# 7 Revising with Word Processing/ Technology/Document Design

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Innovations in technology have historically provoked profound changes in literacy acquisition and expression. From the development of the written alphabet to the printing press, changes in technology affect the way we think, write, and communicate and, by extension, the way we teach written communication. The personal computer as writing tool is now as ubiquitous as the printed page, and like advances in writing technology before it, the computer has affected the process of writing at every stage, from invention, through revision, to delivery. This chapter begins with a brief history of computers and revision and then examines the potential impact on revision practices and strategies of both computer technologies and the recent expansion of composition to include multimodal processes and productions. Throughout the chapter, we provide concrete suggestions for using available computer technologies to encourage substantive revision, while demonstrating the need for informed and critical instruction in concert with the use of technologies to affect changes in students' perspectives on and employment of revision in their writing processes.

## Scholarship about Computer Applications and Revision

Since the introduction of computers into writing classrooms, scholars have questioned whether computer applications positively affect students' writing and writing processes. Some of the issues raised include the degree to which computer applications prompt students to write more and engage in substantive revision given that these applications, such as word processing software, seem to make revision easier. One

of the first major studies of word processing and revision was Colette Diaute's 1983 "The Computer as Stylus and Audience," which argued that student writers would revise more easily and more quickly than they would with traditional pen and paper writing technologies; similar studies stressed the inherent freedom and flexibility of composing on-screen as important factors in revision practices (Bean; Marcus; Sudol). However, subsequent work suggested that student writers (as opposed to experienced writers) performed fewer revision activities on-screen than they would have on paper (Collier; Harris,1985; Hawisher; Lutz). It has been suggested that the differences are a function of access and experience with composing on the computer (Tone and Winston; Owston, Murphy, and Wideman)—thus studies done in the 1980s and 90s may not be as reliable as similar studies that have been published more recently, which reflect the current situation regarding student access and experience. A 2003 meta-analysis of research about the effects of word processing on student writing indicated that all of the studies that were published between 1992 and 2002 found that students using computers did make more changes to their writing than did students using pencil or pen and paper (Cook, Goldberg and Russell 4).

One strain of recent research indicates that revising on the computer screen with word processing applications can impede revision. Several studies (Crafton; Hill, Wallace and Haas; Klonoski; Tone and Winchester; Yagelski) have noted that students' reliance on spell check and grammar check applications often lead to a focus on surface error correction at the expense of substantive revision. Additionally, Crafton notes that the user-friendly and transparent appearance of the interface blocks critical analysis of how it determines/controls the writing process: "User-friendly point-and-click software may actually disguise the ways the medium acts as a metaphor. We cannot see how technology conditions the expression or how it operates as a model, a cognitive structure, that organizes our thinking" (319). Furthermore, Crafton argues that for basic writers in particular, using computer technologies for writing adds an additional layer of complexity to the already complicated process of composition. Hill, Wallace and Haas agree that revising on the screen encourages localized, sentence level rather than global revision, but attribute this as much to inadequate task definition of revision as to the tools used to accomplish it (105; see also Yagelski).

Another potential barrier to revision is the small window provided by the space on the screen: Daniel Kies suggests to his students that the "screen is just too small a canvas for us to get a sense of our draft as a whole. So printing a draft, often and regularly, is the only way to truly see the work holistically. A printout will allow us to better see the connections between the major parts of our work and to judge the work's unity and coherence."

While the aforementioned research certainly has merit and requires our attention, we agree most strongly with the perspective that emphasizes the importance of thoughtful, conscious, and critical instruction in assisting students to use computers and computer applications to foster global and substantive revision. For example, in a study of 12th grade writers that found students focusing on surface error, Yagelski noted that "the students' revision choices were strongly influenced by the teacher's retaining all authority for determining what constitutes 'good' writing and by her emphasizing correctness as its most important criterion" (216). Other studies have shown that instructor feedback and writing prompts have a greater effect on the depth of revision than the technology employed (Reynolds and Bonk; Tuzi). In the remainder of this piece, we demonstrate how in combination with thoughtful and critical instruction that encourages reflection, writing teachers can use a range of computer applications from word processors to Web design applications to help students develop more substantive revision processes and improve their writing.

## Basic Computer Applications and Revision Strategies

In a study of the effects of oral and online discussion and its impact on revision, Beth Hewett notes that "revision changes revealed different qualities when developed in different environments, suggesting that medium shapes revision" (217). We would further suggest that the tools available in a given medium offer particular affordances for revision practices; in this section, we address the different practices facilitated by the tools that are available in word processing programs that are widely available in most computer classrooms and campus computer labs. We demonstrate how thoughtful instruction in the use of these basic tools can facilitate the types of revision we would like to encourage. Some of the examples specifically reference features of Microsoft Word ™; however, most of the tools discussed below are

available in most of the text processing programs that students are currently using, including Corel WordPerfect™ and open-source applications such as OpenOffice.

## Cut and Paste

One of the key features of word-processing applications is the ability to select text of any length (word, sentence, paragraph, page), remove it from its current location in a document, and place it in another location. Many early adopters of word-processing applications in writing classes pointed to this feature as an indicator of the possibilities for deep revision as opposed to surface revision because the actual work of moving text had become both simple and immediate. Simple revision exercises can be accomplished using only this basic feature. For instance, Nick Carbone suggests the following exercise for emphasizing the possibilities of deep revision using cut-and-paste: students can cut the concluding paragraph from a draft, copy it, put it in a new window, and then write a new draft with that final paragraph serving as the first. If the student's final paragraph merely repeats what is their current first paragraph, (an instance that highlights the need for revision of the introduction or conclusion or both), the same exercise can be performed using a paragraph from the middle of the draft. This exercise encourages students to think in terms of global revision practices and helps them to see the possibilities of large-scale revision—in this case, cut-and-paste is a practice not simply for moving smaller elements within a text, but is a vehicle for radical revision involving the composition of a new but related text. Furthermore, this exercise, particularly if they draw on text from the first draft to compose the second, can demonstrate to students how the process of writing can advance their thinking on a topic by showing them that if they begin the new paper at their conclusion, which represents the culmination of their thought process, they may produce a text with more depth and complexity, having worked out some of the issues through the initial writing process.

## Font Formatting

Font formatting is another basic component of all word-processing applications, but it can be used to encourage students to see the elements of their writing style via visual markers (a practice that has been

shown to work particularly well with basic and ESL writers). An instructor can ask students to change active verbs to boldface, highlight passive constructions in italics, use larger fonts for descriptive words, underline the thesis statement, or select particular font colors for topic sentences in each paragraph. This kind of visual marking presents a striking image of the text and can show the writer elements that may be overused or missing. Obviously, this sort of exercise requires instruction in identifying these constructions within a text, which may also help students gain control of their prose by providing them with the tools needed to analyze and discuss it.

## Textual Analysis Tools

Most word-processing programs offer automated tools that attempt to analyze and provide data about a text's organization, style, grammar and spelling. While these tools can be used to support revision strategies, they require a great deal of instruction and scaffolding in order to be used effectively. Heilker notes that students often interpret suggestions from these automated tools, such as the grammar checker, as having a degree of authority equal to that of a human instructor, resulting in a displacement of the writer-audience relationship to a writer-computer relationship in the rhetorical situation (65). Although most of these automated analysis tools emphasize sentence-level constructions, Microsoft Word also provides an AutoSummarize tool that can be helpful when considering revisions of a text's organization: the application examines the document, selects topic and thesis statements, and may either highlight those elements within the document, place the summary in a new document, or place an "executive summary" at the beginning of the current document. The summaries and outlines produced by this tool can help students to visualize the organization of their text and show them how it may potentially be viewed by an outside observer.

Many word-processing applications will also produce simple statistics about the current document (often incorporated into the grammar-checking feature). The statistics include counts of the numbers of words, sentences, and paragraphs, as well as the average number of words in sentences and sentences in paragraphs. Microsoft Word also provides the percentage of sentences that are in the passive voice. Checking these statistics can be a useful revision tool if employed

critically: if students tend to write short, choppy sentences (or long, wordy sentences) the tool helps them to note the average number of words per sentence in their documents. Similarly, a student can check the percentage of passive sentences in the document in order to assess whether or not they unknowingly and unconsciously tend to use passive constructions. Like grammar and spell checking components (which tend to emphasize surface-error correction), this and other automated analysis tools should be used along with instruction and reflection concerning the writing practices and values that they support. For example, the passive voice can be used very effectively and strategically to downplay agency and avoid placing blame. Students should be asked to discuss why the passive voice is flagged as an error by the software, examine the types of writing that the absence of the passive voice encourages, note rhetorical situations in which it is or is not the most appropriate choice.

## Track Changes

The Track Changes feature in Microsoft Word is accessible from the Reviewing toolbar (View > Toolbars > Reviewing). Accessible from the Reviewing toolbar are several options: users can turn Track Changes on or off, choose which changes to show, move through changes to reject or accept them, and add balloon comments. With the Track Changes feature enabled, the writer or reviewer can insert recommendations directly into a text (which is more intrusive than using the commenting feature, but which allows an instructor to make suggestions for revision so that the student can see a model of how that instructor expects him or her to approach the process of revision). Accept or Reject Changes allows the writer to accept a correction (thus making it part of the revised document) or to reject a suggestion. This is particularly useful when using the Track Changes feature as part of a peer-review or collaboration process. From the Tools menu, user can Compare and Merge Documents, which allows the student and/or instructor to quickly see the changes that have been made between revisions while keeping discrete copies of the work performed thus far intact; this could be useful for developing and grading portfolios in which success is measured to some degree in terms of the types and depth of revisions completed. Such comparisons provide a striking visual representation of the alterations made to a text.

The Track Changes feature in Microsoft Word can be used to help students to see and reflect upon their revision process and prompt them to move from less to more substantive, global revision. In order for the results of this feature to be useful, however, students need to be taught to use it consistently and correctly, otherwise the results will be meaningless and inaccurate. Implementation of the Track Changes feature in the writing process requires a strong schedule of due dates during the drafting and then revision process, clear instructions for students to follow (see Appendix A), and instructor oversight. As with all technologies, for this feature to encourage students to reflect on and alter their revision processes, its use must become a natural part of the writing process, be consistently required, and be commented upon constructively for it to make a difference.

In composition classes, students can be asked to use the Track Changes feature at various points in the writing process, from invention to the revision of drafts. During the revision process, it may be best to designate a specific date for the end of drafting and the start of revision, although this point may be largely artificial. Students can turn on the Track Changes feature as of this date and the alterations that they make to their texts in each subsequent composing session, however brief, will be recorded. The highlighted changes can then be used to help students become aware of the types of revisions they make, use that awareness to alter their processes and explore revision on more than one level, and help them to receive comments from their instructors regarding the types of revision in which they engage. The first time students track their changes, they may be surprised to learn that most of their revisions are sentence level and localized. This recognition—again resulting from visual cues—can prompt some students to attempt to engage in more global and perhaps significant revisions, such as adding and deleting content and restructuring across sections. The use of this feature is even more significant if students are asked to reflect on their experiences and brainstorm changes that they might make to their revision practices in light of what they observe. Additionally, instructor feedback on the drafts showing the revisions helps to reinforce the importance of focusing on revision and making the process as productive and substantive as possible.

Moreover, students can be taught to use the Track Changes feature to assist in the development and revision of collaborative projects. When working on a text collaboratively, each student can add their

changes in a particular color using the Track Changes feature, thus highlighting the contributions of each group member. This can be helpful in encouraging equal participation and differentiating various versions of the text from one another. Such use of this feature requires the instructor to help students coordinate the addition of changes and the acceptance or rejection of the additions made by their peers. Students need to be taught to both add and then negotiate the changes made by others when composing and revising texts. Without establishing a clear and systematic process for incorporating this feature into their writing process, its use can cause more confusion and simply introduce more work into the collaborative writing process.

## Highlighting and Commenting

Both highlighting and commenting can also be helpful in the revision of collaborative projects and in the process of peer review. Word's highlighting tool allows a student or peer-editor to accent text in a range of colors, creating a system in which different colors indicate various types of content, grammar, and spelling errors. Because revision is a recursive process that occurs within all of the stages of drafting (particularly when that drafting is completed via a word-processing application), highlighting can also be very useful for marking places in a text that may need to be revisited or reassessed during the composing process. For instance, in the initial draft of this chapter, this section contained a sentence fragment that might have been left incomplete had it not been highlighted during the drafting process. Highlighting can be very useful in the peer-review process, as the writer can visually mark the passages or elements that he or she would most like feedback on. Additionally, in creating a collaborative text, peers can highlight the sections of a draft that are unclear or need attention, and these sections can receive more attention during group writing sessions.

The commenting feature can also be useful in peer review, collaborative writing, and receiving comments from an instructor. There are two kinds of commenting tools available in most word-processing applications: in-text commenting (using a different font color for each commentator), and annotations that appear in the margins or as pop-ups and are indicated by highlighting that appears on a word or phrase. The annotations feature is less intrusive and using that type of comment mitigates the feeling of violence done to a student text, particu-

larly since the annotations—even if they appear in the margins—can be hidden with the click of a mouse on the appropriate menu selection. If the student and instructor have access to sound capabilities it is possible to also add audio commentary to a draft, but the file size expands very rapidly with the addition of audio comments.

When working collaboratively, rather than making changes directly in the text, students can make suggestions for changes or ask for clarifications by adding annotations using the comment feature. Additionally, commenting can be used in conjunction with the Track Changes feature to explain why particular changes were made or to request that peers examine a particular section of the revised text carefully and approve it. In revising this chapter, we used both Track Changes and commenting to communicate about the alterations that each of us made to the initial draft; these features proved indispensable to our long-distance writing process.

## Other Applications for Peer Review

Besides using the features of word processors discussed above, peer review, an important part of the revision process in many writing classes, can also be facilitated by the use any number of online peer review applications (Hewett; Tuzi). Online peer review allows students to continue working with peers and mentors outside of the classroom and the comments of peers can be easily recorded and accessed by instructors and by the class as a whole so that the peer review process can be examined, assessed, and improved.

In the traditional classroom, peer review typically involves exchanging papers, commenting on drafts, and meeting to exchange direct feedback and engage in talk-aloud protocols. Using network technologies allows us to teach students new modes of collaboration that not only streamline the peer-review process, but also offer private partnerships (using email), semi-public group work (using course management systems or discussion boards available only to the group or class), or a completely public process (using Web sites).

Electronic peer-review can be used both inside and outside the classroom: students can work together in person on a document on one terminal and revise collaboratively or switch seats in a computer classroom, thus allowing peers to work directly with each other's

drafts. Nick Carbone advocates collaborative revision as a form of electronic review:

Have students copy just the first and last paragraphs from an essay into a new file. Have them swap files and fill in a classmate's essay—in other words, based on the first and last paragraph, what do they think the argument is and what will the essay say? Or, have them post their first and last paragraphs in a discussion area, and then they can talk online with one another about what they expect to see and why (n.p.).

Online peer-response may take the form of comments on drafts, responses to drafts, or discussions about the writing process or about specific texts. Students can exchange documents in class for a close reading, have readers email comments to writers, and then continue the discussion or talk-aloud reviews begun in class on a group discussion list, where students can post work and receive feedback from multiple peers. Commenting on sentence level issues proves to be more difficult if the text is posted online and cannot be written on. Thus, Web-based discussion lists privilege a different kind of peer critique and students can be prompted answer questions about the organization and the validity of the ideas expressed in their peers' texts rather than the surface errors that they may see.

Online, Web-based peer review applications also provide a space where each student in the class can upload their text and review detailed comments from one or more members of the class. Generally, such applications allow instructors to develop a list of questions for students to answer about the drafts of their peers; the answers to these questions are posted on the webspace as well and can be viewed by all students in the course. Additionally, most applications also allow for students to make specific comments about the content, style, or conventions of particular paragraphs in the posted drafts and these comments are attached to those places in the text. While posting drafts and peer comments on the Web poses privacy issues that should be discussed, the practice facilitates class discussion of peer review as a practice and allows instructors to easily review and comment on the process and intervene as needed. Additionally, the comments of multiple peers can be accessed by students both in class and wherever they have access to the Web. Of course, the use of such applications proves to be most beneficial if accompanied by class discussions on how to write constructive comments and maximize the features of the online

application and how to respond to and distill the comments of multiple peers and translate their suggestions into revisions.

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Remediation, Redesign, and Revision

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Teaching new media composition provides other opportunities to use computer technologies in ways that help students view and apply revision strategies that result in substantive changes in both the form and content of their texts. In the most basic sense of the word, remediation (as defined by Bolter and Grusin, 28) of print texts, such as essays and research papers, into other media has the potential to encourage deep revision by prompting students to rethink the purposes, audiences, and structures of their original texts. When composing a traditional course paper, students may be told to imagine specific audiences and/ or purposes for their writing, but those imagined audiences are largely superficial; the instructor is often perceived as the final, primary audience. Additionally, as noted above, students have difficulty separating revision and editing and often make only superficial changes even after being taught how to revise. However, introducing students to new communication media accompanied by new environments and contexts for their writing may alter the situation sufficiently to require students to rethink their content and formatting choices and make significant changes or risk composing texts that are inappropriate for new contexts.

One way to use technologies to prompt revision is to have students remediate print texts by asking them to create a presentation supported by PowerPoint slides based on a paper they have written; in order to complete this activity, their audiences, purposes, and substance of their material must change based on the new context for their work. A change in media from largely textual to visual/textual/oral requires altering and adding to the information. Writing a presentation of material for a classroom audience, for example, requires students to consider the aspects of their information that would be most understandable and interesting to their peers. Additionally, they may have to define terms and concepts that they did not feel they had to define for their instructor. PowerPoint is also an interesting technology to use when revising the structure and organization of a text. PowerPoint encourages a linear, hierarchical structure that may help students see the ways that their own texts do not fit this pattern and also may reveal

to them the limitations of such an organizational pattern, demonstrating that organization as well as content and other aspects of the text should be consciously chosen and are open to revision. Finally, because PowerPoint is a visual medium, students can be prompted to do more research to find visual elements, including a layout and design as well as graphics, to supplement their textual information. This act of extending research into the revision process is commonly overlooked when revising academic print texts. While looking for supplementary visuals to create presentations, students may find other information that may add a new dimension or element to their previous texts, prompting them to view the subject or issue in a new light. This fresh look at their subject matter resulting from the additional research and refocusing of the print text for a presentation format can help students to see the usefulness of other types of revising activities. Remediation, if done thoughtfully, requires students to dismantle and reassemble texts with a new focus and for a new audience, creating a space where substantive revision may occur.

Other media such as MOOs, websites, and digital video can also be employed to prompt a reconsideration of revision and help students to see the limitations of their typical print-based composing processes. Thus remediation can promote revisioning not only the texts but the process by which composition is done. When developing a website, for instance, students may focus on the layout and visual design features separately from the content, acknowledging the rhetorical aspects of design and the importance of considering the effects of design elements on textual arguments. In contrast, in a print piece, content is all and format is often not considered or only thought of minimally in order to conform with instructor-imposed standards of layout or style largely because such linear academic texts are presented "as though there is nothing visually rhetorical in them" (Wysocki 182). Furthermore, the content included on a website needs to be shaped in order to be suitable for online reading, easy navigation, and visual appeal. Because websites have links to other related sites, in order to create an effective site, students need to do research online to find other texts to which theirs can be connected. Such research and linking helps students to become more aware of the context, at least online, in which their texts are located, which may help them to better situate their arguments and position them vis-à-vis those of others.

In order for students to benefit from remediating print texts in other media and prompt a long term intervention in their composition processes, they need to be asked to reflect on their remediated texts and their development processes and locate points of departure from their typical workflow when writing with new media. As with other technologies employed in writing, simply using them is insufficient; the students have to become conscious and critical users through group discussion and individual reflection. Asking students to reshape texts for other media can highlight the contextual nature of the essay and other unquestioned hegemonic modes of writing ubiquitous in the academy. Analyzing what must be added, deleted, and reshaped to make the academic essay appropriate for other media dominant in other contexts, such as workplaces, shows the situational aspects of the essay while revealing its limitations as a genre as well as the values it reflects, which are often unexamined (Wysocki 182). In a reflective piece, which could be structured as an essay, website, video or even audio text, students can be asked to discuss the changes that they needed to make to their print piece for the new medium and examine the success or failure of those changes and of the new environment to convey their ideas, information, and arguments. Students can be asked to discuss in detail the changes that they made to the content and format of the piece, other changes that they now see they should have made, and the degree to which their remediation is successful in terms of offering a more complete, interesting, or effective representation of their ideas.

## Conclusion

Our discussion highlights many ways that computer technologies can be used to help students to rethink their revision practices and develop more substantive strategies for future revisions. As we demonstrate above, many computer technologies exist that can prove useful for revision. Even simple applications, such as word processing programs, contain features with the potential to improve and facilitate individual and collaborative revisions. Throughout our discussion, however, we have highlighted the idea that the use of technologies is insufficient for helping students see and alter their composition practices. Instruction and conscious reflection on the part of teachers and students are needed to make any technology—whether it is paper and scissors or the lat-

est peer review application—a productive means for helping students to revise their work more globally and substantively.

## Appendix: Directions for Using the Track Changes Tool in Microsoft Word

When you revise your papers/work for our class, please track the changes that you make for the following reasons:

- To allow you to reflect on your revision process

- To help you to make changes to and improve your revision process

- To allow me to view and make suggestions concerning your revision process

After you complete a draft of a paper, you should turn the Track Changes feature on so that all the changes that you make to the paper are visible. When you submit the paper, submit it with the changes still visible. Do not erase or alter them.

*Using the Track Changes Tool*

1. Open your draft in Word

2. From under the Tools menu, select Track changes

3. Start making changes to your document. The changes you make will be recorded in the text on the screen.

4. When you are done making changes, save the document and close it as usual. Repeat this process each time you make revisions to the initial draft of your text. Each time that you open your document, the changes from the previous work session will still be visible.

When you turn in your document, submit the version with all the changes in it. I can then view the document with and without the changes.

*Customizing the Look of Your Changes*

If you want your changes to appear in a different color or format, follow these instructions for customizing them.

1. Open your document in Word

2. From under the Tools menu, select Options and then Track Changes

4. Change the mark and color for each type of change that you want to alter.

5. Click OK. All subsequent changes will conform to your selections.