

ABSTRACT

Fiore, Sallie Mae. Conferencing Software: Why to Incorporate It into Writing Instruction and How to Select an Appropriate Product. (Under the direction of Patricia LaCoste.)

With existing technological capabilities, writing instructors are confronted with many choices regarding the facilitation of their instruction. They must be aware of the potential benefits and shortcomings of using Computer-Mediated Communication (CMC) in their writing instruction, and then they must decide if this technology will support their pedagogy. If so, they face the decision of choosing a conferencing software product and incorporating it into their classroom. This study was designed to provide some guidance for instructors trying to determine if and how to use conferencing software to enhance their instruction. It reviews the educational theories that promote conversation and support community building in writing instruction and examines how CMC can support these theories. To examine the options available to writing instructors wishing to incorporate CMC in their classroom, it compares seven existing conferencing software applications. This comparison attempts to help instructors, who want to foster conversation, involvement, and a student-centered pedagogy, gain insight into available products. In order to make this comparison information accessible via the Internet, I have created a companion website, which can be found at www4.ncsu.edu/~smfiore.

**CONFERENCING SOFTWARE:
WHY TO INCORPORATE IT INTO WRITING INSTRUCTION
AND HOW TO SELECT AN APPROPRIATE PRODUCT**

by
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BIOGRAPHY

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From 1995 until 1997, she taught high school English. She worked as an administrative assistant and technical editor from 1997 until 2000. With the support of her husband, Ralph Fiore, she decided to further her education and return to school to earn her Master of Arts in English in 2000. During her two years as a graduate student at North Carolina State University, she served as a research assistant for the Faculty Center for Teaching and Learning (<http://www.ncsu.edu/fctl>.) After her graduation in May 2002, Sallie plans to work as an instructional designer or technical writer.

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I. Introduction

Today, many people, including students of all ages, communicate with their friends by through email, bulletin boards, or from inside chat room environments. Though this dialogue is different from the type of writing expected in academic settings, it is still a form of written communication. By exchanging ideas through writing, students are practicing composing skills and strategies, such as consideration of audience and tone. Students using email and other forms of online communication must develop the ability to alter their writing style according to the audience they are addressing and choose their words carefully to convey the appropriate tone of their message. It seems logical for writing instructors to take advantage of students' interest in communicating with their peers to enhance these writing skills.

Writing instructors have been incorporating the social atmosphere of collaborative writing groups and peer-editing to teach the thinking processes necessary in writing for the last two decades. Now, technology is available that can enhance this type of social, student-centered atmosphere. Conferencing tools, often called Computer-Mediated Communication (CMC), can allow collaborative writing and peer-editing groups to converse via computer connection rather than requiring face-to-face interaction, eliminating many of the administrative difficulties instructors often face when facilitating group work. For example, groups can work on a document at the same time, but in different places using synchronous systems, or they can spend as much time as they need reviewing a peer's paper and send their responses at a later time using an asynchronous system such as email.

Software companies are creating conferencing software that integrates synchronous and asynchronous systems, allowing instructors to take advantage of both methods of communication. This conferencing software allows instructors to customize the various conferencing tools so that it will support their instructional methods. Customization permits instructors such privileges as varying levels of access, meaning they can determine who participates in which discussions or who can view certain archived documents. Instructors can also provide their own prompts for discussion or guiding questions for peer-editing. Conferencing software allows instructors to adapt technology to fit their instructional needs.

This technology seems to be a logical complement for writing instructors who wish to harness the power of conversation in their writing classrooms. As more writing instructors begin to consider incorporating networking technology into their classrooms, they have many questions about why they should use CMC and how they should select their tools. In an attempt to answer some of these questions, I review the educational theories that promote conversation and support community building in writing instruction and examine how the technology of CMC can support this community building. By exploring the benefits and problems associated with CMC, I hope to provide some guidance for instructors trying to determine if CMC will enhance their instruction.

If writing instructors determine that CMC can benefit their classroom, they must then consider selecting the tools that will best support their pedagogy. Conferencing software applications are often the most feasible option for instructors because most of these applications encompass many of the collaboration and writing tools needed by the writing instructor and have the capacity for customization and flexibility. However, there

are few comparisons and selection guidelines available. Therefore, with the theoretical research examining CMC in mind, I discuss studies conducted using available conferencing software and techniques used by instructors already using such software, analyzing the results and outcomes to determine implications for choosing software. Finally, I use this information to develop a list of criteria with which to compare seven existing conferencing software applications and create a website (www4.ncsu.edu/~smfiore) in an attempt to help instructors who want to foster conversation, involvement, and a student-centered pedagogy in their writing instruction with the help of conferencing software.

II. Review of Literature

For years, writing was considered a solitary act. The nineteenth century writer in the lonely garret, the secluded writer in a cabin in the woods, and the snowbound writer in an empty hotel have been popular images. Kenneth Bruffee disputes this misconception that “[a] writer’s language originates within the inner reaches of the individual mind” and the lone writer must find the appropriate language to communicate these ideas to his readers” (“Social Construction” 784). Many people still believe that the only “discussion” occurs between the writer’s written words and his or her readers as they silently read the finished product. In the 1960s, educators began recognizing the importance of discussion among peers and the validity of such learning theories as social construction and constructivism. Many compositionists now accept writing as a social act, and writing instructors have been working towards creating a sense of community in their writing classrooms so that students can test their thoughts and develop their language through discussion with peers during the writing process. This discussion gives students the opportunity to talk about their texts and revisions; and hearing the comments of their peers helps them to understand the effects their linguistic and rhetorical choices have on other readers. Students work together to bridge the gap between the meaning they are trying to convey and the effect their words have on readers trying to construct that meaning as they read the text.

Now, with advancing and ever-present technology, writing instructors must decide whether to use technology to help them create this sense of community in their classes. Studies show the use of computers alone creates a more social atmosphere, even if they are only being used for word processing capabilities (Hawisher and Selfe,

“Reflections” 294). If for no other reason, writing with computer technology is more social because it is easier to share with others when it is legibly typed and printed. Word processors also make it easier to try the suggestions of the instructor and peers and later keep or discard them since the entire draft does not have to be rewritten (Snyder 185). As writing instructors contemplate incorporating these technologies into their classrooms and taking advantage of current networking capabilities, they should know what theories of learning such technology can support. Obviously, an essential component of Computer-Mediated Communication (CMC) is communication. It emphasizes conversation among peers by providing opportunities for collaboration, encourages student involvement in the learning process by requiring them to participate in the creation of individual and group texts, and decenters the authority of the instructor by giving the students more equal power in controlling discussion. For these reasons, CMC is often appropriately linked to the theories of social construction and building learning communities within the classroom.

Social Construction Theory and Computer-Mediated Communication (CMC)

The central view of the theory of social construction is that knowledge is something constructed by groups or discourse communities rather than something that exists throughout time to be learned. Based on the core set of beliefs of social constructionist views, communities are essential to the learning process. For learning communities to create knowledge, the members of that community must converse with one another, be actively involved in the process, and recognize one another as important, contributing members of the group. As with most learning theories, social constructionist

thought has evolved over time. In this section, I briefly trace the evolution of social constructionist thought, explore some of the differing views of this theory, and examine how CMC can support the building of learning communities.

Evolution of Social Construction Theory

Theorists began appreciating the importance of conversation as early as 1960. It was around that time that M.L. Abercrombie publicly recognized the value of collaboration she saw emerging in the communities of students in her classroom during her research on the processes of perception and reasoning. She reported that medical students working in small groups to diagnose patients worked more efficiently than students working alone. She summarizes the discussion in one of the groups as follows:

Discussion in a group does for thinking what testing on real objects does for seeing. We become aware of discrepancies between different people's interpretations of the same stimulus and are driven to weigh the evidence in favour [sic] of alternative interpretations. Certain areas of one's private world are compared and contrasted with other people's, and in seeing differences between them it becomes possible to modify our own world if we wish to. Instead of seeing our own mistakes by contrast with the statements of unquestioned authority as in the traditional pupil-teacher relationship, we see a variety of interpretations of the same stimulus pattern, and the usefulness of each must be tested in its own right. (62)

Even in this early analysis of group work, Abercrombie identifies conversation, active involvement in learning, and decentered authority as key elements to the learning process that are enhanced by group discussion.

Within ten years, social constructionist thought began to develop. In Thomas Kuhn's Structure of Scientific Revolutions in 1970, the theory of the social construction of scientific knowledge began to emerge. This theory gave communities the responsibility of creating knowledge. Kuhn argues that there is no "set goal, a permanent fixed scientific truth, of which each stage in the development of scientific knowledge is a better exemplar" (173). Rather, Kuhn argues that scientists replace one accepted piece of knowledge with a new one as communities change what they recognize as "truth" or "knowledge." This idea is similar to Abercrombie's notion that her students compared and contrasted their ideas and possibly modified their world, but differs from her analysis by implying the community comes to a consensus so that this modification is extended beyond each individual's world to the world of all in the community.

A decade later, Richard Rorty expanded this theory beyond scientific knowledge to all knowledge and claims that while social constructionist thought had only recently been discussed in much depth and was mainly being developed in scientific fields, the traditional cognitive theory of knowledge in all disciplines had been questioned for almost a century. In Philosophy and the Mirror of Nature, Rorty also discusses the important and accepted concept of abnormal discourse, or the introduction of new ideas into a discourse community. These new ideas must be justified to community members. Creating and justifying knowledge places new importance on the ability to communicate and therefore on the ability to write.

Kenneth Bruffee's work in the 1980s began to analyze the implications of this theory specific to composition studies. In Bruffee's opinion, social constructionist thought gives reading and writing the long-overdue value it deserves. The central idea of social construction "assumes that entities we normally call reality, knowledge, thought, facts, texts, selves, and so on are constructs generated by communities of like-minded peers" ("Social Construction" 774). Because these communities must communicate their ideas to one another through verbal or written language, social construction regards knowledge and language as inseparable. Therefore, the ability to communicate well becomes central to learning and to being a contributing member of society.

Differing Views of Social Construction

Bruffee's explanation of social constructionist thought is not without its critics. Commenting on Bruffee's book, Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge, Patricia Sullivan critiques Bruffee's lack of examples from his own experience and the experience of others as a weakness. She feels such examples would illustrate to writing instructors ways in which they might guide students in collaborative learning and help them cross the boundaries between the discourse communities (602).

Since no one is completely "like-minded," Kurt Spellmeyer sees a problem with the boundaries themselves in Bruffee's version of social construction. Where do we draw the boundaries between knowledge communities, and how do we begin to cross them (158-9)? He indicates that the academy has become too fragmented, and educators must work toward a common ground so disciplines and discourse communities can understand

one another. He suggests that the way it is currently fragmented, “every community has its own framework, with its own ‘logic,’ [so] one framework provides no basis for judgments about another” (170).

Because of such fragmentation, he feels individuals must take in the knowledge of a community and ‘unpack’ it, making their own meaning from it (185). Then, they can take their knowledge into another community and make their own kind of contribution. If writing instructors can convince students that their past experience and knowledge is a worthwhile contribution to the community of the writing classroom, students should be more likely to become involved in the creation of knowledge. Spellmeyer posits that “[t]he point is not to get into the game, nor even to get out of it, but to overcome altogether the disjunction between outside and inside,” the purpose of learning being to blur the boundaries between learning communities to create a common ground, not cross over into new territory (209-10). Understanding this concept of blurring boundaries can help students realize that through assembling their joint knowledge, they are helping one another create a common ground and blurring the boundaries between their classroom community and the academic learning community.

One beneficial aspect of social construction has been that it forces us to acknowledge that we are indebted to those before and after us for what we are and what we know (Spellmeyer 158). However, Spellmeyer disapproves of Bruffee’s explanation of social constructionist thought. He feels Bruffee’s explanation removes authority from a single individual, but gives new authority to the community. Under these conditions, like-minded communities impose their knowledge on the members of the group rather than knowledge being conferred to students by a single authority. Spellmeyer points out

that "... if, as Bruffee holds, the community makes knowledge, ... , then how can the community be wrong" (159)? But, we all know communities can be wrong, and for this reason we should be hesitant to give too much authority to communities. Students should understand as they learn the set of truths and accepted knowledge of learning communities that they do not have to agree with everything the other members of the community believe.

Granting a discourse community such power and unquestioned authority can be dangerous. Joseph Petraglia argues that the compositionist's understanding of social construction gives the English department this type of unquestioned authority. Because the compositionist interprets social construction to mean that "rhetoric is knowledge," the English department becomes extremely important (38). When Petraglia wrote "Interrupting the Conversation" in 1991, he felt that placing such a high level of importance on the teaching of rhetoric gives "further impetus to a political agenda, common in contemporary English departments, that centers on issues of social justice and empowerment even though there is little in constructionist theory itself that suggests a moral or political stance" (51). He suggests that compositionists, including Bruffee, have interpreted the theory to champion the English department in ways that are not exactly incorrect, but not fully supported by the founders of social construction such as Kuhn and Rorty.

Perhaps because of such disagreement with Bruffee's explanation of social construction, there are other theorists who follow a similar theory, but one that decenters authority even further, without simply moving it from the instructor to a knowledgeable community. The followers of this theory drop the term "social," and place more

emphasis on the individual, but still value social interaction. The constructivist theory of knowledge "avers that learners construct their own reality or at least interpret it based upon their perceptions of experiences, so an individual's knowledge is a function of one's prior experiences, mental structures, and beliefs that are used to interpret objects and events" (Jonassen 34-5).

In the constructivist theories of knowledge building, the individual is responsible for building his or her own knowledge, but the social dynamic is still very important because students "actively enter into the knowledge-building dialogue to confirm, modify, question, contradict, or correct shared information" (Resta). This theory decenters authority more completely than social construction because each individual is constructing his or her own knowledge, not the knowledge of an entire community. Yet, the importance of conversation among peers and active involvement in the knowledge building process is still valued. Ann Hill Duin and Craig Hansen point out that it is important to remember that the individual is a contributor to this building of knowledge and "is not helplessly awash in a storm of social forces" (91). Such empowerment of the student more directly supports Abercrombie's analysis that students make the decision to modify their "own world if [they] wish to" (62).

Potential Benefits of Using CMC to Support Community Building

Most importantly, networked classrooms can assist instructors as they encourage conversation, increase active involvement, and decenter the authority of the teacher. In many cases, CMC can encourage conversation by fostering a relaxed atmosphere in which more students feel comfortable contributing. This increased student involvement

results in more active participation in the creation of knowledge. Ultimately, as students become more involved in their own learning, the authority of the teacher is decentered. Also, networked classrooms make collaborative group work, an essential element of building community in the writing classroom, more convenient by alleviating such managerial concerns as copying and distributing student drafts. An additional benefit of CMC can be to help develop critical computer literacy.

Importance of Conversation

According to Bruffee's understanding of social construction, conversation is crucial to the ability to write well. Encouraging conversation among learning groups provides meaningful practice with language that enhances not only the ability to talk, but the ability to think and write as well. If thinking is simply internalized conversation, a person cannot even think without the ability to talk (Bruffee, "Collaborative Learning" 641). Bruffee writes that "[t]he first steps to learning to think better, therefore, are learning to converse better and learning to establish and maintain the sorts of social context, the sorts of community life, that foster the sorts of conversation members of the community value" ("Collaborative Learning" 640). When students learn to converse in a meaningful way, they learn to listen to whomever they are speaking and shape their comments appropriately. They choose words and situations they think the listener will understand and appreciate. Instructors can guide groups of conferencing students in ways that develop conversation skills and lead to essential writing skills (Brooke, Mirtz, and Evans).

Social constructionists such as Bruffee, therefore consider conversation vital to not only being a contributing member of society, but also being able to form thoughts and communicate them in writing. This perspective implies that writing instructors should recognize the importance of providing opportunities for discussion in their classrooms. Students must be given opportunities to test their thoughts on others. Bruffee supports such practice “because writing is itself a displaced form of conversation, teachers have to find ways for students to learn to engage in constructive conversation with one another about writing” (Collaborative Learning 58). Constructive conversation creates the atmosphere necessary for active involvement in learning and developing oral and written communication skills.

Because networked discussions using CMC are usually casual in nature and students are often already comfortable with this type of exchange because of instant messaging and other kinds of online, nonacademic CMC activities, students are able to practice putting their thoughts into writing without worrying about perfection. The tone is conversational, but students are actually conversing in writing. This relaxed atmosphere is important, but it is also important that in networked discussions students are forced to rely on words to convey their meaning, tone, and general attitude. They cannot rely on the body language and voice intonation available to them in face-to-face conversations. In an analysis of electronic writing projects, Tharon Howard found his students were motivated to pay attention to their word choice by the realization that their electronic pen pals, whom they never met, formed opinions of them from their writing (213). Though

this may be counter-productive to the relaxed atmosphere, it does force students to take notice of the tone of their words to avoid misunderstanding.

Similarly, networked conversations provide a beneficial tool for learning the discourse of other learning communities before being thrust into them. Michael Day has recognized the internet as a place for students to write for a bigger audience than the teacher and has students join professional listservs to help them begin crossing the boundaries into other learning communities. After students join a listserv, they monitor the conversations for a week or so until they feel they understand the discourse, then they begin posting messages (155). This is a method of encouraging conversation through CMC while also asking students to stretch beyond the comfortable conversation of their peers.

Active Involvement in Learning Process

Conversation requires action from students, thus actively involving members of the community in the knowledge building process. Gail Hawisher understands social constructionist thought to advocate conversation and interaction in writing classes by emphasizing “knowledge as the active creation of meaning and as the product of ongoing, communal activity” (“Cross-Disciplinary”). Active involvement in the creation of meaning requires students to use the higher order thinking skills of evaluation and justification more than in less interactive methods of instruction, such as rote memorization exercises or lecture. Communities of peers are constantly comparing and contrasting “certain areas of one’s private world ... and seeing differences between them” (Abercrombie 62). In this way, they can establish knowledge and justify their beliefs or

change them as needed. Establishing knowledge and justifying beliefs involve participation from all members of the learning community. These communities are actively “build[ing] meaning through an ongoing process of communication, interpretation, and negotiation” (Duin and Hansen 90).

Just as Rorty explained, this process of building knowledge through negotiation naturally leads to disagreement. When new ideas are introduced, the community members must evaluate and either dismiss the abnormal discourse or accept it and modify their knowledge base (320-2). Again, this evaluation is accomplished through some form of conversation, whether it is verbal or written, and is only possible if community members are actively engaged in the evaluation process.

The anonymity of the computer screen creates a certain level of comfort. Many researchers have found that because of this anonymity, more students are willing to participate in CMC, thereby increasing the level of active involvement. W.R. Klemm cites as two advantages to using collaborative software that “shy students have a better chance to influence the group’s product” and “slow students are less embarrassed.” Studies like Lester Faigley’s show that women and other marginalized groups, such as other minorities, are more likely to participate in networked discussions (see also Bump; Selfe). Faigley cites several psychologists who support this finding “that communication is more equitable and less inhibited when such factors as appearance, paralinguistic behavior, and the gaze of others are removed in written electronic conferences” (182). Both Michael Day and Gail E. Hawisher also cite increased class participation as benefits of CMC. Such increased participation, as well as the fact that CMC accommodates

various learning styles and places more responsibility for learning with the students (ITiCSE'97 Working Group), promote more active involvement from students.

Decentering Instructor Authority

Accepting or rejecting ideas that will shape the base of knowledge in a community is an important responsibility. Members of the community must feel worthy of such a privilege before they will actively participate in the conversations that create knowledge. For this reason, it is important for writing instructors to establish practices that give students some level of authority over their own learning. However, there are many problems facing this relinquishment of authority. First of all, instructors often do not want to relinquish their authority. After all, the discourse community of English professors enjoys an established position of hierarchy over the student discourse community. Secondly, there are the expectations of students. Students come into a classroom expecting an authority figure, the instructor, to bestow knowledge upon them. They often resent the responsibility of being actively involved in the knowledge-making process. Students feel very inadequate in this realm, for they usually feel they can contribute very little to a body of knowledge they do not yet understand.

Once students begin to grapple with this notion that their instructor is not an “all-knowing” figure of authority, they can help one another learn the truths and accepted body of knowledge of the discourse community to which they are all attempting to gain access. Through conversation, students should be able to help one another with this task, and their participation in class conversations becomes valid because they are helping their peers as they attempt to create their knowledge together. For example, students can

discuss their writing in peer groups. Though usually they are still writing for the teacher as the end audience, since even in the best situation the instructor will have to evaluate the students' writing in the form of grading. However, through discussion, students are helping one another and looking at each text as something to be critiqued and valued. Teaching students to negotiate their "position as writer and student in relation to these conflicting demands" can be a difficult, but valuable process (Brooke and Hendricks 1). Writing instructors must attempt to build a community in which students feel comfortable contributing at the same time they are attempting to meet the expectations of the teacher and blur the boundaries between their student community and the academic discourse community.

CMC can help facilitate this difficult task. Since student involvement in a class using CMC increases, the class becomes more student-centered than teacher-centered, thus decentering the authority of the instructor. As CMC allows students to feel less inhibited and more likely to participate in discussion, they develop a sense of self-confidence and independence. Students are relying on one another for writing guidance and advice, and the teacher becomes more of an administrator of tasks than an all-knowing authority figure. Faigley discusses the decentering of teacher authority in networked discussions. He points out that the teacher cannot give visible cues of evaluation in response to student comments (180). Because students are not trying to come to predefined conclusions to impress the teacher and find the "right answer," they are allowed a freedom to ask one another more open-ended questions rather than trying to find the answer the teacher wants, as is often the case in a typical classroom discussion.

Other Benefits of CMC

Technological advances are intended to make life more convenient, and this potential benefit should not be overlooked when considering CMC for writing instruction. Fred Kemp, who is a strong supporter of using the workshop approach for writing instruction, believes that networks alleviate some of the managerial problems of distributing drafts for collaborative group work. He suggests that CMC alleviates time-consuming reading aloud and the expense of making transparencies or numerous copies of student writing (“Emphasizing Rhetorical Effectiveness”). Collaborative learning groups are essential to building a sense of community in writing classrooms. They provide a means for students to pool resources. Each student might have one particularly strong writing skill such as generating ideas, organizing, drafting, or editing (Day and Batson). When working in groups, they are able to share these skills and possibly teach them to their peers more effectively than the instructor. Curtis J. Bonk and Kira S. King cite studies that “support that students internalize the scaffolding of more capable peers when collaboratively writing.” However, the problems specific to the incorporation of collaborative learning groups, such as the managerial concern of making certain every student in each group has read the necessary drafts often keep instructors from utilizing collaborative groups as much as they would like. CMC affords several conveniences otherwise unavailable to writing instructors. Networks alleviate some of these problems that arise while managing collaborative learning groups in a writing classroom.

Another advantage of CMC is that there is a decreased time lag between class discussion and student writing. Using networked discussion means “[c]lass discussion, writing practice, and teacher feedback are not spread out over a week or more, but can be

telescoped into one class session” (Day and Batson 38). Plus, transcripts of networked discussions can be printed to help students remember topics discussed and the thoughts of their peers. Another convenience allowed by CMC is that people separated by time or space are still able to communicate.

A final benefit of CMC is that it offers an interesting way to look critically at computer technology itself. Many compositionists value critical pedagogy, teaching students to be aware of the ideologies and political forces operating in the society around them. In addition to adding convenience, networked discussion has been found to be very useful for creating an awareness of the influence of society. Lara Baker Whelan writes that it provides “an opportunity for students to test their preconceptions about how society ‘works’ by eliminating certain factors such as appearances or membership in social groups and then examining whether and how their online society works differently from ‘regular’ societal exchange.” Donna LeCourt uses networked discussion to analyze the power of context. Her research focuses on how the discourses of society shape our thoughts and opinions. Networked conversations can move quickly at times, and when reviewing the transcripts of these discussions, students are able to examine how the context of what others say influences not only what they write, but what they think. The flow of the conversation might cause them to have thoughts they might not otherwise have, exhibiting the power of society at large in relation to our opinions (279). LeCourt also uses asynchronous discussions for students to post their ideas at a slower pace. Students report that before they become comfortable posting their ideas, they read others looking for “cues on how to participate” (280). They also find that they want their posting to be acknowledged by the others and if they are ignored, they try harder to

normalize their discourse. LeCourt explains that networked discussions present “possibilities for critique at the local level of students’ own experience” revealing the power of context and discourse at larger levels of society (282).

Potential Shortcomings of CMC

Despite the obvious benefits of CMC, some writing instructors have reservations about incorporating the tool of computer-mediated communication (CMC) in their writing classes. One problem with CMC is that teacher authority may sometimes be taken away too completely. Though Faigley is encouraged by the decentering of teacher and subject in networked discussions, he recognizes that it can present problems. There can be tension among class members and an aggressive tone in some discussions. Also, in one discussion, students completely wrote Faigley out of the conversation taking away all of his teacher authority (197). He recognizes that this could be a problem for teachers trying to implement networked discussions into their classroom, posing the question of how involved the instructor should be in computer-mediated work.

Another effect of CMC can be the creation of a hostile environment. David Hogsette hoped to create a more student-centered class and diminish his teacher authority by incorporating CMC into class discussions. However, what he observed in one class was that though students were empowered, their lack of inhibitions created a hostile learning environment. Though more women participated, they also formed alliances with other women, and began to speak as a collective voice. Men also occasionally formed alliances asking other men to support their opinions (2-3). Similar to LeCourt’s discussion of context and discourse, he found students were silenced if their posting was

radically different from other postings. Similar to Faigley, Hogsette found his students moving away from consensus towards dissent, that “instead of working toward closure of discussions or group consensus, my students argued, confronted each other, questioned assumptions, and defended their positions” (4). However he felt their dynamics of dissent were often unproductive and escalated into “flaming,” a term used to describe hostile comments from people empowered by the anonymity of the computer screen.

Hogsette is concerned about the pedagogical implications of networked discussions. He worries about subjecting students to this type of hostility, but feels the level of self-reflection created by the networked discussions is beneficial. He also feels these types of confrontations through networked conversations may equip students with the skills needed to negotiate diversity. Therefore, he believes the discussions are worthwhile but require reclaiming some level of teacher authority. He suggests while not participating in discussions, responding to students who write a hostile message individually or if the class discussion as a whole gets out of control, sending a general message to the class reminding them of the effects on others by their language (6).

In addition to losing authority, writing instructors may be wary of CMC because networked discussions can so drastically change conceptions about writing. Some instructors, such as Theresa Henley Doerfler and Robert Davis, find the products of their courses may change. They found the conversation became the product rather than the original essay they had planned to assign. Faigley agrees that “[n]etworked writing displaces the modernist conception of writing as hard work aimed at producing an enduring object” (191). Another new, possibly unsettling, conception of writing presented by CMC is that writers are not required to find their authentic voice in

networked discussions. The anonymity of the computer screen allows students to easily change identities. Some teachers see this as a problem if they value the "notion of students discovering their authentic selves through writing" (Faigley 191).

Because CMC can cause such drastic changes in writing instruction, Dawn Rodrigues is concerned that prominent composition scholars are influencing writing instructors to use CMC before they really know what they are doing or fully understand the implications of CMC (45-6). Rodrigues' hesitation to noncritically adopt CMC is understandable. As Gail E. Hawisher and Cynthia L. Selfe point out in "The Rhetoric of Technology and the Electronic Writing Class," some teachers hear the enthusiastic claims of how CMC is improving writing instruction, and they assume the technology will do the work all on its own. In the classes Hawisher and Selfe observed, they found three common pitfalls in networked classes. One problem was that though there was a significant amount of writing, there was little interaction, and they felt students were using class time as lab time and needed more direction from the instructor. Another common problem was that the classes were still too teacher-centered. Teachers used the technology for presentations rather than active involvement of students. A final problem Hawisher and Selfe identified was that "lots of peer teaching" sometimes translates to lots of talking, often off-task talking (60-1).

Hawisher and Selfe, however, are not implying that instructors should cease using CMC in their writing instruction. They are simply stressing that instructors must not forget their own responsibilities as they recognize the benefits of technology. Instructors cannot assume any method of instruction is infallible. As Kemp points out, "[t]hose who support CMC-based instruction make strong claims that cause others to call for proof, but

there is no proof that CMC provides better instruction than precomputer pedagogies, just as there is no proof that precomputer pedagogies provide any instruction at all" ("Computer-Mediated Communication" 144). Likewise, D.R. Newman, Brian Webb, and Clive Cochrane found evaluating the quality of group learning in face-to-face communication versus CMC difficult because the opinion of how "good work" is defined can differ so broadly.

Nancy Kaplan indicates that attentiveness and deliberate consideration are the answer to this dilemma. She warns educators not to forget that every tool has ideological implications attached to its use, so instructors should choose the technology used in classrooms carefully (27). And even such advocates of networked classrooms as Fred Kemp emphasize that "[c]omputer software ... can never escape the instructional attitudes and even the ideology of its programmers and designers" ("Who Programmed This?" 10). Therefore, instructors must examine their own pedagogy of instruction and determine if CMC supports it. After carefully considering the potential benefits and shortcomings of CMC, summarized in the following table, they must carefully consider available tools and any research exemplifying how such tools can be used.

**Table I
Potential Benefits and Shortcomings of CMC**

Computer-Mediated Communication

Potential Benefits	Potential Shortcomings
Encourages conversation	Absolute elimination of teacher authority
Increases student involvement	Dissent can create hostile environment
Decenters authority of teacher	Radical changes can be unsettling
Makes managing group work easier	Instructor's lack of familiarity with technology
Helps develop critical computer literacy	

Conferencing Software

The most important distinction between the type of conferencing software I am examining and other types of CMC is the combining of both of the standard forms of networked discussion. At the most basic level, there are two forms of networked discussion, asynchronous and synchronous communication. The primary distinction between these two forms is a difference of time. Asynchronous communication is the use of email, bulletin boards, listservs, and other forms of communication that allow messages to be sent to one or more people linked to a common server. This type of communication does not require that participants be logged on to the server at the same time, and the sender knows their message may or may not be read by the recipient/recipients immediately. Synchronous communication allows real-time discussion in which members of the conversation are all logged onto the server at the same time, and as they type a message, it is appearing on the screens of the others.

Asynchronous and synchronous conferencing each have strengths and weaknesses. Lee Honeycutt did an extensive study comparing the two types of conferencing in online peer response. His hypothesis that “synchronous conferencing and email have different yet complementary strengths and weaknesses that can serve as guides in deciding which technology to use for specific types of peer response” is based on Herbert Clark and Susan Brennan's theory that people have different responses depending on the type of media used (Honeycutt 26-28). His findings support this hypothesis. Though on the average, students viewed email as a more serious form of communication and synchronous conferencing as more playful, each form of networked discussion helped students at the various stages of writing. The students participating in this study reported that asynchronous communication allowed them to be more reflective, organized, and elaborate when formulating their ideas and peer-editing; but synchronous communication allowed a more instant response, more interaction with peers, and a broader scope feedback (48). Computer conferencing software can combine conferencing abilities, making it more beneficial than standard software collaboration systems (Klemm). Conferencing software applications also offer instructors a more sophisticated means of control, organization, and editing.

Studies

Acknowledging the difficulty of defining “good work,” as D.R. Newman, Brian Web, and Clive Cochrane did in their article, is important to my study of conferencing software. It highlights the need for clear, detailed descriptions of the capabilities of each software application since evaluating their quality is subjective and depends on what each

instructor desires for their classroom. Ideologically, conferencing software is best suited for instruction compliant with social constructionist theory. However, some software may not be designed in a way that promotes conversation, active involvement, and decentering authority. Instructors need information to help them analyze the available conferencing software applications. However, I find this need is not being met. There are few existing research studies of how conferencing software is being used in the classroom, few papers detailing the techniques instructors are using to incorporate conferencing software into their instruction, and few reviews of the existing conferencing software applications.

Once writing instructors decide they want to use conferencing software in their classrooms, they must begin the task of evaluating and choosing which program will best suit their needs. The first step in evaluating conferencing software should be to examine the results of research studies, usually case studies or ethnographies, conducted using conferencing tools or specific conferencing software applications. I discovered that such studies were difficult to find. However, the results of these studies were helpful when found since they supported that conferencing tools have the benefits and problems discussed earlier regarding computer-mediated communication (CMC), while being more specific regarding how these benefits and problems occur and therefore, how to enhance the benefits and avoid the problems.

In “Does the Medium Make the Magic? The Effects of Cooperative Learning and Conferencing Software,” Hansel Burley examines the results of two studies. In the first study, one group of college students used word processors to write while the second group used traditional pen and paper. These results showed that while the students using

word processors wrote more and had fewer technical errors, there was little difference between the two groups in terms of content quality. The second study compared a group of college students using word processors to a group using Daedalus Integrated Writing Environment (DIWE), a software program combining many conferencing tools. The students in this study only used one portion of the program, DIWE Interchange, which combines a prewriting prompter and an electronic conferencing system. The results of this study showed a more dramatic difference between the two groups. The group using DIWE executed more content-level revisions.

Burley attributes this success to many features of the conferencing software. He cites many examples of increased conversation and active involvement in his analysis. Overall, he observed “an intense, difficult-to-describe but playful learning atmosphere” in the computer-conferencing class (91). One of the main qualities of DIWE that encourages such an atmosphere is the flexibility it allows. Students in the earlier study using only a word processing program felt it stifled their attempts at collaboration, but with DIWE, students found ways to “bend, break, and recreate the rules in order to improve their papers” (92). They could accomplish such manipulation because of the flexibility of the program.

Similar to Faigley and Hogsette, Burley observes more active involvement from his students, stating he saw an exciting “multiplicity of voices” in the conferencing not dominated by the most vocal students in the classroom (93). However, also like Faigley and Hogsette, Burley acknowledges such heated discussion did lead to flaming occasionally. Nevertheless, he tried to use this hostility as an opportunity “to give a mini-lecture on socialization, stereotyping, modeling, and expectancy theory” (93). He

felt this approach was successful and students were apologetic regarding their earlier comments. This mini-lecture is an example of how Burley had to improvise his planning because of the conferencing software. He often “had to leave the realm of bag-of-tricks instructional planning” because of the changes in his classroom (93). This improvisation shows that the instructor must be willing to be as flexible as the software to avoid the pitfall of assuming the technology will do all the work, as mentioned by Gail Hawisher and Cynthia Selfe in “The Rhetoric of Technology and the Electronic Writing Class.”

The importance of flexibility is also stressed by Theresa Henley Doerfler and Robert Davis in their discussion of a project in which students and teachers from three universities collaborated using Confer II, an asynchronous conferencing software. They emphasize the changing roles of students and teachers, indicating that the complex process of both included “creating and redefining their academic and professional roles online, facilitating collaboration, and negotiating the technology that made the collaboration possible” (175). They found their plans changing as they recognized technological weaknesses of the program. They originally planned for students to write a collaborative essay in Confer II. However, they soon realized that because of editing weaknesses in the program and student inexperience, such an assignment would be impossible. Yet, Doerfler and Davis were so pleased with the quality of the conversation among their students that they came to consider conversation the product of the course.

The conversation Doerfler and Davis describe in this project supports Kurt Spellmeyer’s idea that the boundaries between discourse communities should be blurred, not crossed. They argue that “even the most private utterances appeared in a public space” and that “Confer collapsed public/private distinctions, favoring neither communal

discourse nor individual viewpoints” (180). Through this conversation, “Confer enabled each member to write individually and, in turn, help the group to advance” (180).

Because of such productive conversation, Doerfler and Davis felt their project was a success even though they saw editing weaknesses in the program and felt apprehensive at times about the difficult process of redefining the roles of students and teachers. Though they were not specific about the features of Confer II that allowed such valuable conversation, instructors must examine the conferencing software they are considering and determine if it will allow such student-centered participation.

Another issue to consider when choosing conferencing software is the training and support the company offers instructors new to the product. Paul Resta addresses the problem of insufficient teacher training in “Collaborative Technologies as a Catalyst for Changing Teacher Practices.” In this article, he discusses Project CIRCLE, a project focused on using network-based tools to encourage high school teachers to incorporate more student-centered and constructivist approaches in their classrooms. This project used FirstClass, DIWE, and TeamFocus as conferencing tools. However, the results focus more on how the teachers dealt with the technology, rather than specific features of these programs. Resta finds teachers were anxious about the use of technology in the classroom and often tried to “fit the collaborative technologies into their traditional teacher-directed approach” (5). The teachers who used this approach experienced many problems. Resta identifies inadequate teacher training and support as the main problem in this project. Though conferencing software companies cannot provide teachers with more time, the available support from the company should be examined when choosing conferencing tools.

Instructional Methods

Instructors can also evaluate conferencing software by examining how others are using it in their classrooms and determining if any of these methods or similar ones would be helpful in their own instruction. Then, instructors must consider if the software they are considering will allow the employment of these techniques. Writing instructors are using conferencing software to fulfill many writing objectives. A few of these are brainstorming, class discussion (including debates and reading responses,) group projects or papers, peer response, student-instructor conferencing, and submission of papers to instructors and comments to students. It helps instructors create concrete images of how they might use conferencing software if they can peruse the specific techniques others are using to meet writing objectives.

Fred Kemp, who along with some of his colleagues at the University of Texas at Austin helped create DIWE, details an instructional unit using DIWE to employ many possible methods of instruction in “Computer-Mediated Communication: Making Nets Work for Writing Instruction.” The instructor presents the class with a prompt to discuss on synchronous exchange for thirty minutes. Then, students write for ten minutes using the word processor regarding the class discussion. Students reread a transcript of the discussion the next day and, using the editor, delete all but a few of the points made in class. Students use this brainstorming and gathering activity to draft a thesis on the subject. Then, they email these drafts to someone in the class for peer response. On the third day of the unit, students can review an archive of all the drafts in the class. Next, they freewrite about the strengths and weaknesses of the class’s writing. Eventually, essay drafts are divided into groups for peer discussion. This instructional unit takes

advantage of the synchronous messaging, word processing, editing, email, and file management features of DIWE. Accomplishing all of these tasks using separate software applications, which only offer one or two of these capabilities could be very awkward. If instructors want to integrate all these instructional techniques, they must consider which conferencing software applications include these basic features and how easy they are to use.

There are many possible techniques that take advantage of these capabilities of conferencing software and at the same time encourage the type of conversation essential to the writing process. Wayne Butler has his students write a one-page reaction to a reading. Then, they copy and paste their reaction papers into the Mail program of DIWE. As the program receives the messages, they are listed in a chronological order. Students must read and respond to the message immediately above and below their own. This technique ensures that all students will have at least two responses to their reaction paper. Another way of having students engage in a conversation about their writing is discussed by Steven Greenlaw. He has his students submit their papers to the class archive. Each student must read an assigned group of papers and pick the “best” paper, explaining his reasoning and possibly comparing and contrasting the paper with his own. Greenlaw expresses surprise at how well this works. He writes that by the end of the term students are going beyond his expectations and really analyzing one another’s paper, sometimes citing a particular sections of different papers as being the best introduction, conclusion, etc.

In addition to these rather familiar features of synchronous messaging, word processing, editing, email, and file management, instructors will also want to consider the

special features offered by some conferencing software applications. For instance, Jim Clark discusses a tool called the gated conference. This tool forces students to form their own opinion about a topic before joining a class discussion and being able to read the opinions of their classmates. In the gated conference, students must submit a response to a question before being allowed to access the other answers and general discussion. Another special feature instructors will want to consider is how easily instructors can change prompts and discussion questions. Joanna Castner recognizes that students often have little experience peer editing and give their peers insignificant comments during this process unless given some guidance. She enters specific guiding questions into the InterChange tool of DIWE to help her students as they respond to one another's writing.

Reviews

Yet another way for instructors to evaluate conferencing software is to read reviews of existing conferencing software applications. This might seem like the most logical and easiest way to learn about what is available, but very few reviews exist and many of the ones that do are outdated. However, even the outdated reviews can be helpful if instructors observe the criteria used by the reviewers. For example, a reviewer of CommonSpace (a conferencing software program currently going out of print), Mary Quinn, points out that the interface, or format the program uses to dissect the text, could be confusing. Though another reviewer, Catherine Yoes enjoyed using CommonSpace as well, she did not recommend everyone rush out and buy it because of its incompatibility with other programs. She “balk[s] at the idea of forcing students to buy an extra layer of word processing technology.” However, she does like it better than DIWE, “primarily

because Daedalus is LAN-only whereas CommonSpace documents can be zipped around the Internet via e-mail.” Lady Falls Brown’s review of DIWE, which appeared in the November 1992 volume of Computers and Composition, was the most helpful of the reviews I found on conferencing systems. She evaluates DIWE based on its prewriting and invention features, revising capabilities, word processing, and system management tools. Brown praises these features on their ability to facilitate collaborative learning and ease of use. The only elements of DIWE she criticizes are the spell checker and ability to format. She says if these are improved, “Daedalus will be nearly perfect”(88).

In 1997, Peter Sands wrote the most recent review comparing four of the top conferencing software applications at the time. These were CommonSpace, Norton Connect, DIWE, and Aspects. Again, because of the rate at which technology changes, this comparison is outdated. Still, noting the features of the software he examined in this comparison can be helpful. He compares the following features of each of the conferencing software applications:

- word processing
- annotation
- handbook
- bibliography generation
- conferencing
- spelling
- grammar
- heuristics/question-sets
- compatibility
- grading templates
- platforms.

In his comparison, he notes that some of these features may be more important to some instructors than others. For instance, he writes that many instructors might not be

interested in the grading templates offered by Norton Connect, but that it “is one of the most attractive, and potentially dangerous, features of the program.” Sands argues this feature can be dangerous because it can allow instructors to use canned comments and possibly rely on these too much. Sands also explains how features can affect other capabilities. For example, when discussing compatibility with other programs, he mentions that this will influence the ability to email documents within the class.

Criteria for Choosing Conferencing Software

Choosing criteria by which to compare conferencing software is an important part of the decision-making process. Once instructors determine they want to incorporate conferencing software into their classroom and have examined the studies, techniques, and reviews of other instructors, they should begin composing their own list of criteria that will be necessary to help them create a learning community that encourages conversation, increases active involvement, and decenters the authority of the teacher, as well as raising the critical awareness of students and making collaborative learning more convenient. Identifying the type of conversation being promoted is one way to examine conferencing software. Kenneth Bruffee notes that some software promotes conversation between the students and the machine, not with each other (Collaborative Learning 126). This type of one-way conversation cannot successfully promote active involvement. Bruffee argues that educational software should support interaction among students and that the program should “‘learn’ as the ability of learning communities to govern themselves and the ability of their members to learn from each other develop” (128). Similarly, David Squires calls for a volatile design, one that changes with contextual use.

Thus, students can feel actively involved in their learning and not simply that the computer has replaced the teacher as authority.

Squires also stresses the need for authentic learning environments. David Jonassen agrees that such an environment is important and that a constructivist design model will support the construction of knowledge “facilitated by exploration of real-world environments and invention of new environments” (37). Such a meaningful and authentic context will stimulate student interest and promote active involvement. Creating an environment where students are actively involved and even controlling outcomes also promotes a more student-centered pedagogy.

Once ideological concerns have been considered, instructors can focus on practical concerns. Indeed, David R. Woolley notes, “[a]sk 100 experienced conferencers what makes a good conferencing system, and you’ll get 100 different answers.” However, there are some basic considerations that would affect anyone considering investing in a conferencing software application. Woolley’s list of key considerations includes the following:

- price
- operating system support
- compatibility with other environments
- administrative capabilities
- browser support
- customizability.

Though Woolley’s article is directed at a wider audience than just writing instructors or even educators, this list of considerations seems applicable. Most educators are interested in things such as price, platform compatibility, access control, and

customizability. I discuss more in Chapter III how Sands and Woolley's criteria lists helped me develop my own criteria lists for comparison.

Armed with the knowledge that CMC can potentially benefit their instruction and help enhance the collaboration among their students, many writing instructors are attempting to choose and incorporate conferencing software applications. However, this selection and implementation process can be a difficult one. As an attempt to offer suggestions to writing instructors, I outline my own methods of selecting software applications for comparison and the criteria by which to compare them, the results of this comparison, and the conclusions that can be drawn from these results.

III. Methods

Using the studies, instructional methods, and reviews discussed in Chapter II, as well as my own review and research of the available software, I chose seven software applications for comparison. These were the seven which seemed most beneficial to writing instructors wishing to promote collaboration, encourage student involvement, and decenter instructor authority. To confirm my selection of these applications and compile my list of criteria for comparing them, I closely examined the software and also sent a request for information to four listservs of writing instructors (Conference on Basic Writing, a listserv focusing on basic writing; TeachDaedalus, a listserv specifically for sharing ideas regarding teaching with Daedalus software; TechRhet, a listserv devoted to exploring teaching with technology; and Writing Program Administration, a listserv for individuals involved in writing program administration at universities, colleges, or community colleges). I then forwarded a survey of eight questions (Appendix A) to any interested listserv members.

Software Applications for Comparison

Below is the list of seven software applications I chose for comparison:

- Daedalus Integrated Writing Environment
- Daedalus Online
- Norton Connect.Net
- Norton ConnectWeb
- FirstClass
- WebCT
- Blackboard

Choosing Software Applications

I chose this list of seven software applications through a process of examination and research. In my research, I found many software applications described or mentioned. It seemed logical to choose some applications marketed directly to writing instructors as well as applications used by other instructors and even businesses to determine if the importance placed on certain features varied depending on the intended audience of the application. It also seemed reasonable to have this mix since writing instructors might find it necessary to use software not specifically designed for them due to institutional or curriculum constraints. Therefore, I originally considered eight applications for comparison. These were Daedalus Integrated Writing Environment (DIWE), Aspects, ClassWriter, CommonSpace, and NortonConnect (developed by writing instructors and used primarily by writing instructors) and FirstClass, Forum, and Lotus Notes (used by businesses for their collaboration needs as well as by various types of instructors at learning institutions).

The first of these eight programs, DIWE, was an obvious choice for several reasons. First, it was mentioned in more articles than any other software application in my research (Brown; Day and Batson; Haney; Jewett; Kemp, “Computer-Mediated Communication”; Kirscher; Resta; and Sands). This application is also the focus of the article that originally prompted my interest in conferencing software and its possibilities for writing instruction, “Does the Medium Make the Magic? The Effects of Cooperative Learning and Conferencing Software.” Besides these references, Daedalus sponsors a newsletter, Wings, for teachers using their DIWE, which was extremely useful in my

search for techniques used by writing instructors incorporating conferencing software (Butler; Castner; and Solberg).

The other seven software applications I originally considered for my comparison were chosen because they were described as promoting collaboration or were frequently mentioned in my research: Aspects (Day and Batson; Haney; Kemp, “Computer-Mediated Communication”; Kirscher; and Sands), ClassWriter (Day and Batson; and Kirscher), CommonSpace (Honeycutt; Kemp, “Computer-Mediated Communication”; Quinn; Sands; Stock; and Yoes), FirstClass (Harris; and Resta), Forum (Day and Batson; Kirscher; and Klemm), and NortonConnect (Kemp, “Computer-Mediated Communication”; and Sands).

Four of my original eight selections (Aspects, ClassWriter, CommonSpace, and Forum) proved to be unfeasible for my comparison because the company had gone out of business, the software was out of print, or the company was unresponsive to my requests for demonstration copies and further information. To replace these programs, I added WebCT and Blackboard. While these two programs lack some of the word processing capabilities of the others and thus were not included in my original list, they are widely accepted course management applications and are often used by writing instructors. Even one of my contacts from NortonConnect, Fred McFarland, suggested I include these two programs because of their prevalence in the education field.

Thus, when I sent my request for information to the four listservs of writing instructors, I was considering seven software applications: DIWE and NortonConnect (developed by writing instructors and used primarily for writing instructors); FirstClass, Forum, and Lotus Notes (used by businesses for their collaboration needs as well as

learning institutions); and WebCT and Blackboard (prevalent in learning institutions by many types of instructors). I received strong response to my request. Twenty-nine people received surveys and twenty-three surveys were returned completed by writing instructors who use the following software applications (followed by the number of surveys received per application):

- DIWE – 1
- Daedalus Online (DOL) – 3
- Norton Connect.Net – 2
- FirstClass – 3
- WebCT – 6
- Blackboard – 7
- WebBoard – 1

After reviewing the information received from these surveys, I determined that DIWE, Norton Connect.Net, FirstClass, WebCT, and Blackboard were indeed used by writing instructors and would be feasible choices for my comparison. It also seemed reasonable to include DOL, a new product from the creators of DIWE, the Daedalus Group. It is very similar to DIWE and seems to be more widely used now. Similarly, I decided to include Norton ConnectWeb, a new product from the creators of Norton Connect.Net. Including DOL and Norton ConnectWeb would allow for comparison between two versions of similar products, the newer version and their predecessor. Though WebBoard appeared in one of the returned surveys, it was not mentioned in any of my other research, and therefore, I did not include it in my comparison.

Comparison Criteria and Definitions

In order to provide a better understanding of the features discussed in the criteria selection process, below is a list of my final comparison criteria and definitions of these features. Following this list is a discussion of my criteria selection process.

Features of particular concern to writing instructors:

- Conferencing – Features that promote collaborative work
 - File sharing – Methods students and instructors can use to archive, exchange, and access files of written text
 - Joint editing – Any features that make easier the process of commenting on a peer’s work or writing collaboratively
 - Synchronous discussion – The real-time communication feature of each of these software applications
 - Asynchronous discussion – The delayed discussion features of each of these software applications
- Word Processing – The presence or absence of word processing capabilities
- Spelling – The presence or absence of spell checking capabilities
- Grammar – The presence or absence of grammar checking capabilities

Features that would be of concern to anyone choosing a software application:

- Price – Any pricing information available on the company website or from email communication with the company. Selling software to large institutions like universities, especially software that is often accessed via the Internet can be a complicated procedure. Therefore, some companies could not give me a

price quote, because their pricing varies depending on customer type and volume or purchase.

- Platform – What operating program the software application requires (Windows, Macintosh, etc.) In some cases, the software can be operated from multiple platforms.
- User Support – Any type of help the software companies cite as ways they can answer questions and help users with problems that arise
- Interface – The arrangement of menus, icons, screen views, and other navigational tools designed to guide the user through the program
- Access Control – Ways the instructor can manage groups and place constraints on who can retrieve files or enter discussions
- Customizability – Any special features that allow the instructor to manipulate the software to best fit his or her needs

Selecting Comparison Criteria

In selecting the criteria for comparing these seven software applications, I considered the criteria used by authors in my research, particularly Peter Sands and David Woolley, whose criteria lists were the most comprehensive. Sands uses the following categories to compare software in his article:

- Word Processor
- Annotation
- Bibliography Generation
- Conferencing
- Spelling and Grammar Checking
- Heuristics/Question Sets

- Compatibility
- Grading
- Platforms
- Draft Comparison
- Handbook

Many of the criteria on Sands' list apply directly to writing instructors, so I created a list of features of concern to writing instructors. The conferencing aspect of the software is of most importance to me, since I believe this is the feature that promotes collaboration, encourages student involvement, and decenters instructor authority. Therefore, I divided this feature into several sub-features, including file sharing, joint editing, synchronous discussion, and asynchronous discussion. Compatibility is important, but can be discussed in the context of file sharing. Similarly, annotation and draft comparison are important features to a writing instructor, but can be considered in the context of joint editing.

I also created a list of general concerns that would interest anyone choosing a conferencing software application, not only writing instructors. User support is one important general concern, because as Paul Resta discovered in his study, inadequate teacher training and support is often a huge problem when implementing new technology. Price, which appeared on Woolley's list of key considerations, seemed especially important to include. Lee Honeycutt acknowledges that having conferencing software which combines asynchronous and synchronous systems might be a difficult luxury for some writing instructors because “many schools and colleges find it difficult keeping up with the pace of new technology” due to the expense of systems and training (53). The problem of expense relates directly to Woolley’s third consideration, compatibility with other environments. If a school system is planning to purchase a conferencing software

application, it will need to be compatible with the equipment the school already has installed. Some applications work only with PC or Macintosh, and some require a certain type of server. Therefore, knowing the platforms a software application requires is important.

Customizability may be one of the most important considerations to writing instructors, as they will want to be able to modify the system in ways that meet their pedagogical needs. Heuristics and grading templates from Sands' list can be considered through the criterion of customizability, since these features tend to allow instructors either a great deal of customization or limited flexibility. Another area of customization writing instructors will want to consider is the access control. For example, they may want some documents to be accessible to all students, such as drafts in progress for the purposes of peer editing. However, if students submit their final papers to the instructor for grading and the instructor replies with grade information and comments, there should be a feature that allows some documents to be private with only certain members of the group having access.

Another feature writing instructors will want to consider is user interface, meaning the appearance of the screen and how the user interacts with this appearance to accomplish a task. Woolley mentions this as a common problem in conferencing systems. Dave Collins and Stephen Bostick also discuss this problem, noting that in the past, conferencing system interfaces have been somewhat intimidating. They recommend that since most students are accustomed to Windows, designers should use a similar interface (339). Students will have varying degrees of computer literacy and a familiar interface will make it easier for students to learn how to use the software. I decided

price, platform, user support, interface, access control, and customizability were crucial comparison features.

To test my selection of features important to writing instructors, I included a question on my survey requesting instructors list the features of their conferencing software application that they most often used. I have synthesized the responses to this question to include sixteen features, followed here by the number of times each appeared on the twenty-three surveys:

- Asynchronous discussion (bulletin boards, threaded discussions, or email) - 16
- Joint editing (or peer review) - 11
- File sharing - 9
- Synchronous discussion - 9
- Posting assignments - 6
- Prewriting - 3
- Drafting - 2
- Linking to web sites - 2
- Archive - 2
- Online grading - 2
- Online handbook for documentation - 1
- Collaborative writing - 1
- Calendar - 1
- Note taking feature - 1
- Announcements - 1
- Bibliography generation - 1

I feel the survey responses clearly indicate that file sharing, joint editing, synchronous discussion, asynchronous discussion, and word processing are important features to a writing instructor.

Gathering Information

I learned a great deal about these seven software applications from their informative websites, from email correspondence with contacts at the companies, and

from the comments of writing instructors who used the applications. In order to gain experience with the applications, I interacted with each product in some way. I downloaded demonstration versions of DIWE and Norton Connect.Net to explore as a potential user. There were no downloadable versions of DOL or Norton ConnectWeb available, but I did take online tours of them. I felt more comfortable relying on the descriptions of others for these two programs, since they are so similar in design to their predecessors, DIWE and Connect.Net, respectively. I received a demo CD of FirstClass and an information packet from the company. To learn more about WebCT, I helped an instructor at North Carolina State University who will be using WebCT to facilitate group work and archive resources of information in her psychology class. To explore the features of Blackboard, an instructor at Wake Technical Community College granted me student access to her course.

IV. Results

Software Application Overviews

Daedalus Integrated Writing Environment (DIWE)

DIWE was developed specifically for writing instructors by writing instructors. At first glance, it appears very similar to MS Word. However, there are fewer word processing features and more writing process features. DIWE is a software application that integrates six tools: Invent, Write, Respond, Mail, InterChange, and BiblioCite. Each of these tools is designed to manage a different element of text production and can be accessed from the Activity drop-down menu of the program. Invent is a prewriting tool that allows instructors to provide prompts and assignments for students. Write is a built-in word processor. Respond helps students respond to their peers' drafts with the help of questions entered by the instructor. Mail is an email function that can facilitate several types of asynchronous discussion. InterChange makes synchronous discussion possible. Finally, BiblioCite helps students create a bibliographical database as they research (Daedalus Group). In Peter Sands' 1997 "Writing Software Comparisons," he states that DIWE has "the best word-of-mouth advertising" and those who use it "have a strong emotional connection to the software."

Daedalus Online (DOL)

Essentially, DOL is the same software application as DIWE, except the features are accessed from slightly different menus arranged similarly to a common website

navigational bar than MS Word. The major differences are found in the method of pricing (Taylor, "Re: Daedalus Online Pricing") and the fact that DOL is an Internet application used via a standard web browser, such as Internet Explorer or Netscape. Other differences between the two programs are that DOL does not include BiblioCite; and Discussion Board in DOL replaces the DIWE asynchronous discussion tool, Mail. DOL does provide the email addresses for all students in a class in case they should want to use the email function on their browser (Taylor, "Re: Questions about DIWE").

Norton Connect.Net

Like the Daedalus products, the Norton Connect products have been created with writing instructors in mind. The Connect line of products developed from Norton Textra Writer, a simple word processor with an online handbook for writers using stand-alone computers, as a result of the growing popularity of the Internet. Connect.Net is a file transfer protocol (FTP) program that can be used from any computer with access to the Internet and an FTP server and allows data files from the disk of one computer to be transferred to the disk of another regardless of the operating system type. Norton Connect.Net offers collaboration and document sharing, but focuses on the composing and editing process using the writing tools of MS Word and commenting and editing tools that rely on a split-screen capability within MS Word. This split-screen allows students to see their original draft, the draft of a peer, or the assignment at the top of their screen and make corrections or changes at the bottom of the screen. Peer reviewers or the instructor can also embed comments or links to other documents within the text at the bottom of the screen (W.W. Norton and Company).

Norton ConnectWeb

Like Connect.Net, Norton ConnectWeb emphasizes the sharing of documents and split-screen editing. It supports the same writing, commenting, and editing tools as Connect.Net. The major difference between the two programs is that ConnectWeb allows these tools to be used via any browser on a Macintosh or in Windows without requiring MS Word (W.W. Norton and Company). Also, since ConnectWeb is not operated through MS Word, the developers have created an original interface rather than using the same menu and toolbars as MS Word.

FirstClass

FirstClass is the only software application of the seven in my comparison that has been developed as much for the business world, if not more so, than the world of educational institutions. The focus of FirstClass is communication. One dominant advantage of this program is that it unites many methods of communication – email, voice mail, fax messages, synchronous conferencing and other forms of communication – and allows access from a wide variety of platforms and devices (Centrinity). Despite the distinctive business tenor of FirstClass, it is used quite successfully in English departments as well. The Ball State University English Department has been using FirstClass for five years and is one educational group who seems pleased with its benefits. They even have a website devoted to introducing students to FirstClass and guiding them through its features, as well as listing the many courses using FirstClass and student feedback from these courses (BSU FirstClass).

WebCT

WebCT is marketed to the higher education population as a course management tool. There are two basic editions of WebCT – standard and campus. The standard edition is a stand-alone system suitable for a limited number of users, while the campus edition is appropriate for a large institution. WebCT offers such collaboration tools as Discussions (allowing threaded asynchronous communication), Chat (facilitating synchronous discussions), Whiteboard (providing an area for joint work on a project), and Internal E-mail (allowing email conversations within the structure of the program only). However, the foundation of the system is not conferencing, but content management. Because WebCT offers a wide variety of common tools that support course development, delivery, and management within the framework of one system, it is a program that can be used by instructors of many disciplines. It is not surprising that many educational institutions have incorporated it into their Internet infrastructure and endorse it campus-wide. WebCT lists more than 2,300 institutions in 79 countries that are currently licensed to use WebCT. Almost all of these are higher education institutions ([WebCT](#)).

Blackboard

Like WebCT, Blackboard is touted as a course management system. Blackboard has three primary systems that form the Blackboard e-Education suite and may be purchased together or separately: the Learning System (facilitates course management), the Community Portal System (provides the larger architecture that unites academic or business communities beyond the scope of one course), and the Transaction System

(allows campuses to track the purchases and account information for students). While the Community Portal System and Transaction System are likely valuable tools to universities, I focus on the Learning System, since it manages the tools of course development, delivery, and administration very similar to those of WebCT discussed above that would most interest writing instructors. Also like WebCT, Blackboard is usually purchased by a campus and endorsed campus-wide. They, too, indicate a large number of customers (more than 3,300), but unlike WebCT, Blackboard includes a few more K-12 learning institutions and corporations as their customers (Blackboard).

Software Application Comparison

Below is a narrative of the results of my software application comparison. Immediately following this narrative is a table that summarizes my comparison of these features.

File Sharing

File sharing is important because it alleviates the administrative difficulty of getting copies of student drafts to peers for review. Attaching files to emails or archiving them in an accessible folder are the two most common ways of file sharing in these software applications. All of the seven software applications include some method of file sharing, but some of the applications require certain file types or involve complex steps in order to access the files.

Using **FirstClass**, any type of file can be sent as an attachment or archived in a group folder and opened as long as the appropriate application is available on the

computer. For example, an Excel file can be opened if Excel is loaded on the computer. This allows the instructor and students a great deal of flexibility regarding the types of programs they can use to create written texts outside of FirstClass. **WebCT** and **Blackboard** operate very similarly to FirstClass, but the process of attaching a file to an email within these systems is complicated and involves several steps. However, there is an option in WebCT and Blackboard that allows files to be archived and access by students who have access to that particular archive.

DIWE, DOL, Connect.Net, and ConnectWeb have limitations on the types of files that can be opened in their file sharing features, thus limiting the options available to the instructor and students regarding text creations outside of these programs. In DIWE and DOL, students share their files with classmates through an archive in the Respond component. These files must either be text files or created in the Daedalus word processor, Write. Using DOL, students also have the option to attach files to an email. However, these files cannot be opened in the program unless they are text files or in the Daedalus format. In both Connect.Net and ConnectWeb students can read the papers of other students in their workgroup archives, but the files must be MS Word files.

Joint Editing

Joint editing is a feature that allows students to “mark” and comment on a peer’s draft directly on the computer screen or to actually co-write a text collaboratively. If this feature is designed well, it can encourage students to be actively involved in the creation of not only their own text, but also the texts of their peers. The writing becomes a type of conversation in which two students (or more) attempt to understand the thoughts and

questions of another without relying on the body language and voice intonation available in face-to-face communication.

The design of **Connect.Net** and **ConnectWeb** is excellent for facilitating peer review. Connect.Net's split-screen design allows fluid comparison of two drafts. Connect.Net and ConnectWeb both allow an easy system of annotating or commenting on texts by inserting links to pop-up windows that contain comments about specific sections. This annotation system encourages the conversation necessary for developing the written communication skills inherent to good writing instruction, as discussed in Chapter II. However, as there is no function that allows collaborative writing, Connect.Net and ConnectWeb do not support the creation of text or knowledge as a community. **FirstClass** does not have a joint editing system, but the flexibility of the font style and color allows students working on a joint writing assignment or peer editing to track who wrote what within the document if each student were assigned a different color.

In **DIWE** and **DOL**, there is no formal joint editing function or method of comparing various drafts of a paper other than inserting comments directly within the text of another student's paper in the word processing feature. However, there is a way for students to comment on peers' papers. Students answer prompt questions, provided by the instructor, in a comment box that appears in the Respond mode. This feature does encourage conversation among students, but the instructor directly controls that conversation. Similarly, **WebCT** and **Blackboard** have no joint editing or draft comparison features. However, students could use another program for commenting on a peer's text and archive or email the file to others in their groups.

Synchronous Discussion

Synchronous discussion is another feature that encourages conversation in writing among students. It is this feature that Lester Faigley, David Hogsette, and others view as one of the most promising computer-mediated communication (CMC) tool for decentering the authority of the instructor. As discussed in Chapter II, such decentering can be crucial in allowing students to be involved in the creation of their own knowledge. However, as Faigley and Hogsette note, it can be a disorienting experience for both instructors and students. Therefore, it seems imperative that the synchronous discussion feature foster open communication while allowing the instructor some level of control.

Interchange is the synchronous discussion tool in **DIWE** and **DOL**, and is the most well known of the Daedalus features. This feature facilitates synchronous discussions for the entire class, small groups, or both at once. The instructor may begin the conference with a prompt question for discussion. The group discussion appears in an upper window of the computer screen, while the writer composes their message in a separate window before sending it to the group. Students can be identified by their real name or pseudonyms. Transcripts of the discussions are automatically saved and can be printed or viewed at any time.

Synchronous discussion in **Connect.Net** and **ConnectWeb** is very similar to that of the Daedalus products, with one interesting twist. If students are using the programs during class or at a set time, the instructor can broadcast a message as a notice or to begin a discussion and students must respond or at least press “OK” before they can continue work. This feature may allow instructors to regain some of the control they feel they lose

in a CMC atmosphere. However, it is unobtrusive enough that if used sparingly, it should not disrupt the flow of thought or conversation among students.

FirstClass gives equal authority to all users by allowing instructors or students to interrupt the work or conversation of anyone logged in to the system. Rather than having to consciously make themselves available by logging in to a special room or turning on a feature, all participants are automatically available for a chat unless the user disables the chat feature. This ability to disable the chat feature is also an area of control. Anyone can disable this and avoid the request for a chat, even the request of the instructor.

WebCT and **Blackboard** also have synchronous discussion features that can involve the entire class or small groups, can begin with a prompt from the instructor, and can be printed as transcripts later. Yet, Kathryn Cook and Trevor Davies still see problems with Blackboard's synchronous discussion feature. They indicate that the chat function "takes 3 minutes to load on a 56K modem connection using a Pentium III computer, and over 1 minute to load from a network connection" (22). Therefore, they think students will avoid using this function to ask their classmates or instructor a quick question while working on an assignment. They also feel it is somewhat cumbersome that instructors must log into the Virtual Classroom to be available, as opposed to FirstClass where users are always available for discussion.

Asynchronous Discussion

There are two major types of asynchronous discussion tools – email, which allows messages to be sent to one or more people chosen by the sender, and threaded asynchronous discussions sorted by subject and available to a set group of people to read

and contribute. Lee Honeycutt found in his comparison of synchronous and asynchronous conferencing that students perceive asynchronous discussion to be a serious form of communication that allows them to be reflective, organized, and elaborate. For these reasons, asynchronous discussion can be an important part of encouraging students to collaborate and be actively involved in the learning process.

Management of asynchronous communication is one of **FirstClass**'s strongest features. The program allows a wide variety of options for facilitation of asynchronous communication. It has an extremely functional email program that can be easily sorted, managed, and accessed. The messages also create a message history that tracks the date and time when the message was sent, the user id of the sender, and when the message was created, sent, read, replied to, forwarded, unsent, or if an attachment was saved. This allows advanced monitoring of student participation. FirstClass also allows an instructor to "create many levels of sub-conferences, and each sub-conference can have multiple, numbered threads that are created automatically based on the subject line" (Cook and Davies 5). These sub-conferences facilitate groups of different sizes and functions well. FirstClass also allows all of these sub-conferences to be searched collectively for a student name or keyword. Then, the search results can be summarized with the FirstClass "Summarize" command. In addition to advanced email and asynchronous conferencing systems, FirstClass is specifically designed to handle large numbers of users without delay.

Asynchronous communication is available on a smaller, simpler scale in the other six programs. In **DIWE**, the Mail feature is the only asynchronous communication tool available. This feature operates much like any email system, and using Mail, students

may send messages, drafts, or responses to individuals, group members, or the instructor. All messages indicate date, time, and whether or not the message was received, which makes it an effective method of tracking student activity. This feature is one way in which DIWE and **DOL** differ. Users of DOL can use the email feature of their browser if they wish, but Discussion Board offers the class a method of threaded asynchronous discussion. The first message becomes the head message and all responses are indicated as replies to this message. Instructors have the option to create message boards and add and remove messages.

Likewise, **Connect.Net** has a messaging system that operates much like email. There is also a public discussion forum for each assignment. The instructor determines if it will involve the entire class or only small groups. Comments can identify the student's name or a randomly assigned number. **ConnectWeb** has a similar threaded discussion capability that uses one level of indentation to help sort replies. **WebCT** and **Blackboard** have a simple email function and a threaded asynchronous discussion capability much like that of ConnectWeb.

Word Processing

Word processing was one of the first methods of incorporating computer technology into writing and writing instruction, and as mentioned in Chapter II, word processing alone can create a more social atmosphere in a writing classroom (Hawisher and Selfe, "Reflections"). The publishing capabilities of word processors allow texts to be more easily shared and manipulated, contributing to this social atmosphere. For these reasons, the presence of an integrated word processing feature makes conferencing

software applications seem more complete to the writing instructor. **DIWE**, **DOL**, **Connect.Net**, **ConnectWeb**, and **FirstClass** all have some form of word processor incorporated into their software. **DIWE**, **DOL**, and **FirstClass** have simple built-in word processing capabilities. **Connect.Net** and **ConnectWeb** use MS Word as a word processor. **WebCT** and **Blackboard** have no word processing capabilities unless students know HTML coding, which they can use to create texts within the program.

Spelling and Grammar

The quality of spelling and grammar are usually important to writing instructors when evaluating the completed work of students. In network communication, spelling and grammar acquire additional significance. As mentioned before, students communicating via a network rather than face-to-face make judgments about one another based on written communication rather than appearance, gestures, or other physical features. Therefore, spelling and grammar mistakes cause writing to “look sloppy, and make the authors look careless” (Cook and Davies 7).

In response to this need for professional work, **DIWE**, **DOL**, and **FirstClass** have built-in spell checkers. **Connect.Net** and **ConnectWeb** use the spell checker of MS Word. However, **WebCT** and **Blackboard** have no spell checking capabilities. Similarly, **DIWE**, **DOL**, **FirstClass**, **WebCT**, and **Blackboard** have no grammar check or reference. On the other hand, **Connect.Net** and **ConnectWeb** have several grammar functions. First of all, the MS Word grammar check will review documents as students type. Then, when instructors are commenting on student texts, they can link to an online handbook based on Dawn Rodrigues and Myron Tuman’s Writing Essentials.

Price

There are two basic formats for purchasing these seven conferencing software applications. First of all, an institution may purchase a site license. The other option is for students to pay for the software as a part of their textbook costs.

The institution purchases **FirstClass**, **WebCT**, **Blackboard**, and **DIWE**. The pricing of these applications varies significantly based on factors like customer type and volume. Specific pricing information on FirstClass is unavailable. The price of WebCT varies greatly as well, and therefore, they usually quote prices during the sales process and do not have the price listed on their website. Blackboard allows an instructor to create a course website for free if they only need use of it for 60 days or less and require only five megabytes (MB) of storage space for course materials. For instructors who need the use of the course website for more than 60 days, which is usually the case, there is the option to register a course for one year, including twenty-five MB of storage space, for the price of \$295 (Blackboard). Customers purchasing DIWE buy either an unlimited site license or a license for each computer. The site licenses are based on student enrollment and begin at \$7,500. The cost per station is \$149. Paul Taylor, my contact at Daedalus, says this price has stayed the same since 1995 (“Re: Thesis on Conferencing Software”).

Students pay for **DOL**, **Connect.Net**, and **ConnectWeb**. Taylor admits that DOL pricing is a little more complicated than that of DIWE. He was able to give me some specifics, though. Students pay \$29 for the core version of DOL if it is not packaged with a textbook. If DOL is bundled with a textbook, students will pay \$10 over the textbook price or \$12 over textbook price if it is text-specific. These text-specific

versions will contain content from the text and often include special Invent and Respond prompts. Schools may also buy 100 or more subscriptions for students at \$10 each (Taylor, "Re: Daedalus Online Pricing"). This pricing system draws some criticism as I observed in a recent exchange on the TeachDaedalus listserv (Denton, King, and Sendelbach). These instructors indicate that they really enjoy using DOL, but find this pricing system a drawback. Sometimes the program is not packaged with the textbook they use, plus they do not like passing the cost of the program on to the students. Connect.Net is also paid for by the students, rather than the institution. Students purchase a textbook with a data disk and a network-access ID number. The price varies depending on the textbook with which the program is packaged. Students purchasing ConnectWeb buy a 12-month ConnectWeb license for \$20. ConnectWeb is available at a reduced price if it is packaged with a Norton text (W.W. Norton and Company).

Platform

The main reason **DIWE** and **Connect.Net** seem somewhat outdated and their production companies have released new, but very similar successors, is that they cannot be run from common browser systems. **DIWE** can be run from any Windows or Macintosh computer, but the computer must be connected to a local area network (LAN) for networking tools to be enabled. Similarly, **Connect.Net** must be run on a computer that has MS Word for Windows installed and is connected to an FTP for networking tools to be enabled.

DOL and **ConnectWeb** do not require a LAN, but can be run from any browser on a Windows or Macintosh computer. Likewise, **FirstClass** can be activated from any

browser on a Windows, Macintosh, UNIX, or handheld device. One of FirstClass's selling points is that the program can be accessed from almost any computer, phone, or even a Palm Pilot. **WebCT** and **Blackboard** can also be run from any browser on a Windows or Macintosh computer.

User Support

In Table 2, Software Comparisons, I have listed the various types of user support mentioned on the websites of each company. I found user support to be an extremely difficult feature to evaluate. Because I am not a real customer and there is no chance I am going to be purchasing any of this software, I have to imagine that my questions are of a different nature and treated somewhat differently than a paying customer. Still, I must say that I received immediate responses to my requests for information from the Daedalus Group, W.W. Norton, and FirstClass. Ann Woodlief states in her review of Norton Connect that she has seldom "seen any program with so much friendly and useful support." Possibly because of the sheer size of WebCT and Blackboard, my requests for information to the contact email address on the website simply took longer to address. Nevertheless, WebCT never failed to eventually respond. However, after several requests for information from Blackboard, I still have not heard from them.

Somewhat ironically, since the focus of this study is the ability to communicate effectively online, I found sometimes the best support is face-to-face interaction with an experienced user. While helping develop a WebCT course, I asked technical support person on campus when I had a question, rather than emailing the company. Sitting in his office, I could show him exactly the problem I was having. Being able to justify a

support position at the institution site is one advantage to having a large percentage of people using the same program. I also found the support of a peer user, someone who has likely had the same experience to be helpful. The instructors on the TeachDaedalus user listserv ask one another questions, and if none of them know the answer, there is a knowledgeable moderator from Daedalus, Paul Taylor, to step in and help them find the answer.

Interface

The interface of **DIWE** is almost identical to MS Word. Most of the menu headings at the top of the screen have the same names as those in MS Word, and the icons are very similar. Of course, many of the items on the drop-down menus are different because of the special features, but these items are intuitively arranged under the headings. The interface of **Connect.Net** is exactly the same as MS Word, as it operates within the program. However, it does look a bit different because of the split-screen viewing. The top of the screen is a read-only view of the text, while the bottom is a normal word processing window. Again, some of the drop-down menus are a bit modified to suit the special features of Connect.Net that make it different from MS Word.

The other five applications have more original interfaces. **ConnectWeb** has an original interface with simple and intuitive navigation. There are only six menu items from the instructor view and four menu items from the student view. These headings are specific enough to know what features to expect on the drop-down menu, yet broad enough to cover all the capabilities of the program. The menu in **FirstClass** is original, but similar to the interface of popular word processors and file management systems.

FirstClass also has a web interface so if it is accessed from a computer other than the one with program, the user will still get a simpler, but similar interface.

DOL, **WebCT**, and **Blackboard** have original interfaces that are similar to many websites found on the Internet with a navigational side bar. The designer interface for WebCT is not very intuitive, and I needed quite a bit of help getting started. For example, to set up discussion groups and group archives, one must choose to add a “Class Presentations” page. However, as a designer, I could change the headings on the navigational side bar so the students would not have similar problems when trying to access information. Both WebCT and Blackboard have a choice of icons for the menu items. If the designer does not like the available icons, others can be imported from a file, or the icons can be deleted.

Access Control

Access control capabilities for **DIWE** and **DOL** are very similar. The instructor retains a great deal of their authority regarding who reads archived files, but have little control over who reads the comments on the various drafts of these files. In order to control who reads archived files, the instructor can create an archive of both InterChange and Mail conferences. These archives of simple text files are saved in a folder where everyone can find them using “Read a Document.” However, the instructor can choose to save the archives anywhere else, which could prevent the students from opening them. Instructors can make Mail archives available to students, but these archives contain both

private and public messages, so instructors must be careful to delete any private messages from students intended only for the instructor.

However, instructors and classmates have access to all comments students write for one another on these drafts unless they paste it into a Mail message or physically hands the comments to them. If a student uses Respond to review a classmate's paper, the student can give the finished review to the classmate in one of several ways. The student can use the "Turn in a Document" feature and then everyone, including the instructor and the paper's author could read the comments through "Read a Document." The second method would be for the student to copy and paste the comments into a Mail message to the paper's author. With this method also, everyone could read the comments unless the message was marked "private." Finally, the student could print the comments and give them to the paper's author. Unless the reviewer also prints a copy for the instructor, no one but the author could read the comments using this method (Taylor, "Re: Questions about DIWE" 12 Dec. 2001). As these examples show, there is limited access control to comments on papers in DIWE and DOL. However, this open access promotes decentering of instructor authority and allows students to feel more like a community, using the experiences and writing processes of their classmates as a learning tool.

There are three areas over which instructors have access control using **Connect.Net** and **ConnectWeb**. First of all, the instructor sets up working groups. Members of each group and the instructor can view any discussion or work created within the group, but other members of the class cannot. This promotes a sense of a smaller community within the class. Secondly, instructors and students have access

control of messaging. The teacher may send messages to the class or individual students and each student can respond individually. Likewise, students may send public messages to the entire class or private messages to one another that cannot be viewed by the instructor or other students. However, instructors retain the authority to disable private messaging during an exam or at other inappropriate times (Ellison). The third area over which instructors have access control is grading. When the instructor returns a paper to a student with a grade and comments, that student is the only person who can view it.

An instructor using **FirstClass** has many options regarding access control. An instructor can create a collaborative folder and assign rights to a group of people or down to the individual level. FirstClass is also extremely adaptable regarding access control of conferences. The instructor can determine who views or contributes to conferences and has an extensive list of individual permissions available (Cook and Davies). However, students also have some control over access. Like Connect.Net and ConnectWeb, students can send messages to one another that the teacher may not view. Students may also initiate a private chat and must invite participants, so if the instructor is not invited, he will not be able to view the discussion.

WebCT and **Blackboard** have similar access control capabilities available to the instructor. In both, the instructor can control access into group discussions and files and only instructor and student have access to submitted assignments and grades. Using **WebCT**, an instructor can set up groups in Class Presentations. Only those admitted into the group by the instructor can participate in discussions, upload files, or access group files. As long as the instructor includes himself in the group, he will have access to all of the group activity. WebCT also has a system for students to submit assignments and

instructors to return a grade and comments to the students. The instructor and student are the only two with access to this information. WebCT and Blackboard do little to decenter instructor authority, since students have hardly any access control over their discussion groups or messaging.

Customizability

While **DIWE**, **DOL**, **Connect.Net**, **ConnectWeb**, and **FirstClass** offer instructors limited control over the appearance of the program, they do offer ways in which instructors can control the content and organization. Using DIWE and DOL, instructors can design the look of the “Class Assignment,” the first thing students see when they enter the program, but this is the only portion of the program where appearance can be customized. However, instructors are allowed a level of customization through their Invent and Respond prompts. They can create any prompts they wish to help students get started writing in Invent, and they can create questions and guidelines to help students with peer review in Respond.

In Connect.Net and ConnectWeb, instructors have no control over the look and feel of the program, but they have many customization options when commenting on a student’s paper. Using Connect.Net, instructors can use MS Word's annotation feature that allows text to be highlighted and a comment that will appear when “rolled over” with the cursor. In both Connect.Net and ConnectWeb, instructors can choose to insert one of 23 icons available from the instructor’s grading toolbar. Some of these are pre-programmed representing some of the most common errors in student writing, such as a spelling error or missing documentation. Five of these are customizable icons instructors

can use to create their own set of frequently used comments. One icon allows a detailed summary of instructor comments, and finally, instructors can link to an online handbook and select the relevant portion (Ellison).

FirstClass is highly customizable. Though, again, the instructor cannot alter much regarding the look of the program, FirstClass offers customizability in the access permissions, as well as conferencing and discussion options discussed above. In relation to feedback, instructors using FirstClass can use Reply with Quote and choose from different text colors, styles, and fonts to edit and mark-up the papers of students. Instructors can also create rubrics for commenting online. The rubrics are created as stationary that can be personalized for each student and then emailed to that student when complete (Cook and Davies).

WebCT and **Blackboard** differ from the other software applications in the area of customization. They both allow some flexibility to the instructor in the overall design and the set up the course management tools. They can alter the interface by changing the headings on the navigational side bar and choosing icons to represent tasks, but they offer little in the way of customizing the tools themselves.

The following table summarizes my comparison of these features.

Table II
Software Comparisons

Features of Particular Concern to Writing Instructors							
	DIWE	DOL	Connect.Net	ConnectWeb	FirstClass	WebCT	Blackboard
Conferencing							
File Sharing	Files must be Text files or in Daedalus format	Files must be Text files or in Daedalus format	Files must be MS Word files	Files must be MS Word files	Files of any type are sent as an email attachment or archived and opened if the appropriate application is available separately on computer	Files of any type can be archived and opened if the appropriate application is available; attaching a file to an email is possible, but complicated	Files of any type can be archived and opened if the appropriate application is available; attaching a file to an email is possible, but complicated
Joint Editing	None, other than inserting comments in word processor	None, other than inserting comments in word processor	Split-screen design and embedded comments	Comments may be embedded within text	None	None	None
Synchronous Discussion	Class or small group discussion; transcripts available; can use pseudonyms	Class or small group discussion; transcripts available; can use pseudonyms	Class or small group discussion; transcripts available; can use pseudonyms	Class or small group discussion; transcripts available; can use pseudonyms	Class or small group discussion; transcripts available; can use pseudonyms	Class or small group discussion; transcripts available; can use pseudonyms	Class or small group discussion; transcripts available; can use pseudonyms

Table II (continued)

Asynchronous Discussion	Simple mail feature allows students to send messages, drafts, or responses to individuals, groups, or the instructor	Allows threaded discussions sorted by subject	Messaging system that operates like email; discussions are public and either class-wide or group-based	Simple email system within the program or ability to link to a regular email account.	Elaborate email program with advanced managing options; conferencing system that allows multiple, discussion threads	Email feature and threaded discussions; email will only be transmitted through WebCT	Email feature and threaded discussions; email will only be transmitted through Blackboard
Word Processing	Built-in	Built-in	MS Word 6, 7, 97 and 2000	MS Word 6, 7, 97 and 2000; also HTML coding	Built-in	None, other than HTML coding	None, other than HTML coding
Spelling	Built-in	Built-in	MS Word	MS Word	Built-in	None	None
Grammar	None	None	MS Word and links to online handbook based on Dawn Rodrigues and Myron Tuman's <u>Writing Essentials</u>	MS Word and links to online handbook based on Dawn Rodrigues and Myron Tuman's <u>Writing Essentials</u>	None	None	None

Table II (continued)

General Concerns							
	DIWE	DOL	Connect.Net	ConnectWeb	FirstClass	WebCT	Blackboard
Price	Institution buys a site license (starting \$7,500) or pays a fee per station (\$149).	Students buy a subscription alone or bundled with a textbook. OR schools can buy 100 or more subscriptions for students at \$10 each.	Students purchase a textbook with a data disk and a network-access ID number.	Students purchase a 12-month ConnectWeb license	Unavailable. Based on customer type (education, corporate, government, etc) and volume.	Institution buys a site license.	Free use of course website and 5 MB of storage space for 60 days; \$295 for use of course website for one year and 25 MB of storage space
Platform	Windows and Macintosh connected to a LAN	Any Browser on Windows or Macintosh	Word for Windows on an FTP server	Any Browser on Windows or Macintosh	Any Browser on Windows, Macintosh, UNIX and handheld	Any Browser on Windows or Macintosh	Any Browser on Windows or Macintosh
User Support	Online help, numerous printable guides, and listserv of others who use program; Training workshops or a consultant is also available for an additional fee	Online help, numerous printable guides, and listserv of others who use program; Training workshops or a consultant is also available for an additional fee	Instructor's guide, email support, and phone support	Instructor's guide, email support, and phone support	Telephone, email, fax, online help, and training programs	Online help, searchable index of information, question and answer service, and library of guides, manuals, and other topics	Online printable guides, access to a system administrator, and access to a support site with password and school ID

Table II (continued)

Interface	Almost identical to MS Word	Original; similar to that of many websites with navigational side bar	Same as MS Word with two windows: a top, read-only, and a bottom normal word processing window	Original; six menu items from instructor view and four from student view	Similar to popular word processors and file management systems; also has web interface if accessed from a computer other than one with program	Original; similar to that of many websites with navigational side bar	Original; similar to that of many websites with navigational side bar
Access Control	Instructor can restrict access to archived files, but all comments on these files are accessible to all	Instructor can restrict access to archived files, but all comments on these files are accessible to all	Instructor can restrict access to group discussions and files, messages, and grades	Instructor can restrict access to group discussions and files, messages, and grades	Instructor can restrict access to collaborative folders and conferencing groups	Instructor can restrict access to conferencing groups and grades	Instructor can restrict access to conferencing groups and grades
Customizability	Instructor can change appearance of Class Assignment page and create Invent and Respond prompts	Instructor can change appearance of Class Assignment page and create Invent and Respond prompts	Instructor has many options when commenting on papers	Instructor has many options when commenting on papers	Instructor has ability to create rubrics; Any user can code comments with color, style, or font	Instructor has ability to alter interface to some degree	Instructor has ability to alter interface to some degree

Understanding the capabilities of each of the software applications is a first step for writing instructors considering incorporating conferencing software into their classroom. Considering this comparison of various features of particular concern to writing instructors and of general concern to anyone choosing a conferencing software application, writing instructors must now weigh the importance of each feature and consider which of these programs best fits their pedagogical needs and experience levels. The next chapter categorizes these programs and explain what the programs in each category do well and who would find which programs the most useful.

V. Conclusions

The seven conferencing software programs I have compared can be classified into three categories: programs created specifically for writing instructors (Daedalus Integrated Writing Environment, Daedalus Online, Norton Connect.Net, and Norton ConnectWeb); programs created chiefly for educators, but not specifically writing instructors (WebCT and Blackboard); and programs created for all types of organizations (FirstClass). From which of these categories should writing instructors choose their software application? It might seem that one of the four programs developed specifically for writing instructors would be the most beneficial. In truth, it depends on which of the potential benefits of Computer-Mediated Communication (CMC) the instructor most wishes to enhance. My findings indicate that instructors using WebCT and Blackboard are typically using these programs to help facilitate the administrative tasks of group work; instructors using Daedalus Integrated Writing Environment (DIWE), Daedalus Online(DOL), Norton Connect.Net, and Norton ConnectWeb are using the built-in features of these programs to facilitate a sense of community by encouraging conversation, involving students, and decentering instructor authority; and the instructors using FirstClass are manipulating the program to meet their individual needs, whether it be to simply manage their coursework or facilitate a collaborative atmosphere.

One revealing insight into the question of how writing instructors are choosing to use these software applications appeared in the survey responses to my request for information sent to four listservs. In answer to my question regarding the percentage of writing instruction conducted via this software, I found that the percentage varies noticeably according to which of the three categories the software appears. The highest

percentage cited by any of the thirteen instructors using WebCT and Blackboard is 33%, with as many as five instructors indicating they only use the program 10% or less in their instruction. However, the six instructors using the four programs created specifically for writing instructors state they conduct at least 40% of their instruction via the software, with three instructors indicating they use it in more than 75% of their instruction. The responses of the three instructors who use FirstClass, the program created for all types of organizations, were not as easy to categorize. The amount these instructors use FirstClass ranges from 30% - 80%.

One possible explanation for why the instructors using WebCT and Blackboard incorporate this software so minimally in their instruction is that the instructors are simply using these programs as content management systems, which is largely how they are advertised. These programs prove extremely beneficial to the instructor seeking to manage the administrative difficulty of managing group work. They are quite versatile in the areas of file sharing, which is one of the features of importance to writing instructors wishing to allow students access to the writing of their peers. However, both WebCT and Blackboard are weak in the areas of joint editing, word processing, spelling, and grammar—features of great importance to writing instructors. The other conferencing features of these two programs, synchronous and asynchronous discussion are available, but as mentioned in the discussion of the chat feature of Blackboard, some instructors find these features less than satisfactory (Cook and Davies). Other instructors indicate that separate collaborative tools work just as well or better (Rice; Rivers). Therefore, these two programs do have features that allow conversation and active involvement, but they do not necessarily encourage these qualities.

Another explanation for why instructors using WebCT and Blackboard cite such a low percentage of reliance on these programs to conduct their instruction is that technology savvy instructors are probably using other technologies, perhaps more advanced synchronous and asynchronous discussion systems, in addition to WebCT and Blackboard. Perhaps a benefit of using WebCT and Blackboard is that they introduce writing instructors who are new to technology to several technological features while only having to learn to operate one software application. In fact, it is this uniformity of features that many instructors cite as the reason for the popularity of these programs (Dorwick; Klein; Krause.) Marcy Bauman adds that interface consistency benefits not only instructors, but also students who may be intimidated by an overload of different programs. Therefore, WebCT and Blackboard both reduce the potential shortcomings of CMC discussed in Chapter II in regard to the unsettling nature of radical changes and the lack of instructor training or preparation. However, inevitable shortcomings accompany the benefit of uniformity enhanced by WebCT and Blackboard. These programs are not the best choices for instructors who wish to decenter teacher authority. Creating a collaborative, student-centered environment is problematic since the conferencing features are only satisfactory and the teacher maintains a high level of control over what is posted and how it appears.

The four programs created specifically for writing instructors allow a bit more decentering of teacher authority without completely eliminating it. These programs are not quite so dominated by teacher control. In fact, in DIWE and DOL, there is limited control available to instructors over who can see what files. Because most files and messages can be viewed by all, a sense of community without the veto power of the

teacher can be felt by students when they archive files or post messages. Possibly because of this sense of community, users of DIWE and DOL are most impressed by the conferencing features of these programs that enhance conversation. The surveyed writing instructors mentioned synchronous and asynchronous discussion as the most frequently used and most helpful features of these programs more often than any of the other features. Possibly in response to this strength, The Daedalus Group improved the asynchronous discussion capabilities of DIWE when they created DOL.

While the collaborative tools of Connect.Net and ConnectWeb also enhance a more student-centered learning environment, the extensive joint editing, word processing, spelling, and grammar features of these two programs focus on increased student involvement in the creation of texts. The variety of options in their easy system of annotating and commenting on texts and inserting links to pop-up windows encourages students to find the best method of communicating with their peers in peer review sessions, enhancing the students' active involvement in the learning process. The fact that the instructor chooses from the same annotating options as the students is another example of how these two programs decenter teacher authority and create a more leveled classroom environment.

For these reasons, the four programs created specifically for writing instructors are possibly the best for creating a collaborative atmosphere by encouraging conversation, increasing student involvement, and decentering the authority of the teacher—the three key elements of a sense of community discussed in Chapter II. However, while the creators of the programs, many of whom are also writing instructors, are often able to envision the needs of other writing instructors, these features sometimes

allow little in the way of customizability. For this reason, the more technologically advanced writing instructors may choose to adapt other programs to accomplish similar tasks. I believe this is a part of the explanation for why writing instructors using FirstClass vary so drastically in the percentages they use the software to conduct their instruction. They are adapting this very capable and flexible program to meet their needs in original ways. Instructors indicating they use the software to conduct 75-80% of their instruction have adapted many of the features of the program, whereas instructors indicating they only use the program for 30% of their instruction may be using only one or two of the features.

All of the seven programs compared are capable programs and provide helpful tools, but none of them are perfect for writing instruction. WebCT and Blackboard are beneficial course management programs that have conferencing capabilities and can be adapted by writing instructors to meet their needs. However, as writing instructors learn more about using file sharing, joint editing, and synchronous and asynchronous discussion in their instruction, they may feel constricted by the lack of flexibility in the programs. The four conferencing software applications created explicitly for writing instruction – DIWE, DOL, Connect.Net, and ConnectWeb – obviously cater more to the needs of the writing instructor and enhance the conversation and active involvement of the students. Yet, they too, can be constricting in their limited customizability. Programs like FirstClass provide writing instructors with the tools for creating a conferencing atmosphere and allow extensive flexibility. However, this lack of structure can be intimidating to an instructor using conferencing technology for the first time and may require an understanding of the capabilities of conferencing tools like file sharing and

discussion management that they have not yet mastered. None of the programs provide enough structure for the writing instructor new to conferencing technology and enough flexibility to allow the instructor to improve the program to meet their own instructional needs as they gain confidence with the tools.

There is still a need for more conferencing software that offer writing instructors at various stages of competency with CMC technology satisfactory tools for creating a collaborative atmosphere. The same problem existed ten years ago when nine experts on academic software discussed the state of software available to writing instructors in “Software Forum: A Conversation about Software, Technology, and Composition Studies” (Haney, et al.). One of the issues they discussed was why so few writing instructors are actually involved in the design process of writing software. Cynthia Selfe suggests that the problem lies in the fact that “[f]or someone to become a content expert and remain integrally involved throughout the development process, they often have to lose ground in the tenure race, or the promotion race, or the scholarly race” (Haney). Possibly this is still one of the reasons for the insufficient choices available to writing instructors of software applications that combine flexibility with conferencing tools such as file sharing, joint editing, synchronous and asynchronous discussion and other tools important to writing instructors such as word processing, spelling, and grammar capabilities.

More detailed research is needed to determine what structure is necessary in conferencing software applications to give instructors the tools they need with an appropriate amount of flexibility and customizability. A more intensive surveying of writing instructors using such programs is one possible way to begin this research.

Though time consuming, it would also be beneficial for a researcher or group of researchers to use each of the available conferencing tools and software applications in an actual class to determine the which tools successfully encourage conversation, involvement, and a student-centered atmosphere and which tools cause problems for both instructor and students. By having one instructor or small group of instructors with this goal in mind consciously using a variety of applications, a more detailed comparison could be formulated.

More research is also needed to answer some of the questions suggested by my review of these seven programs. For instance, what can be done to assist writing instructors new to technology to incorporate conferencing into their instruction without simply giving them a program that provides the tools, but allows little flexibility and does little to encourage the conversation, involvement, and student-centered atmosphere necessary to promote success? Does the answer lie in a more intuitive interface of the software application or possibly more technology training for writing instructors? Researchers could compare observations of writing instructors inexperienced with technology as they attempt to incorporate conferencing tools to observations of writing instructors with experience in the use of technology. Perhaps such comparisons would shed more light on what is needed in a software application to make it practical for writing instructors and students of all levels of technology competency.

In the quest for conferencing software applications that assist writing instructors take advantage of the potential benefits of CMC and facilitate writing instruction which encourages conversation, actively involve students, and decenter instructor authority, both software designers must constantly question themselves and their own ideologies

regarding writing instruction. One of the predominant issues in incorporating CMC and conferencing tools into writing instruction is this last potential benefit—decentering instructor authority. The question of how much control the teacher is willing to give students over their own learning resounds throughout discussions of conferencing software. As the technology becomes available to allow and require students to take control of their learning, instructors must address their fears of this and face the daunting task of how to facilitate instruction in an atmosphere over which they are allowing students to build their own learning communities and teach themselves.

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APPENDIX

Appendix A

Conferencing Software Survey

Thank you for your willingness to complete this survey. Your answers will help me in my research for my thesis. Feel free to elaborate on any of the questions. If you use more than one software package, please answer questions #3-8 for each.

1. Where do you teach?
2. What conferencing software do you use for writing instruction?
3. How long have you used this software?
4. Do others at your institution use this software?
5. What percentage of your writing instruction is conducted via this software?
6. Which feature of this software do you use the most frequently? Why?
(Ex. annotation, asynchronous discussion, file sharing, joint editing, real-time discussion, etc.)
7. Which feature of the software do you find the most helpful? Why?
8. Are any of the features of the software difficult to use? If so, which ones?