Your Desktop or Mine: Extending the Reach of Writing Instruction

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ABSTRACT

While much of the teaching and learning of writing unfolds within a conventional classroom setting, most writing classes supplement in-class work with individual conference meetings between each student and the writing instructor. This one-on-one collaboration is the complementary and crucial element in the development of a student writer, and once a class has ended is often the principal mode for mentoring and learning. When a student and the instructor are not able to meet in-person to review a text, either during a class term or afterwards, learning opportunities are forfeited, unless an alternative approach can be used that makes it possible to extend the instruction and learning beyond the in-person meeting. We describe how desktop sharing can be used under such circumstances, when collaborative editing must take place remotely instead of face-to-face, and how it preserves the most important characteristics of the more familiar in-person conferencing session. Feedback from Computer Science PhD students who used desktop sharing over a period of 18 months indicates that they found remote editing quite useful as long as voice communication was intelligible and stable. We also present the writing instructor's perspectives concerning how the differences between remote conferencing and in-person conferencing shape the process of collaborative editing, specifically how a shared familiarity with rhetorical principles and past editing experiences are more critical when writers are not interacting face-to-face.

Keywords

Technologies for learning, writing, graduate studies, curricular initiative, distance learning.

1. INTRODUCTION

Writing instruction at the university level generally includes a combination of traditional class meetings coupled with individual conference sessions. These two settings -- the classroom and the individual conference -- are important and complementary contexts that together help students learn to produce well-argued texts. In the class setting, the group focuses on the principles of academic writing and participates in the analysis and group editing of student texts. In the individual conference meeting, the dynamic shifts from group work to individual work, where a single student and the instructor scrutinize the content and rhetorical organization of the student's text, and address idiosyncratic elements of the student's writing such as style, tone, and sentence level language patterns [2, 3].

Conferencing plays a critical role in a student's writing development, as it is through this focused interaction that a student writer's organizational logic, language usage, and even thinking style evolve and mature. Even after a writing course has ended, on-going conferencing collaboration makes it possible for students to refine their writing and especially to flesh out writing projects that are part of their coursework and professional commitments. Although students continue to request individual meetings after the course has concluded, one-on-one conferencing with the writing instructor usually stops, as most PhD programs in the sciences are not able to support a full-time, on-site writing instructor.

To make it possible for students and writing instructor to continue their conferencing work when a face-to-face connection is not feasible -- especially after instruction has ended, and even as an alternative to the in-person conference conducted during the regular class term -- it is of value to identify a mechanism that enables collaborative editing through remote means. In addition to extending the mentoring/learning of writing, such a solution would be advantageous as well for student-advisor editing sessions when in-person connections are not practicable.

A satisfactory approach for remote editing -- the context where collaborators are not working together in person, face-to-face -- must support the unique interactive nature of the teaching and learning of writing. In particular, the approach must successfully preserve in the *remote* setting the two most important characteristics of *face-to-face* writing collaboration. First, the remote approach must support real-time, interactive dialogue, and second, the remote approach must make it possible for collaborators to jointly manage the written text under review. Desktop sharing, by satisfying these conditions, is a logistically straightforward way for students and instructor to connect for one-on-one collaborative editing, and in our view works as well as in-person editing.

Frees and Kessler [1] introduced a desktop sharing component into an introductory CS programming course. In the next section we describe how we use desktop sharing to extend the reach of writing instruction for CS graduate students at two universities.

2. COLLABORATIVE REMOTE EDITING

While many computer science educators have incorporated a writing component into their courses at

both the undergraduate [8, 9, 10, 11] and graduate levels [7, 12], we offer a separate academic writing course for our CS graduate students. The same writing instructor teaches the course at two universities and is not available for in-person conferencing with students at one university while instruction is taking place at the other location. Our investigation with desktop sharing grew out of these scheduling and geographic limitations.

Description

We enlisted student volunteers for our remote editing experiment from each of the two universities where the writing instructor teaches academic writing to computer science graduate students. Within the group of students who participated in the remote editing, ten had completed the academic writing class, including the required individual conferencing sessions. The other two students were referred by their faculty advisors and had neither met the instructor nor attended any advanced writing course prior to the editing sessions. We were pleased to have the chance to work with students who had had no prior association with the instructor so that we might observe whether the remote context, with its intensive communication and interactive requirements, would be helpful in some way when undertaken between collaborators who were strangers to each other.

Most editing sessions lasted an hour; some sessions lasted longer, depending on the goals of the individual student; and about half of the students participated in more than one session. Texts that were discussed and edited during the sessions were portions of research papers, a book chapter, conference papers, sections of a dissertation, and a request for travel funds. Within these genres, we focused on a variety of sub-sections, including introductions, conclusions, descriptions of methodology, data commentaries, and abstracts. The editing sessions were not proof-reading exercises nor watered-down versions of a face-to-face meeting -- we used the same approach and type of analysis practiced in conferences conducted during the writing courses. Specifically, the pair together analyzed the organization and balance of the content, the development of the story, and clarity, tone, logic, level of detail, flow, word choice, and readability [2, 3].

We used the desktop sharing tool GoToMeeting [4] during our remote editing sessions. We chose a desktop sharing tool instead of another online option that incorporates audio and text editing because desktop sharing makes it possible for participants to incorporate into the discussion, in real time, any program on either participant's desktop without having to leave the desktop application. We are thus able to switch among applications that are important resources for our students in research

and academic writing, such as Word, PowerPoint, Adobe PDF reader, Firefox and Safari, so that editing work incorporates not only text but figures and other visuals that are fundamental components of the writing process. The instructor used a Macintosh and the students used both Macs and PCs. The pair connected using the voice functionality built into GoTo Meeting as well as cell phones.

Setting up a remote editing session

After the instructor and student pair agree on a meeting day and time, the instructor initiates a GoToMeeting-generated email containing the meeting's assigned web link and general session information. At the beginning of a scheduled session, a few minutes are needed to adjust the audio and review the features of the sharing procedure, specifically how to exchange desktop views and share the mouse. Once the student's desktop and text are visible, other formatting adjustments are made, such as increasing the font size for easy viewing or adding line numbers to the text. Modifications are made so that both people are able to manipulate the mouse and highlight the portions of the text being discussed. During each encounter between a student and the instructor, a small amount of time is spent on these types of organizational details. In some cases, other adjustments may be necessary throughout the sessions, as when the audio is not clear or when a connection between the pair is lost and the meeting has to be re-started.

Once preliminary details are set up and the editing session is underway, we are able to work collaboratively and intensively on the student's text, much like we would work during a face-to-face conference. In all sessions, desktop control is handed off to the student so that the document on the student's desktop can be shared with the instructor. Just as with face-to-face conferencing, it is always the student authors who work directly within their texts during the collaboration and who decide which changes to accept or reject. We work primarily on Word documents and use the track changes tool to follow the editing process (See Figure 1). We also use the line numbering feature to make it easier to specify the location if a word or phrase within the larger text (Figure 2).

3. DISCUSSION

The instructor's perspective

The students who had completed a writing course with the instructor prior to their desktop sharing sessions had a shared context for a remote dialog about their writing. They had already spent many hours analyzing their texts in class as well as during individual conferences, learning experiences that brought them to the
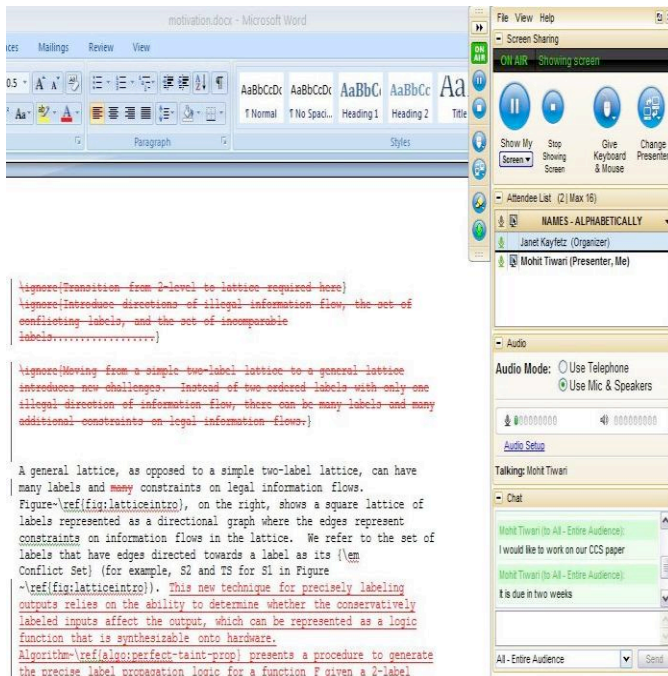
Figure 1. This figure shows the remote collaboration interface with the control panel an edited document where we used track changes during the editing session.
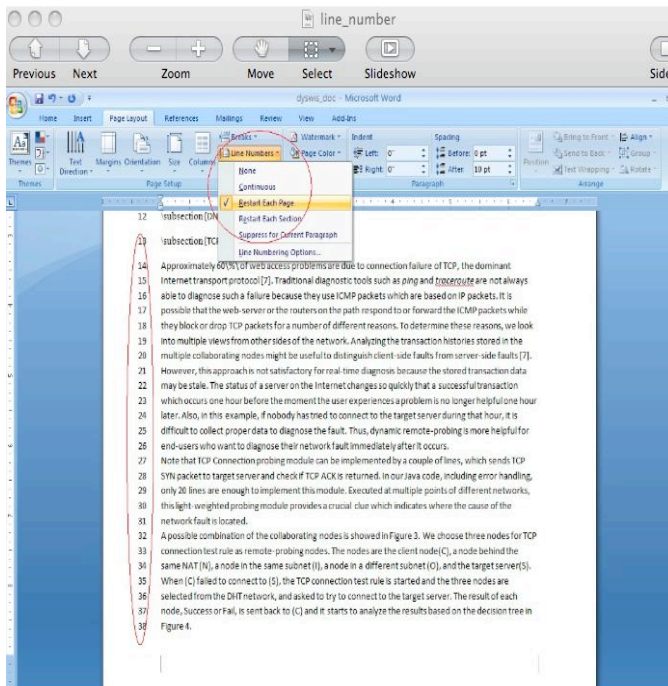

Figure 2. Here is a document with the line numbering feature included for ease of reference during a remote editing session.

remote sessions with a clear idea of how to introduce the general focus of the specific portion of text they wanted to discuss. Based on their knowledge of writing in general and their own writing patterns in particular, these students also had explicit questions about the story, the transitions, the logic, and the language of the text being reviewed. Because very little time was needed to work out the details of the collaborative process, the verbal interaction with these students flowed smoothly, and in-depth drafting and re-working of the text were easy to realize during the meetings. Time during these sessions was devoted exclusively to discussion of the specific rhetorical and language issues of the text under review. In fact, the only interfering features of the remote sessions with the experienced writers were technical issues, especially the clarity of the audio and the use of the mouse for highlighting and editing.

The remote editing rhythm is quite different when working with a student who has not completed a writing class. One important difference when working with a new student is the time that must be allotted at the beginning of the first session for general introductions and the exchange of background information: where in the graduate school process is the student? what is the major field of study? what is the student's research focus? has the student had a previously published paper? what specific writing issues does the student want to address? Time is also spent discussing what can and cannot be accomplished in an individual editing meeting, whether in person or remote, so that the student can select judiciously the section of the text that most requires attention. Finally, time is also spent discussing some of the basics of academic writing (how to narrow the problem space; the importance of audience; how to calibrate strength of claim regarding data; and so on) in order to create a working foundation for the editing process.

The teaching component of the interaction with a new student takes time, so that the portion of the hour given to editing the text is somewhat reduced. Predictably, for the first session, much less solid editing is accomplished when compared to the first session with a student who has completed a writing course, a detail that must be kept in mind when scheduling sessions with new students. Second sessions with the two new students in our group moved along more naturally as familiarity between the collaborators developed while discussing writing in general and the students' texts in particular.

Apart from differences in formal writing background, degree of familiarity with the instructor, and technical issues having to do with the editing application, it is important to highlight our original goal for trying out desktop sharing in the first place. We wanted to extend the

learning of writing beyond the classroom -- to make it possible for students, through intensive collaboration, to continue to develop their analytical and composing skills. This goal is clearly attainable through remote editing.

Nonetheless, a remote editing experience is not identical to a face-to-face meeting. In the next section we identify the important modes of communication used in collaborative writing and describe the degree to which these interactive patterns are supported by remote desktop sharing.

Modes of communication used in collaborative writing

Scanning: Scanning through a document both individually and collaboratively is a central activity during the process of learning and rethinking the context for a piece of writing. Both collaborators must be able to flip back and forth through the pages of the document to understand how the chosen text segment fits into the flow and to understand the logical inter-dependencies of the different sections of the larger text. In person, scanning happens as the student and instructor either share a common paper document or use their own copies, and both parties can flip forward and backward through the paper easily. In addition, during an in-person session, it is easy for one person to see where the other is looking and to then find the proper page. With desktop sharing, while both parties can see the same page, only one person has "control" of the document at any given time. This restriction slows down the interaction to a degree, especially for the person who does not control the desktop. The "passive" participant is able to read only the portion of the text presented on the screen and does not have the freedom to glance back to a previous page or forward to another spot to point out details of flow and logic. This limitation can be mitigated to some extent by leaving the student in control and providing the instructor access to an offline copy of the paper. This offline copy could be either a physical paper copy or a file on the instructor's desktop which is not shared through the desktop application.

Pointing: Like scanning, pointing is a relatively simple act that becomes more complicated during remote sessions. During in-person communication, pointing at specific segments of text is used by both the instructor and student while considering the rearrangement of sentences, the restructuring of arguments, the placement of logical transitions, the discussion of word choice, and so on. The challenge during remote editing is that the pointing is usually controlled by one person at any one time, and changes in control must be explicit. These characteristics of desktop sharing affect the tempo and flow of the interaction, making it much choppier than in-person collaboration. One way this problem can be mitigated is

through the addition of line numbers in the text which allows for the use of verbal cues rather than visual cues. While this remedy is still somewhat slower than pointing with a finger and does not allow pointing cues to be specific within a single line of text, we found this approach to be acceptable.

Discussing: Discussing a text during desktop sharing, equivalent to a normal telephone conversation, is more difficult than in person as the visual cues present in face-to-face interaction that help the conversation advance -- like gestures and facial expressions -- are absent when working remotely. In addition, having to wait patiently during a remote session while the other person speaks instead of being able to overlap or interrupt comfortably as one would in person also affect the flow of the discussion. These issues seem to be somewhat mitigated by the use of a land-line phone during the editing session rather than the less reliable teleconferencing software.

Viewing of external sources: In addition to reviewing written text, it is important to be able to view other types of files that are part of the document, such as excel files, PDFs, and so on. Desktop sharing supports this mode of communication by allowing access to any application on the participants' desktops. In fact, working on line with a desktop sharing application makes this process easier than when working in person with a hard copy. Other online editors that require participants to work solely within a single framework do not support access to outside applications.

Editing: The actual movement of elements within the text, the typing of new text, and the deletion of unwanted text during remote editing is always done by the student, just as with in-person conferencing. This aspect of the collaboration process remains the same whether the editing session is in-person or remote.

The students' perspectives

An important measure of the desktop sharing approach to the editing of papers is the point of view of the students who worked with the technique. We asked the participating students to give us their feedback so that we could evaluate the benefit of this approach as we consider whether we might formally incorporate it into our CS writing courses. You can find in the *Appendix* all of the unedited comments we received from our participating students. The feedback from our cohort of students was positive. Students were astute in their recognition of the subtle differences between face-to-face meetings and remote meetings, citing such details as how the absence of facial expressions and gestures altered the remote

interaction as well as the importance of having had an already established writing relationship with the instructor so that the dialog about the details of the text being reviewed was familiar territory.

In general, whether a student has the chance to work with the instructor face-to-face or whether the work is done remotely, students are grateful and gracious about receiving individualized feedback on their writing projects. Even given the remote context and the requirements of dealing with the desktop sharing tool, the audio, the lack of face-to-face cues, the need to wait patiently while the other person speaks instead of being able to overlap or interrupt comfortably as one would in person, and all of the other elements that make remote editing different, slower, and less natural feeling, the benefits of having received personal and focused feedback on a challenging text were evidently more meaningful for students than the process's drawbacks. One student captured the core principle of any type of collaborative editing, whether face-to-face or remote: "Perhaps, the most satisfying experience was to see, in real-time, how the newly edited text was a significant improvement over the old text. This not only improved the quality of the paper but helped me quickly identify new ways of presenting the material."

Recommendations

Desktop sharing for collaborative writing has already improved over the years [5], and while further research into collaborative application frameworks continues [13,14], we expect the modes of communication outlined above to remain central. If there were one adjustment to the application that would make the process more efficient and fluid it would be the availability of two independent cursors -- one for each participant. If each participant were able to point, highlight, and change text without interfering with the other's actions, then the actual physical aspects of text editing would be enhanced, and two simultaneous creative processes would be supported by the software. Furthermore, the knowledge that each participant is free to work on the text without being constrained by the application would likely enhance the spirit and tone of the collaboration, a benefit perhaps not readily measurable but nonetheless vital to successful joint editing.

It might also be logical to ask whether video would make the remote editing experience easier and more productive. Programs such as WebEx and Electromeet, for example, offer video capability along with a desktop sharing function. While it could be the case that video might add a dimension that would make the editing process feel more satisfactory for some collaborators, others, especially students, might prefer the comfort level afforded by not having to actually "see" the instructor. The

evaluation of remote editing using desktop sharing with video would be an interesting process to study down the line.

4. CONCLUDING OBSERVATIONS

We explored the use of desktop sharing to see whether a remote approach to intensive editing of written texts would be a satisfactory way for graduate students to continue to develop their writing outside the framework of a traditional on-site writing course. We found that when students have been introduced to the basics of academic writing, when they have a solid understanding of their individual composing and language issues, and when they have some experience with the processes of editing and redrafting, the technique of working remotely on texts is as productive as an in-person session. Even the students who had not completed a writing course prior to the remote editing sessions were able to collaborate well after some initial tutoring on the basics of writing and some time spent working out the interaction patterns of the editing dialog.

As a result of our successful experience with remote editing, we see the approach being incorporated into the curriculum of a traditional writing course, taking the place of face-to-face conferencing under circumstances where students and instructor are not able to schedule a regular in-person meeting. While an in-person meeting is a more personal forum and for some may always be the more desirable choice, remote desktop sharing can be a productive way for students, instructors, and co-writers to extend the analytical editing process beyond the boundaries of the more familiar face-to-face context.

5. APPENDIX OF STUDENT COMMENTS

- "I worked with [the instructor] on a paper, where we got together once I had a fairly decent draft. Our main emphasis was in making the story flow better, choosing appropriate words to make the writing really precise, and getting the register right. I found GotoMeeting very smooth when both of us were editing the document together, and after a three-hour session, my paper was in considerably better shape than when we began. I think this experience would carry over easily to situations when I want to work on an early version of a paper or a talk with [the instructor]. In fact, I am looking forward to it! We had talked about how we could do a quick reconnaissance round early in the week, and then get together for an intense session once we had the low-hanging fruit out of the way."

- "I think that the two most useful aspects of

editing papers using a desktop sharing model are real-time editing and the ability to have a voice conversation about the text under consideration. In the conventional reviewing method, the student's advisor marks a hard copy of the paper and the student then incorporates the advisor's comments and submits a new version for review. While I think that real-time editing may not be a complete substitute for such markup chiefly due to the time constraints of using this method, using real-time editing allowed the writing instructor to review problem areas in my paper and suggest clarifications or alternate text. Perhaps, the most satisfying experience was to see, in real-time, how the newly edited text was a significant improvement over the old text. This not only improved the quality of the paper but helped me quickly identify new ways of presenting the material. I think that this method is especially useful for writing introductions and conclusions of a paper."

- "I think that the concept of desktop sharing used in Gotomeeting was extremely helpful in creating a shared visual medium to enable effective communication. The back and forth communication that you would have in face-to-face encounters was appropriately simulated. The only visual that is lacking is the gestures and expressions of the person you are communicating with. I think that how effective the desktop sharing communication mode would be depends on how clearly the other person can express these facial and hand mannerisms with their voice. The process of becoming familiar with someone's gestures (in class) could be similar to the process of becoming familiar with the mannerisms in someone's voice (in Gotomeeting). I think visuals and mannerisms are helpful in getting a message across. Gotomeeting can have both, with the mannerisms being attached to the sense of sound. Just like you can have a good face-to-face teacher, you can also have a good remote teacher.

Whether this can be a helpful addition to a writing course, it might be the case if you want to familiarize students with such a tool for situations where a face-to-face encounter is difficult. Seeing how remote conference calls are prevalent nowadays, I think it would be useful to use in class.

The session I had was really great. It was just like a face-to-face meeting. But, then again, I am familiar with the way [the instructor] teaches :D"

- "Our remote editing sessions using the desktop sharing were as good as face-to-face. Without voice communication, it would be awful. But with voice communication, the sessions were done in a time efficient manner."

- The remote revising worked very well and it was really useful for me. Here is some feedback:

1) The application quality was very good. I felt like you were talking right beside me. But somtimes I could hear my own voice. It was a little bit annoying. It seems that this is a technical problem which we cannot handle, though. 2) When you talked about some sentences, I sometimes couldn't follow where we were. This is because we only communicated with voice and couldn't physically point out the sentences using our fingers. Although I could find the sentences in a very short time, to avoid the confusing moment, I suggest to use "line numbers". MS Word has the feature. So, when a student is confused, we can say "the sentence in line number 25" or "I mean the word at the beginning of line number 31".

-"Pros: 1. Clear communication - did not experience any voice-breaks; 2. Could neatly compare the after-change and original versions of the paper; 3. One to one communication - therefore highly productive.
Cons: 1. Minor set-up problems like microphone; 2. Requires windows operating system (Many of us use linux); 3. Only one person can edit at a time - but I can't think of anything that can do away with this problem."

- "I am a non-native speaker of English, pursuing my graduate studies in Computer Science. I took an academic writing class offered by [the instructor]. Thereafter, I stayed in touch with [the instructor] and sought her input on several publications through in-person meetings and also remotely using GoToMeeting. While the face-to-face meetings were definitely more interactive, I found the remote desktop sharing application to be extremely helpful as I got closer to the deadline as time was at a premium. I would definitely recommend the remote desktop sharing meetings, after having taken [the instructor's] class once, due to the rapport we had already established. The remote meeting helped me greatly in refining my text which ultimately contributed to the acceptance of the paper."

6. ACKNOWLEDGMENTS

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