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Infrastructure and Wiki Pedagogy: A Multi-Case Study

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Abstract

Current theories of wiki pedagogy, which hold that wikis can be valuable tools for collaboration and socially constructing knowledge in the classroom, have not thoroughly considered how wikis are experienced by introductory writing teachers who are not already wiki scholars. With infrastructure as a theoretical lens, this study uses data collected from two immersion narratives to examine how introductory writing instructors use and talk about wikis in their courses. Overall, the study found that the level of a wiki's embeddedness in a course can have a significant effect on its perceived usefulness and that immersion into using new technologies can have significant outcomes for both teachers and students. These findings suggest that wikis influence and are influenced by the infrastructures they belong to, that there are both physical and ideological barriers to successfully incorporating a wiki into a course infrastructure, and that immersion narratives can be a useful method for studying wikis. Because of these implications, the essay concludes with a call for more classroom-based inquiry as a means of reflective practice.

Keywords: Wikis; Wiki pedagogy; Infrastructure; Writing pedagogy education

When I first began researching wikis as a graduate student, I scheduled a meeting with an educational technologist at my institution. I explained that I was interested in using wikis as digital archives in my writing courses. He disagreed. I'm paraphrasing, of course, but he said something like "Wikis aren't archives. They are collaborative writing tools." This is a crucial, albeit small, conflict at the heart of the role of wikis in writing courses. Wikis are collaborative writing tools, but as Robert E. Cummings and Matt Barton (Cummings et al., 2008) demonstrated, writing instructors have added layers of complexity to that simple definition by utilizing wikis for a great many purposes beyond drafting a document with others. These utilizations have generated a great deal of excitement in composition studies, as well as other fields, about the potential for wikis, and Web 2.0 technologies in general, to reshape research, writing, and knowledge-making processes (Nelson, 2008; Purdy, 2010). The problem is getting there. In other words, what does wiki pedagogy look like when it reshapes research, writing, and knowledge-making processes? And more importantly, how do the instructors using wikis use and view these tools, particularly when the instructors are not wiki scholars?

1. Background

To address these questions, writing scholars and instructors have explored several spheres of inquiry. The first sphere of inquiry articulates *wiki pedagogy*. One of the most salient contributions to this scholarship was Mark's

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Phillipson's (2008) taxonomy of wikis in the classroom because this work helped to map other contributions. For example, there were studies examining what Phillipson identified as resource wikis, which traditionally served as collections of information (Anson & Miller-Cochran, 2009; McCorkle, 2008) In addition, there were studies examining what Phillipson identified as presentation wikis, which primarily supported the work of a course (Carr, Morrison, Cox, & Deacon, 2007; Fernheimer et al., 2009; Martin & Dusenberry, 2008; Walsh, 2010). Beyond these case studies of wikis, other scholars have employed Wikipedia as a situated writing context to teach students about audience and contributing original information to existing discourse communities (Caeton, 2008; Cummings, 2009; Vetter, 2013). And finally, there is scholarship that does not look at specific cases but instead makes rhetorical arguments for practicing wiki pedagogy, both its affordances and challenges (Barton, 2008; Lundin, 2008; Nelson, 2008). All of these contributions have made wiki pedagogy a rich and active sphere of scholarship within rhetoric and composition.

Another important sphere, particularly within computers and composition, has been how instructors, in general, develop their use of computers in writing courses. Barb Blakely Duffelmeyer (2003), for example, argued that new graduate teaching assistants often feel uncomfortable teaching with technology at first. Yet, she also challenged the assumption that more training prior to teaching was the most appropriate solution. Instead, Duffelmeyer argued for an

> alternative way to think about how we may gain facility and comfort with technology: through an on-going process of participatory activity, a purposeful and active route of exploring and figuring things out as circumstances demanded. This idea of active participation, in contrast to the idea of advance training/transmission, permits TAs to be willing and able to perform before they are, or feel, entirely competent. (2003, p. 303)

My goal with this research is to focus on the times and places where these spheres overlap because one sphere that remains to be explored is how (typical) writing instructors—those not already invested in scholarship on wikis—experience wikis and the wikis' influence on the classroom. I argue that this perspective is crucial to wiki pedagogy for several reasons. First, throughout existing scholarship there seems to be an assumption that instructors deploying wikis in their courses possess an already formed or easily attained awareness of what wikis can do and should be. In other words, researchers—largely examining their own courses—have reached a level of awareness about collaboration, socially constructed knowledge, or even writing as a process that they then want to see their students achieve.

While inarguably valuable, this approach does not account for the perspectives—and ideologies—of the countless instructors who regularly teach writing but are not wiki scholars. Second, this group of instructors is crucial to the continued development and innovation of wiki pedagogy because there seems to be a certain irony in a potentially democratizing tool like wikis reshaping writing instruction while only being deployed by a narrow group of writing instructors and scholars. Third, understanding these perspectives is crucial for writing program administrators often charged with helping to prepare both new and experienced writing teachers to deploy new media in the classroom. If they are to work effectively toward this goal, writing program administrators must increase their knowledge of how new media are encountered, how they are used, and how challenges might be addressed. Therefore, the purpose of this study is to describe the processes and outcomes of two writing teachers' immersions into using wikis in their courses. I use what I am calling *immersion narratives* to make visible both the processes and the ideologies that instructors sometimes bring to bear on the technology they use, the ways in which the technology itself both shapes and is reflective of those ideologies, and even the ways in which students, participating in the construction of wikis, shape and are shaped by their participation.

My use of the term *immersion narrative* is an attempt to name something that I argue happens more than we like to admit. One of the premises of scholarly work is that any new research or teaching project begins with considerable exploration of existing scholarship. As John Creswell (2003) so aptly wrote, "A first step in any project is to spend considerable time in the library examining the research on a topic.. This point cannot be overemphasized" (p. 29). As appropriate, and even crucial, as this first step is, the development of projects does not always conform to neat, linear processes. To illustrate this, consider Cheryl Hofstetter Duffy's (2003) article for *Reflections* about redesigning composition courses to harness the potential benefits of service learning. Duffy referenced the growing wealth of scholarship on service learning and explained that "Ideally, composition faculty would avail themselves of this wealth of thinking and theorizing before ever attempting to teach a service-learning class, to ensure a coherent, thoughtfully critical program" (2003, p. 2). Then she confessed "I.. was too eager to begin and too overwhelmed as a newly appointed director of composition to do much delving beforehand" (2003, p. 2). Duffy's narrative of her experience

and lessons learned constitute one way that scholars and teachers employ experiential learning to make knowledge, if not publishable scholarship.

Immersion narratives also have a foundation within computers and composition. Duffelmeyer (2003) used instructor narratives to make her case for "communities of practice" in developing computer pedagogies, and she suggested an alternative to the more traditional advance-training model. She wrote:

> Elena's story suggested an alternative way to think about how we may gain facility and comfort with technology: through an on-going process of participatory activity, a purposeful and active route of exploring and figuring things out as circumstances demanded. This idea of active participation, in contrast to the idea of advance training/transmission, permits TAs to be willing and able to perform before they are, or feel, entirely competent. (2003, p. 303)

Here again is the acknowledgement, if not the encouragement, to work with technology in the classroom prior to personal mastery as well as an effort to capture that work through narratives.

Therefore, I contend that *immersion narratives* have at least two defining characteristics. First, their examinations are *in situ*, that is the natural position or place. To put it another way, immersion narratives about composition pedagogy happen in the classroom under the normal conditions of a course instead of in more rigid experimental settings where conditions can be controlled more fully. Second, immersion narratives have discovery as their aim, as opposed to the testing of a specific hypothesis. In other words, immersion narratives do not set out to prove theories as much as they set out to make visible certain possibilities, relationships, or outcomes.

Like Duffy's work, then, this article is an attempt to document some of what happens—the perils and possibilities that come with immersion; however, instead of service learning, this essay focuses on wikis. Yet, to make these narratives more than tales of instructors succeeding or struggling with new technologies, I also apply discourse on infrastructure as a theoretical lens. This lens provides additional language with which to analyze the narratives, and it helps to expand the considerations beyond an oversimplifying—albeit important—question of what works in the classroom.

Infrastructure can be a complex term to define. Danielle DeVoss, Ellen Cushman, and Jeffrey Grabill (2005) defined infrastructure in terms of physical components, such as "computers, software, and networks"; however, they also expanded the definition to include "the policies and standards that regulate" classroom space, the "systems of support for the work that takes place," and "the budget and funding (and related decisions) for material objects." On top of this, they also added "structures of surveillance" such as video cameras and the activity tracking recorded by software programs as well as the "tasks and practices" including the things that are used for what purposes and audiences (p. 20). To support their definition, DeVoss, Cushman, & Grabill (2005) drew on earlier work by Susan Star and Karen Ruhleder (1996) from information science. These scholars described eight different characteristics that help to expand our understanding of infrastructure, yet for the purposes of this essay we'll focus on a few major characteristics:

1. Infrastructures are embedded within other structures.
2. Infrastructures are transparent until they break. Then they get noticed.
3. Infrastructures are learned as part of membership.
4. Infrastructures link with conventions of practice—they both shape and are shaped by how they are used.

These characteristics are important because of the infrastructure's function: to support work. For example, Grabill (2010) argued that writing programs themselves are infrastructures that enable work. He suggested that infrastructures are not "stable" but become "visible and meaningful through use" and that "if we want to understand the rhetorical work that people do together, we must render visible the infrastructure that remains (or wants to remain) invisible and that supports, locates—participates in—that rhetorical work" (p. 15, 21). In other words, building a complex understanding of infrastructure can enable a more complex understanding of the rhetorical work that people do together.

Immersion narratives are one way to make infrastructures visible and develop instructors and students understanding of these systems. The teaching and learning in a writing course is certainly rhetorical work that people do together. Wikis, therefore, are part of the infrastructure that supports, or at least has the potential to support, that work.

Furthermore, using infrastructure as the lens for analyzing these narratives is important because it opens up analysis for all of the things for which wikis are used and utilized. I use these two verbs intentionally here with a mind to call attention to their difference. *Use* typically refers to employing something for its intended purpose. In the case of wikis, that means multiple authors writing a document. *Utilize*, on the other hand, typically refers to employing something to

accomplish a task other than its original intended purpose. In the case of wikis, we often see them utilized as content management systems, or even digital archives. Examining wikis in terms of infrastructure, then, enables us to move beyond seeing them as one tool or another but rather as apparatuses that support the rhetorical work of the writing course in multiple ways. It also opens up discourse about wikis to include multiple audiences and perspectives. Instead of teachers only writing about their students work on wikis, we can begin to examine how wikis support students' rhetorical work, teachers' rhetorical work, and possibly even the rhetorical work of program administrators.

In order to explore these possibilities, what follows are reconstructions of how two graduate teachers and their students used wikis in their introductory writing courses. These instructors are, in many ways, representative of a large contingent of instructors within many writing programs. They are instructors. They are students. They have some interest in digital pedagogy, though their experience is not as rich as those who commonly write articles relating to the subject. By chronicling these two immersion narratives, we gain greater insight into how wikis can—and perhaps should—affect course infrastructures, what causes the barriers to their success as infrastructural components, and how we might study these apparatuses and infrastructures in the future.

2. Method

In order to craft these immersion narratives, I completed a multi-case study with three instructors and several students at a large Midwestern research institution. In order to insure that the research was carried out with high regard for its participants, I received approval for the research from the writing program's administrator and the institution's human subjects research review board. It is also important to note that although the instructors were required to use wikis, they were not required to use them in any particular way like those identified by Phillipson (2008). They could develop and employ the wikis in whatever ways they saw fit, and their participation was entirely voluntary. I collected data from the wikis themselves, teacher journals, teacher interviews, and student email interviews in order to construct the two immersion narratives described here.

2.1. Infrastructure Support

There were several elements of infrastructure support for this research. First, the instructors taught one day each week in a computer lab that featured an instructor work station as well as individual work stations for each student. Second, the institution had purchased an enterprise wiki solution called Confluence for these and other instructors at the institution to use. This meant that the instructors did not have to find or install their own wiki software or rely on online wikis services that often require subscriptions. I also provided the composition instructors with some initial training on how to use the wiki software by directing them to a short, instructional video entitled *Wikis in Plain English*, available on Youtube (Common Craft, 2007). I also provided some basic materials that the composition instructors were free to use if they chose to. These materials were writing prompts for their students (see Appendix A and Appendix B). Finally, I provided some one-on-one coaching on using the wikis. In each case, the purpose of these coaching sessions was to demonstrate how the wikis operated. For example, because the wikis were password protected, I demonstrated how to add students to the roster of approved users so that they could have access to the wiki. None of these coaching sessions focused on ideologies—fully acknowledging that in itself is an ideology—concerning wikis or the purposes for which the composition instructors could use the wikis.

3. Aaron's wiki

At the outset, Aaron was an interested participant in this project. He was an experienced composition instructor, and he possessed a B.A. in English and an M.A. in English with a specialization in rhetoric and composition. In terms of professional development, Aaron had participated in a mentoring practicum at his master's degree institution and again at the Midwestern institution at which he was pursuing his doctorate in rhetoric and composition. He had also worked for four years in a university writing center and had used wikis previously as a teaching tool.

In general, Aaron's wiki reflected a utilitarian philosophy. The wiki essentially served as a clearing house for all of the work that his students produced over the course of two semesters, and it most appropriately fit the definition of a presentation wiki because its primary mission was to support the overall work of the course. The first page of the wiki featured announcements, some basic course information like book ISBN numbers, a brief welcome message,

and some links to additional information about the course. The sidebar contained links to student pages, assignment sheets, and other resources like a link to an online writing lab and a page dedicated to answering common grammatical questions. Aaron chose to have the students manage their own pages. Therefore, each student in the class had his or her own page. As they completed their work for the course, they would then post that work to the wiki and create a link to it from their "root" pages. Aaron explained his goal for the wiki this way:

> I really like the idea of using a wiki in my classes. For me, it gives the students a place to find information and work with their peers' work. (Teacher Journal)

One source of tension in Aaron's use of the wiki was his preconception about his students as tech-savvy millennials. When the course began, Aaron quickly concluded that this was not the case. He freely expressed his frustration and bewilderment at what he perceived as their technological literacy deficiencies:

> A large issue was the students. I was lead to believe they were far more tech-savvy than most of them proved to be. Actually, I have had to take time out of class and conferences to fix what I would have seen as minor problems. Not knowing how to create a new page, knowing how to insert pictures, not knowing how to edit a page. All of these things struck me as elementary; why am I taking time out of class to show them this? (Teacher Journal)

Aaron's expectations contrasted greatly with the realities of his students' technological—or at least, wiki—literacy. Applying the infrastructure lens suggested that this was not as much a failing of the students as it was a moment of infrastructures being learned as part of membership. For Aaron's students, like many of the students participating in the study, this was the first time they had actually participated in the construction or active use of a wiki. As outsiders, the students were unable to immediately dive into the conventions of practice that Aaron desired because the wiki itself was an object of study. Aaron's student, Roger, wrote "I was really confused when I first began taking this English class because it is quite difficult for a student who doesn't know much about computers to post something on the computer" (Student Reflection). What is notable about Roger's comment is the seemingly limited vocabulary Roger possesses for this type of work. He conflated the wiki, the Internet, and the machine itself as "the computer," suggesting that his outsider status may have extended to much more digital technology than just wikis.

Interestingly, this tension seemed to resolve itself over time. For many of Aaron's students, Aaron's original preconception of the wiki as a beneficial course management tool proved accurate. Several students commented on their ability to find information and news about the course in a digital space. For example, Grace noted in her reflection on working with the wiki that "It was nice to be able to post my work rather than turning in hard copies in class" (Student Reflection). Likewise, David suggested that it was helpful in "portraying announcements and due dates" (Student Reflection). While comments like these focused on the basic utility of the wiki as a course website, at least one other student mentioned how the immediacy of the wiki proved to be a benefit. Nicole took this utility of the wiki a step further by stating:

> The wiki is nice in the sense that you can for the most part get on and read through stuff when you have the time unlike in classrooms. You can get on the wiki and work when you have the motivation and concentration. (Student Reflection)

Therefore, several students described the potential of the wiki to serve as course information hub.

Another source of tension in Aaron's use of the wiki resulted from technical difficulties. Aaron had experience using wikis, but he was inexperienced with the particular software required for this study—Confluence. The issue first started to arise as Aaron worked to organize the course wiki. Aaron explained, "I want [the students] to use the space, but I still want to be able to quickly navigate around." He added,

> On a related thought, I need to get the [information technology] people to set up my RSS feed on the wiki.. That would really help me keep track of who is posting what so I can give them credit, and it would help me with my first concern. If I am getting the information I need via email, I am not as concerned about how clean and neat the wiki is arranged. (Teacher Journal)

As indicated in the discussion of infrastructure, infrastructures tend to remain invisible; however, they become visible when they break down. As Aaron encountered challenges with the software, its visibility as a component of his course's infrastructure increased as well.

Within the next ten days, the situation deteriorated rapidly. Aaron explicitly outlined his frustrations:

> I officially hate the wiki platform. At least three students are having major difficulties with it. Trying to grade who commented and when takes hours. I have emailed the support people two or three times and have never heard from them. These are problems. (Teacher Journal)

This passage demonstrates that Aaron's frustration with the wiki erupted from multiple positions; however, they were all in some way related to breakdowns in the infrastructure. These breakdowns were further exacerbated by the wiki's centrality, or embeddedness, in the course. First, the students were complaining because the technology seemed to be hindering their efforts in the class rather than facilitating their work. Second, from an instructor standpoint, the wiki's promise was not living up to its reality. Although Confluence included an RSS feed, it was either bugged or simply did not provide the level of functionality that Aaron was accustomed to based on his previous experience. Finally, Aaron clearly indicated his repeated efforts to solicit and receive technical support (another element of infrastructure) with the issues he experienced; however, his pleas were unanswered. These breakdowns resulted in increased tension until Aaron reached a turning point. To provide the best possible course, Aaron requested he be allowed to continue using a wiki in his course but switch to a different software platform: PBwiki.

In Aaron's case, the breakdowns in the course infrastructure appeared to be more pronounced precisely because the wiki was so deeply embedded in the course. This is an important possibility to identify because it is not difficult to imagine or understand an instructor simply stopping use of the wiki or dismissing the technology all together. In other words, these breakdowns may push an instructor from a mindset interested in growth and experimentation with new technology to a more fixed, disapproving mindset: "I tried that once. It didn't work." This is an important implication for any instructor as well as programmatic efforts to successfully implement the use of new technology.

The outcome of Aaron's frustration was that he was allowed to switch to the alternate wiki platform. Aaron's frustrations subsided when he switched; however, his switch also generated new tension for the course in terms of migration. The first tension was migration. Aaron was already a full month into the fall term, and his students had been producing content for the wiki throughout that time period. At the end of September, Aaron wrote the following passage:

> I am not totally sure if I am going to migrate everything, or if I only grab the big stuff. I am thinking of cleaning up the layout. On second thought, I will ask my students if they want me to clean up the layout. I will still have to copy and paste a ton of stuff. I may have to recruit help to get this done in just a day or so. I still have readings to read and papers to think about. (Teacher Journal)

Immediately after deciding to switch, Aaron was faced with the challenge of how exactly to move all of the content. As described above, his first reaction, was to undertake the entire job himself; however, his idea quickly changed:

> After looking over how much needs to be migrated between the wikis and estimating how long it will take, I have decided to offer extra credit to [the students] to migrate their own pages. I hate extra credit, but this seems like a good time to use it. The migration needs to get done, but I do not have the time. So, I am recruiting students. (Teacher Journal)

It is easy to dismiss this simple solution to a large-scale issue as a "no-brainer": divide and conquer by sourcing the crowd. But what is especially important about these examples is the subtle shift in authority that occurs and what the wiki enables. In the first passage, Aaron is initially focused on his ownership of the wiki and how he will accomplish the monumental task before him—building tension. As a means of relieving this tension and completing his goal, he considered compromising content in order to complete the task himself. Yet, toward the end of the passage, Aaron's stance began to soften as he admitted that he might need help. In the second passage a turn took place, Aaron shifted from requesting help to sharing responsibility for the wiki with his students (albeit with extra credit). The work of migrating content to the new wiki changed from a teacherly responsibility to a class project. Something also changed with Aaron's students. Recall that, previously, Aaron expressed frustration at his students' inability to operate the wiki. Yet at this point, he was comfortable asking them to migrate their content from one wiki software to a brand new wiki software, and his concern was not their ability to do it correctly. It was instead on giving extra credit. This suggests that Aaron's students had graduated, in a way, from outsiders to members in their relationship to the course infrastructure.

Despite the tensions described here, the move to PBwiki proved to be a significant turn toward positive outcomes. As the students' work on the wiki continued to grow, so too did Aaron's imagination for how to use the device,

demonstrating a shift in his ideology about wikis. In early October, Aaron wrote, "I started wanting to use the wiki to store files and give the students a place to comment on each others work. It has grown beyond that" (Instructor Reflection). In the subsequent entry, Aaron listed all of the ways in which he had incorporated the wiki into the course with even one idea coming from the students:

- "I have started assigning who each student comments on."
- "I have a pool of papers to use as examples in class."
- "I have each student post a citation on a specific page [of the wiki], and then as a class we all look at the citations."
- I "use the wiki for announcements and general instructions."
- "I am no longer requiring students to turn in hard copies of their papers."
- "The students have also asked me to post my comments on the wiki for them to download—I will be using audio comments." (Instructor Journal)

What is notable about this entry is how far Aaron and his students had progressed, perhaps without even realizing it. The semester began with tensions related to the wiki software and the students' lack of technological expertise. By the end of the course, the wiki became a tool deeply embedded in the course that both was shaped by and shaped conventions of practice. It was used as an online resource both as a course archive—"I have a pool of papers to use as examples"—and as a workspace—"I have each student post a citation [and] as a class we all look at the citations." Furthermore, the students were not only proficient with the wiki, but also negotiating with their instructor about how information was delivered. The same students that Aaron was initially disappointed with were negotiating for formative feedback delivered via the wiki. Aaron summed up the wiki's contribution to the course's infrastructure in his teaching journal, "My entire class is now run from the wiki."

4. Charlie's wiki

Charlie's wiki story differs a great deal from Aaron's. Using Phillipson's (2008) taxonomy, Charlie's wiki was also a presentation wiki, though it took the shape of an end-of- semester project rather than a deeply embedded course management tool. Whereas the tensions in Aaron's immersion narrative stemmed from the technology itself and his students' experience composing in electronic environments, the key tension in Charlie's immersion narrative stemmed from building and maintaining the wiki as a collaborative space. Unlike Aaron's background, Charlie was a third-year Ph.D. candidate studying medieval literature. His preparation for teaching composition included yearlong mentoring programs during his M.A. and Ph.D. degree work, and he served several times as a reader of Advanced Placement Exams in English Literature.

Charlie approached the construction of the wiki as an end-of-semester class project written over the entirety of the course. At the beginning of his first semester, Charlie worked with the students to complete a form of genre analysis on wikis in general and negotiate the purpose of the wiki he and the students would produce as part of the course. With one day each week in a computer lab, Charlie used the time for the students to work on the project.

Charlie's wiki project was literally embedded into the semester and the calendar; however, it did not connect directly to the other practices in the course. It remained a stand-alone project. The writing provided by Charlie and his students suggests that they were very excited about the project in the beginning and took ownership of the wiki; however, as the semester moved on, the students became bored with the project.

Charlie approached the wiki with the students from the standpoint of a novice and negotiated the purpose of the wiki with them. In his teaching journal, he described his approach this way:

> This week, I helped them to brainstorm what sort of wiki they'd like to create. We went through the first three steps on [the researcher's] "wiki-creation" assignment sheet, and examined a few examples of wikis online [Wikipedia, Eve Online wiki, and a genealogy wiki]. We discussed the various parts of the wikis: imbedded links, citations, imbedded pictures, sidebar navigation, a search feature, decoration suited to the intended audience [flowers and things for the genealogy wiki, science-fiction-type designs with cutting-edge fonts for the Eve Online wiki, and an easy-to-use interface for Wikipedia].. They settled on the scrapbook idea [after the helpful comment from one student who called the idea "so cute"], so I titled the project the [University] Scrapbook Wiki. (Teacher Journal)

From the outset then, Charlie employed a collaborative, co-learner approach with the students. Like other typical composition assignments, students engaged in a form of genre analysis to determine the conventions and purpose of their text. Note that according to Charlie's journal, the students decided what type of wiki they wanted to create for their class project.

Charlie's approach appeared to lead to more authority and agency on the part of the students. Whereas Aaron's students expressed some consternation at figuring out how their instructor wanted the wiki arranged, Charlie's students took more ownership of the wiki. Traces of this can be found in both Charlie's reflection and in the students' reflections. For example, Charlie made notes such as "then we started designing the webpage, and the students wanted to turn the colors black and gold. So we did that" and "one girl asked if they could make it 'colorful' (meaning either or both colorful in terms of description or decoration) and I said, 'Yes, of course, write it however you like"' (Teacher Journal). This attitude of the instructor was also reflected in the students' attitudes about the wiki. One student, Christy, wrote:

> I like the fact that we are able to edit each other's articles.. Wikis are fun ways of learning and sharing information. It gave me the chance to be the teacher, instead of always being on the receiving end. (Student Reflection)

Christy felt empowered by that fact that she could edit and make comments on other students' writing, taking on the role of the "teacher" from time to time.

The primary tension in Charlie's immersion narrative came out of the wiki's role in the course. As time passed, Charlie found it difficult to maintain his students' intensity and interest in the project. About a month into the fall semester, Charlie reported the first signs that the students were beginning to lose interest in the project:

> Students not very dedicated today, but are working on it since I'm keeping an eye on them. [October] Break starts tomorrow and probably contributes to their lack of attention. Four students missing. Not sure if they find this to be an important use of their time—might seem like busy work. Need better rationale to explain to them why it's important—abstract reasons like "practice using rhetorical techniques" not very effective. My opinion there. Have not surveyed them on it, and they might be too polite to say. (Teacher Journal)

Charlie could sense his students' waning interest. Yet, none of Charlie's students actually articulated anything about their displeasure at the time, which suggests the possibility of a limit on their agency or simply indicates a different form of agency through passive resistance. This did not stop students from corroborating Charlie's concern in their end-of- semester reflections though. For example, Scott, a student, wrote in his reflection:

> after a while it started to get a little boring because my page was complete and I had changed everything that people had suggested needed to be changed. I also had commented on almost everyone's pages, so there was not much left to do. (Student Reflection)

Likewise, Kelly, another student, commented that one

> problem the class had with the wiki was a lack of activities to complete. In the space of an entire semester we only had to complete one entry to the wiki website and simply comment on 4-5 other entries our classmates had posted. (Student Reflection)

Charlie eventually came to the same conclusion as his students: "They've had more time than necessary to write a short article (200 words is what I asked for). One student has done four" (Teacher Journal). This development suggests two things.

First, it corroborates what we already know about how vagueness or lack of rigor can lead to less successful new media projects (Krause, 2004). Second, it offers an interesting juxtaposition of infrastructural characteristics. The project was embedded in the course, and it persisted over time. Neither Charlie nor his students reported any trouble learning to use the wiki. Nonetheless, everyone lost enthusiasm for the project because it seemed to have run its course. The project was interpreted as done and, therefore, returning to it seemed like wasted time. To put it another way, the perceived need to use the wiki—perhaps because of Charlie's participation in this research or perhaps because of the wikis presence—may have generated a convention of practice that the wiki should be returned to on a regular basis. Charlie was not required to continue spending time on the project in class and could have declared the project complete at any time. The students, for their part, seemed dissatisfied and yet didn't voice their concerns. Both parties continued to the end of the course leaving a low-grade tension in place throughout the term.

In any case, Charlie's class did produce a digital scrapbook focused on the context of the institution. The front page featured high-resolution photographs of the university's campus along with a bold, *sans serif* title declaring "Welcome to the [University] Scrapbook Wiki." Below that, another message of the same size and type stated:

> Here our composition classes of Fall 2009 and Spring 2010 have documented places around [campus] by taking photographs, adding reflections upon the importance of these places, and sometimes offering up odes to [the university's] fountains during hot weather or to the free food at campus events. (Course Wiki)

These messages were then followed by links to the various pages documenting campus locations, events, customs, and groups.

In the second semester, Charlie was excited for the students to add to the wiki and to revise or build on what the students from the previous semester had written. His excitement was quickly subdued by the "quiet" group of students he had. The technology itself also became a source of tension in the spring semester. Although Charlie reported that the students did not have trouble operating the wiki, they did have trouble gaining access to it early in the semester. Essentially, for the first several weeks of the spring course, the software locked the students out of the wiki, and they could not complete their work. Here, then, is another case of an embedded component of course infrastructure becoming visible upon breaking down, which may have had an effect on how the wiki and the scrapbook project were perceived.

Another source of tension for the second iteration of the wiki project was the classroom dynamic between Charlie and the students. While Charlie described the spring semester students as "quiet" he also mentioned "they don't seem too upset by the idea of creating a wiki. Perhaps not thrilled, but even that's hard to tell. Mostly just seem to take it in stride and just do what I ask them to do" (Teacher Journal). Whereas the fall semester students shared some excitement and engagement with creating something new that would extend beyond their course, the spring semester students seemed less enthusiastic about receiving it and trying to make it their own. With a few minor revisions to the article production assignment for the wiki, Charlie was able to convince the students to make contributions to the wiki project, yet when he focused on revising and building on previous articles, the project stalled. Students appeared to exercise their agency not in terms of revising and building the way Charlie had hoped but in avoiding and diverting from it. There was no notable turn in this course. The students completed the assignment by adding their contributions to the wiki.

Over the course of the academic year, Charlie's ideas about the wiki changed in some ways but solidified in others. He articulated his conclusions about the wiki in this way:

> My opinion hasn't changed about wikis in general.. As for teaching with wikis, I think now that it is useful to encourage the students to familiarize themselves with the sort of knowledge creation that goes on online, and I think that the process of working on the website will point out to them some of the flaws of trusting websites such as Wikipedia for research information. (Teacher Journal)

He also added,

> In the end.. I do find using a wiki to be effective in teaching the students about the exchange of information online, a bit about the construction of websites.. in teaching the students about the rhetorical situation of writing to a specific audience, and in helping the students to realize the divergent motivations and accuracy of information found in online articles (as on Wikipedia) and why these sources are not academically credible and should not be cited in research papers. (Teacher Journal)

Therefore, in the case of this composition teacher, we can see the development of an opinion that wikis can be useful pedagogical tools. We also see some reification of the argument that they do not possess enough authority to be used as evidence in research. Moreover, Charlie provided some testimony for the idea that wikis and their production in the context of a composition course could help students develop a richer sense of how information is created, disseminated, and stored online.

In the end, Charlie's wiki story is one of ambivalence. While he didn't feel much difference in how he himself viewed wikis, he did see exceptional value in familiarizing students with the types of "knowledge creation" that exist in the twenty-first century. Interestingly, while Charlie's perspective on the wiki remained mixed, some of his students provided even deeper insight into how the wiki "changed" them and how it could contribute to the development of a constructivist epistemological paradigm.

When he began this research project, Charlie was fairly apathetic about wikis, and he described his experience with them in this way:

> Before using the [project] wiki.. I hadn't worked on a wiki, edited one, or helped to create one. I had used Wikipedia now and then for information or to check for student plagiarism, but not other wikis.. I thought they were a useful repository for common knowledge and individual contribution without the auspices of a publishing house, and I had the opinion, for the same reason that they had no upstanding publisher, that they were not particularly reliable. (Teacher Journal)

There are several important things to note about Charlie in this passage. First, Charlie had no experience producing a wiki, but he did have experience using wikis as tertiary sources.

Second, Charlie provided one example of how composition teachers frequently employ digital archives already: They check student papers against them in order to catch plagiarists. Finally, this passage provides an example of a common assumption that the collective authorship and flexibility of a wiki diminishes its authority.

5. Discussion

5.1. Implications for wikis in introductory writing courses

Wikis affect course infrastructures in many ways, and that's a good place to begin this section because we need to disabuse ourselves—as students, teachers, and administrators—of the ideology that wikis (or any technology, for that matter) work effectively as treatments. That is to say, you cannot give one course a wiki and a second course a placebo writing environment and measure the effects (as Fernheimer et al. [2009] documented so well). Instead, wikis are components of complex infrastructural systems. They are mediators. They can support the rhetorical work of a course, but they can also detract from that work. The outcomes of their presence are largely determined by the physical infrastructure they are connected to as well as how they influence and are influenced by the students and the teachers.

One of the key implications for wikis supported by this research and others is that they are fantastically fluid. Instead of arguing that wikis work best as course management systems or co-authoring tools, it may be time to embrace the fact that wikis work in multiple capacities. This fluidity as well as the rhetoricity of wikis as public or semi-public spaces make them exceptional tools for introductory writing courses. As Aaron's narrative demonstrated, wikis can be remarkable course management systems when utilized to that end. As Charlie's narrative demonstrated, wikis can function as end-of-semester writing projects that focus students around a singular writing purpose as co-learners and co-authors. As I write this, it feels like a mundane implication; however, the conceptualization of wikis as one-trick wonders for collaborative writing persists despite the ample scholarship demonstrating their many uses. They remain fluid apparatuses despite often rigid thinking. Furthermore, this fluidity is especially beneficial when wikis are considered components of infrastructure because they can bend to address the specific goals and needs of different introductory writing courses and different introductory writing teachers. They represent the notions that infrastructures can support work, hinder work, and most importantly that infrastructures can change.

The second implication of this work in terms of wikis as infrastructural components is their ability to create productive cognitive dissonance. For many students, wikis are not simply tools for collaborative writing. They are, themselves, objects to be studied. One of the key characteristics of infrastructures previously described is that infrastructures are learned as part of membership. This helps to explain why Aaron's students were initially confused by the wiki and why other research, like that of Fernheimer et al. (2009), has demonstrated students struggling to use and ultimately disapproving of the software. In each of these cases, the instructors (and researchers) took for granted the students' ability to work with the software as well as their abilities to see and capitalize on the software's potential for collaborative writing. Susan Leigh Star and Karen Ruhleder identified the "taken-for-grantedness of artifacts and organizational arrangements as a *sine qua non* of membership in a community of practice" (as cited in Devoss et al., 2005, p. 20). One place where we can see this taken-for-grantedness actually emerging is in Aaron's wiki. While Aaron embodied one prevalent ideology about composition students in the twenty-first century—that they enter the classroom with more technological savvy than their instructors—recall his student Roger's comment that he was "really confused" at first "because it is quite difficult for a student who doesn't know much about computers to post something on the computer" (Student Reflection). This serves as a reminder that our students aren't quite as "wired" as we often think they are. This also suggests that exposure to new digital technologies like wikis in contexts like introductory

writing courses can help students like Roger develop the necessary digital authoring skills needed to become successful students and professionals. Recall that just a few more weeks into the term, Aaron was no longer worried about the students' ability to use the wiki because he asked them to migrate all of their content to a different wiki platform.

The final implication that I will focus on here has to do with reflection. The point I want to make is that encountering new technologies like wikis in introductory writing courses is not enough. Students must also be compelled to think about what these technologies mean and why they are being used. The key concept that we have to hang onto here is that bit about infrastructures being learned as part of membership. The wikis themselves must—at least at first—be objects of inquiry. In other words, before using wikis to write something, students might best be served by writing about wikis. This approach coincides with all of the scholarship on the value of reflection within composition studies as well as recent scholarship on pedagogical memory (Jarratt, Mack, Sartor, & Watson, 2009; Yancey, 1998). As part of the research discussed in this essay, students reflected on the value of learning about and using wikis, but they did so as part of their participation in the research project—not the course. This suggests that immersion narratives—for both instructors and students—can be valuable forms of reflective practice. It is not enough to write with wikis in introductory writing courses or any course where the technology is new. Students must write about wikis as well.

5.2. Barriers to the success of wikis as infrastructure components

There are several barriers to the success of wikis as infrastructural components, yet interestingly, none of them have to do with the ability to use the software. The first barrier to the success of the wikis in these cases was a lack of infrastructural support from the institution. Wikis, as components of course infrastructures, become visible when they break. Both Aaron and Charlie experienced down time with the wikis because certain functions were not working properly or one computer error or another made the wiki wholly inaccessible. In Aaron's case, the breakdowns were more pronounced precisely because the wiki was so deeply embedded in the course. Because the wiki was at the core of the course and the conventions of practice, its failure to perform slowed or stopped the rhetorical work and frustrated the instructor. Although Charlie reported that the students did not have much trouble operating the wiki, they did have trouble gaining access to it early in the semester because of technological issues. Essentially, for the first several weeks of the spring course, the software locked the students out of the wiki. In other contexts, it is not difficult to imagine or understand an instructor simply stopping use of the wiki or dismissing the technology all together. In other words, "I tried that once. It didn't work." This is an important implication for any instructor or programmatic efforts to successfully implement the use of new technology. It is also important to underscore at this point that it is most productive to view the integration of new media into a writing curriculum as a process like any other such as writing or research. Regardless of whether a project succeeds or fails, reflective practice can help the integration of the technology continue to evolve over time.

A second potential barrier worthy of discussion has to do with embeddedness. Embeddedness is the degree to which something is inside of other "structures, social arrangements, and technologies." Based on these two cases, we can argue that Aaron's wiki was more deeply embedded into the course's infrastructure because it was a tool used frequently and consistently throughout his courses. Charlie, on the other hand, used the wiki consistently (once a week) but less frequently (i.e. the wiki was not used daily inside and outside of class). Interaction with the wiki was limited to once per week. This suggests that Aaron's wiki was far more successful than Charlie's wiki because of all the outcomes that Aaron listed. Nonetheless, Charlie adopted the "spirit" of collaborative writing to a far greater extent than Aaron did. Is it possible or even desirable to find a solution somewhere in between? In other words, is it possible that instead of seeing wikis as mechanisms that only support course management or mechanisms that only support team-based writing, can we use one wiki to accomplish both purposes? Instructors interested in using wikis or any new technology may do well to consider embeddedness as an important variable when integrating new technology into a course and work to define that embeddedness in terms of frequency of use, consistency of use, purpose of use, and outcomes of use. If you're going to incorporate a wiki for a wiki's sake or simply to introduce a technology, then you might want to be prepared for it to flop. However, if you incorporate a technology like a wiki as a means to achieve certain course goals and use it regularly to that end, then you may have more success.

A third barrier to the success of wikis as infrastructural components may be instructor ideology. This is not to suggest that instructors have the wrong ideas about wikis but instead to suggest that sometimes instructors may have fixed

ideas about wikis. An instructor, for example, may view wikis only as collaborative writing tools and then conclude that because his or her curriculum does not include collaborative writing that wikis will be of no use. On the other hand, an instructor may view the wiki as an end-of-semester project only and not explore the possibilities the wiki affords in terms of archiving, collaboration, course management, and so on. As a result, it is imperative for writing teachers as well as writing program administrators to create conditions that generate the types of immersion narratives documenting here. These narratives demonstrate a form of reflective practice that encourages invention, innovation, and growth with respect to writing technologies like wikis.

5.3. Studying wiki infrastructures

Considering all of the recent scholarship on wikis as well as the relative simplicity of using the technology, it is tempting to suggest that perhaps we've already exhausted the pedagogical possibilities of these devices. Maybe we're at an "I used a wiki in comp, and all I got was a bunch of spam" t-shirt phase. Yet, there are several angles that are worthy of additional research. First, more work needs to be done on the embeddedness of wikis in course infrastructures and how the level of embeddedness correlates to the outcomes of the projects or endeavors. For example, in this research we can see a difference between the two wiki models adopted by the instructors—course management versus end-of-semester project. With additional research, we may be able to better calibrate for more effective end-of-semester project models as well as more effective hybrids of both formats particularly within writing courses.

Second, we need additional research examining both students' and instructors' attitudes toward wiki technology. What was especially interesting in Charlie's case were the intersections between his attitudes toward wikis and his students'. While two goals of wiki writing are learning the technology and collaborating on writing projects, additional potential outcomes of this instruction are the determinations that both the teachers and the students make about this particular technology. For example, Charlie articulated a common concern that wikis were less credible sources due to their co-authorship. The epigraph that opened this essay from Christy, one of his students, reflected the same sentiment. Both demonstrate the assumption that error is not simply part of the writing process but that it is a part of the process of writing with other people. As James Purdy (2010) suggested in his own research on Web 2.0 tools, "an important lesson for students (and all researchers) can be found in acknowledging the potential for misinformation in research and the resultant need to critically analyze rather than passively accept published findings" (p. 51). In this sense, this was one affordance of using the wiki. What would be even more interesting to know is, as part of using the wiki, how did both the instructor's and students' attitudes change or evolve, and did they converge? Survey work that includes both teachers and their students may provide a more complete picture of what, if any, correlations exist.

6. Conclusion

Examining wikis in these contexts has had a significant impact on my teaching, and even more importantly, my work as a writing program administrator. From a teaching perspective, I've come to see wikis as highly flexible digital writing tools that can be employed for many different writing aims in a course. In addition to co-authoring documents, wikis can be utilized as course management tools, digital archives, and presentation platforms. Moreover, this flexibility also creates opportunities for students to contribute to and shape the courses in which they participate. This type of participation in a course seems vital in 21st century education, especially when national standards like the Association of American Colleges and Universities' Liberal Education and America's Promise (LEAP) outcomes emphasize things like "critical and creative thinking," "information literacy," and "teamwork and problem solving" (AACU, 2015, p. 9).

While this research does not prove that students will gain proficiency in these areas simply by working with wikis, it does suggest that these tools have the potential to contribute to this learning. As the students in this inquiry suggested, sometimes they like to feel like they have control, they like to imagine the possibilities of a tool like a wiki, they can see co-authoring and online information as complex forms of authorship that require some vetting, and they can solve the problems of using new and sometimes clunky tools to complete required tasks.

Because of this potential, there are features of these courses that can be revised and tested through additional research. First, more work can be done to examine wikis as course management tools, particularly in comparison to other course management tools like Blackboard (the latest versions of which have built-in wikis). This research can

examine what is gained and lost on these platforms in terms of accessibility, functionality, participation, and even provenance. Second, more work can be done to examine wikis as end-of-semester projects seeking the right balance of authority, productivity, and problem solving.

Finally, and perhaps most importantly, achieving these ambitious student outcomes depends on involving writing teachers like Aaron and Charlie in classroom-based inquiry. If there is one thing that this research makes apparent to me as a Writing Program Administrator, it is the need for future research to foster the professional development of teachers. Traditional models of professional development suggest that instructors must first conduct an inquiry into a subject before gaining any knowledge through experience. Immersion narratives, on the other hand, provide one useful means of gaining experience with a technology while also making the technology an object of inquiry. They offer a means of connecting reflective practice and classroom-based inquiry. As scholars of teaching and learning, practitioners of scholarly teaching, or even as research participants engaged in reflective practice, writing teachers only stand to gain through thoughtful experimentation, and immersion narratives provide a compelling means of sharing the outcomes of those activities.

Appendix A. Creating a Wiki Page Sample Assignment

GOALS

- To write as a means of discovery and learning about ourselves and the cultural contexts we share with others
- To develop the ability to create, interpret and evaluate a variety of types of texts integrating verbal and visual components
- To familiarize you with the conventions of form, style, and citation and documentation of sources appropriate for composing in a variety of media for a variety of rhetorical contexts

TASKS

5. **Invention**: Imagine you are creating your own online encyclopedia, but this encyclopedia is specifically about [this school]. What places, people, or events have to be included? Spend 10 minutes writing down ideas about what or whom you might profile for the encyclopedia.
6. **Genre Analysis**: In addition to knowing what you will write about, you will also need to know the genre conventions for a wiki page. Spend several minutes looking at three or more different wikis. What appear to be the basic parts? Are there images? Links? Sound? Write notes about what you see.
7. **Audience Analysis**: Now that you have this background go back to the list you created in Step 1. In order to make decisions about what to profile, we'll have to decide on audience. For this assignment, imagine your audience will be future first- year students at [this university]. Now, spend 10 minutes listing some characteristics of this audience? How old are they? Where are they from? What will they be most interested in? What do you wish you had known when you started [at this university]?
8. **Drafting**: Now it's time to put everything together and start composing. For your first draft, it's a good idea to try to make sure you include the most important information and write something for all of the sections you listed in Step 2. You will probably find that you have to do some additional research such as emailing contacts or reading through university websites.
9. **Review**: After your first draft, it's a good idea to get some feedback from other people. Ask some classmates to read and comment on your wiki page or get some notes from your instructor.
10. **Revision**: Review all of your notes from peers and your instructor. Spend some time thinking about why people gave you the notes that they did. What suggestions do you think will make your wiki page better? Make decisions about what is doable and what will make your page better.
11. **Proofread**: Once your wiki page is complete, it's still important to read through it closely to determine if you've made your writing as clear and error-free as possible.
12. **Label**: After you've completed the other steps, apply at least three labels that might help your audience find your page when they need to.

ASSESSMENT

Table 1
Wiki Page Assessment Rubric.

	Excellent	Very Well Done	Done	Not so Well Done	Not Done
Rhetorical Knowledge					
The wiki page addresses an appropriate subject for the purpose and audience					
The wiki page makes an argument about why its subject should be included in the wiki					
The wiki page uses language and style appropriate for its intended audience					
The wiki page acknowledges the existence of differing viewpoints and attempts to address them constructively					
Critical Thinking, Reading, and Writing					
The wiki page references at least two primary or secondary sources appropriate to the subject					
The wiki page references at least one tertiary source appropriate to the subject					
The wiki page invokes emotions appropriate for the rhetorical situation					
The wiki page is arranged logically in order to increase reader comprehension					
All information on the wiki page is represented honestly and accurately					
Knowledge of Conventions					
There are no spelling or grammatical mistakes that distract the reader					
All research is appropriately cited on the wiki page					
The wiki page includes at least two links to external sources of information					
The wiki page includes at least 1 appropriately cited image—the image can be original work					
The wiki page includes at least three labels to help your audience find your page					
The wiki page is easy to read in terms of headers, tables, and spacing					
The wiki conforms appropriately to the genre conventions.					
The wiki page includes a table of contents					

Appendix B. Revising a Wiki Page

Note to instructors: This assignment does not have to focus on the [program's] Student Guide. This is merely a suggestion for starting out. The assignment could instead focus on any wiki page or multiple wiki pages. My plan is to copy and paste the [program's] Student Guide into the wiki where students can work with it.

GOALS

- To provide you with opportunities to write as a means of learning about the material, social and cultural contexts they share with others
- To develop your ability to interpret, evaluate and revise electronic texts integrating verbal and visual components
- To help you understand how to use writing for multiple academic, civic, and personal purposes
- To help you understand the inherent rhetorical situation of writing
- To help you demonstrate coherent structure, effective style, and grammatical and mechanical correctness in a way that contributes to an author's credibility and style

TASKS

1) **Reading**: For this assignment, you are being asked to update the [program's] "Student Guide to Introductory Composition." To begin, find this guide on your course wiki and look for subject headings to get a sense of everything that's included. After you do that, read the whole document making notes about anything that seems very important or very unimportant—anything that jumps out at you.
2) **Invention**: Now that you've read the document, make a list of the different sections in order of importance. List the most important information first and the least important information last. Next, make a list of things you think the Student Guide should have. Finally, make a list of things that the Student Guide should not have or that should be removed from the document.
3) **Audience Analysis**: Now that you have some initial ideas down on paper, analyze your audience. You know that the audience for this guide will be future introductory composition students at [this university]. Spend several minutes listing some characteristics of this audience. Since you are an introductory composition student now, write down what you think would be useful for the Student Guide. What would you like to know?
4) **Prioritizing**: Now, as a class, list all of the ideas about what should be done to revise the "Student Guide to Introductory Composition." When this is done, prioritize the revisions from 1 to 5. Some suggestions may be combined into larger categories like formatting while others may address specific content needs like textbook reviews.
5) **Form Teams**: Next, divide the class up into five teams with each team responsible for one revision on the list.
6) **Drafting**: As a team, divide up responsibilities and begin working on your revisions for the Student Guide.
7) **Review**: After your first draft, it's a good idea to get some feedback from other people. Ask some classmates to read and comment on your revisions or get some notes from your instructor.
8) **Revision**: Review all of your notes from peers and your instructor. Spend some time thinking about why people gave you the notes that they did. What suggestion do you think will make your revision better? Make decisions about what is doable and what will make finished product better.
9) **Proofread**: Once your revisions are complete, it's still important to read through it closely to determine if you've made your writing as clear and error-free as possible. Also check any links or images to make sure they work and are formatted correctly.
10) **Memo**: After your revision has been completed, draft a memo describing the revision completed by your team and why you made the revision. In other words, explain your rationale for why this revision was needed and why your revision was effective.

ASSESSMENT

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Table 2
Wiki Page Revision Assessment Rubric.

	Excellent	Very Well Done	Done	Not so Well Done	Not Done
Rhetorical Knowledge					
The revision addresses an appropriate subject for the purpose of the Student Guide					
The revision uses language and style appropriate for its intended audience					
The revision helps the audience understand something about introductory composition.					
Critical Thinking, Reading, and Writing					
The revision references at least one external source of information—interview, website, textbook, etc.					
The memo describes in detail the revision made to the Student Guide					
The memo describes in detail why the revision was necessary for the Student Guide					

Table 2 (*Continued*)

The memo describes in detail why the team's specific revision was an effective way to address the Student Guide's need
All information in the revision is represented honestly and accurately
Knowledge of Conventions
There are no spelling or grammatical mistakes in the revision that distract the reader
All research is appropriately cited in the revision
The memo conforms appropriately to the genre conventions
There are no spelling or grammatical mistakes in the memo that distract the reader

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