehensible (p. 7)."

There is particular need for attention to this issue at the teacher education level. It is vital to help pre-service teachers value literature experiences for children by making them a part of the curriculum. It is hardly surprising to find teachers in the classroom who, amidst the pressures of curriculum and requirements, cannot find time to use literature just for pleasure and aesthetic experience. Their teacher preparation program most likely did not indicate a value for such activities. Many teacher education programs do not require students to have any coursework in children's literature; many do not even have a regular course available.

It is also important to enable pre-service teachers to recognize and identify the differences between *using* literature and *experiencing* literature. If pre-service teachers encounter children's literature only in the context of subject matter teaching or curricular integration, they may have no context for recognizing that their students, busily engaged with lots of good books, are not having any opportunity to spend time enjoying and experiencing the aesthetic pleasure of literature. Pre- service teachers need to be provided with opportunities to engage in aesthetic stances as readers as well as to be given opportunities to learn how to create aesthetic experiences with children.

For those, like myself, who value what literature *as* literature can offer in the educational experience of elementary children, and beyond that, value clearly aesthetic experiences with literature for all children, this research offers a serious concern about the limited attention to literature experiences in the current educational climate. A note of hope is offered by the children, however. Children still love stories, even children whose "transactions" with literature involve the calculations and purchases of Accelerated Reader. When Travis can't put his book down at the end of the Accelerated Reader session and asks to take it back to his desk, and when Maya reads all the way down the hall on the return to class, it is not Accelerated Reader points they are responding to. And when Martina says with delight, "The sand and the witch, sand-witch, get it?" and later, out of nowhere: "Books are my most favorite thing. I love books," it is possible to believe in the power of story over system.

A Final Note

I began looking at classroom literature and technology use together because of a belief that they must be related. I worried that teachers' interest in and use of literature might diminish as their interests in technology use developed. There is no evidence here to suggest such an occurrence. Indeed, the teacher with the strongest literature program—Carl-- is also the most enthusiastic advocate for technology exploration. Additionally, Carl reported that he observed a high correlation between interest in literature and interest in computers among his fifth grade students. Indeed, at surface level, this research produced evidence of very little visible intersection between technology and literature in any of the classrooms. Karen's classroom is intimately involved with computers, but that connection, although clearly between technology and books, cannot, as we have seen, really be considered a connection between technology and *literature*.

How do we understand the apparent disconnect between these two phenomena in these classrooms? It is useful to look at the question from the opposite direction—was technology in these classroom related to other subject matters? In fact, in none of these classrooms was technology deeply integrated in any way to the content learning of the students. In Karen's classroom the students also used Accelerated Math, but it was used in ways similar to Accelerated Reader—it contained managed the work and provided scores and reports. In all other content learning the technology served similar functions, as more efficient or fun substitute for paper and pencil tasks. In Clarice's room, similarly, the technology use, regardless of the subject matter associated with it, served to provide enrichment through CD-ROM resources and to provide a publication method for

report booklets. In Carl's room, perhaps more surprisingly because of the spontaneous and creative presence of technology in the classroom, it serves primarily as enrichment—technology for the sake of the fun of technology, as an alternate method of creating reports, and as a way of recording and preserving class activities and work. With the exception of the email discussion in Carl's British Literature project, in none of these classrooms was technology observed to be deeply integrated into any subject matter learning. So the original question is answered by default. Literature engagement in these classrooms is not deeply impacted by the presence of technology at least partly because the learning activities of students in these classrooms are not deeply impacted by the presence of technology.

However, this research also hints at the complex and indirect relationships between literature and technology discussed in the introduction to this study. Participants in this study report a familiar school and district level trend: Money and attention follow technology; literature is a poor relation easily ignored. In two of these schools, Broughton and Chappell Creek, both part of the same district, library staffing and funding were cut back at precisely the time that computer labs were installed. At Collins, the library aide struggles to manage the increased work load attributed to Accelerated Reader-stimulated book circulation, while a strong formal infrastructure has been built up to provide teachers with technology support. Sven Birkerts would not be surprised. Although I believe it is naïve to imagine that this attitude does not impact teachers' choices and students' experiences in ways both subtle and profound, this research did not reveal any direct evidence that within these classrooms technology use either inhibited or expanded children's engagement with literature.

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