Sprinting toward Genre Knowledge: Scaffolding Graduate Student Communication through "Sprints" in Finance and Engineering Courses[1]

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Abstract: This article evaluates the use of biweekly deadlines called "Sprints" to scaffold the development of conference papers in graduate-level courses in econometric modeling and electrical engineering through analysis of faculty assessment reports, observation notes, and transcripts of two audio-recorded class sessions. Data were analyzed to identify Tardy's (2009) four dimensions of genre knowledge: subject-matter, rhetorical, process, and formal knowledge. We found that Sprints provide consistent opportunities for students to provide and receive helpful formative feedback that builds disciplinary genre knowledge in each of the four dimensions. We conclude by recommending strategies for maximizing Sprints' benefits while minimizing potential drawbacks in graduate courses across disciplines.

Graduate students take time away from careers, family, and other obligations to pursue post-graduate education, often in hopes of becoming industry leaders or pursuing advanced study in their disciplines. Given that graduate programs are meant to prepare students for these careers, it is reasonable for graduate students to expect to learn strategies for communicating in the highly specialized professional realms they hope to enter as part of those programs. Nevertheless, faculty can be reluctant to offer explicit communication support because of the pervasive assumption that students should have already learned to communicate effectively by the time they enter graduate school (Brooks-Gillies, Garcia, Kim, Manthey, & Smith, 2015; Curry, 2016; Madden, 2016; Sallee, Hallett, & Tierney, 2011; Simpson, 2012, 2016; Starke-Meyerring, 2011). This dearth of support leads to stories like Simpson's (2012) about "a group of international doctoral students who wandered into the writing program office" hoping to find help with their science writing after having "already been pinballed from department to department on campus" (pp. 95-96). Anecdotes like these point toward the urgent necessity for resources that address graduate students' communication needs.

Responding to this "felt need" (Caplan & Cox, 2016, p. 40), in recent years, communication specialists have developed and studied a wide variety of resources for graduate students, including courses (Aranha, 2009; Douglas, 2015; Fredericksen & Mangelsdorf, 2014; Micciche & Carr, 2011;

Negretti & McGrath, 2018; Shapiro, 2015), writing centers (Cirillo-McCarthy, Del Russo, & Leahy, 2016; Lawrence & Zawacki, 2019; Phillips, 2013, 2016; Summers, 2016; Woodward-Kron, 2007) writing camps (Blake, Bracewell, & Stivers, 2015; Busl, Donnelly, & Capdevielle, 2015), and peer writing groups (Alvarez, Brito, Salazar, & Aguilar, 2016; Bell & Hewerdine, 2016; Gradin, Pauley-Gose, & Stewart, 2006; Phillips, 2012). As pedagogical and scholarly interest in graduate communication skills and practices has increased, professional organizations such as the Consortium on Graduate Communication (Consortium, n.d.) have been created to provide practitioners with opportunities to share resources and exchange ideas related to graduate communication support in a variety of forms and disciplinary and institutional contexts.

In any context, learning to write at the graduate level is not a simple process. Instead, it involves becoming familiar with a wide range of written and spoken genres, many of which are likely to be unfamiliar to new graduate students (Curry, 2016; Simpson, 2016). To use those genres successfully, graduate students must understand goals and values that characterize the institutional and disciplinary discourse communities in which they circulate and how those goals and values impact expectations for communication. In addition, they need to learn how various genres interact with and complement each other as well as what purposes they are meant to accomplish and for whom. They must also understand how to engage in the research and writing processes necessary to produce those genres.

Given the need for graduate students to understand genres as "typified rhetorical actions based in recurrent situations" (Miller, 1984, p. 159) in highly specialized academic and professional communities, researchers have increasingly turned their attention to strategies for helping graduate students to develop genre knowledge (Aranha, 2009; Cheng, 2018; Kuteeva & Negretti, 2016; Negretti & McGrath, 2018; Tardy, 2009) and to the features of and processes surrounding specific graduate-level genres like abstracts (Swales & Feak, 2009), dissertations (Pantelides, 2015; Paré, 2011; Paré, Starke-Meyerring, & McAlpine, 2009; Rogers, Zawacki, & Baker, 2016; Starke-Meyerring, 2011), grant proposals (Cheng, 2014), literature reviews (Feak & Swales, 2009) and research proposals (Yin, 2016; Yu & Lee, 2013), as well as to tools for assessing such genres (Rakedzon & Baram-Tsabari, 2017).

Support from communication specialists in disciplines like writing studies and applied linguistics goes a long way in helping students to think strategically about writing by identifying genres, audiences, and purposes as well as moves and sentence-level features that characterize important genres. They also help students to develop iterative and sustainable writing processes that include seeking consistent feedback and continually revising in response to that feedback. Despite this, mentoring from seasoned members of students' disciplines remains crucial, as illustrated by a recent study by Mangelsdorf and Ruecker (2018), which found that cross-disciplinary peer review was of limited value to graduate students who participated in a writing workshop and that even in intradisciplinary pairings, "the less experienced students tended to learn more about writing in their discipline from more advanced peers, but not the other way around" (p. 16). These findings point toward the importance of scaffolding professor-to-student and peer-to-peer feedback on writing projects in graduate courses in the disciplines so that students with varying levels of disciplinary expertise can learn from each other, and even the most experienced students can learn from a more seasoned member: the professor. Given the acknowledged link between disciplinary expertise and effective mentoring in discipline-specific communication, increasing demand for graduate communication support across contexts presents WAC/WID specialists with opportunities to work with faculty in the disciplines to develop communication support strategies

tailored to meet the needs of graduate students in their specific programs (Boquet et al. 2015; Jordan & Kedrowicz, 2011; Simpson et al., 2015).

This article contributes to ongoing conversations about graduate communication support across disciplines by analyzing one strategy called "Sprints" that two faculty who participated in a recent WID initiative, a professor of business statistics (Jayendra) and a professor of electrical engineering (William), implemented in their graduate courses in the Fall 2017 and Spring 2018 semesters, respectively. In each class, students gave short biweekly presentations leading up to a final research paper. Each presentation built upon the previous one, and students and professors asked questions and offered feedback in response to each presentation. In this article, we evaluate this strategy through analysis of course observation notes, transcripts from two audio-recorded class sessions, and final assessment reports that Jayendra and William wrote as part of the WID initiative.

Our analysis suggests that the use of Sprints to scaffold research-based writing assignments in graduate courses across disciplines provides students with similar benefits to other scaffolding activities like mandatory rough drafts and peer review and some benefits that are unique to the Sprints. One unique benefit is consistent practice delivering information in multiple modes. Another is point-of-need feedback from the professor on various aspects of students' projects and on the quality of the feedback students offer each other. Significantly, all of this feedback is given in front of the entire class rather than to individual students or teams, so students benefit not only from teacher and peer responses to their own work but to others' work as well. In addition, Sprints help disciplinary faculty to develop best practices for sharing specialized genre knowledge with their students. Although Sprints do take up class time that would otherwise be used to cover content, we argue that this activity is worthwhile because it makes the application of course material to original research projects a central part of the course, creating regular opportunities for students to provide and receive formative feedback that both promotes deep learning of course material (Anderson et al., 2015) and builds genre knowledge "while keeping [professors'] workloads manageable" (Bean, 2011, p. 267), which is important for any WID assignment.

Background

WID Fellows Program

This project grew out of a pilot WID initiative sponsored by our university's Center for Teaching and Learning Excellence and led by Lindsey and Michael, two writing professors. The "WID Fellows Program" came about in response to survey and interview research which showed that only 56% of survey respondents agreed that students leave their upper-division courses with an understanding of the kinds of communicative practices valued by their respective fields. Findings from that study demonstrated a need for additional faculty development related to discipline-specific communication. Because our institution does not have a WAC/WID program, Lindsey and Michael developed a two-year "WID Fellows" initiative to support non-writing faculty who assign writing in their courses and encourage interdisciplinary discussion about expectations for communication and best practices for communicating those expectations. Non-writing faculty from each college on campus were invited to serve as WID fellows.[2]

In the first year of the program, the five WID fellows who participated in the initiative were tasked with revising or creating a series of small scaffolding activities leading up to a final written assignment, all under the guidance of two "WID mentors" with backgrounds in writing studies. Two

of the five WID fellows, Jayendra, a professor of business statistics, and William, a professor of electrical engineering, decided to focus on developing sequences for graduate-level courses and ultimately implemented the same strategy, which is described in the next section.

Biweekly "Sprints" in Graduate Courses

At a WID fellows meeting, Jayendra shared his strategy of using biweekly presentations to help students in his graduate-level econometric modeling course to take small steps toward the completion of a research paper that should be suitable for submission to a conference. Upon learning about this strategy, William adapted it for his graduate-level electrical engineering course, "Sensors & Datalinks," in which students are required to work in teams of two or three to complete a research paper suitable for presentation at a conference. Drawing from his background in software engineering, William named the biweekly deadlines "Sprints."

The concept of Sprints comes from the SCRUM agile project management method, an approach to collaboration mostly used in software development that emphasizes adaptability to changing circumstances ("Agile," 2013). This method is characterized by flat, as opposed to hierarchical, team management and by the delivery of "products or services that add value in incremental releases, called 'Sprints'" (Basahel, 2015, p. 796). Although students did not follow all of the steps outlined for Sprints as part of the SCRUM method, they did develop their projects incrementally and, as our analysis will show, adapted their projects and processes in response to changing circumstances, so the name "Sprints" is fitting for the biweekly deadlines.

In each course, students collectively determined biweekly deliverables after the research project was introduced. Having shared responsibility for determining the Sprint deliverables was meant to give students a sense of ownership over the process and increase engagement. In most cases, Sprints culminated in a two-to-three-minute presentation on the allotted topic, allowing professors and students to provide oral feedback as the projects developed. However, one of the Sprints in William's class culminated in a peer review session focused on written rough drafts, allowing students to provide local feedback in addition to the global feedback on which they focused during the presentations. Tables 1 and 2 show the schedules for each course.

Table 1: Presentation Schedule for "Econometric Modeling" Course

Date	Deliverable & Instructions
10/10/17	**Problem Statement:** Students identify the problem and present it to the rest of the class. They also discuss how they will be obtaining data to solve the problem.
10/24/17	**Past Research:** Each student presents at least two relevant published research papers. For each paper, the student should identify the paper's purpose, methodology, variables, theoretical and empirical model, results, and relevance to the student's own project.
11/7/17	**Data Presentation:** Each presentation should consist of two slides. One slide should describe what variables the student is using at present. One slide should summarize statistics as prepared from Eviews software.

11/14/17	**Theoretical and Empirical Model:** Students identify the theoretical interpretation in terms of their hypotheses. Any mathematical derivations should be presented in one slide.
11/21/17	**Findings and Conclusions:** Each student provides two slides on how his or her hypotheses panned out (i.e. economic and statistical significance) and one slide on what he can conclude.
12/5/17	**Final Presentation**

Table 2: Sprint Schedule for "Sensors & Datalinks" Course

Date	Deliverable
2/7/18	**Sprint 0, Introduction:** Research project prompt is assigned. Students form groups. The professor presents poorly designed slides to emphasize the importance of effective communication in the field.
2/14/18	**Sprint 1, Proposals:** Teams present their topic proposals. The class creates a Sprint-based schedule for the rest of the semester.
2/28/18	**Sprint 2, Literature review:** Teams present literature review drafts identifying primary sources for their research. Presentations are now timed to provide practice with balancing brevity and necessary content.
3/21/18	**Sprint 3, Preliminary project sketch:** Teams present a preliminary project outline that answers the following questions: What are the main components on which they're focusing their research? What are some of the big unknowns? Where will they focus their design efforts? What have they already designed?
4/4/18	**Sprint 4, Paper outline and peer review discussion:** Teams present an outline of their paper, which should evolve from the 'big picture' ideas of the previous Sprint. The class discusses peer review.
4/18/18	**Sprint 5, First draft:** Teams present their final Sprint report describing the first draft of their papers.
4/25/18	**Sprint 6, Peer review:** Each student provides peer review comments for three papers. Teams then assimilate feedback and make changes in response.

5/2/18	**Final paper submission:** Each team submits their final paper along with a rebuttal responding to peer review comments, in which they address the professor as the editor of a hypothetical journal or conference.

Research Methods

Information for this qualitative study was collected from course observations, faculty assessment reports, and follow-up conversations. Lindsey observed Sprint presentations in both classes throughout the semester and took notes on topics covered during the sessions. Michael also observed William's class and took notes. With the permission of the IRB and all students in attendance, two sessions of Jayendra's class were audio-recorded and transcribed. Lindsey and Jayendra coded the transcripts for dimensions of genre knowledge (described below) using Nvivo software. We coded the transcripts independently first and subsequently compared our observations. We were unable to audio-record any sessions of William's course, which is a limitation of our study, but we drew relevant information from observation notes. In addition, we drew data from final reports describing the revised assignment sequences and assessing their impact on students' final projects that Jayendra and William submitted as part of the WID Fellows program, which Lindsey coded using Nvivo software.

Analytical Framework

The purpose of the WID Fellows program was for faculty to learn from each other about strategies they can use to help students better understand the genres of their disciplines. Therefore, we conducted this research to evaluate whether and how the Sprint strategy facilitates heightened genre awareness for students using Christine M. Tardy's (2009) four dimensions of genre knowledge as a framework for our analysis.

Tardy (2009) argues that "genre knowledge cannot exist separately from *formal, process, rhetorical*, or *subject-matter knowledge*; instead, it is a confluence of these four dimensions" (p. 20). Rhetorical knowledge relates to a genre's intended audience, purpose, and context; formal knowledge refers to a genre's structural elements such as document sections, rhetorical moves, and syntax; subject-matter knowledge relates to relevant content; and process knowledge refers to the steps taken to create the genre and put it into action (pp. 21-22). Tardy's (2009) research with multilingual graduate students indicates that "more expert genre users . . . spoke of texts and textual practices in a way that considered form, rhetoric, procedure, and subject matter as inseparable" (p. 24). In other words, as writers develop a more sophisticated understanding of disciplinary communication, what Tardy (2009) refers to as *integration* of the four dimensions occurs in their commentary about written and spoken genres (p. 24).

In our coding, we identified references to Tardy's (2009) four dimensions of genre knowledge. Comments on intended audience, purpose, and context were coded as rhetorical knowledge. Comments, questions, and observations that focused on sentence, paragraph, or document structure or visual presentation of data were coded as formal knowledge. Those related to concepts, theories, and equations from economics, finance and/or engineering were coded as subject-matter knowledge. Finally, comments related to steps in the process of creating the genre, including researching, writing, analyzing, and giving feedback, were coded as process knowledge. In

addition, we identified comments and questions in which students or faculty integrated two or more of these dimensions.

Results

In this section, we evaluate the Sprints' impact on students' writing and research processes and final products in the four dimensions of genre knowledge Tardy (2009) identifies. Although most examples integrate multiple dimensions of genre knowledge, they are grouped according to the dimension that emerged as most salient.

Rhetorical Knowledge

A central reason why responsibility for writing instruction lies in part with professors in the disciplines is because they possess unique insights into what disciplinary audiences expect from various genres and the reasons behind those expectations. Our data suggest that Jayendra and William took advantage of the opportunities the Sprints provided to share that knowledge and reinforce the importance of meeting audience expectations throughout the semester. As Tardy (2009) notes, rhetorical knowledge frequently overlaps with process and formal knowledge (p. 21). As the next sections will show, this was certainly the case in the classes we observed, as both professors frequently explained why their formal and process recommendations would help the students to more successfully achieve their purpose with their intended audience. In this section, we comment on one significant improvement in students' demonstration of rhetorical knowledge.

William found that his consistent insistence that students stay mindful of their rhetorical situation led to the most notable improvement he observed when comparing papers submitted during the semester when he piloted the Sprints to those from previous semesters. When he introduced the research project, William asked his students to write for an audience that would attend major engineering conferences such as IEEE and AIAA,[3] and he specified that projects must only cite sources from reputable academic archives in the field and provide rigorous quantitative analysis of data to meet the expectations of that audience. Observation notes indicate that William remarked on quantitative analysis during almost every presentation session, complimenting groups who included quantitative analysis in their presentations, reminding those who did not have much quantitative analysis that he would expect to see that in the next Sprint, and making recommendations for ways that each group could conduct quantitative analysis.

In his final assessment report, William noted an improvement in source selection and analysis. He attributed that improvement to the opportunities for feedback the Sprints provided, saying,

> The continual reinforcement of the ideas of quantitative analysis and the use of appropriate sources do appear to have caused a positive shift in the quality of the reports. In past years, the most common failing of "bad reports" is they tended to lack any quantitative rigor, and used marketing materials as primary sources (rather than scholarly articles). All sources were appropriate this year. While many teams were still below the level of quantitative rigor that I would prefer at the masters level, this area was also improved . . .

These improvements indicate that the students who completed the Sprints left with a better understanding of how to meet expectations that readers in their discipline hold for research and

analysis than their predecessors. As William's report indicates, the repetition of expectations fostered by the Sprint format led his students to provide more rigorous analysis than past students had done, resulting in a greater likelihood of their work achieving its intended purpose: acceptance into a conference in their field.

Formal Knowledge

In addition to addressing concerns like research and analysis, throughout the semester, the professors pointed out ways that students' formal choices could better align with their intended audience's expectations, making the connection between formal knowledge and rhetorical efficacy. Discussions of formal elements we observed suggest that a unique benefit of the Sprints is that they focus on communication through multiple modes.

For example, one formal element that William emphasized throughout the Sprints was the need for clarity and brevity in technical communication, both oral and written. This insistence on concision led each group to create increasingly focused and concise presentations with each Sprint, and William's assessment of his students' final papers indicates that they were also acceptably concise. This suggests that working to meet time constraints when speaking helped the students to meet space constraints in written documents.

Visual Presentation of Data. Both professors offered detailed feedback on strategies for formatting visual aids to effectively communicate with the intended audience. The use of color came up in both classes, such as when Jayendra pointed out a creative strategy that one student, Jake[4], used to draw his audience's attention to important information: "He has color coded the P values . . . Not very common, but people do color code their significant coefficients and variables. Especially at the grad student level, this is a very nice way to analyze your data." Here Jayendra informs the class that Jake's strategy is an uncommon but acceptable and useful way to point out significant coefficients. When he says this rhetorical choice is nice, "especially at the grad student level," he suggests that Jake's work rises above his expectations for students and moves toward professional-level work with formatting. William also provided an audience member's interpretation of colors his students used in a graphic, noting that he could not see the parts colored in red and misinterpreted the meaning of white elements as satellites. These comments emphasize that even small formal choices, which may at first seem arbitrary, can determine the audience's interpretation of the speaker as well as the subject matter being presented; students were encouraged to pay careful attention to these choices and to consider their impact on interpretation moving forward.

In addition, both professors shared insights into best practices for formatting graphs and tables. At one point, William complimented a group on a graph they included in their presentation and encouraged them (and all groups) to do more of that because graphs allow the audience to see numbers, which are necessary for meaningful analysis. Similarly, Jayendra complimented another student, Charita's, use of "simple, elegant tables" and used them as an example of how other students in the class should design their slides. He explained, "You should always, always show your number of observations. It shows the depth and the gravity of your research study. If you present to fellow finance and economics people, they'll understand how each and every observation is so hard to get, so when you're sharing four and twelve observations, they know that your study will make a lot of sense."

Jayendra provided an additional rhetorical reason for a formal recommendation in a summative comment he made about table use at the end of one round of presentations:

> If we have six models, for example, they can all lie in a single table on the same slide, so you don't have to really turn through the slides. Instead, on one slide you can compare everything one by one, so you can say, "Oh look, I dropped these variables and that is how my coefficients have changed. Oh look, I added these new variables, and this is how my coefficients have changed," so it helps you discuss as well.

Consolidating models into one slide, he emphasized, allows the speaker to achieve her presentation's purpose, which is to describe methods and findings smoothly and efficiently. In each of these cases, the professors drew upon what they saw in the students' presentations to make recommendations for how best to format reports and slides to achieve their respective purposes successfully with an audience in their field.

In these comments, Jayendra and William not only explained how students should format their information but also *why* they should format it that way. Both professors emphasized the importance of presenting precise numbers and justified their recommendations by connecting them to the project's purpose, explaining that they enable deep and meaningful analysis. In addition, the professors reminded their students that their work can reach beyond the classroom and provided specific guidance designed to prepare them to present data in ways that align with the goals and values shared by professionals in their disciplines.

Multimodal Genre Systems. Along with real-time feedback on how to tailor formal elements to fit the audience and purpose, the Sprints offered students an additional benefit uniquely promoted by this scaffolding strategy: practice communicating their work in multiple modes. William observed in his assessment report that "the organization, flow, and style of both oral (with slides) and written communication was improved; improvement was even seen throughout the course of the semester in the form of the in-class presentations." Similarly, Jayendra argues in his report that the use of Sprints "helped students figure out how research is conducted and more importantly presented to peers in oral and written form."

These improvements in multiple modes of communication point to a formal benefit attributable to the interactive and iterative nature of the Sprints. Because the Sprint strategy requires students to share drafts of their projects in presentation form and develop their written documents in response to feedback on their presentations, it immerses them in what Molle and Prior (2008) call "multimodal genre systems," an interrelated network of genres in different modes, including digital texts, oral interactions, and written texts that work together in specific social contexts (p. 557). Instead of focusing solely on the written paper and giving a presentation only at the end, which is often how writing projects are scaffolded, with Sprints, the students first shared their ongoing research in presentation from with the understanding that each presentation served as a preliminary draft of the corresponding section of their conference paper. They then revised their written drafts in response to the feedback they received on their presentations. As a result, the students concluded the semester with a great deal of experience speaking, writing, revising, and repurposing information, all strategies essential for success outside of the classroom.

Subject-Matter Knowledge

A primary concern that many professors may have regarding the Sprint strategy is that bi-weekly presentations and conversations take away valuable class time that could be spent covering content. William expressed this concern in his assessment report, explaining that "[t]he main

drawback was the amount of time allocated to the biweekly sessions (about 45 minutes to an hour each, for 5 class sessions; equivalent to 1-1.5 weeks of class)." This is likely to be a common concern among instructors in the disciplines because time dedicated to the presentations could be devoted to covering other relevant content.

However, research in writing studies suggests that discussing course material in relation to students' projects may promote deeper understanding by encouraging practices such as analysis of course material, synthesis of information from multiple sources, and application of course concepts to real-world situations. For example, in a recent survey of over 95,000 undergraduate students from 80 universities, Anderson et al. (2015) found that "as students [across disciplines] interacted meaningfully with instructors, classmates, and others during the writing process; were challenged by writing tasks that required meaning-making, and received clear expectations for their written work, they experienced more course work that emphasized deep learning strategies" (p. 220).

In both classes, the majority of student comments on peers' presentations focused on subject matter, and many of those interactions showed evidence of deep learning strategies, including synthesis, analysis, evaluation, and application. For example, in response to a presentation focused on the use of X rays to communicate in space, one student in William's class suggested that another group look at how powerful X rays have to be to be effective and at their impact on human cargo, thus synthesizing multiple relevant factors. In another example, Jayendra's student, Charita, asked her classmate, Jake, how he expected that lease yield would impact return on equity, again, interrogating the relationship between multiple elements.

Often, critical discussion of course material led to suggestions for how research findings and insights gained through discussion should impact students' research and writing processes going forward. In William's class, for instance, one student asked a group researching the feasibility of using GPS tracking on Mars what they would do if they learned early on that their idea was not possible. They replied that they would research why it wasn't possible, which William said was a good idea. In another instance, Jayendra recommended further research after his student, Diu, asked her classmate, Jake, if he assumed that the variables he named in his hypothesis would change together:

> Jake: I don't think they're going to change together. I think each one will have its own unique effect and change on the model, but if some do change together, maybe that would show multicollinearity.

> Professor: No, no, then I'll test it too!

> Jake: Then I'll test it.

Here Jayendra again indicates that subject-matter knowledge gained through research can influence the research process by explaining that instead of drawing conclusions based on unexpected findings, researchers should respond to such findings by further testing their data. In at least eleven exchanges much like this one, Jayendra built upon students' interactions to help them revise their models in ways that would lead to more precise results.

In each of these cases, students evaluated each other's research questions and methods in light of course material and research findings and made recommendations for revision. In so doing, they synthesized relevant information from multiple sources, evaluated that information's relevance, and applied it to their own work. In addition, these interactions demonstrate how Sprints foster

adaptability to changing circumstances. The students drew upon what they had learned in class and from their own research to identify issues related to subject matter and took further steps in the process such as refining their hypotheses, revising their models, conducting further tests, revising certain sections of the paper, and the like. Thus, moving through the Sprints encouraged students to engage deeply with course material and apply that deepened understanding to their own projects to create final products that met the expectations of their target audiences. In short, they wrote to learn while learning to write, ultimately integrating the rhetorical, formal, subject matter, and process domains of genre knowledge. Although the Sprints did take time that could have been spent covering content, they made good use of that time by prompting students to engage deeply with the content that was covered.

Process Knowledge

In the semesters we observed, the greatest challenges and insights came in the area of process knowledge, specifically when it came to peer feedback. Previous sections have shown that Sprints help students to see academic research-based writing as an incremental and collaborative process that involves continual revision in response to evolving insights. In addition, Sprints highlight not only the important role that peer feedback plays in the academic writing process but also the necessity for professor-to-student meta-feedback in graduate courses. Our observations suggest that Sprints create a rich feedback loop that allows instructors to model effective feedback and provide meta-feedback without adding to their workload outside of class. They also suggest that careful scaffolding is necessary to maximize the benefits of in-class feedback.

Given the central role that interactions play in prompting deep learning strategies, in-class peer feedback is necessary to make the Sprints worth the time they take. In his assessment report, William expressed disappointment that his students did not ask questions or offer comments in response to their classmates' presentations as frequently as he had hoped, noting that "in-class participation by peers was too low." He concluded that in future semesters, "some method needs to be found to increase weekly participation." This is supported by previous studies, which suggest that formal instruction is necessary to maximize the benefits of peer response (Berg, 1999; Min, 2006; Rahimi, 2013; Zhu, 1995).

 Although it was not consistent, students in both classes did offer each other useful feedback at points, and the strategies that led to those interactions point toward a method for improving participation. Jayendra coached students on their professional interactions throughout the process, which led to productive in-class conversations. William's students provided each other with helpful written feedback after he led an in-depth discussion on the role of peer review in his discipline and provided a list of questions to address in peer review commentary. These experiences suggest that professors should discuss peer feedback early on, work with their students to generate lists of sample questions, and provide metacommentary on feedback throughout each Sprint to optimize peer interactions.

In his report, Jayendra noted an improvement in the frequency and quality of his students' interactions compared to the previous semester and attributed that improvement in part to increased scaffolding. Indeed, throughout the semester, Jayendra consistently scaffolded peer-to-peer interactions using a variety of methods, including prompting students to ask each other questions, coaching them on strategies for interacting with colleagues, complimenting effective interactions, and reiterating the important role that peer feedback plays in shaping research

projects. As a result, the students became increasingly comfortable interacting with each other as colleagues and learned about the valuable role that such interactions play in shaping academic research.

In transcripts for two class sessions, we counted twelve separate instances when Jayendra commented on student interactions, which he identified as a crucial part of the research and writing process. He consistently prompted his students to ask each other questions and frequently complimented them on the quality of their interactions. The phrase "good question" alone appears seven times in the transcripts. For instance, after a detailed exchange between students Dev and Rohan about the definition of an event window, the criteria Dev used to determine his event window, and the reasoning behind that selection, Jayendra replied "Good question, good answer," indicating he was impressed that they were engaging with each other as professional colleagues. Later, Jayendra directly referred to a professional context while prompting his students to interact with each other:

> Jake: Who defines short run or long run?
>
> Professor: Oh wow. Who defines short run or long run? Holy moly, great question.
>
> Dev: Great question. The answer will be provided by Dr. Jay...(laughter)
>
> Jake: I meant how can we define long run for . . .
>
> Professor: Just because I say good question doesn't mean you can't answer it. I've seen these kinds of questions at conferences with my fellow researchers, and I was surprised to see that kind of question in a classroom setup, which tells me that your intellectual level has gone so high. That doesn't mean you don't know the answer. You still know the answer. It's just that I wasn't expecting the question.

Here, Jayendra encourages the students to think rhetorically by mentioning the context for which they should be aiming with their projects, a professional conference. He indicates that Jake's question rises to the level of a professional in the field by saying it is something he would expect to hear from a fellow researcher in that setting. At the same time, he encourages Dev to respond to the question as a professional instead of a student likely to defer to the professor as the only subject-matter expert in the room by noting that he should not be intimidated by good questions and reassuring him that he probably knows the answer.

Metacommentary on how to interact as colleagues was offered so frequently in Jayendra's class that it became an inside joke. A few times, when asked if they had questions, a student would ask, "Are you impressed with your results?" This generic question was always followed by quiet laughter from the class. Similarly, at points, he offered recommendations for polite phrases the students could use as they interacted, such as "thank you for the fantastic question" and "very interesting presentation." These suggestions were also met with chuckles from the class and a repetition of the suggested phrase by the student being instructed. The laughter, however, did not seem to indicate that the students did not take Jayendra's guidance seriously. In fact, the students' repetition of these stock phrases indicates acknowledgement of their importance. While stock phrases are laughable, the students recognized that they also keep scholarly discourse going. They were comfortable enough to chuckle at the explicit mentoring they were receiving, but their repetition also

acknowledged that they were learning the informal spoken genres they would need to participate in disciplinary discourse outside of the classroom.

All joking aside, Jayendra took a moment at the end of one presentation session to reiterate the positive impact that peer interaction can have on the development of research projects:

> You already have certain models in place, but you're asking these fundamental questions in terms of, is it really making sense to ask these hypothesis questions? And that's the kind of answers we try to ask each other, right? You asked Jake. We asked Arjun. Somebody asked Feng. Somebody asked Dev. So we asked each other these questions: "Really, what you're doing, is that making any sense or not?" And that's why today's class was actually the most important presentation. . .

Here Jayendra points out that exchanging relevant questions and recommendations is part of being a good colleague and that such exchanges strengthen academic research. Although each student asked his or her own hypothesis question and developed his or her own model, in this comment and throughout the two recorded class periods, Jayendra pointed out that in each case, the end result will reflect the efforts and insights not of only one student but of the entire class, leaving students with a clear message that collaboration is crucial for creating a solid product. Ultimately, this repeated emphasis on peer interaction strengthened his students' process knowledge, which encouraged them to provide each other with helpful feedback.

While William's students struggled to provide consistent feedback in response to each other's presentations, they were successful when it came time to peer review each other's written documents. William noted in his assessment report that "The peer review was of unexpectedly high value." Based on experiences in his own courses and on observations of online peer review comments from other professors' courses, he had expected non-committal, non-substantive comments to dominate his students' peer review feedback. Instead, many of his students submitted marked-up copies covering grammar and formatting as well as providing technical insight.

Before they exchanged drafts for peer review, William led a conversation about the process that emphasized the central role that peer review plays in academia, integrating the four dimensions of genre knowledge. The class began by identifying authors, reviewers, editors, and readers in the field as stakeholders in journals' peer review processes and proceeded to discuss what each party gets out of the process. They then moved on to strategies for peer review and created a list of questions to consider when providing feedback, which included the following:

- o Is the paper suitable for an audience at a professional conference?
- o Are grammar, spelling and IEEE formatting correct?
- o Is the math accurate?
- o Is the information statistically relevant?
- o Are tables and figures accurate?
- o Do the authors cite sources that are appropriate for the audience and venue?
- o Are the claims made by the authors backed up by their research?

William provided the list to his students before their peer review session. This specific guidance might have contributed to their comments' high quality.

During the peer review discussion, William also introduced the "rebuttal," which writers in engineering submit to journal editors alongside revised article manuscripts to explain how they

revised in response to reviewers' comments and, if necessary, justify decisions not to follow reviewers' recommendations. He asked students to submit a rebuttal with their final drafts. By explaining the importance of peer review in academia, identifying common review criteria, and requiring students to simulate the professional peer review process, William used the Sprints to introduce his students to a crucial process that is necessary for publication of scholarly articles, a genre central to any academic discipline. He also introduced them to the supporting genres necessary for writers, reviewers, and editors to complete that process, thereby scaffolding rhetorical and process knowledge necessary for success with writing in engineering.

While William and Jayendra reported experiencing difficulty with getting students to provide feedback, both also demonstrated strategies professors can use to encourage such engagement. Jayendra's consistent prompting as the presentations progressed and William's pre-peer review discussion and guidelines both encouraged detailed feedback. This suggests that a combination of these strategies may help professors maximize the Sprints' value.

Discussion

Our analysis suggests that biweekly deadlines, or Sprints, which culminate in short presentations and sometimes other deliverables, instantiate and even improve on the most promising outcomes of teacher response to student writing identified in previous research. Knoblauch and Brannon (2006) argue that although existing literature shows little evidence that teacher response visibly improves student writing from one draft to the next, "at its best, [teacher response] makes explicit to one student at a time, text by text, what a teacher's values are" (p. 15). Instead of communicating values to one student at a time, Sprints allow faculty to share disciplinary values with entire classes at once. As a result, disciplinary faculty can develop best practices for sharing their specialized genre knowledge with students without creating an unreasonable grading load, and students get more exposure to that knowledge than they would with other scaffolding activities in which professors provide written feedback to individual students or small groups of students provide feedback to each other.

Sprints develop students' rhetorical and formal knowledge by encouraging faculty to continuously reiterate advice regarding how students can revise their content and its presentation to better meet the expectations of disciplinary readers as projects develop. They also provide practice with the multimodal genre systems associated with scholarly work. Sprints foster process knowledge by moving students incrementally through the research and writing process, encouraging them to continuously refine their methods in response to feedback from peers and professors, which they receive at the point of need. Further, they allow professors to model effective feedback and provide meta-feedback to their students, developing students' ability to engage more fully in this important aspect of the writing process. Finally, Sprints promote subject-matter knowledge by encouraging deep engagement with course material. Although Sprints take up class time that may otherwise be used to teach content, our transcripts indicate that most student interactions focused on disciplinary content as it related to students' projects. Especially when combined with the flipped classroom model in which students watch video-recorded lectures and read chapters for homework and then work with the content in class (Gilboy, Heinerichs, & Pazzaglia, 2015), Sprints have the potential to promote subject-matter knowledge by encouraging students to apply course material to real-world questions, making them worth the class time they take.

Although the information we collected from the audio-recorded class sessions, observation notes, and faculty reflections illustrate Sprints' benefits, additional data would help to provide a more

complete picture. More specifically, future research should include interviews and/ or focus groups with students who participated in Sprints to provide their perspective on how that process impacted their learning in the four dimensions of genre knowledge. Case studies tracking how students revised their projects in response to feedback over the course of the semester would provide additional insight.

This study points toward several recommendations for faculty interested in using Sprints in their graduate courses. First, before implementing the Sprints, professors should articulate what they hope students will learn about discipline-specific communication and reinforce that information repeatedly in response to student presentations. Next, they should work with students to determine goals for each Sprint to create buy-in among all participants. Also, strict time limits should be set for presentations so that students gain the benefits Sprints offer without taking too much time away from other content.

Crucially, faculty should carefully scaffold in-class interactions. The dearth of interaction in William's class was the biggest drawback we observed. However, our observations point toward best practices for scaffolding impromptu oral feedback during Sprints, building on existing guidelines for instructing peer response (Liu & Hansen, 2013). Jayendra's strategy of prompting, validating, and building upon student interactions and emphasizing the importance of collegial collaboration throughout the semester led to productive exchanges for his students; William's success with peer review suggests that augmenting the coach-as-you-go strategy with explicit discussion of the important role that face-to-face feedback plays in the development of scholarly projects and listing examples of questions students can ask at each phase of the process might further improve interactions, but further research into this question is necessary.

Finally, our experience illustrates that reflecting on the benefits and drawbacks of the Sprints after each implementation and collaborating with colleagues across disciplines implementing similar strategies provide insights that faculty can draw upon to make the Sprint sessions increasingly beneficial with each iteration.

References

Agile development. (2013). In George Thomas Kurian, *The AMA dictionary of business and management*. New York, NY: AMACOM, Publishing Division of the American Management Association. Retrieved from http://ezproxy.libproxy.db.erau.edu/login?url=https://search.credoreference.com/content/entry/ama dictbm/agile_development/0?institutionId=951

Alvarez, Nancy, Brito, Francia, Salazar, Cristina & Aguilar, Karina. (2016). Agency, liberation, and intersectionality among Latina scholars: Narratives from a cross-institutional writing collective. *Praxis: A Writing Center Journal, 14*(1), 9-14. Retrieved from http://www.praxisuwc.com/alvarez-et-al-141

Anderson, Paul., Anson, Chris. M., Gonyea, Robert M., & Paine, Charles. (2015). The contributions of writing to learning and development: Results from a large-scale multi-institutional study. *Research in the Teaching of English, 50*(2), 199-235.

Aranha, Solange. (2009). The development of a genre-based writing course for graduate students in two fields. In Charles Bazerman, Adair Bonini, & Débora Figueiredo (Eds.), *Genre in a changing world* (pp. 179-193). Fort Collins, CO: The WAC Clearinghouse & Parlor Press.

Basahel, Abdullah. (2015). Adopting SCRUM agile project management for managing academic institutions. *BVICAM's International Journal of Information Technology, 7*(1), 795-798.

Bean, John C. (2011). *Engaging ideas: The professor's guide to integrating writing, critical thinking, and active learning in the classroom* (2nd ed.). San Francisco, CA: Jossey-Bass.

Bell, Katrina & Hewerdine, Jennifer. (2016). Creating a community of learners: Affinity groups and informal graduate writing support. *Praxis: A Writing Center Journal, 14*(1), 50-55. Retrieved from http://www.praxisuwc.com/bell-141

Berg, E. Catherine. (1999). The effects of trained peer response on ESL students' revision types and writing quality. *Journal of Second Language Writing, 8*(3), 215-241.

Blake, Brandy, Bracewell, Joy, & Stivers, Clint. (2015). "Just write?" . . . not quite: Writing "procedure" for STEM-focused dissertation boot camps. *The Writing Lab Newsletter, 39*(9-10). Retrieved from https://wlnjournal.org/archives/v39/39.9-10.pdf

Boquet, Elizabeth, Kazer, Meredith, Manister, Nancy, Lucas, Owen, Shaw, Michael, Madaffari, Valerie, & Gannett, Cinthia. (2015). Just care: Learning from and with graduate students in a doctor of nursing practice program. *Across the Disciplines, 12*(3). Retrieved from http://wac.colostate.edu/atd/graduate_wac/boquetetal2015.cfm

Brooks-Gillies, Marilee, Garcia, Elena G., Kim, Soo Hyon, Manthey, Katie, & Smith, Trixie. (2015). Graduate writing across the disciplines, introduction [Special issue]. *Across the Disciplines, 12*(3). Retrieved from http://wac.colostate.edu/atd/graduate_wac/intro.cfm

Busl, Gretchen, Donnelly, Kara Lee, & Capdevielle, Matthew. (2015). Camping in the disciplines: Assessing the effect of writing camps on graduate student writers. *Across the Disciplines, 12*(3). Retrieved from http://wac.colostate.edu/atd/graduate_wac/busletal2015.cfm

Caplan, Nigel.A., & Cox, Michelle. (2016). The state of graduate communication support: Results of an international survey. In Steve Simpson, Nigel A. Caplan, Michelle Cox, & Talinn Phillips (Eds.), *Supporting graduate student writers: Research, curriculum, & program design* (pp. 22-51). Ann Arbor, MI: University of Michigan Press.

Cheng, An. (2018). *Genre and graduate-level research writing*. Ann Arbor, MI: University of Michigan Press.

Cheng, Ying-Hsueh. (2014) Dissertation grant proposals as "writing games": An exploratory study of two L2 graduate students' experiences. *English for Specific Purposes, 36*, 74-84. doi: 10.1016/j.esp.2014.07.001

Cirillo-McCarthy, Erica, Del Russo, Celeste, & Leahy, Eizabeth. (2016). "We don't do that here": Calling out deficit discourses in the writing center to reframe multilingual graduate support. *Praxis: A Writing Center Journal, 14*(1), 62-71. Retrieved from http://www.praxisuwc.com/cirillomccarty-141

Consortium on Graduate Communication. (n.d.) Retrieved from https://www.gradconsortium.org/

Curry, Mary Jane. (2016). More than language: Graduate students writing as "disciplinary becoming." In Steve Simpson, Nigel A. Caplan, Michelle Cox, & Talinn Phillips (Eds.), *Supporting graduate student writers: Research, curriculum, & program design* (pp. 78-96). Ann Arbor, MI: University of Michigan Press.

Douglas, Jennifer. (2015). Developing an English for academic purposes course for L2 graduate students in the sciences. *Across the Disciplines, 12*(3). Retrieved from http://wac.colostate.edu/atd/graduate_wac/douglas2015.cfm

Feak, Cristine B. & Swales, John M. (2009). *Telling a research story: Writing a literature review*. Ann Arbor: University of Michigan Press.

Fredericksen, Elaine, & Mangelsdorf, Kate. (2014). Graduate writing workshops: Crossing languages and disciplines. In Terry Myers Zawacki & Michelle Cox (Eds.), *WAC and second language writers: Research towards linguistically and culturally inclusive programs and practices* (pp. 347-367). Fort Collins, CO: The WAC Clearinghouse & Parlor Press.

Gilboy, Mary Beth, Heinerichs, Scott, & Pazzaglia, Gina. (2015). Enhancing student engagement using the flipped classroom. *Journal of Nutrition Education and Behavior, 47*(1), 109-114. doi: 10.1016/j.jneb.2014.08.008

Gradin, Sherrie, Pauley-Gose, Jennifer, & Stewart, Candace. (2006). Disciplinary differences, rhetorical resonances: Graduate writing groups beyond the humanities. *Praxis: A Writing Center Journal, 3*(2). Retrieved from http://www.praxisuwc.com/new-page-83

Jordan, Jay, & Kedrowicz, April. (2011). Attitudes about graduate L2 writing in engineering: Possibilities for more integrated instruction. *Across the Disciplines, 8*(4). Retrieved from https://wac.colostate.edu/docs/atd/ell/jordan-kedrowicz.cfm

Knoblauch, Cy, and Brannon, Lil. (2006). Introduction: The emperor (still) has no clothes—revisiting the myth of improvement. In R. Straub (Ed.), *Key works on teacher response: An anthology* (pp. 1-15). Plymouth, NH: Boynton/Cook.

Kuteeva, Maria, & Negretti, Raffaella. (2016). Graduate students' genre knowledge and perceived disciplinary practices: Creating a research space across disciplines. *English for Specific Purposes, 41*, 36-49. doi: 10.1016/j.esp.2015.08.004

Lawrence, Susan & Zawacki, Terry Myers. (2019). *Re/writing the center: Approaches to supporting graduate students in the writing center*. Logan, UT: Utah State University Press.

Liu, Jun & Hansen, Jette G. (2013). *Peer response in second language writing classrooms*. Ann Arbor, MI: University of Michigan Press.

Madden, Shannon. (2016) Introduction: Access as a praxis for graduate writing [Special issue]. *Praxis: A Writing Center Journal, 14*(1), 1-8. Retrieved from http://www.praxisuwc.com/madden-introduction

Mangelsdorf, Kate, & Ruecker, Todd. (2018). Peer reviews and graduate writers: Engagements with language and disciplinary differences while responding to writing. *Journal of Response to Writing, 4*(1), 4-33.

Micciche, Laura R., & Carr, Allison D. (2011). Toward graduate-level writing instruction. *College Composition and Communication, 62*(3), 477-501.

Min, Hui-Tzu. (2006). The effects of trained peer review on EFL students' revision types and writing quality. *Journal of Second Language Writing, 15*, 118-141. doi: 10.1016/j.jslw.2006.01.003

Miller, Carolyn R. (1984). Genre as social action. *Quarterly Journal of Speech, 70*, 151-167.

Molle, D., & Prior, P. (2008). Multimodal genre systems in EAP writing pedagogy: Reflecting on a needs analysis. *TESOL Quarterly, 42*(4), 541-566.

Negretti, Rafaella & McGrath, Lisa. (2018). Scaffolding genre knowledge and metacognition: Insights from an L2 doctoral research writing course. *Journal of Second Language Writing, 40*, 12-13. doi: 10.1016/j.jslw.2017.12.002

Pantelides, Kate. (2015). Dissertation genre change as a result of electronic theses and dissertation programs. *Across the Disciplines, 12*(3). Retrieved from http://wac.colostate.edu/atd/graduate_wac/pantelides2015.cfm

Paré, Anthony (2011). Speaking of writing: Supervisory feedback and the dissertation. In Lynn McAlpine & Cheryl Amundsen (Eds.), *Doctoral education: Research-based strategies for doctoral students, supervisors, and administrators* (pp. 59-74). Dordrecht, Netherlands: Springer.

Paré, Anthony, Starke-Meyerring, Doreen, & McAlpine, Lynn. (2009). The dissertation as multi-genre: Many readers, many readings. In Charles Bazerman, Adair Bonini, & Débora Figueiredo (Eds.), *Genre in a changing world* (pp. 179-193). Fort Collins, CO: The WAC Clearinghouse & Parlor Press.

Phillips, Talinn. (2012). Graduate writing groups: Shaping writing and writers from student to scholar. *Praxis: A Writing Center Journal, 10*(1). Retrieved from http://www.praxisuwc.com/102-links-page

Phillips, Talinn. (2013). Tutor training and services for multilingual graduate writers: A reconsideration. *Praxis: A Writing Center Journal, 10*(2). Retrieved from http://www.praxisuwc.com/phillips-101

Phillips, Talinn. (2016). Writing center support for graduate students: An integrated model. In Steve Simpson, Nigel A. Caplan, Michelle Cox, & Talinn Phillips (Eds.), *Supporting graduate student writers: Research, curriculum, & program design* (pp. 159-170). Ann Arbor, MI: University of Michigan Press.

Rahimi, Mohammad. (2013). Is training student reviewers worth its while? A study of how training influences the quality of students' feedback and writing. *Language Teaching Research, 17*(1), 67-89. doi: 10.1177/1362168812459151

Rakedzon, Tzipora, & Baram-Tsabari, Ayelet. (2017). To make a long story short: A rubric for assessing graduate students' academic and popular science writing skills. *Assessing Writing, 32*, 28-42. doi: 10.1016/j.asw.2016.12.004

Rogers, Paul M., Zawacki, Terry Meyers, & Baker, Sarah E. (2016). Uncovering challenges and pedagogical complications in dissertation writing and supervisory practices: A multimethod study of doctoral students and advisors. In Steve Simpson, Nigel A. Caplan, Michelle Cox, & Talinn Phillips (Eds.). *Supporting graduate student writers: Research, curriculum, & program design* (pp. 52-77). Ann Arbor, MI: University of Michigan Press.

Sallee, Margaret, Hallett, Ronald, & Tierney, William. (2011). Teaching writing in graduate school. *College Teaching, 59*(2), 66-72. doi: 10.1080/87567555.2010.511315.

Shapiro, Elliot. (2015). Towards an integrated graduate student (training program). *Across the Disciplines, 12*(3). Retrieved from http://wac.colostate.edu/atd/graduate_wac/shapiro2015.cfm#_edn1

Simpson, Steve. (2012). The problem of graduate-level writing support: Building a cross-campus graduate writing initiative. *WPA: Writing Program Administration, 36*(1), 95-118.

Simpson, Steve. (2016). New frontiers in graduate writing support and program design. In Steve Simpson, Nigel A. Caplan, Michelle Cox, & Talinn Phillips (Eds.), *Supporting graduate student writers: Research, curriculum, & program design* (pp. 1-20). Ann Arbor, MI: University of Michigan Press.

Simpson, Steve, Clemens, Rebecca, Killingsworth, Drea Rae, Ford, Julie Dyke. (2015). Creating a culture of communication: A graduate-level STEM communication fellows program at a science and engineering university. *Across the Disciplines, 12*(3). Retrieved from https://wac.colostate.edu/atd/graduate_wac/simpsonetal2015.cfm

Starke-Meyerring, Doreen. (2011). The paradox of writing in doctoral education: Student experiences. In Lynn McAlpine & Cheryl Amundsen (Eds.), *Doctoral education: Research-based strategies for doctoral students, supervisors, and administrators* (pp. 75-95). Dordrecht, Netherlands: Springer.

Summers, Sarah. (2016). Building expertise: The toolkit in UCLA's Graduate Writing Center. *Writing Center Journal, 35*(2), 117-145.

Swales, John M., & Feak, Christine B. (2009). *Abstracts and the writing of abstracts*. Ann Arbor: University of Michigan Press.

Tardy, Christine M. (2009). *Building genre knowledge*. West Lafayette, IN: Parlor Press.

Woodward-Kron, Robyn. (2007). Negotiating meanings and scaffolding learning: Writing support for non-English background postgraduate students. *Higher Education Research & Development, 26*(3), 253-268. doi: 10.1080/07294360701494286

Yin, Bin. (2016). An exploratory genre analysis of three graduate degree research proposals in applied linguistics. *Functional Linguistics, 3*(7). doi: 0.1186/s40554-016-0032-2

Yu, Shulin. & Lee, Icy. (2013). Understanding supervisors' commentary practices in doctoral research proposal writing: A Hong Kong study. *The Asia-Pacific Education Researcher, 22*(4), 473-483. doi: 10.1007/s40299-012-0046-9

Zhu, Wei. (1995). Effects of training for peer response on students' comments and interaction. *Written Communication, 12*, 492-528.

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[2] While we recognize that the term "writing fellows" generally refers to students who support other students writing in the disciplines, in this case, the term "fellows" refers to non-writing faculty who participated in our program.

[3] Institute of Electrical and Electronics Engineers and American Institute of Aeronautics and Astronautics.

[4] All student names are pseudonyms.

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