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transferring files (Center for Instructional Technology, 2005). As writing instructors, we wondered if iPods might also offer us an effective way to provide students with feedback on their writing, so we decided to experiment with different ways of offering students digitally recorded audio feedback. We tried creating podcasts of our comments, embedding audio clips into text files, and creating MP3files that we could either post on-line (in Blackboard, the web-teaching platform used at Duke) or email directly to students. We also experimented with recording files using iPods versus using a laptop or desktop with an attached microphone. As we became more familiar with the technology, we noticed that providing students with audio feedback was much more time-efficient than giving written comments, and seemed to be higher-quality. But we questioned if audio feedback would be an effective way for students to offer high-quality comments to each other.

Although plentiful research exists on the effectiveness of peer reviews in improving student writing, few studies have tested the relative merits of audio versus written feedback among peers in a college classroom. One reason is that much of the research on the effectiveness of peer review predates the digital revolution (Nortcliffe & Middleton, 2007). In addition, most studies on the effectiveness of audio feedback have focused on teacher rather than peer feedback (Nortcliffe & Middleton, 2007; Russell & Pearson, 2004; White, 2007). One exception is a study by MacLeod (1999) in which the author used an online teleconferencing tool that had both written and audio functions to facilitate peer review.

we recorded our feedback, we focused less on lower-order writing concerns (such as spelling, punctuation, and grammar) than on higher-order writing concerns (such as the structure of arguments, overall organization, and use of sources). In addition, we could explain the nuances of our comments more completely when recording audio clips than when typing written comments. The use of audio allowed us to communicate more effectively about the equivocal nature of writing choices, which then allowed students to decide themselves what to do about that uncertainty. We also noticed that we spent less time dealing with lower-order concerns when we used audio. Talking about grammatical errors or missing commas, for example, is simply not as interesting for the reviewer, whereas “fixing” these mistakes in writing is easy and expedient. Despite these experiences, we still wondered whether or not audio feedback would help student reviewers focus more on higher-order writing concerns.

HYPOTHESIS : *Peer reviewers who give audio feedback offer more specific comments than reviewers who give written feedback.* In our experience, students seemed to respond better to reviews with comments on specific language or sections within their texts(r) 10(o) 12

HYPOTHESIS : *Students prefer receiving written feedback.* Even though we saw advantages in offering feedback using audio comments, we thought students would prefer written comments for three reasons. First, students are most familiar with written feedback, so processing audio comments could move them out of their comfort zone. Second, students must spend more time processing audio feedback; they must listen to the comments (often multiple times), take notes on what the reviewer is saying, and decide how to respond to those comments. Therefore, we thought students who are given a choice might prefer written comments since they take less time to process. Third, we have noticed that inexperienced writers think of “feedback” as suggestions for “fixing” their writing, rather than comments for helping them rethink their ideas and approaches. Therefore, these students often perceive mechanical comments to be the most useful, concrete type of feedback. Since written comments seem more likely to include these lower-order suggestions, students are likely to prefer that kind of feedback.

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in Blackboard. Consequently, we assessed 75 peer reviews, 36 of which were audio and 39 of which were written. We excluded email submissions by students, due

We found that 73percent of our students also preferred to receive feedback in

takes less time to record meaningful audio comments than it would take to typed our comments. Thus, we were interested to learn that recording peer reviews does not necessarily save students time. We conclude from this that audio feedback may be more efficient (e)-c(h)10(x(p)-5)3-11(eo)3(c)11(e)-2(d(r)12(e)-7)-15(e)1(w)7)321(ss)e)3ch

from more than one sensory channel (Mayer & Moreno, 2003; Paivio, 1986), suggesting that audio comments may complement other modes of feedback. Although beyond the scope of this study, assessing the relative improvement in the quality of a final text, one that students revise based on audio rather than written peer review, offers rich potential for further research.

If audio feedback significantly improves the quality of peer reviews, as our research indicates, we should integrate such strategies in our classrooms. Although embracing new pedagogical and technological tools can prove daunting, we believe any reluctance we might feel is well worth sublimating in order to reap tangible rewards. The model we propose has only three components: 1) modeling effective peer review strategies in class, using audio and/or written comments, to prepare students to provide constructive criticism; 2) requiring pre-review questionnaires for writers, which are shared with peers and instructors, to encourage constructive and focused comments as students learn to respond orally; and 3) reflecting on the effectiveness of the process, as both writers and reviewers, to sustain the efficacy of using audio feedback in our classrooms. We urge our colleagues to consider the possibilities.

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H *Peer Review Guidelines.* The goal of this assignment is to help you learn to give effective feedback to your classmates about their writing. Before you begin your review, your classmate will provide you with the writing context and her or his concerns about the draft (Handout 1). Your peer's concerns and questions should always drive your response.

The peer review process should look something like this:

s 2 **H A D** and your peer's paper once just to get a sense of the paper, jotting

comments for things that seem to be working well, especially at the beginning of your comments. You might want to use language such as: “I like how you ...” or “I’m impressed by ...” Essentially, think about ways to achieve something like the balance between being honest and congenial that you’d aim for if you were talking face-to-face. A tone that works particularly well is one that is both friendly and supportive.

- s Ask questions. Your job as a reviewer is not to fix the paper, but rather to help your classmate understand how the writing affects readers. Given this approach, it can be very helpful to ask questions, just as you might do if you were talking face-to-face. It will be helpful for the writer to reflect on these questions when making writing choices.

- s *Questions about claims.* You might ask, “What in the readings or evidence prompted you to develop this claim? Why are you interested in this aspect of the topic? How does the evidence support your claim? How many pieces of evidence do you have (and does the quantity of evidence say anything about the strength of that evidence)? Do you have additional evidence that isn’t included in this draft?”

- s *Questions about evidence.* If the writer needs more evidence, you might say that you would like to hear more about a particular point, that you didn’t understand a certain point, and/or that you have additional unanswered questions.

- s *Questions about organization.* If you think a certain paragraph doesn’t belong, you can describe your response as a reader; for example, “When I got to this paragraph, I wondered what it was doing here – it seemed like you had been talking about A, but all of a sudden, here’s this paragraph about B! Can you help your reader understand how this paragraph should fit in?” The student may need better transitions, or may have left out something important that will clarify matters, or he or she may see that the paragraph doesn’t really belong. But let the writer make those decisions – if you say, “Take that one out!” you are making the writing decision for her/him.

- s *Questions about sentence structure.* How might you help your classmate learn to revise a sentence without changing it? Make up a similar sentence and carry out your revisions on it, explaining what the problem is, what options there are for revising it, and why you selected the option you did. Offer several different options, not just one, so that the writer sees that he/she has many choices.

- s *Questions about word choice.* Ask why the writer chose the word; tell what the word means to you and why it seems odd to you in this context. You could say, for example, “In your opening paragraph, I wonder how you chose the word ‘bellicose.’ When I read this word, I think of someone who is aggressive and warlike; is that what you meant?”

s Look for patterns: When addressing sentence-level issues, look for patterns of error, rather than going through the draft and pointing out errors in the order in which they occur. The same sort of big-picture reflection will be helpful with non-sentence-level issues, too. If you notice wordiness, see how often it occurs; if you see one transition that troubles you, check out the others. You can then try to offer the writer new ideas about this general issue, instead of just commenting on one sentence here and another one there.

s "E W O A P R A K O N C E A R D the following, as easy and tempting as they may be:

s 2 E V T S M I N G T T E F E C S S A I M

s 0 R E S N E E W N D G F N O C H E R I T O N R C L U D E

s 2 E W R N D I I N G D E U T L E N C E S

s 4 E L L H M E B I T O B A D I F F E A R C E M N S U G G B A S H T A N G E W O R B B O U L D
be)

s 4 E I L H E R G I T G E R M O P A E R A C O R R A P O H V E O S P E O P I L A C E

s Organize your comments Consider outlining or clearly grouping your comments, realizing that a certain approach may work well in one instance, but not necessarily another. Here are some strategies:

s / R G A I O I Z E M M B N R S A D D R E T S H A I N I G C O R N S E I A N D S R D E R L Y
way) and then moving on to additional concerns you noticed.

s % M P F A N E O S E E G N I W R N T T S N G S E L S C B I O E V - € Q Š)jãŞÜ ® T H

issues that you perceive to be of more concern than those your classmate raises,

TABLE

Student responses to the attitudinal survey (n=). Bold values show the majority response.

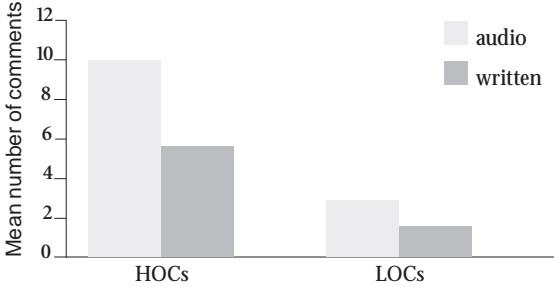
SURVEY QUESTION	PERCENTAGE PREFERRING		
	AUDIO	WRITTEN	NEITHER
As a peer reviewer			
1 Which mode of response did you prefer to use	28		0
2 Which mode of response helped you provide more helpful feedback?	39		0
3 Which mode of response was more efficient to use (in terms of the time and effort it took to do a good job)?	40		3
As a writer			
4 Which mode of response did you prefer to receive from your classmates?	27		5
5 Which mode of response was more helpful when revising your draft?	21		0
6 Which mode of response was more efficient to use (in terms of the time and effort it took to do a good job)?	21		0
As both writer and reviewer			
7 Which mode of response tended to focus more on higher-order concerns (claims, evidence, organization) than lower-order concerns (grammar, punctuation, documentation format)?		32	5

TABLE

Inter-rater reliability, showing means (\bar{x}) and standard deviations (σ) of scores for each rater, based on assessment of 75 peer reviews. All Pearson correlation coefficients (r) were statistically significant ($p < .000$).

T a a	RATER		RATER		r
	+	m	+	m	
HOCs	82	58	72	57	0.83
LOCs	25	59	09	20	0.86
Specific comments	85	83	65	62	0.91
Generic comments	22	21	16	15	0.50

FIGURE



Mean number of comments that focused on higher-order concepts (HOCs) and lower-orders concepts (LOCs) in audio versus written peer reviews. Error bars represent the 95percent confidence intervals around the means. The mean number of HOCs for reviews using audio was significantly higher than the mean for written reviews ($t=4.98$ $p<.000$). Similarly, there were more LOCs in audio reviews than in written reviews ($t=2.54$ $p=.00$).

Mean number of specific and generic comments in audio versus written peer reviews. Error bars represent the 95% confidence intervals around the means. The mean number of specific comments given in audio reviews was significantly higher than the mean for written reviews ($t=5.24$ $p<.000$) but there was no difference in the mean number of generic comments ($t=$