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Instructors often use text-based methods when giving feedback to students on their papers. With the development of audio recording technologies, audio feedback has become an increasingly popular alternative to written feedback. This study analyzed five instructors' commenting patterns of both written and audio feedback. The five instructors, who taught sections of the same undergraduate composition class, provided written feedback to students on one writing assignment and audio feedback on another writing assignment. A mixed-methods research methodology was employed for the study. Data were collected through surveys, students' writing assignments, digital audio files (for audio feedback), and interviews. The findings indicated that the word count and the number of items commented on differed between audio and written commentary. In addition, there was a teacher effect and an interaction effect for both word count and number of items in the instructor feedback. The interview data offered explanations for why the teacher effect and the interaction effect might have occurred. The findings show that an individual teacher's commenting styles and strategies, as well as the medium used in commenting, have a strong influence on the nature and length of the commentary. Implications for future research and practices were discussed at the end of the paper.

Keywords: online writing instruction, written feedback, audio feedback, composition classes

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The feedback that instructors give to students on their writing assignments is one of the most important features of a composition class. Writing comments by hand and typing comments have been the typical methods that instructors have used to provide feedback to students in traditional face-to-face classes. Recently, with the emergence of digital media, instructors have begun to experiment with providing audio feedback (e.g., Ahern-Dodson & Reisinger, 2017; Bauer, 2011; Chew, 2014; Ghasemi, 2018; Ice et al., 2010; Keane et al., 2018; Olesova et al., 2011). This approach has gained popularity, especially in online classes, because online instructors may record their voice commentaries and post them as digital audio files instead of writing detailed comments on students' papers (Cavanaugh & Song, 2015). This development has added a new dimension to the conversation on the content of instructor feedback and the method of providing it for students' writing assignments.

Research has investigated the different features of written and audio comments (e.g., Bardine et al., 2000; Sipple, 2007). However, many of the quantitative studies in this area have analyzed the feedback from only one instructor or have not featured a comparison of feedback patterns across several instructors (Chalmers et al., 2014; Dunne & Rodway, 2009; Huang, 2000; Merry & Orsmond, 2008). Little research can be found on in-depth analyses of the patterns of the different commentary types. This study contributes to the scholarship on audio and written feedback by analyzing five different instructors' audio and written comments on two essay assignments in five sections of a first-year composition class. The study featured quantitative analysis on the number of words used and the number and type of items commented on in audio and written commentary as well as a qualitative analysis of interviews with the five instructors on their experiences with providing audio and written commentary.

Review of Previous Research on Audio and Written Feedback

When instructors provide formative feedback to students in online writing classes, the medium they use (whether written or audio) may have an impact on the feedback itself. Research on instructors' feedback on students' writing typically has investigated the features of a certain type of feedback

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(e.g., just audio feedback or just written feedback) or has compared different types of feedback (e.g., audio feedback vs. written feedback). For example, Brearley and Cullen (2013) examined an instructor's audio feedback on their students' first draft of a paper. The authors found that the number of words provided in the audio feedback averaged 2,489 and that the focus of the feedback tended to be in directing students regarding spelling, references, and content and in giving positive comments about the paper. They also concluded, "An assessment of the content of audio feedback found that three minutes of audio feedback was around 450–500 words of text if written down" (Brearley & Cullen, 2013, p. 30). Irwin (2018) conducted a study of written feedback provided by him to 38 students in Japan. He found that lexical feedback on spelling and word-choice errors represented 11.7% of his feedback; grammatical feedback represented 28%; structural feedback on punctuation, sentence fragments, and comma splices represented 17.9%; and feedback on the content of the paper represented 26.1%. The remaining 16.3% of the feedback consisted of general comments and words of encouragement to students (Irwin, 2018). These studies examined one type of feedback. It is challenging, however, to conclude how feedback is different between audio and written media by examining data across studies. Studies that compare the two methods of feedback side by side render a more useful analysis of audio and written feedback patterns.

Research studies that compare different types of feedback (e.g., audio vs. written) have found that audio feedback typically features a significantly higher number of words in various feedback categories when compared to written feedback. For example, Chalmers et al. (2014) conducted a quantitative study that analyzed five instructors' feedback patterns to 60 students completing a first-year biological sciences module. Using the categories devised by Brown et al. (2003), the authors found that audio feedback included significantly higher word counts than written feedback did. Specifically, the audio feedback featured a statistically significant higher number of words in the categories of *explaining misunderstandings* and *demonstration of good practice*, and the audio feedback also resulted

in a statistically significant higher number of comments for *giving praise*, *explaining misunderstandings*, *demonstration of good practice*, and *justifying marks*. Only one category, *suggesting approaches to future work*, showed written commentary resulting in a significantly higher number of comments than audio commentary.

Kirschner et al. (1991) examined the use of audio commentary and written commentary from two instructors to 12 students in an online photochemistry class, noting that the combined average between the two instructors for audio feedback was 502 words; the average for written feedback was 280 words. Dagen et al. (2008) conducted a study in which four instructors used Adobe Acrobat Professional v.7 to provide audio commentary, along with more traditional written commentary, to students in a literacy course. The authors found that the students received 30.7% more instances of feedback in audio form for *content/subject matter*, while they received 48.2% more instances of feedback in written form for *clarity and flow*. In terms of the number of words, "the word count total was double, triple or greater when comparing the means between audio and text-based feedback," with audio commentary resulting in the greater number of words at a statistically significant level (Dagen et al., 2008, p. 161). Merry and Orsmond's (2008) study indicated that audio feedback resulted in a statistically significant higher number of comments on assignments than written feedback did for two of the 10 areas—*identifying errors* and *demonstrating correct practice*. Huang's (2000) study found that audio feedback resulted in a total of 54,258 words, or an average of 2,359 words per essay, while written feedback resulted in a total of 4,757 words, or an average of 206.8 words per essay.

In a study conducted by Ahern-Dodson and Reisinger (2017) in an advanced French grammar and writing class, the instructor gave all students in her class written feedback on grammar issues. However, for the content of their writing, half of the students received audio feedback, and half received written feedback. This arrangement occurred for all four assignments, with the two groups switching back and forth

between audio and written feedback throughout the semester. The study found that written feedback resulted in between 54 and 169 words of feedback, while the audio feedback resulted in between 42 and 659 words of feedback. Written feedback averaged 117.99 words across the four assignments, while audio feedback averaged 320.91 words across all four assignments (Ahern-Dodson & Reisinger, 2017).

Such studies have contributed richly to the literature on written and audio feedback. These studies have shown, among other findings, that the number of words given in audio feedback is greater than the number of words given in written feedback. However, what is lacking in the literature is an analysis across several instructors of commenting patterns when providing different types of feedback (e.g., audio vs. written). Few, if any, studies have compared different instructors' commenting patterns when using written text and when using audio files. The study by Ahern-Dodson and Reisinger (2017) indicates that the range in the number of words in audio feedback is much higher than the range in the number of words in written feedback. Further research on this dynamic would render helpful data to the field. As institutions and academic programs attempt to enhance the quality and quantity of feedback given to students, a quantitative analysis of the use of written and audio feedback of multiple instructors, along with a qualitative follow-up exploring their commenting styles, would yield rich data for such efforts.

Overall, research studies have investigated the characteristics of audio and written commentary on student writing. These studies have made significant contributions to the literature in the field on instructor feedback. However, much of the existing research has had a small sample size, featured only one or two instructors, or did not compare the various instructors' commenting patterns. What is lacking in the research literature is a large-scale comparison study on commenting patterns across different instructors. In addition, the quantitative studies that have analyzed written audio feedback often do not include qualitative interviews with faculty to examine possible reasons for their different commenting patterns. Questions

remain: Do different instructors have different patterns in their audio and written feedback? How do instructors make sense of their commenting experience when using different media?

As institutions aim to provide students with substantive feedback on writing assignments, and as they consider audio commentary as a means to providing substantive feedback, a comparative analysis of commenting patterns using audio and written feedback across multiple instructors would contribute significantly to the body of literature on instructor feedback. This research investigates the features of five instructors' audio and written commentary on two writing assignments for 75 first-year composition students. It analyzes whether and how instructors' commentary changed when giving written and audio feedback. The study investigates the following research questions:

1. Is there a significant difference between audio feedback and written feedback in terms of the number of words? If so, is there an interaction effect between the feedback medium and the instructor?
2. Is there a significant difference between audio feedback and written feedback in terms of the number of items commented on? If so, is there an interaction effect between the feedback medium and the instructor?
3. Do instructors' comments change in content and in length when they provide written comments compared to when they provide audio comments?
4. How do instructors explain their commenting practices relative to the medium used?

Methodology

This study adopted a sequential mixed-methods design: quantitative analysis followed by qualitative analysis (Creswell & Plano Clark, 2007). The mixed-methods approach has become more popular in scholarly literature in the last two decades. It offers the promise of closing gaps and answering questions that either a quantitative or qualitative approach might have left unanswered or open.

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Creswell (2007) sums up the benefits of the mixed-methods approach:

> We use qualitative research to follow up on quantitative research and help explain the mechanisms or linkages in causal theories or models. These theories provide a general picture of trends, associations, and relationships, but they do not tell us about why people responded as they did, the context in which they responded, and their deeper thoughts and behaviors that governed their responses. (p. 40)

In this study, comments about the first drafts of students' essays were analyzed quantitatively first, and then the qualitative interview data collected from the five instructors were analyzed. The units of quantitative analyses were the number of words and the number of items commented on. For the qualitative analysis, we included five instructors as five cases, which is an acceptable sample size for qualitative case study design (Stake, 2006). The mixed-methods approach allowed the researchers to provide a general understanding of the research subject (in this study, the characteristics of audio and written commentary) through a quantitative analysis and then explain those quantitative findings through interviews exploring the participants' (i.e., the five instructors in this research) views in greater depth (Creswell, 2013).

Participants and Context

Five instructors who had been assigned to teach online sections of a first-year composition course at a large, accredited university on the east coast of the United States participated in the study. All five instructors had taught at least 12 online writing classes before participating in the study. For one instructor in the study, this was her first time giving audio comments. The remaining four instructors had had experience in providing audio comments to students prior to this research. Four of the instructors were female, and one was male.

Procedure

The class in which the study was conducted required four writing assignments from students. This study was conducted on the first two of those

four writing assignments. The first assignment (writing assignment #1) was a narrative essay. The second assignment (writing assignment #2) was a compare–contrast essay. In order to ensure consistency across sections, the same writing assignment prompts were given to all instructors.

Data Collection

For writing assignment #1, the narrative essay, students submitted a first draft. Among the five instructors, the style of response to the first draft differed. Two of the instructors commented using only written comments. The other three instructors commented by providing only audio comments in .mp3 file format.

For writing assignment #2, the compare–contrast essay, students also submitted a first draft. When providing feedback on this assignment, the two instructors who had provided written feedback on the first writing assignment now commented using only audio feedback. The other three instructors, who had provided audio comments on the first writing assignment, commented using only written feedback this time (see Table 1 for the instructors' commenting arrangement). The reason for this approach was to ensure that all instructors provided solely audio commentary for one assignment and solely written commentary for another assignment but also to make sure that both assignments received feedback using both media. This design was implemented so students in the same class would receive the same type of feedback on the same assignment. To maintain consistency in instructors' technology use when providing feedback to students, all five instructors used the Microsoft Word track changes feature for written comments and used a Sony digital voice recorder to create audio feedback in .mp3 format. In order to ensure that all instructors provided reasonably comparable types of feedback in both written and audio form and that a level of consistency in commenting was maintained across all five instructors, guidelines were provided for them on the types of issues on which to comment. The study used Stern and Solomon's (2006)

categorization of *global-level*, *middle-level*, *micro-level*, and *other* comments. The authors, after having examined 598 papers from 30 different portfolios within the university, found these four areas to be representative of the full range of individual instructor comments on student papers. Furthermore, Ice et al. (2010) used the same classification scheme for their study, noting the soundness of the feedback hierarchy presented by Stern and Solomon.

Table 1
Instructors' Commenting Methods for Both Assignments

Instructor (Number of students)	Method of feedback for writing assignment #1	Method of feedback for writing assignment #2
Instructor 1 (13 students)	Audio	Written
Instructor 2 (15 students)	Written	Audio
Instructor 3 (17 students)	Audio	Written
Instructor 4 (14 students)	Audio	Written
Instructor 5 (15 students)	Written	Audio

In this study, *global-level* comments refer to comments on issues related to the overall organization of the paper, the topic of the paper, the introduction paragraph, the thesis statement, and the concluding paragraph. *Middle-level* comments refer to comments on issues related to how well a thesis statement is defended, how well the body paragraphs are developed, how effectively topic sentences are used, and how well support and evidence of claims are integrated. *Micro-level* comments refer to comments on issues such as grammar, punctuation, word choice, phrasing, formatting, references, and citations. *Other* comments refer to any other guidelines or comments to the student that did not relate to the writing strategies in the paper, such as comments that thanked students for posting their papers or comments that gave students instructions on posting the second draft.

Following these guidelines, each instructor was asked to provide commentary on at least one global-level issue, one middle-level issue, and two micro-level issues. This arrangement did not mean that instructors

were allowed to give only four comments to the paper but simply set up minimum criteria for the range of issues that the feedback should cover. The instructors could choose to comment on more than one instance of an issue. For example, they could comment on more than one sentence fragment, more than one paragraph that lacked unity, etc. This strategy helped ensure that comments to a particular draft were not dominated by, for example, only micro-level issues and that other global- or middle-level problems were addressed.

A survey was sent to all five instructors asking them to compare their experiences with providing audio feedback and written feedback (see Appendix). After completing the survey, the instructors participated in a one-on-one phone interview with one of the researchers. The length of the interviews ranged from 8 minutes to 18 minutes and 45 seconds. During the interview, the researcher asked the instructor to expand on his or her answers to questions 3, 4, 5, and 6 on the survey. The interview allowed the instructors to further explain and clarify their survey responses.

Data Analysis

The audio feedback from all five instructors was collected in the form of .mp3 audio files. The .mp3 files were then transcribed using Dragon Naturally Speaking software, a process through which one researcher was able to accurately and efficiently generate transcripts for all audio files from the five instructors. Each instructor's transcribed audio files were saved as Word documents. Each transcript was checked for accuracy by comparing it to the audio file.

One of the authors, Cavanaugh, who is an experienced writing instructor with 25 years of teaching experience, coded all five instructors' audio feedback and written feedback. Using Stern and Solomon's (2006) comment framework as a guideline, the researcher coded the comments (sentence by sentence) into each of the four categories from Stern and Solomon: global, middle, micro, and other. Cavanaugh has taught the same first-year composition course, the course for which this study was conducted, for 20 years and has utilized the Stern and Solomon comment framework

in his teaching practices. While the researcher is an experienced writing instructor, arranging for a second researcher to analyze the data for interrater reliability would have strengthened the study. The lack of a second researcher for interrater reliability is a limitation of the study.

Once the audio-feedback data and the written-feedback data were coded into categories, the number of words and the number of items commented on were then counted for each category (i.e., global, middle, micro, and other). All words were included in the word count, including filler words and any repeated phrases. A repeated-measures analysis of variance (ANOVA) was then conducted to determine whether the number of words and the number of items commented on were significantly different between audio and written feedback for all four levels (global, middle, micro, and other) of comments and, if so, in what direction the difference would point.

After completing the analysis of the quantitative data, the researchers then analyzed the qualitative data from the surveys and interviews. The survey data included each participant's preference of providing audio or written feedback on the various categories of comments and their perceived differences between audio and written feedback. The interview data included participants' elaboration on their experiences in providing audio and written feedback. The interview data were transcribed using the same Dragon transcription software. Cavanaugh analyzed each participant's interview data and the qualitative comments from the survey data, looking at the participants' explanation and elaboration on their use of audio versus written comments. For example, if the findings indicated a particular instructor used more words in audio feedback than in written feedback, the researcher would look at the interview and survey data to see if there was any explanation for such practice.

Results

Comparing the Number of Words

For global-, middle-, and micro-level comments, the repeated-measures ANOVA showed a significant difference at the $p < 0.05$ level in the number

of words between audio and written forms for all comment categories (see Figure 1 for an example visual illustration): global level, $F(1, 69) = 100.07$, $p < 0.001$; middle level, $F(1, 69) = 86.10$, $p < 0.001$; and micro level, $F(1, 69) = 78.47$, $p < 0.001$. In other words, there was a significantly higher number of words in audio commentary than in written commentary. In addition, the ANOVA also showed that there was an instructor effect for all comment categories: global level, $F(4, 69) = 21.91$, $p < 0.001$; middle level, $F(4, 69) = 15.64$, $p < 0.001$; and micro level, $F(4, 69) = 7.18$, $p < 0.001$. The instructor effect, which is a "between-subjects" main effect, refers to the fact that the average number of words used from instructor to instructor, collapsing across audio and written comments, differed. This difference was statistically significant at the $p < 0.05$ level for all comment categories. Each instructor demonstrated different commenting patterns in terms of the number of words they used, and these differences were statistically significant for the global, middle, and micro levels.

Here is an example of the written comments and audio feedback from one instructor. This instructor was directing one of her students to not use second-person point of view in her writing. When providing written commentary, she typed, after the sentence in question:

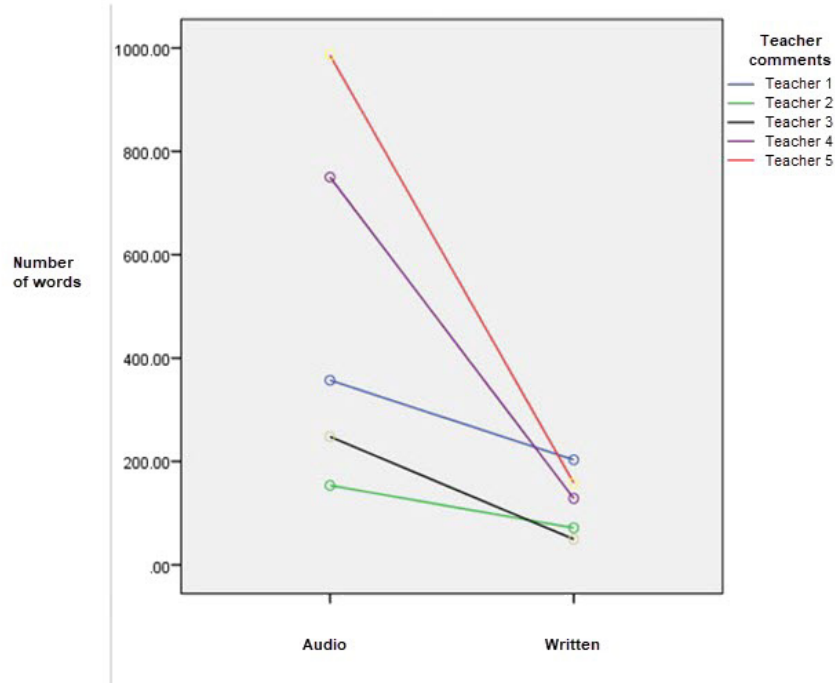
Avoid referring to the audience as 'you,' as it is not possible to gauge a reader's experience.

When providing audio commentary to the same student for writing assignment #2, she said the following:

> Another area I'd like you to think about is be sure to eliminate the 'I' and 'you' voice in papers other than narratives because narratives are personal stories and it is acceptable to use the 'I' voice. But in other papers that we will be writing and future papers, the conversational 'I' or 'you' voice is very—what's the word?—it's not suggested. It's usually prohibited because using 'I' or 'you' or 'me' brings a conversational tone, an informal tone, to the paper. So please be sure to again kind of take it out of the personal realm and think of it more in a journalistic realm where, you know, pretend you're writing this for a health website. And just from your experience, but you don't have to personalize it with 'I' or 'you.'

Figure 1

Mean Number of Words for Each Instructor for Middle-Level Comments



This example illustrates how the use of audio can result in a higher number of words than the use of text when providing feedback to students.

Furthermore, the ANOVA showed that there was an interaction effect for all comment categories: global, $F(4, 69) = 19.865$, $p < 0.001$; middle level, $F(4, 69) = 13.17$, $p < 0.001$; and micro level, $F(1, 69) = 5.75$, $p < 0.001$. An interaction effect occurs when two variables interact with each other. In this case, the medium variable (audio vs. written) is interacting with the instructor variable. The results show that the effect of the medium (audio vs. written) was not the same for each instructor. In other words, the difference between the number of words used for audio comments and

written comments varied from instructor to instructor, and the difference was statistically significant at the $p < 0.05$ level.

For *other* comments, an ANOVA was conducted on the number of words for audio and written commentary for all instructors combined. As stated above, *other* comments refer to comments in which instructors thanked students for submitting their papers, gave direction on how to proceed with submitting the second draft, or in general commented on issues that did not inform strategies in revising the paper. The results indicated a significantly higher number of words in audio form than in written form, Audio $M = 106.31$, $SD = 59.48$; Written $M = 15.18$, $SD = 19.22$; $F(1, 69) = 267.70$, $p < 0.001$. All instructors used more words on average for audio comments than for written comments when giving comments on *other* issues in their students' papers (see Figure 2 for a visual illustration). Overall, the results showed a significant difference between the number of words used in audio comments and the number of words used in written comments.

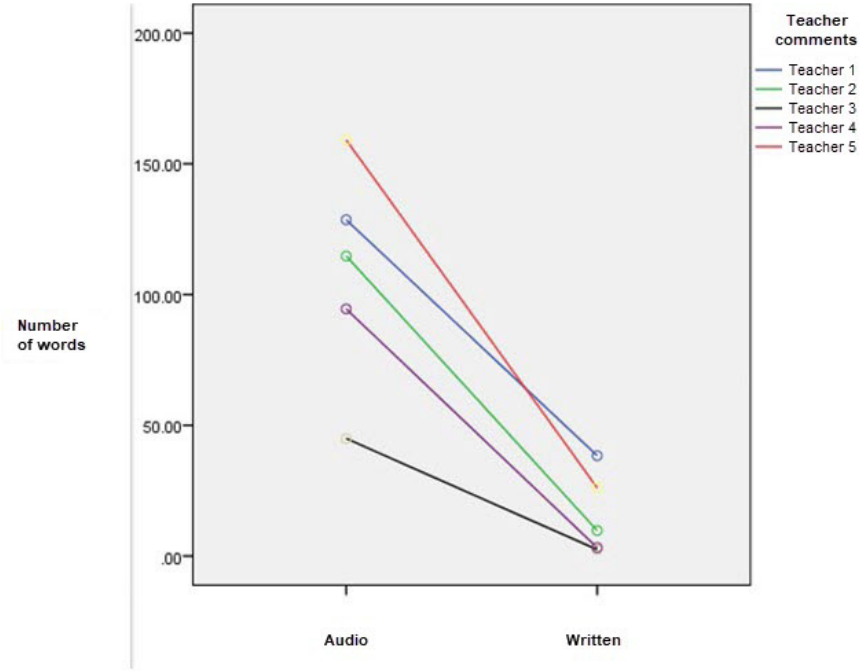
The ANOVA showed that, for *other* comments, there was an instructor effect: the average number of words used from instructor to instructor, collapsing across audio and written comments, differed. This difference was statistically significant at the $p < 0.05$ level, $F(4, 69) = 21.72$, $p < 0.001$. The interaction effect was also evident in the *other* comments. In other words, the difference between the number of words used for audio and written comments varied from instructor to instructor, and the difference was statistically significant at the $p < 0.05$ level, $F(4, 69) = 7.42$, $p < 0.001$.

Comparing the Number of Items Commented on

The ANOVA showed a significant difference in the number of items commented on in audio commentary as compared to written commentary for all comment categories for all instructors combined: global level, $F(1, 69) = 20.12$, $p < 0.001$; middle level, $F(1, 69) = 8.24$, $p < 0.005$; and micro level, $F(4, 69) = 14.61$, $p < 0.001$. In other words, there was a significantly higher number of items commented on in audio form than in written form.

Figure 2

Mean Number of Words for Each Instructor for Other Comments



Instructor preference influenced the number of items commented on more than it influenced the number of words used. In other words, while the difference in the number of items commented on was significantly higher in audio form than in written form for all instructors combined, the results for individual instructors were mixed.

For example, three instructors commented on more items in the global area in audio form than they did in written form, and two instructors commented on more items in the global area in written form than in audio form. For the middle level, four instructors commented on more items in audio form than they did in written form and one instructor commented on more items in written form than in audio form. For the micro level, two instructors commented on more items in audio form than they did in

written form and three instructors commented on more items in written form than in audio form.

The ANOVA indicated that there was an instructor effect at all comment levels for the number of items commented on. The average number of items commented on from instructor to instructor, collapsing across audio and written comments, differed. This difference was statistically significant at the $p < 0.05$ level (see Figure 3 for an example visual illustration): global level, $F(4, 69) = 8.89$, $p < 0.001$; middle level, $F(4, 69) = 14.61$, $p < 0.001$; and micro level, $F(4, 69) = 31.09$, $p < 0.001$.

Furthermore, the ANOVA showed that there was an interaction effect. In other words, the difference between the number of items commented on when giving audio versus written commentary varied from instructor to instructor. The difference was statistically significant at the $p < 0.05$ level: global level, $F(4, 69) = 10.60$, $p < 0.001$; middle level, $F(4, 69) = 7.04$, $p < 0.001$; and micro level, $F(4, 69) = 9.69$, $p < 0.001$.

The data on the comments at all levels showed that the instructors exhibited different styles and, perhaps, preferences when commenting in audio form and written form. The results indicated that instructor style or preference influenced the number of comments more than it influenced the number of words.

Overall, the findings showed two main effects and one interaction effect. The first main effect is that the medium used (audio vs. written) among all instructors produced a statistically significant effect. The use of audio resulted in a higher number of words than did the use of written text for all five instructors. The use of audio also resulted in a higher number of items commented on than the use of written text for all five instructors.

The second main effect was that the specific instructor giving the commentary, whether audio or written, produced a statistically significant effect. Some instructors used a significantly higher number of words when commenting than other instructors, both in audio and in written form. In addition, some instructors commented on a significantly higher number of items.

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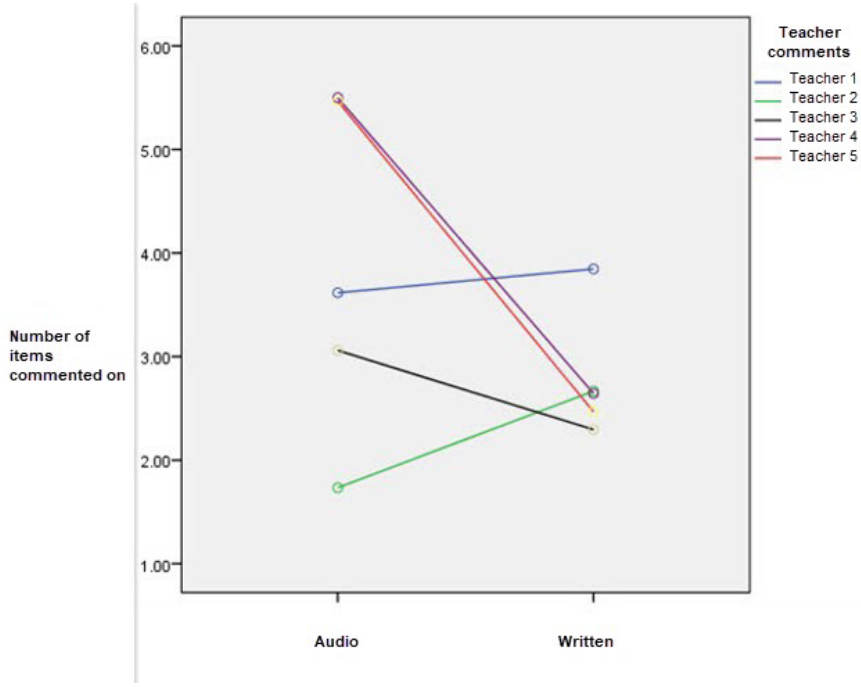
Figure 3

Mean Number of Items in Each Instructor's Commentary for Global-Level Comments



The interaction effect was between the medium and the instructor. There was a statistically significant interaction effect between the medium (audio or written) and which instructor provided the commentary.

The interaction effect indicates that simply knowing which instructor is giving comments is not sufficient information in predicting how many words will be used in the comments at the global, middle, and micro levels. Similarly, simply knowing which medium is being used for the comments is not sufficient in predicting how many items will be commented on at each level. The commenting habits and proclivities of an individual instructor

as well as the medium *that that* particular instructor is using will together influence how many words he or she will use and how many items he or she will comment on at each level.

Instructors' Explanations of Their Commenting Practices

The survey and interview data provided explanations for the interaction effect between the medium and the instructor. For example, all instructors used more words for audio commentary than for written commentary at all levels—except for Instructor 1 at the global level. At the global level, Instructor 1 showed a higher word count for written commentary than for audio commentary (audio $M = 208.5$, $SD = 114.4$; written $M = 211.0$, $SD = 167.4$). In her interview, Instructor 1 stated the following:

> I do have what I sort of think of is almost like cheat sheets. You know, I say what I think of like particular for what is succinct or brilliant or whatever [laughter] statements like, oh, I better keep that one. So I have a whole series of the statements inside my own little textbook and I'll plug those in. In fact, when I do the written I do this, you know, global, middle, micro, and I find that almost all students need the certain comments on thesis statements, so I've got was written out so you know, I save a certain amount of time doing that. I'm not saying that each one is totally original.

Instructor 1 used predesigned "cheat sheets" for her written comments. She copied and pasted these comments into the paper when she desired to point out a specific item for students to work on. She mentioned that she often used these templates for her comments on thesis statements. Thesis statements represent a global-level issue. This pattern of pasting prewritten comments into students' papers may explain why the number of words she used at the global level for written commentary was higher than the number of words she used for audio commentary.

In addition, these differences among instructors further explain why this interaction effect was significant in the study. Instructor 1's use of written comments, especially for the global level, features a different method and pattern than all the other instructors' use of written comments. Again, simply

knowing which medium is being used (written or audio) for commentary is not sufficient in predicting how many words will be used in the comments at each level. One has to know the instructor's personal practice styles to predict the volume of feedback at each level.

Instructors 2 and 3 used the lowest number of words in both audio and written form compared to that of the other three instructors. In her interview, Instructor 2 mentioned that she makes a conscious effort not to post lengthy audio files to her students:

> And I try to be more conservative without overwhelming students with the audio comments. I wouldn't consider myself a blatherer, you know, I don't . . . I don't go on and on with my comments and you even in my conversations in normal life. So I really just choose—as you suggested—specific things to talk about.

This excerpt suggests that her philosophy in providing audio commentary influences the number of words she uses when providing feedback.

Instructor 3 did not indicate any particular philosophy of providing audio commentary, but he did note a reason why his written comments tended to feature a relatively low number of words:

> It takes more effort to writing extensive in-text comments. I generally don't put too much at the end of an essay and to write in-text comments right next to the issue takes a lot of time and more thought than to just describe the situation in audio format.

Thus, while Instructor 2 used fewer words to save students from exhaustion, Instructor 3 used fewer words to save himself time. In both cases, their interviews pointed out possible reasons why they provided the lowest numbers of words for the audio commentary and nearly the lowest number of words for the written commentary.

Instructors 4 and 5 used the highest number of words in audio form among all instructors. In her survey, Instructor 4 explained this phenomenon:

> I was likely to go into more detail about what was strong about the essay and this also added to the length of the file. In the audio file, I can tell the student that the thesis

> is good and then say why that thesis is well crafted (whereas in a written file, I might just write, "Thesis is effective.").

She elaborated on this trend in her interview:

> What I'm doing when I'm giving the comments orally, I tend to expound more on my points. So for example, if in the written file, I might just say this thesis is appealing or, you know, "thesis is strong." And then in the audio file, I may go into a little bit more detail about why I feel the thesis is effective.

Instructor 5 explained a similar phenomenon when she provided audio comments at the global level:

> Because I was, like, addressing, for instance, maybe I was addressing a problem with the thesis. Then I would try to give some examples. You know, I just felt inclined to say more. And again, I felt going into this that I would spend less time on the audio comments. But I ended up spending more time, and I just thought that if I, you know, gave them more examples that that would be helpful.

Overall, the comments gleaned from the instructors' surveys and their interviews corroborated with and explained the quantitative data in showing that an interaction effect occurred from instructor to instructor and from medium to medium. Simply knowing which instructor is giving feedback or knowing which medium the instructor is using for commentary is not sufficient information in predicting commenting patterns. The commenting patterns of an instructor along with the medium he or she is using will together affect the commentary features and patterns the instructor demonstrates.

Discussion

The findings show that the use of audio commentary among instructors results in more words given in feedback. These findings corroborate those of previous analyses (Ahern-Dodson & Reisinger, 2017; Anson, 1997; Dagen

et al., 2008; Huang, 2000; Kirschner et al., 1991; LaFontana, 1996; Merry & Orsmond, 2008; Pearce & Ackley, 1995; Sommers, 2002; Still, 2006). One area that the study helps add to in the literature about writing commentary is exposing the interaction effect between a commenting medium and an instructor. The increase in the number of words among instructors using audio commentary varied from instructor to instructor. In other words, if institutions or instructors themselves want to promote more feedback to students in terms of volume (e.g., number of words), institutions or instructors cannot simply promote using one type of feedback medium over the other. Instructors differ in the way they provide audio feedback and written feedback.

In addition, the study shows that the use of audio feedback does not necessarily mean that more items will be commented on. At the global level and middle levels, instructors tended to comment on more items when using audio commentary than when using written commentary. Nonetheless, at the micro level, instructors tended to comment on more items when using written commentary than when using audio commentary. This finding underscores the interaction effect among instructors. One cannot assume that an instructor providing audio commentary will comment on, for example, more sentence fragments or comma errors than the same instructor providing written commentary will. Increased word count may reflect that an instructor gave more feedback overall, but it may not mean that the instructor gave more feedback to all areas of a student's paper. For writing instruction, institutions should consider both the volume of feedback given overall and the number of items commented on at the four issue levels when assessing feedback given to students.

Moreover, four out of the five instructors commented on more items at the micro level when using written commentary. The study's findings correspond with some previous studies and analyses (LaFontana, 1996; Merry & Orsmond, 2008) in demonstrating that instructors may gravitate to commenting on more micro-level items when providing written commentary than they do when providing audio commentary. This finding suggests that

a mixed method of feedback (audio and written combined) might be a viable approach to providing in-depth feedback at all levels of writing. In addition to using a combination of audio and written commentary, another possibility is screencasting feedback by video. In her study comparing (a) audiovisual commentary through screencasting plus text commentary with (b) just text commentary, Grigoryan (2017) found that 78% of students "would prefer to get some form of a combination of text and video or audio commentary rather than just text-based feedback" (p. 106). This study's findings also support further research in mixed methods of feedback.

Finally, the wide range in the number of words used in audio commentary across the five instructors, compared to the more limited range in the number of words used in written commentary, indicates that instructor preferences, personalities, and commenting strategies might affect audio commentary more than they do written commentary. Ahern-Dodson and Reisinger (2017) and Huang (2000), whose studies involved one instructor, also found a wider range of difference in word count with audio feedback compared to that of written feedback. The current study of five instructors indicates how this range differs across instructors, and the follow-up interviews with the instructors show how individual preferences and approaches to feedback inform this wide range. This difference in word-count range between written and audio feedback might be because written feedback has been dominant in writing instruction and instructors have developed a robust practice of providing written commentary. Institutions may consider providing training on best practices for providing audio feedback to help instructors improve both productivity and quality when providing audio feedback.

Overall, the findings from the study suggest that audio feedback and written feedback each have their own benefits and limitations. One benefit of written feedback is the ability to have prestructured comment templates on some common issues such as thesis statements that "almost all students need certain comments on" (Instructor 1's interview data). Instructors may simply copy and paste those template comments wherever they see

fit. However, when extensive feedback is needed, audio feedback seems to have advantages—it takes more time to write in-text comments, and some instructors prefer to use audio comments for providing extensive feedback (e.g., Instructor 3). Another benefit of audio files is that they give instructors an opportunity to elaborate on issues or topics. As Instructor 4 explained in the survey and during the interview, for the same writing issue (e.g., thesis statement) she might use one sentence in written commentary simply stating a fact (e.g., the thesis was well crafted) but would elaborate much more on the issue (e.g., why the thesis was strong) in audio feedback. In other words, the audio feedback format offers a more convenient way of providing elaborate comments on students' writing. These findings further imply that a combination of written comments and audio feedback might be worth exploring for writing instructors when providing feedback on students' writing assignments.

Implications for future research include further study of the nuances of audio and written commentary, as well as analyzing the possibility of complementing the two media. First, while the level of detail provided in a piece of feedback might yield a higher word count, the impact of such feedback on the student could then be explored. Whether the use of more words means more comprehension on the part of the student represents a fascinating opportunity for further research. Related to this, examining not only the number of words used and the number of items commented on but also the depth of comments, the effect of repeated phrases in audio comments, and the length of specific feedback items in an instructor's commentary are all areas in which further research would be warranted.

With the increased popularity of using screencasting for giving feedback for student writing, the use of video feedback adds another dimension to the landscape of media used in commenting to students. For example, a comparison of both audio commenting and video commenting through screencasting would add greatly to the literature on feedback for student writing. In addition, future research may consider having one instructor provide different types of comments on the same assignment. In other words,

an instructor could provide half of the class with one type of feedback and the other half of the class with a different type of feedback on the same assignment. This way, the research could compare the different types of feedback.

Another implication for further research includes whether or not *combining* two media in responding to student writing would improve student comprehension of feedback and result in improved writing. While this study examined exclusively written commentary for a paper and audio commentary for another paper, the possible advantages of combining two media in commenting on a student's paper, as Grigoryan's (2017) study suggested, is an area for future research.

Conclusion

The emergence of digital media offers instructors alternative approaches to providing feedback on students' writing. The findings of this study suggest that there are differences in terms of the number of words and the number of items that instructors comment on when providing audio feedback and written feedback. In addition, the interaction effect that the study found between the medium and the instructor presents a new perspective in the field of writing feedback research. Not only do we need to understand the differences that a medium might have on feedback but we also need to take into consideration an instructor's effect on feedback provided to students. As new technologies become available (e.g., screencasting technology), new and innovative ways of providing feedback to students are being experimented with. Researchers exploring different types of feedback and how they might affect students' writing should continue to develop best practices for providing feedback.

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Appendix
Instructor Survey

You gave two types of comments to students in this study. For one writing assignment, you gave written comments to students. For another writing assignment, you gave audio comments to students.

Please answer the following questions. In the questions with tables, you can answer the question by putting an "X" into the cell of your choice.

1. Before this semester, what prior experience did you have in giving audio comments to students on their papers?
2. Prior to this semester, how many online courses have you taught for [this institution]? For other institutions?
3. Please consider your experience commenting on the *first draft of each of the two assignments that pertain to this study.* How much time did you spend on average in commenting on the first drafts? Please include the time you spent reading the paper and the time you spent giving comments to the paper. **Please *do not include* any time spent uploading the comments to the online class.**

	0–15 minutes	**16–30 minutes**	**31–45 minutes**	**46–60 minutes**	**Over 60 minutes**
For my students to whom I gave audio comments					
For my students to whom I gave written comments					

4. How much time did you spend *on average* in uploading the comments to a student paper in this class?

	0–30 seconds	31–60 seconds	1–2 minutes	2–3 minutes	over 3 minutes
For my students to whom I gave audio comments					
For my students to whom I gave written comments					

5. How would you compare the use of audio comments with the use of written comments in your ability to accomplish the following tasks?

	I prefer giving audio comments	I prefer giving written comments
Explain your points clearly		
Be thorough in your comments		
Save time in commenting on papers		
Explain global-level issues • organization of the paper • flow of the writing • overall creativity • thesis statement • the topic of the paper • point of view in the paper (if the paper uses a particular point of view inappropriately throughout) • voice (if the paper uses passive voice or active voice inappropriately throughout)		

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Explain middle-level issues • overall paragraph-level issues • quality of paragraphs (unity, coherence, support) • use of topic sentences in paragraphs • quality of specific arguments or claims • support or evidence for the claims • clarification of the content used in the paragraphs • paraphrasing and quoting of sources (if sources are used in the paper)		
Explain micro-level issues • word choice or phrasing • grammar and punctuation • formatting • references and citations		

6. Please comment on your overall experience with the two methods of commenting—written and audio. Feel free to write freely about any concerns or points you want to raise. You may use additional paper in answering this question.

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