ABSTRACT
             Part of a larger ethnographic study, this
investigation focused on the literacy development of a college
student as he participated in the virtual culture of a
computer-networked writing classroom where all instruction and
communication occurred through the computer. The student was a member
of one of two classes of adult students, ranging in age between 25
and 48, all employed in upstate New York. Data included transcripts
of large- and small-group discussions, response writings and
compositions, composition logs, focus group discussions about
computer networking, transcripts of electronic mail communications,
field notes, and student interviews. Results indicated that: (1)
e-mail communication between the teacher and the student served as
backstage support; (2) the relationships the student developed with
members of the small group provided an anchor for his actions within
the large group; (3) the student gained respect from class members,
which may have been more forthcoming through computer networking than
in face-to-face interaction where traces of the student's speech
handicap might have caused resistance; (4) his writing demonstrated a
closing of the communication gap through his strength of voice and
his attention to clarity and coherence; and (5) the student acquired
metacognitive knowledge about writing and valued peer response.
Findings suggest that an electronic environment where readers'
responses link feelings to thought and where responses are shared
with ease can lead to more powerful learning for some students than
in a traditional classroom. (Contains 21 references.) (RS)

Reader Response, Collaborative Writing, and Computer Networking

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Literacy looms as an immediate concern to educators in the decade of the nineties and with that concern has surfaced a redefinition of literacy itself. According to Brandt (1990), for some educators, "literacy is a technology; for others, a cognitive consequence; for still others, a set of cultural relationships; yet for others, a part of the highest human impulse to think and rethink experience in place" (1). Literacy as conceived in the following ethnographic research assumes these components, but it also accepts Bleich's admonition (1989) that "attention to literacy in any of its aspects entails simultaneous attention to the community, the culture, and the process of language socialization" (25). The following teacher-research project considers how a virtual computer culture can contribute to the development of literacy. The culture described here was formed so that fourteen adult students at SUNY Empire State College could participate in a collaborative study of composition that integrated reader response and writing.

The virtual culture of computer networking enables speed of light transmission of messages asynchronously, that is, at any time of day from any location where computer and modem are located. Though real-time networking is possible through local area networks, for distance learning

asynchronous networking provides flexibility for all members
to participate at their convenience. The ease of
collaboration and the need to write for all communications
make this medium particularly attractive for literacy study.

Theoretical Grounding

The collaborative pedagogy and curriculum that framed
students' learning in the current study derive from
interdisciplinary theory in psychology, feminism,
composition, reading, and computer-mediated education. In
psychology, the Russian Vygotsky (1978; Brunner, 1985)
envisions language as a psychological tool that, through
social interaction, moves a person to higher levels of
reasoning and reflection. In describing the kind of learning
environment that facilitates reflection, feminist scholars
Belenky, Clinchy, Goldberger and Tarule (1986) propose that,
at least for women, the best educational structures are those
that emphasize connection, acceptance, experience, and
collaboration. They ground their work on Gilligan's earlier
conclusion (1982) that "since the reality of connection is
experienced by women as given rather than as freely
contracted, they arrive at an understanding of life that
reflects the limits of autonomy and control." In
composition, Bruffee (1984), questioning traditional styles
of academic learning that assume knowledge as a product of
individual effort, introduced collaboration through peer
tutoring efforts at Brooklyn College with the aim to make
education more democratic and to give authority to the

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student. Borrowing ideas from Dewey, Rorty, and Geertz, Bruffee (1986) maintains that instead of resting on a universal foundation, knowledge derives from "an agreement, a consensus arrived at for the time being by communities of knowledgeable peers" (774-777). Similar to Vygotsky's social theory of language development, knowledge in Bruffee's model flows from the community to the individual.

At the same time the pedagogy of collaboration sought to distribute authority among teacher and students in the composition room, literary theory veered from the text-centered approach of the New Criticism to reader response theories that lent authority to the reader and to the group. Bleich (1975, 1988) acknowledgs the importance of the affective response of the reader in interpretation and also the role of the group in shaping meaning. For Bleich, as each individual seeks "the truth" in responding to classmates' responses, interpretation becomes "a communal act, serving the collective subjectivity rather than an external absolute standard of truth" (95). Encouraging a classroom that welcomes feelings into its public discussions, Bleich (1988) advocates a pedagogy that recognizes differences such as gender, race, and class; seeks authority for each member; and works toward change as students begin to understand the social relations embedded in their language experiences.

The virtual classroom of computer networking offers a unique space for pedagogy grounded in collaboration, for,

according to Joyce (1992), learning through this medium can change "the contour of learning itself" (9). Ong (1982) also notes its power in suggesting that computer networking, along with other forms of electronic communication, may become as significant in shaping human consciousness as the shift from orality to literacy. Psychologists Belyaeva and Cole (1989) see the medium as a "prosthetic device" for developing higher psychological functions such as those needed for reflection (49). With educational interactions that are "revisable, archivable, and retrievable" (Harasim, 1990, 51) computer networking, according to Harasim (1990), extends the user's control over interactions and "provides social framework for the development of a growing community of people" (30). Furthermore, reports also indicate that shy students and minorities feel liberated to contribute through this medium (Bump, 1990). Though Barker (1990) worries about possible misuses such as gender bias in computer access, he also claims that "the computer...can make us more open to our students and ourselves" (17). Hawisher and Selfe (1992), leaders of computers in composition, recommend a critical approach to the use of computers so that educators can control the use of this technology rather than be controlled by it. These reseachers, along with Harasim (1990) and Hall(1991), call for additional research on the use of computer networking as an instructional medium.

Method

Data derive from two classes of adult students, one with eight students and the other with fourteen students, ranging in age between twenty-five and forty-eight, all employed in upstate New York. In exploring the effect of this computer culture on students' literacy development, I was guided by the context sensitive research paradigm of ethnography, modified by the goals of feminist research--the empowerment of women and others who have previously been denied access to research discussions. Throughout the study I approached research as Geertz might (1973), "not an experimental science in search of law but an interpretive one in search of meaning" (34). The research took into account the "local conditions, local mutual shapings, and local values" that, according to Guba and Lincoln (1986), lead to the reader's ability to draw inferences from the study in order to apply them to her own situation. After being immersed in the culture as teacher of the course, I reviewed transcripts of the entire course including large- and small-group "discussions," response writings and compositions, composition logs, focus group "discussions" about computer networking, transcripts of electronic mail communications betweem students and me, field notes, and transcripts of selected face-to-face, open-ended student interviews.

With the whole class, students in this computer networked class reacted to literature relating to family, education, and the workplace; in small groups they wrote responses, later revised into compositions, to which group

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members responded. Entries were transcribed and recorded so that, unlike face-to-face conversation, participants could review the progression of a conversation before responding. All instruction and communication occurred through the computer. Part of a larger study, this paper focuses on the literacy development of one student, Clint, as he participated in this virtual literacy classroom.

As a framework for analyzing the data, I isolated the following characteristics of the environment that I hoped to achieve through the collaborative pedagogy and curriculum-- evidence of care and connection, validation of feeling and personal experience, and attention to issues of power and gender. Emerging from the data were categories representing the effects of this environment on literacy--the development of relationships with class members, affirmation and/or change of perspective, the presence of voice, and clarity and coherence of expression. I then coded data for significant examples of each category. To assure internal validity, I arranged for a member check as suggested by Guba and Lincoln (1986), the results achieving remarkable similarity. All categories were represented in the data; however, the most salient feature in the story of Clint is his development of clarity and coherence in writing.

Analysis and Results Represented through the Story of Clint

Deborah Brandt (1990) proposes that "reading and writing serve to close up the spaces between people, to draw them together across the impediments of time and space."[1] Though the freeing of time and space through computer networking offered certain liberties to students, interacting through space with diverse individuals required students to give special attention to language in order to close the gaps of communication. Peer response resounded with "I don't understand," I'm confused," "I want to hear more." Though students were given Bruffee's guidelines for peer critique along with my suggestions, the most important contribution to closing the communication gap came from the necessity--and sometimes struggle--to make oneself understood in the absence of body-language supports. Clint, in particular, learned through this struggle.

When Clint enrolled in the course, I knew only that his advisor had recommended the course so that he might study writing in the context of his declared major in computer systems. Clint's first communication, written personally to me through electronic mail (E-mail),caught my attention: "This is my practice introduction. My name is Clinton.... (Call me Clint). I am attending Empire to receive a degree in Computer Information Systems. I hope this will help my career. I have worked for the last 12 years at...[XYZ Company]. I hope to hear from others." This message alerted

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me to the simplicity of Clint's sentence style; the next message introduced me to his language processing and spelling: "I sorry about the confusion. Also, I a trying to upload a file into scride. Opps .. Scribe."

This message forewarned me of a language problem that Clint himself confirmed in his first response writing to Walker's "In My Mother's Garden," in which he named his mother as hero. Clint explained that he and his twin sister had a "noticeable speech problem," adding, "my sister and I could not talk to our farther." (Throughout this paper, students' writing appears as on transcripts.) In that writing Clint praised his mother, who had only a sixth-grade education, for understanding his language problem, for caring for thirty foster children over the years, for bearing the burden of her own ill health and that of her "ailing 77 year old husband" who, in an "unbending German attitude" believed that "women should be seen and not heard."

Clint was fortunate to have several caring individuals in his small group. In particular, he grew to respect Sue and her suggestions for his writing. After responding favorably to initial paragraphs of his first writing, she then added, "...Paragraphs 4 and 5 came as a surprise in regards to the flow of the essay....As a reader I felt the essay would flow better if the part about the ailing chauvinistic father were together with other statements regarding him."

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In the large group, Clint, along with another male participant, demonstrated a lack of sensitivity to Walker's point of view, explaining that "Walker could of approached the topic of contrary instincts in a less offensive way" and that she "overstresses the slavery part." Here Clint's response may relate to what Flynn (1986) labels a deficiency in interpretive skills because of the tendency to "resist the alien thought or subject and so remain essentially unchanged by the reading experience," a trait Flynn found more in men's reading than in women's. The presence of other voices, however, enabled Clint to hear many points of view. Mary wrote, "Wheatley [a slave] was considered a fool because, in admiring those with fair hair, she was perceived as rejecting her own race, and, in effect herself. Further, these people, regardless of how comparatively well they treated her, bound Phyllis by law in servitude for the purpose of labor. She was a S-L-A-V-E. She did not own herself." Clint also witnessed the participation of Maggie, the only Black student in the group. She chose to write about her mother: "...Not only was she expected to make her own home happy but oft' times she was a hired hand in this trade. She showed me an inner strength through all of the trials in the life of a Black woman, equaled only by her inner peace." Maggie's minority experience mirrored the ways in which race, class, and gender intersected and offered new issues upon which Clint and other class members could reflect.

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In his response writing to Glaspell's "Trifles," Clint identified more closely with the author's view; the writing, however, lacked coherence as well as problems with mechanics: "My feeling go out to Mrs. Wright. Her enjoyment seems to have be taken from her by her husband. Mrs. Hale indicated that she used to be real pretty and sweat. Mrs. Wright also used to sing. It would seem like she was very lonely. She had no children and nobody visited her. Mrs. Hale said it never seemed a very cheerful place was the reason she didn't visit....This story show the reader that a happy family life is very important. It shows that a wife's needs are important also. I came from a family where the farther was the master and the mother was their to wait on everyone else. I seen this additude cause depression in my mother." Sue again offered praise and a gentle suggestion: "Clint, when I read your essay I was very comforted by your stand on marriage. Many people, growing up in the 'dictatorship' you described, might just mimic the attitudes of their parents, rather than see the mistakes made and the pain caused....I feel compelled to make a suggestion....I was thinking that some longer, more embellished sentences might add some zip. But don't develop my bad habit of writing entire paragraphs for sentences!"

From his early responses and frequent E-mail messages to me, I sensed Clint's insecurity in the group but also his determination to succeed. Our E-mail communication became a backstage support with a correspondence that included eighty-

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three messages, forty-three from me. I offered encouraging remarks and gave specific specific ideas for responding to others' writings. As an addendum, I suggested more care with mechanics. My backstage support continued throughout the course though Clint's requests for help diminished as he gained more confidence.

The relationships Clint developed with Sue and others in his small group provided an anchor for his actions within the large group. The literacy event relating to Rich's "When We Dead Awaken: Writing as Revision" impressed upon Clint the need for clarity and development in written prose since on more than one occasion he had difficulty in getting others to understand why he had felt attacked by Rich. Marilyn wrote to him, "The very statement that you disliked is the statement from Rich's essay that I liked the most. In the context in which she is using it, referring to a 'holding back, a putting aside...as a kind of conservatism' is a thing I experience almost everyday. You may be happily married, but I'll bet dollars to donuts that your wife doesn't tell you exactly what's she's thinking all the time, for fear of whatever, your rejection, displeasure, not taking her seriously, fear of hurting your ego." Sue also disagreed with Clint's position. She explained tactfully, "...Through no fault of any one sex the male species dominates and controls in all walks of life. This is not a person to person domination....It is one way of life being considered by society to be supreme....It is the system--the patriarchy-

-that women are questioning...." Other members continued the exchange: "Clint, did you try to read Rich's essay "with the grain"?..."Clint, do you feel "attacked" because of what Rich writes or because maybe, deep down, you recognize that she might be right?"

Despite Clint's initial discomfort, he later acknowledged that he benefited from this literacy event as well as from subsequent encounters: "...After my experiance with Rich's story, I was very careful what I wrote so that I was not misunderstood and that my tone was not taken offensively. I think I will take this carefulness and detail with me into other writings that I do at work and at school." Such authentic literacy experiences spurred Clint to develop his writing more fully and to respond to the writing of others more carefully. To Marilyn he wrote, "...Marilyn, I strongly agree with you statements in paragraphs two, four, five and six. I have seen these problems in the company that I work for....The only thing I have to comment on is the title of 'Power in Progress.' You may need to give more examples of who has the power as it relates to management or maybe the title could be 'Differences between Automation and Technology.' Just a thought." This time Marilyn acknowledged learning from Clint: "Clint, thank you for your comments. I agree that I need to add more about "power" if I'm going to keep that title. Maybe I need more discussion about the ideological gap between the designers and the end users. I'll think on it and use your suggestion."

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In the medium of computer networking and with this group of students, honest communication did not prevent relationships from being built. Clint gained a respect from class members that may have been more forthcoming through the free space of computer networking than in face-to-face interaction where traces of Clint's speech handicap might have caused resistance and where he would be more vulnerable to interruption. Not until the end of the course did I learn that Clint had been in special education for most of his schooling because of his speech handicap. Now, working through computer networking with diverse students, most of them with more sophisticated language development, Clint learned quickly. Clint began his final essay, a response to David Noble's "Automation Madness": "Automation and technology are rewriting people views, values and life styles. It affects how people interact at home, school, work and the community. It affects everyone regardless of their age, sex or nationality. The number of people that a person can communicate with has increased, yet the quality of that communication has decreased...." Adding detail to a later thought, he explained, "disk packs, mainframe, and megabytes are terms the older generation can't relate to...."

Though Clint still had conventions of academic discourse to learn, his writing demonstrated a closing of the communication gap through his strength of voice and, most particularly, his attention to clarity and coherence. His log describing the process of his final essay demonstrates

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his acquisition of metacognitive knowledge about writing and also his value of peer response. He noted, "Use Sue's response 16:4, Mike's comment 102:3, Lori's suggestion 102:2, and Patti's idea in 102:4." Such collaboration that encouraged readers to link experience with idea and to negotiate meaning with class members is more readily available through computer networking because of its focus on internal thought rather than on external distractions. This unique freedom added to Clint's progress.

Class members also recognized Clint's development. In offering a double perspective for Clint's own self evaluation, Michele commented, "In your "Trifles" response, you stated some of the events from the play but commented little about your thoughts....Your last two compositions flowed well and I liked the many descriptions and examples you used....I think electronic collaboration has helped you to formulate your ideas--it really helped me....I think this collaboration has made it easy for us to keep files of our work and it's easy to reflect on our writing." Sue also spoke kindly of Clint's development: "Clint, I hope you enjoyed this course, because I think you certainly got a lot out of it. As I said to you in a previous response, your writing has taken on quite a change, and I mean that to be a compliment....I don't think it takes an expert to see the changes you went through during this course. While your earliest writings were good, they just kept getting better and better with each essay....You were not afraid to express

sentiments that are not "macho", and that helped to put some of us "feminist" types (me) more at ease....You also were not afraid to disagree with a point of view, which helped me because I tend to be timid in that area. It is apparent that you spent a lot of time and effort in both your essays and your responses....You've done a great job and it's been a pleasure collaborating with you."

Clint's self evaluation highlighted his new learning about writing. He concluded, "The benefit of electronic collaboration is that it forces the writer to be more precise. I found myself taking extra time when preparing my responses and compositions. I tried to be as detailed as possible when describing my point of view. I made an effort to write so people from different jobs would be able to understand me. In order to do this I had to put myself in their shoes and try to think as they would. I felt this detail was needed because I didn't know my audience and I didn't want to be misunderstood." Though Clint valued networking as "a very good `ice breaker'" without distractions of the actual presence of individuals," he also admitted that he preferred face-to-face interaction. This view stemmed particularly from work experience: "I always feel that I am being attacked if I receive a memo or electronic mail that describes a problem only from their point of view, especially if my superiors are copied in on the collaboration." Although Clint's criticism of workplace practices should be heeded by those in academia who turn to

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computer networking, Clint's experience in this virtual

environment of academia demonstrated how computer networking

when used for reader response to significant literature can

facilitate honest communication yet provide enough distance

to maintain respect among group members. In responding to

Clint's evaluation, Ray commented cn the advantage of having

time to reflect before responding, and Gary reminded Clint of

the benefits of being freed from face-to-face cues:

"Clint,...face to face communications is easier. However

using written communication forces you as a writer to be

descriptive and specific so the reader doesn't have to guess

as to the content." Mary agreed: "Yes Gary! Without the

luxury of body language to fill in the gaps of verbal

communication, electronic communication requires that our

written communication be precise. And that is exactly what

has helped me in composition." Clint's note to Sue epitomizes

the possibility of developing literacy through computer

networking and honest reader response that links personal

experience and feeling to text. He explained, "...You gave

me some good insight into my writing style....Before I got to

the last line in your first response to me, I thought 'Man, I

am going to have a hard time writing in this course,' but

after following your suggestions, I found all the responses a

lot better. I thank you your help."

Conclusion

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According to Belenky et al. (1986), "the connected class recognizes the core of truth in the subjectivist view that each of us has a unique perspective that is in some sense irrefutably "right" by virtue of its existence. But the connected class transforms these private truths into objects, publicly available to the members of the class who, through 'stretching and sharing,' add to themselves as knowers by absorbing in their own fashion their classmates' ideas" (222-223). Clint's experience in the electronic classroom confirmed not only that a connected classroom can be established through computer networking but also suggested that an electronic environment where readers' responses link feelings to thought and where responses are shared with ease can lead to more powerful learning for some students than that in a traditional classroom. In this environment, Clint was able to internalize new ways of thinking new structures for writing. By emulating peers and reflecting on their suggestions, Clint received valuable experience in the process of writing.

For Clint as well as for other students, computer networking provided a free space for learning to communicate to a broad range of individuals. Communication in this open class went beyond the factual knowledge that Clint had gained from classes in computer systems. The layers of messages included diverse feelings about human experience within cultural institutions--institutions embedded in conflicting issues of power and gender. The desire to be understood by

classmates from various discourse communities and with
opposing views prompted Clint to write more precisely and to
develop his ideas more fully, skills required for writing at
the workplace as well as in college. Though computer
networking can be abused, when it is structured as a
"connected" classroom, it can have the power of transforming
the literacy class and closing the communication gap. In
this instance, Clint's participation mirrored literacy in
action.

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