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Pervasive Pedagogy: Collaborative Cloud-Based Composing Using Google Drive

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Integration of Cloud Technologies in Digitally Networked Classrooms and Learning Communities

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Chapter 7

Pervasive Pedagogy: Collaborative Cloud-Based Composing Using Google Drive

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ABSTRACT

Cloud-based services designed for educational use, like Google Apps for Education (GAFE), afford deeply collaborative activities across multiple applications. Through primary research, the authors discovered that cloud-based technologies such as GAFE and Google Drive afford new opportunities for collaborative cross-platform composing and student engagement. These affordances require new pedagogies to transform these potentialities into practice, as well as a reexamination of contemporary theory of computers and composition. The authors' journey implementing Google Drive as a composing and communication environment required continually remediating content, relationships, practices, and their own identities as they interacted with students in the cloud. This chapter addresses how GAFE and Google Drive engage students in the composition classroom, redefine and transform pedagogical and curricular concepts, and improve students' experience and learning.

INTRODUCTION

Using personal cloud-based storage has become a way of life for many. Whether it's Dropbox or Google Drive, Microsoft OneDrive or Apple iCloud, free and low-cost personal cloud storage is readily and inexpensively available, enabling users to access their files and content from any networked device (Duffy, 2014). With a networked device, internet connection, and an account, files can be saved and backed up online, shared, and downloaded on demand. This new way of accessing, managing, and sharing information is transforming the tech industry, the workplace, and our personal relationship to technology. Increasingly, cloud-computing plays a role in education, as students use applications located

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in the cloud, and store and share a variety of media with classmates and faculty. Institutions -- including colleges and universities -- that implement storage and sharing using cloud technology must consider the way that it transforms access, communication, interaction, and relationships between and among the institution and its constituents.

File storage and file sharing, however, only scratch the surface of the potential that cloud-based technologies offer. Cloud-based services designed for educational use, like Google Apps for Education (GAFE), afford deeply collaborative activities across multiple applications. Google Drive and Google Docs, two of the applications in GAFE and the focus of this chapter, work in tandem to provide shared folders (through Drive) for exclusive, password-protected file sharing among class members and free web- or app-based word processing (in Docs). Google Docs also offers the opportunity for synchronous or asynchronous collaborative use. Granular sharing levels enable strict or loose limits on the way partners or groups can collaborate in a document or among multiple documents. With appropriate sharing permissions, collaborating can take the form of typing in the same document at the same time, typing in the same document at different times, and suggesting and accepting changes at the same time and different times. Asynchronous commenting, threaded and labeled by user, enables users to post comments, respond to comments, and mark comment threads as resolved. Synchronous chats are also built into the document as a sidebar or separate window, enabling brainstorming sessions and communication related to, but outside of, the primary composition space. Multimedia can be embedded, and this functionality can be extended to voice and video collaboration by using other GAFE applications like Google Hangout. GAFE offers this level of collaborative affordances in Docs (word processing), Sheets (spreadsheets), Slides (presentations), Forms (web-based forms connected to Sheets), and Drawings (drawing) applications, all of which can be combined and shared through Drive. Other third-party apps, such as mindmapping, can be added to this standard suite to extend the functionality and collaboration possibilities of GAFE, and Google encourages developers to create new apps.

These collaborative cloud-based affordances offer composition studies the opportunity to rethink not only our pedagogy but also key “givens” in the field, such as drafts, process, peer review, and authorship. In this chapter, the authors present their combined efforts to revise and rethink teaching composition with/in the cloud using GAFE in two different first-year composition situations: rural campuses of a community college serving a mix of traditional students and working professionals, and the continuing education unit of a suburban private liberal arts college serving working professionals. The authors integrated GAFE for student composing, collaboration, and communication, requiring work to be completed using GAFE collaborative applications and shared with peers and their instructor using Google Drive folders. Students completed invention, drafting, revision, review, and submission activities in Google Drive; they produced no printed compositions. Although the authors used their institutions’ learning management systems (LMS) to post grades, students submitted assignments to the LMS as Google Doc URLs, and instructors annotated and assessed (without grading) assignments within the Google Doc. After observing student interaction during both face-to-face class sessions and within the online documents, the authors surveyed students about their experience using GAFE in the composition course.

Through primary research, the authors discovered that cloud-based technologies such as GAFE and Google Drive afford new opportunities for collaborative cross-platform composing and student engagement. These affordances require new pedagogies to transform these potentialities into practice, as well as a reexamination of contemporary theory of computers and composition. The authors’ journey implementing Google Drive as a composing and communication environment required continually remediating content, relationships, practices, and their own identities as they interacted with students in

the cloud. Using theory and praxis from online writing instruction (OWI), information communication technology (ICT), and rhetoric and composition studies, this chapter will address how GAFE and Google Drive engage students in the composition classroom; redefine and transform pedagogical and curricular concepts; and how these transformations improve students' experience and learning.

Literature Review

One reason cloud computing is so attractive to scholars, instructors, and students is its 24/7 availability and ubiquity. Twenty-first century students in higher education represent a shifting demographic, one that includes far more part-time students who fit school around other schedules, including work and family obligations (Schuetze & Slowey, 2002). The rise of online learning and the readily-available Web 2.0 online interfaces demand that composition pedagogy and practice, among other educational experiences, be flexible and available beyond traditional "classroom" space (James, 2014). With an inexpensive net-book, tablet, smartphone, or other mobile networked device, students and teachers can access educational activities and engage in collaborative composing and reviewing. This ubiquity, especially supported by pervasive wifi across vast swaths of urban and suburban centers (Yu, 2014), makes collaborative cloud computing more accessible¹ and reliable for instructional use.

This interest in using cloud-based technologies in composing practice responds to Yancey's (2004) call for composition scholars and educators to study and incorporate technological and multimodal affordances in our composition practice and instruction. Our field has responded with many studies exploring the relationship between the digitally-mediated composing environment and writing outcomes. Several aspects of this relationship have received critical attention. For example, Cook (2005), Depew & Lettner-Rust (2009), and the "Position Statement of Principles and Example Effective Practices for Online Writing Instruction" (CCCC, 2013) call on teachers to privilege pedagogy over technology; to develop composition courses around sound pedagogy first, then select technologies that successfully implement pedagogical decisions. Focusing more directly on technologies for specific composing tasks, Halasek et al. (2014) and Porter (2014) seek to explore the potential benefits and drawbacks of using MOOCs for composition classes or as media for composing texts, while Breuch (2005) encourages teachers to utilize the affordances of the online environment (while recognizing and adapting to its constraints) when planning and leading peer review sessions in synchronous and asynchronous sessions. In seeking to examine ways technology can be used to better facilitate summative assessment of composing practices, Barrett (2006), Clark (2010), Davis and Yancey (2014), and Tulley (2013) pay critical attention to the development and use of eportfolios. McKee and DeVoss (2013) edited an online collection titled *Digital Writing Assessment and Evaluation* that offered several different scholars' perspectives and ideas on ways assessment needs to adapt to the online digital composing space and its artifacts.

The new ways of interacting and new implications for digital composing provided by cloud-based applications and Networked Knowledge Communities (NKC)s require new pedagogical approaches, as several scholars have explored. Boyd (2007) demonstrates the importance of digital media to young people for idea sharing and creativity, and how they participate in a variety of small and large, local, and global networks in their daily lives outside of educational contexts. Gee and Hayes (2011) note that new forms of digital media engage students in alternative ways of learning and advocate bringing them into the classroom and improving teachers' awareness of and facility with them as new pedagogies. Limbu (2013) explores how networked technologies and web 2.0 applications affect multiple literacies -- traditional, digital, and global. Gurung (2014) considers the conceptual and theoretical aspects of

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emerging pedagogies in Networked Knowledge Communities, emphasizing their pedagogical implications and teachers' knowledge base. Echoing Gurung (2014), DePew, Spangler & Spiegel (2014) note that few instructors have been trained to critically examine technological programs' affordances to determine how they affect the relationship between students, the instructor, and course content despite the importance of this critical awareness in developing pedagogies designed for networked spaces. Brown & Hocutt (in press) look specifically at issues related to institutional policy, transparency expectations, trust, surveillance, composing practices, and pedagogies that instructors and institutions must consider when implementing GAFE.

Other scholars have thoughtfully considered how specific digital tools can be used in composition classes: For example, Reid (2008) examines iTunes U as LMS and encourages teachers to integrate formal and informal composing practices in mobile learning pedagogy on such a platform; Bowie (2012) examines ways podcasts can be effectively used in composition classes; and Robins (2008) examines Second Life for its potential as a space for composition teaching, learning, and practice. Focusing on the social nature of composing, Danowski (2006), Neff and Whithaus (2008), and Warnock (2008) encourage composition teachers to use digital network affordances to encourage and facilitate composing as a collaborative activity. Noting that "nearly all composition is digital composition," Eyman and Ball (2014) call for the composition studies field to engage more deeply with the "very rapid shift in modes, genres, and media of textual production" which they argue is critical for building literacies and expanding research in the field (p. 114). Cloud-based computing is a frontier in composition studies, and represents a growing site for research into composing practices, engagement, literacy, and new pedagogies that capitalize on its unique affordances.

Despite studies like these that examine the relationship between various technologies and composing practice and pedagogy, little critical attention focuses on the use of cloud-based tools for collaborative composing. Use of cloud-based tools in classroom settings has not yet become widespread, partially due to institutional privacy concerns in cloud-based technologies and potential FERPA implications of using third-party applications like GAFE or Dropbox. As a result, despite its no-cost ease of access and extensive collaborative affordances, little research focuses on the use of Google Drive for collaborative cloud-based composing. Two recent international studies (Cuestas & Fazzi, 2012; Rowe, Bozalek, & Frantz, 2013) addressed pedagogical implications of using Google Drive and concluded that implementing GAFE enabled pedagogical transformations in critical thinking, power relationships, and students' perception of learning, but they did not address composition specifically. This chapter seeks to begin the work of closing that gap by providing data on the effects using cloud-based technologies such as Google Drive has on student composing and engagement, as well as on pedagogical practice, in two different classroom environments.

Collaborative composing is a term the authors use to mean two separate but related ways of thinking about composing with others. The first generally refers to the use of specific technological affordances to enable multiple users to compose together; the second refers more abstractly to the social production of meaning through composition, "a writing process that grows out of the very nature of language" (Fontaine & Hunter, 2006, p. 12). The authors understand technological affordances as the means to collaborating, of working together to solve a problem with language. As a result, the authors recognize collaborative composing as rooted in writing's social aspects (Bazerman, 1994, 2004; Gaillet, 2009; Miller, 1984, 1994). Collaborating in the same document, on the same assignment, as part of an intentional community of learners, replaces the writer/reader binary and its corollary, the solitary, discipline-bounded writer expressing a single idea at a given moment (J. Rice, 2006) with a far more social actor

in a complex, networked space (Latour, 2005). When Bezemer & Kress (2008) consider current and future understandings of “text” and “genre” in composition studies, they invoke the social dimension of composing in multimodal texts. Collaborative composing is a networked activity (Bazerman, 2004), and using GAFE and Google Drive, networked activity among class members and instructor can easily become networked activity among other classes and instructors (also functioning within networks) that are seeking to address common critical approaches and composing outcomes. The nesting of networks within networks, and collaborative activity beyond the brick and mortar classroom, beyond the course in a single semester, beyond the campus, and indeed beyond other geographic borders also makes cloud computing and collaborative composing in GAFE all the more relevant and transferable to situations both within and outside of higher education.

Throughout the article the authors make reference to CCCC Principles for Online Writing Instruction (OWI). The courses the authors taught and reference in this article were not online. They were a variety of options of face-to-face courses as described below. However, when one uses a cloud-based computing interface which requires students to interact online, the principles of OWI are not only relevant, but crucial. In using GAFE with students, the course becomes online writing no matter the modality assigned to it by the institution or the presence of face-to-face interaction that occurs between instructor and students.

Methods

In first-year composition (FYC) at two different institutions -- rural campuses of a mid-size Virginia community college and the professional and continuing education division of a private Virginia liberal arts college -- the authors integrated GAFE for student composing, collaboration, and communication. The courses operated independently and students in one course did not interact with each other, although the GAFE interface does make that possible and such cross-course and cross-institutional collaboration is an avenue for future research.

Brown used Google Drive for two sections of College Composition I and one section of College Composition II. The Composition II course was taught twice per week during the day in a computer classroom at a regional center. Students ranged in age from dual-enrolled in high school to early 60's. One Composition I section was taught twice per week during the day in a traditional classroom at the campus primarily serving allied health students, and contained students in a similar age range. The other Composition I section met once per week in the evenings in a computer classroom, and contained two high school students along with adults who worked full-time during the day. Hocutt used GAFE for one section of Critical Research and Writing I in the continuing studies school of a small liberal arts college. Students ranged in age from twenty-something employees to fifty-something mid-level professionals, meeting once weekly in the evening on the university campus.

Data were collected in three ways:

1. Ethnographically, via instructor as a participant/observer in the respective classrooms;
2. Via traces left within the Google Drive environment itself; and
3. Via a mixed-methods survey instrument administered anonymously at the end of the semester to gauge student perceptions of the usefulness and application of Google Drive to their personal, academic, and professional lives.

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The instrument is an original survey design which was constructed as a Google Form and made available only to students in these composition sections. Students were asked to complete the surveys at the end of the semester, either in class following the final exam, or on their own time. Student survey responses were confidential. The survey instrument consisted of a total of 28-questions, broken down into four sections: Access to and Use of Google Drive, Function and Utility of Google Drive, Effectiveness of Google Drive, and Attitudes Toward Google Drive. Survey questions used standard Likert and Likert-Type scales to measure attitudes and values along the negative-positive dimension.² At the end of the instrument, participants were asked demographic data that allows for segmentation and comparative study. In addition to the quantitative questions described above, the instrument also contained narrative questions to allow students to elaborate on their ranked choices and to make open-ended comments regarding their experience using the interface in the composition classroom.

Brown's classes consisted of 66 students at two campuses, both serving a rural and suburban commuter population. Hocutt's class consisted of 14 students attending evening classes on the main campus. Of these 80 students, 56 voluntarily responded to the survey, a 70 percent response rate. In the combined student population, 73 percent of students were in the "traditional" college age group of 18-24, 13 percent ages 25-34, 13 percent ages 35-54 and less than 2 percent age 55 or older. We used the standard US Census codes to determine student demographic characteristics. The combined student population was 68 percent female and 31 percent male. Fifteen percent of students identified as Hispanic, 18 percent Black, 5 percent Asian, 5 percent American Indian, and 2 percent Native Hawaiian/Pacific Islander; the remainder identified as White.

Different Implementations

Google Drive and Google Apps for Education allow for customized implementations, depending on the instructor's curricular goals and pedagogical style, as well as the needs of students. This affordance enables instructors to maintain control over their pedagogical implementations, upholding instructor professionalism and classroom autonomy in line with OWI Principle 5 that promotes instructors being able to "retain reasonable control over their own content and/or techniques for conveying, teaching, and assessing their students' writing" in their classrooms (CCCC, 2013). The primacy of instructor control available in GAFE was important to the authors, as each followed different strategies for setting up shared Google Drive folders. The authors each created a series of shared folders on their own Google Drive accounts that they shared with their students. Brown required students to create their personal folders within the shared class folder (see Figure 1), while Hocutt required students to share their own folders with members of their writing and peer review groups (see Figure 2). Brown's method required students to share their composing practices with the rest of the class from the earliest stages, while Hocutt's method required students to share all folders with the instructor early in the process, but to share composed drafts at later stages of development with a smaller group of students.

One of the strengths of GAFE is its flexibility to adapt to different teaching and learning styles without compromising collaborative affordances. Brown's method reflected her desire to co-create classroom activities and outcomes with students, while Hocutt's methods reflected his desire to maintain a level of control over folder structures and shared content. Despite these different strategies and the philosophical positions they reflect, the authors experienced similar results among our students.

Figure 1. Brown’s shared folders, one for each course section, owned and shared by the instructor for the length of the class

My Drive > Spring 2014 ▾		
Name	Owner	Last modified
ENG 111 - [redacted]	me	Apr 24
ENG 111 - [redacted] Spring 2014	me	Apr 30
ENG 112 - [redacted]	me	Apr 30

Figure 2. Hocutt’s student folders, owned by the students and shared selectively as assigned

_Student Folders		
My Drive > Teaching > Spring 2014 > _Student Folders		
TITLE	OWNER	
ENGL 201U - [Student Name] Shared	Student 1	
ENGL 201U - [Student Name] Shared	Student 2	
ENGL 201U - [Student Name] Shared	Student 3	
ENGL 201U - [Student Name] Shared	Student 4	
ENGL 201U - [Student Name] Shared	Student 5	
ENGL 201U - [Student Name] Shared	Student 6	
ENGL 201U - [Student Name] Shared	Student 7	
ENGL 201U - [Student Name] Shared	Student 8	
ENGL 201U - [Student Name] Shared	Student 9	
ENGL 201U - [Student Name] Shared	Student 10	
ENGL 201U - [Student Name] Shared	Student 11	
ENGL 201U - [Student Name] Shared	Student 12	
ENGL 201U - [Student Name] Shared	Student 13	
ENGL 201U - [Student Name] Shared	Student 14	

Results and Discussion

Although implementation of the composing platform differed at the two sites, the authors discovered that Google Drive engages students in the composition classroom; redefines and remediates traditional concepts of artifacts, processes, and places; transforms students’ experience and learning; and requires new pedagogies to align the technology with composition theory and praxis.

Because of their pervasive nature and cross-platform capabilities, cloud technologies redefine the classroom. “Classroom” now can mean the wider world, as it is not bound by time and space to the 2.5

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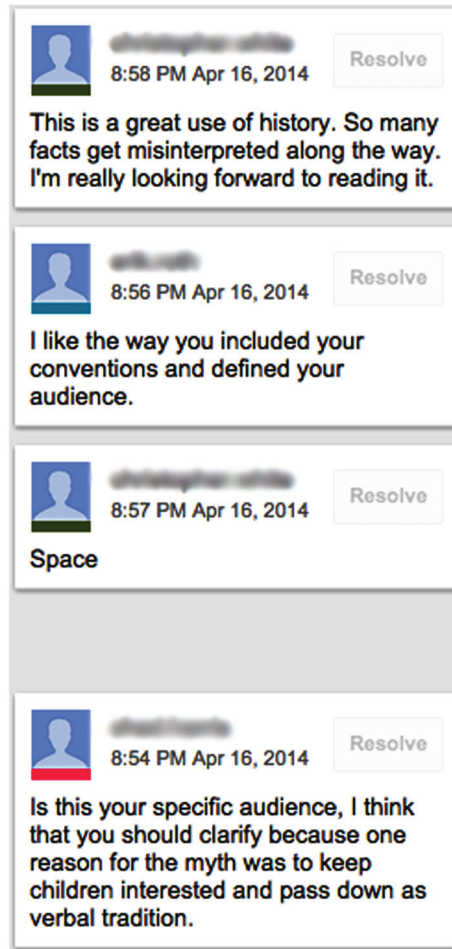
hours per week face-to-face session. These results suggest the cloud-based ubiquity of GAFE allowed engagement to occur beyond the classroom environment, and even beyond the virtual classroom environment into the shared composing environment of the cloud-based technology itself. While access to course content 24/7 is not unusual in today's higher education environment where professors create a course web page or use a LMS to deliver content, much of that "interaction" is top-down: the delivery of information from the instructor to the students. Items such as course syllabi, assignment sheets, handouts, or even recorded lectures and multimedia items can be viewed by students from any device with an internet connection. The GAFE environment is fundamentally different from these interfaces that allow for information dissemination and submission, or asynchronous interaction through discussion board posts.

Google Docs allows students to interact simultaneously and iteratively. Rather than a static discussion board post that another student replies to, students interacting in a Google Doc can leave comments on specific paragraphs, sentences, or even individual words. These comments can then be replied to, and ultimately an action on the comment is taken by the document owner (the student writer) when s/he decides how to resolve the comment. That could mean taking the advice of the commenter, rejecting it, or a nuanced middle ground in which the writer considers the feedback and makes his/her own revisions to address the concern raised in a way that feels authentic to their voice and purpose. This back-and-forth is not done a single time, but can be done multiple times as the document evolves, and done with nested levels of specificity, related to a single comment, idea, or phrase. This composing process among collaborators is accomplished within the same document, without downloading or re-uploading, as a dynamic conversation in networked space (see Figure 3). The writing is transformed as the prior, less polished prose is overwritten, and evidence of this transformation is captured and archived in GAFE through revision history.

We found that students engaged with their documents beyond the class session. While some of that is unsurprising -- students must work on their papers outside of class -- there was a change in their writing process in terms of when, where, and with whom they wrote. Students accessed GAFE at all times of the day and evening, weekdays and weekends, and using a multitude of platforms, including their personal desktop/laptop (91%), their work desktop/laptop (17%), college computer during class (81%), college computer outside of class (40%), their smartphones (38%), and their tablet devices (15%). Throughout these disparate spaces and places, they were engaged in the composing process, not merely downloading or uploading content. Since students had access to the technology -- and thereby their drafts -- 24/7, they often participated in small "doses" of composing or editing when it was convenient for them, or as ideas occurred to them, accessing GAFE from multiple devices and platforms, including their phones and tablets. GAFE becomes a space of interactivity and creativity, of recursive collaborative composing and not the transaction-based use of an LMS.

The fundamental difference between GAFE and other cloud-based applications such as an institutional LMS is that GAFE easily allows and encourages students to work together *as they are completing the assignment*, as part of the composing process, rather than enabling students to respond to another's composition *after it's already been submitted* to a discussion forum or digital drop box. Students can "meet-up" in a Google Doc, from a distance or in person, and work together synchronously using the chat feature to ask questions, develop ideas, socialize, and build community. Later, students can return to that document and leave comments for peers to read and review. GAFE allows students to move seamlessly between synchronous and asynchronous interactions. What is ultimately produced by an individual student following this process is a text that was socially composed, with iterative feedback and input from peers provided as it developed. The social composing can also be traced by looking at the

Figure 3. Sample comments written by classmates on an invention assignment. Each blurred entry represents a commenter. This figure reflects a synchronous in-class review session.

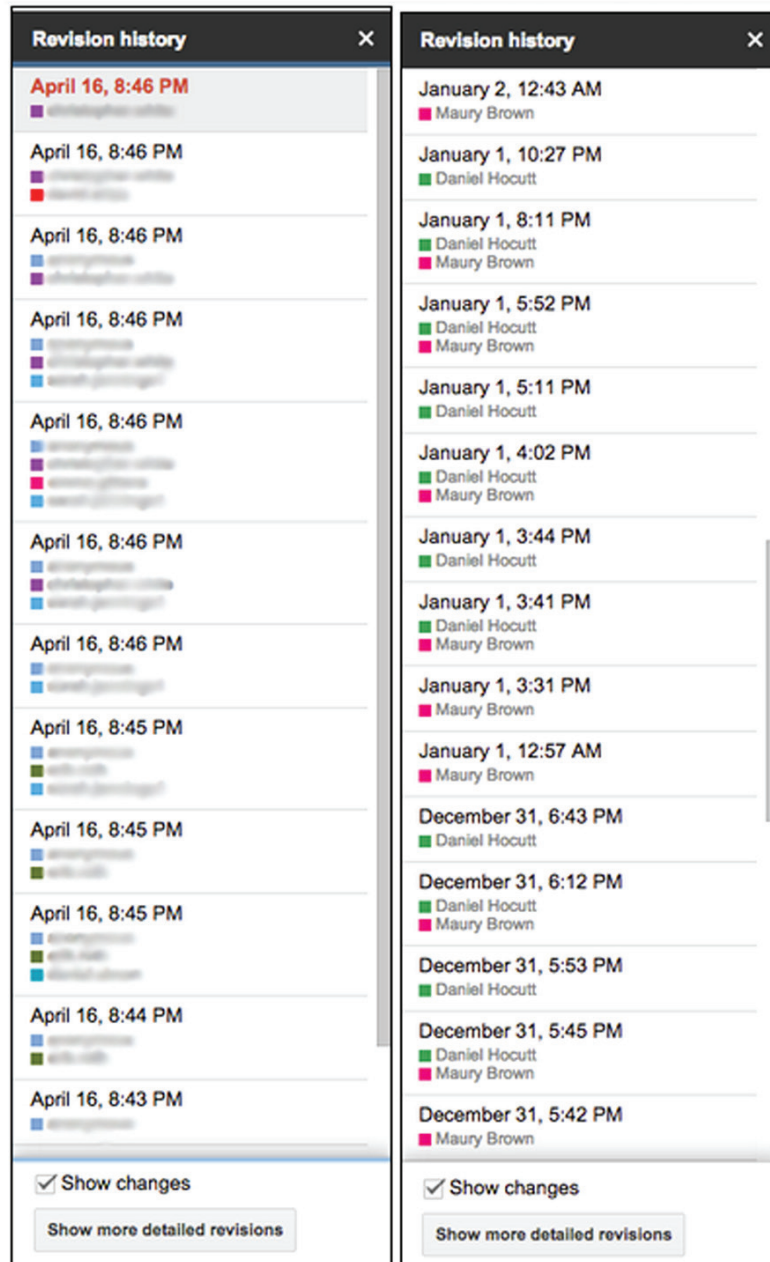


Doc's revision history (see Figure 4), where comments and replies to them (but not chats) are archived in addition to revisions to the document itself.

The authors' implementation of GAFE applications enacted the tenets of OWI Principle 3, which calls for teachers to develop "appropriate composition teaching/learning strategies... for the unique features of the instructional environment" (CCCC, 2013). The authors taught their classes in synchronous face-to-face sessions, so they were able to immediately gauge engagement in the classroom space. Because the authors could also see what their students were doing any time they reviewed the contents of students' shared folders, they could tell when and how students were engaged. The survey focused on student attitudes toward GAFE, and the authors were particularly interested in whether student use would change attitudes and expectations of both the use of technology and the composing practice. The authors asked students to evaluate how using Google Drive affected their expectations about several classroom activities and functions on a 5-item Likert-like scale: better than expected, somewhat better than expected, matched my expectations, somewhat worse than expected, and worse than expected. The

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Figure 4. Sample Revision history from a student paper (left) and this chapter you are reading now (right). In the student paper's revision history (left), each blurred entry represents a collaborator's contribution. In this chapter's revision history (right), timestamps reflect asynchronous individual work and synchronous collaboration.



majority of students found the classroom activities and functions involving Google Drive were better than expected or somewhat better than expected. These results, focused on how using Google Drive exceeded expectations about class activities and functions, are listed in Table 1.

Table 1. Percentage of students who found using Google Drive in classroom activities and functions exceeded expectations

Activity or Function	Better	Somewhat Better	Overall
In-class activities and assignments	48%	30%	78%
Instructor/student relationships	39%	29%	68%
Your relationship with your classmates	41%	29%	70%
Your involvement in the class	46%	28%	78%
Your writing or composing process	44%	27%	71%
Your revising process	44%	27%	71%
Peer review	51%	19%	80%
Writing/composing together	45%	28%	73%
Submitting assignments for grading	42%	18%	60%
Grading/assessment	39%	17%	56%

Of particular interest in these results is the percentage of students who reported that using Google Drive exceeded their expectations related to classroom activities that do not directly engage technology, namely class involvement (78%, itself a measure of engagement) and relationship with classmates (70%) and teacher (68%). One student noted that, “Realizing that people could come into my paper at anytime was a little intimidating, but it also gave me a push saying ‘you can do it,’” a comment that demonstrates positive involvement and relationship with classmates. By using GAFE, students are no longer solitary individuals composing on individual computers, seeking advice (if at all) after their paper is finished. One student affirmed, “I spent more time planning what I wrote before I write and I also spent more time reviewing my work. Because of the constant communication I spent more time interacting than I usually do.” Another confirmed that the GAFE composing environment “made me look my paper over multiple times and ask people to peer review it. When I use to write I would just be like ‘whatever’, no one will see this.”

More importantly, students engaged with one another in their writing practices and appeared to appreciate the opportunity to do so. The overwhelming majority of students (95%) considered the ability to share documents with one another either somewhat (20%) or very (75%) useful. Students found the opportunity to comment on others’ compositions and to receive comments from classmates useful: 65% found this function very useful, 28% found it somewhat useful. And students also found useful the ability to create collaborative documents with others: 63% found this function very useful, while 30% found it somewhat useful. These findings suggest that students found the technology’s collaborative affordances and its cross-platform ubiquitous availability useful for composing in the digital environment.

These quantitative findings are reflected in qualitative feedback from students, such as: “I expect myself to be working in groups of people in the future and to perhaps have multiple people edit my works. Google Docs makes that easily done.” Other students wrote, “It has made it tremendously easy to share documents with other students and professors”; “I liked seeing other classmates opinions”; and “The ability to share each other’s documents allows not only for feedback from other students but also allows people to get an idea of what other people have written.” These comments, and others they represent, demonstrate the value students found in the collaborative affordances of GAFE in their composition

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practice. They also reflect OWI principle 2, which calls on writing classes to focus not on teaching the technology but on teaching writing skills (CCCC, 2013). GAFE collaborative affordances are intuitive enough that, even for the most fearful or hesitant student, the technology quickly fades from being an obstacle or learning curve to becoming a useful and meaningful composing tool.

As a result of using Google Drive for composing, the students' relationship to the instructor, to each other, to the writing process, and to the technology changed in significant ways, creating a more collaborative and transparent composing process. One simple example addresses students being prepared for class with paper drafts. Previously, as any composition instructor has experienced, multiple students would come to class without a draft for workshop, or with a severely anemic one. Somehow, on days when papers were due, many students would experience hard drive crashes, disappeared documents, locked up computers, lost or broken flash drives, failures to save documents, or drafts left on a different computer or at another location. There was little an instructor could do in the face of these impediments to the day's lesson plan: the choice was generally between telling the student to leave class since they were not prepared, or asking them to give feedback on another student's paper despite not having their own. The student without a draft would miss out on critical feedback to develop a draft to a more polished product and was also "successful" at thwarting instructional attempts to engage in the writing process. There was little accountability to the student -- perhaps a zero on a homework grade or the chagrin of a small number of classmates working with the student in a writing pair or group. Students who resisted drafting and reviewing their work have developed sophisticated ways to get out of doing it, keeping with their method of writing a single draft at the last minute before the final paper is due. The authors found that using GAFE changed these patterns by making the drafting process transparent and eliminating many of the common excuses students use to avoid it.

Since all drafts in Docs are automatically saved, there was never a problem with typing out a draft and forgetting to save or having a computer accidentally shut down and the document be unrecoverable. Students found this GAFE function liberating since it relieved the worry of losing work; one student wrote that "You don't have to worry if you forget to save. It automatically saves everything you type." But it also introduced a measure of transparency and accountability. Work done in Docs is automatically saved, *and time-stamped, and visible, and can be restored through revision history*. With GAFE, there is no "I forgot it at home" or "my flash drive is corrupt." Google Docs are available from any computer or mobile device with an internet connection. Thus, the student can simply log in and pull up his or her draft from a classroom or campus computer and participate in the workshop. If a student attempts to use former fail-safe strategies for not having a draft, the failure to complete the draft would be immediately apparent and compounded with their untruth about its whereabouts. As a result, students tended to have at least a basic draft posted in the Google Drive folder for workshop days. Instructors noticed a decrease in the number of students who came to class unprepared with drafts, while students themselves reported that they found peer review more valuable than their previous experiences.

With Google Docs the instructor can tell when and what a student types and can witness drafts as they progress. Simply by pulling up revision history (see Figure 4), the instructor can see -- and show to other students -- how a document changed over time, including who made the change, what change was made, how substantial that change was and whether it was in response to a comment from the instructor or a peer. In fact, the authors modeled this feature many times, pulling up documents on the podium computer and projecting them onto the screen for the class to see. Students began to expect that the authors were interested in, and did, indeed review, the revisions they made to their documents. They could no longer change a word or two, or increase the margins of a paper, to make it appear that they had made revisions

from a “rough” to a “final” draft. In fact, the concept of a static rough and final was transformed by using GAFE as well. In a composing environment where multiple authors and respondents contribute comments, revisions, and texts at different times, few traditional clues exist to delineate a rough draft from a final draft other than due dates as chronological markers. A peer reviewer’s suggestion might prompt revisions that occur after the posted due date for a specific draft. And even after due dates, students are able to comment on others’ work and review instructor feedback, itself posted in comments related to content and style, not grades or formal assessment. The composing process *as collaborative process* could be the focus of student and instructor feedback and commentary. The work came to be more about the revision of the document and not about having a deliverable at a deadline.

The collaborative affordances of Google Drive clearly positively affected students’ expectations of the experience of peer review (80%), an important aspect of the social nature of composing. Students made connections between the ease of peer review and the effect on their relationship with classmates: comments such as “I liked seeing other classmates opinions” and noting that Google Drive provides an easy way for those opinions and feedback to be shared. In Brown’s classes, documents were housed in a shared folder for each assignment, making each student’s draft available to all other students in the class. In Hocutt’s class, students shared specific assignment folders with a peer review group and the instructor. These pedagogical practices had several positive results. First, in both instructional settings, students were accountable to each other for turning in their drafts. It was obvious, at a glance, whose paper was in the folder and whose was not. Students tend to care about what their peers think (Nelson & DeBacker, 2008), and are also crafting a classroom persona. The knowledge that a student was accountable to their peers, and not just the instructor, for posting a quality draft, was a powerful motivator for many students. They did not want to look bad in front of their peers, so they ensured they had something posted that was acceptable. One student echoed others’ sentiment by saying that “the ability to share each others documents allows not only for feedback from other students but also allows people to get an idea of what other people have written.” Students were viewing each others’ documents as part of their own learning process, and this awareness of practice helped them to be more accountable to each other.

Our different implementations of Google Drive sharing -- Brown’s with instructor-owned folders shared with all students, Hocutt’s with student-owned folders shared with a peer editing group -- allowed students to both comment on any other student’s paper, as well as read the comments posted by others on their papers. This transparency required a large amount of vulnerability and trust on the part of the students. In response, the authors both sought to prepare students for “the unique technological components” of technology-facilitated peer review as encouraged by OWI principle 10 (CCCC, 2013), and carefully modeled peer review in Google Docs through whole class discussion and individual and collective student practice. The authors continued to model and direct peer review throughout the semester, through the tenor of their comments in student papers in Google Docs and in their replies to other students’ comments they had offered to their peers. The fact that other students could read comments given to them by a peer or the instructor -- something that was previously private between the peer reviewer and instructor or student -- caused many students to take immediate interest and action in the comments they received. For a few students, it was not uncommon for them to read, reflect on, and respond to comments given on their papers within hours of receiving them. They simply did not want the evidence of their possible shortcomings remaining visible in their document. And some simply didn’t like the “mess” of the comment streams with their talk bubbles and different colored texts marring their document. Their urge to organize and clean up caused them to revise their document, engaging them in the writing process as a result of their interaction with the GAFE interface. The comments on their

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document were distributed to them via an email to their college Gmail account. For many, these emails appear as notifications on their mobile devices. The prompting of the notification urged the student to take action, in much the same way as they might reply to a Facebook post or comment on an Instagram photo.

Since all student drafts were either already available to all classmates (Brown's implementation), or easily shared with specific classmates (Hocutt's implementation), from a single interface, the instructors could assign spontaneous writing workshops, organizing students into heterogeneous groups based on previously demonstrated strengths and weakness, or on interests and topics that complemented each other. Students could work with a recurrent writing group, but then obtain a second peer review from another classmate. This practice allowed students to obtain a diversity of opinions on their drafts, while also having the ability to develop a closer relationship with a core group of peer reviewers they could work with assignment to assignment. This practice also fostered OWI principle 11, which calls on teachers and institutions to "develop personalized and interpersonal online communities to foster student success" (CCCC, 2013). While this can be done with printed copies of a paper draft and students circulating in a classroom, with Google Docs, the comments become visible to others, and those comments became ideas that the next peer reviewer can also interact with (see Figure 3). Reviewer 1's comments may agree or disagree with Reviewer 2's thoughts. Reading Reviewer 1's comments may cause Reviewer 2 to consider something s/he would not have on his/her own. The two reviewers enter a conversation with each other and with the primary writer. Multiple reviewers can comment on a document using a word processing program such as Microsoft Word, but in such programs only one person can view and comment on the document at a time. Reviewer 2 would have to wait until Reviewer 1 finished commenting and exited the document. The original author would have to wait until both Reviewers were finished to read and respond to any comments made using track changes. In GAFE, both R1 and R2 can simultaneously review a piece, and the original author can choose to watch responses unfold. This creates a much more dynamic interface and a sense of immediacy with the writing process. The review and revision happens before the writer's eyes. One student remarked, "I like to get comments when I am not done so I can see what to change, look over or just to hear a 'good job.'"

Pervasive Pedagogy: Composition Transformed

Using GAFE remediates the composing experience by shifting from computer-based, individually licensed, and often expensive software to free, cloud-based, pervasive composing and collaboration tool. This remediation of the composing experience accomplishes the work encouraged by OWI principle 4, which calls on teachers and WPAs to migrate and adapt "appropriate onsite composition theories, pedagogies, and strategies" to the online -- or, in this case, to the cloud-based pervasive composing -- environment (CCCC, 2013). This remediation occurred in several different ways.

First, a digital networked environment through cloud computing allows students to collaborate not only when they are together in space and time, but also when they are available and have access to the required technology and internet access. Furthermore, while face-to-face groupwork can also require collaboration outside of class, the students we teach at open-access commuter campuses, particularly those who are considered "non-traditional," have an even more difficult time coordinating schedules around family and work responsibilities. Since GAFE is a web-based service that requires only a network device connected to the internet along with a browser or mobile app, using the GAFE apps expands the temporal and spatial limits of our classroom beyond our allotted class time, shifting agency for participation from instructor and school schedule to student. Being able to work beyond the standard class

time breaks the learning environment out of the classroom, into the lived experience of the students, including home and workplace, among other possibilities. The Google Docs interface is replicated in the various physical environments students inhabit and is a constant familiarity, a standard “place” to go and meet peers. The familiar interface and functionality across platforms represents the universal and accessible character of GAFE, important pedagogical affordances that reflect the call of OWI principle 1 for instruction to be “universally inclusive and accessible” (CCCC, 2013). The GAFE free, collaborative composing environment is available 24 hours a day, seven days a week, without scheduled downtime, which allows for an anywhere/anytime opportunity for learning.

Second, as visualized above, GAFE reveals processes and retains traces of the entire composing process. Each file contains a comprehensive revision history that includes both changes made and the identity of the account making the change. Comments are also archived; even when comments are resolved, the entire history of the comment, including any discussion made about the comment, remains available for review. These traces encourage accountability among students and instructors alike, to themselves and to the other members of the class, for their full engagement in the collaborative composing process. Students and teachers alike can access existing and previous work, enabling all to review the entire composing process. Teachers are offered a unique opportunity to view composing practices in real time, to coach when needed and model as appropriate. Teachers can interact with students during any moment of the process of composing, not just during class time or during a review session or in comments on a rough draft or final submission. As importantly, other students can view these same processes and traces, extending their learning beyond their own compositions. Access to the entire composing process makes the experience explicitly social, transparent among members of the class and/or peer review group. We can integrate metacognitive reflection on their own and others’ composing processes as part of the social learning experience. Reviewing the traces of the composing process offers students and teachers access to procedural patterns. A metacognitive focus on these traces (facilitated and modeled at first by the teacher) enforces and reinforces the iterative nature of composing.

Being able to see revision history makes grading process, rather than a product, much more viable. Danowski (2006) and Warnock (2008) reiterate the importance of low-stakes composing exercises for successful digital composition instruction. By developing low-stakes checkpoints within the same document or shared folder -- like an invention submission and peer responses to the invention; an incomplete draft and corresponding peer and instructor responses; a full draft for review and multiple reviews of others’ drafts; a full revision with peer and instructor feedback; and a final version for grading that incorporates peer and instructor responses -- instructors shift the focus of review and assessment from the various products submitted throughout a semester or term to the iterative process of composing. Low-stakes assessment and review checkpoints throughout the entire process, made possible in a single interface in Google Docs, relieve the pressure of high-stakes final drafts and the inconvenience of multiple submissions throughout a term. Although digital writing assessment is a practice whose implications and procedures remain in flux (McKee & DeVoss, 2013), the ability to view and provide feedback on all parts of the composing processing is a powerful affordance that encourages new methods for formal and informal assessment practices and methods.

Third, the performative and collaborative nature of activity in GAFE is explicitly visible: all users synchronously accessing the file are listed with avatars at the top of each file, and all activity in the comments archive, chats, and revision history are identified by user account. All of the activities in which students participate, from invention strategies to graded drafts, are designed to be socially accomplished, in collaborative spaces with one or more people from the class (students or instructors).

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The longer students use Google Docs in collaborative composing, the more comfortable they become with the idea that writing is social. The GAFE explicitly visible account avatars, along with archiving features, remind students that they are never writing for themselves. This exemplifies the social turn in composition, but we contend that awareness of others in collaborative composing, whether synchronous or asynchronous, goes beyond traditional understandings of composition's social turn and replaces the experience of the lone writer with the experience of a writer within a supportive composing community. As students compose in a collaborative environment, they continually navigate social tensions, engage in knowledge making and undergo habituation through repeated and iterative processes. The GAFE collaborative interface enables students and teachers alike to participate in dynamic social relationships. In groups and as a class, students work on composing processes that alternately call upon strengths of different members of the groups and class. The dynamism of participants means habits and processes can't be static. In order to complete composing assignments, students and teachers must engage with different group members, participate in different scaffolded activities, and navigate the process of reaching consensus when working in a group. As a collaborative networked space, students are continually navigating the power relationships inherent in classroom environments (e.g. self-perceived stronger and weaker writers, non-native and native language users, teacher and student) through their composing activities. Although such navigation is also present in f2f classes, Google Drive-mediated composing relies almost entirely on written text as the primary mode of communication, further reinforcing the rhetorical nature of composition and the need for carefully considered and composed prose.

Last, GAFE enables teachers to step aside, to avoid being a bottleneck in the teaching and composing processes. Instead of students performing for the teacher -- which, given the political dynamics of the classroom, is somewhat unavoidable -- students are performing with and for one another in a shared situation toward a common goal. As instructors, we are free to flip the instructional focus from "sage on the stage" to "guide on the side," to join the composing processes as participants, as facilitators, as coaches and cheerleaders. With agency in the hands of the students, they are free to engage in creating knowledge collaboratively, regardless of whether the instructor is facilitating the process.

CONCLUSION

This primary research demonstrates that cloud-based technologies such as GAFE afford new opportunities for collaborative cross-platform composing and student engagement, and that new pedagogies are required to transform these potentialities into practice. GAFE is easily adapted to multiple instructional environments. Although our experience largely represents f2f instruction, we also experimented with blended, asynchronous, and synchronous online class sessions and found GAFE equally capable and relevant. In fact, Hocutt found GAFE far more reliable during a synchronous online session than the institution's LMS, while Brown maintained instructional continuity while traveling overseas using GAFE's pervasive and continuous accessibility. Affordances are also easily adapted to instructor teaching styles and data control preferences, as reflected in the different folder sharing implementations Brown and Hocutt enacted in their classrooms. And because GAFE is easily adapted to teaching styles, it's also easily adapted to the institutionally mandated and/or instructor and students' preferred location of teaching and learning, whether it be the traditional classroom, a computer/technology lab, an off campus location, or the online environment.

The Google Drive interface enables several collaborative affordances, including synchronous chat within the file -- meaning conversations can be held parallel to, but not outside of, the primary composing space, the “page” on the screen. The same composing space can also contain selection-specific or file wide commenting, tracked by user and even threaded to a limited extent. These comments can be responded to and resolved, allowing composers to engage one another about general or specific aspects of their compositions. Commenting is available in synchronous or asynchronous modes, so time and space are not factors in commentary. This enables teachers to shift peer reviewing to an asynchronous mode, if they wish. Google Drive also tracks all changes and allows file sharers to view those changes. Finally, GAFE includes features that extend the composing environment, including Google+ Hangouts. In Hangouts, up to six people can network by telephone or video feed simultaneously, and they can open Google Drive files and other Google products (like Blogger or Google search) in the Hangouts interface to collaborate on the document while video chatting. The result is that GAFE combines the affordances of several technologies: threaded discussion forum, office suite (including word processor, spreadsheet, presentation, and drawing applications), video chat, real-time SMS chat, and word processor revision tracking and recording.

Students who used GAFE were able to interact with the technology, the instructor and each other beyond the 2.5 hours per week of the f2f classroom, and reported doing so from a variety of devices and locations. The single interface of GAFE made the composing, communication, and collaboration process simple, ubiquitous, transparent, and continuous. Students reported more interaction with their drafts, and more attention to revision based on comments from peers and instructors. Through engagement with the technology, students engaged with the course content, each other, and the writing process, reporting that their experiences with the course content, activities, peers, and instructors were better than they expected. In implementing this technology, instructors created and used a Collaborative Cross-Platform Cloud-Based Pedagogy that was based in theory and praxis from Online Writing Instruction (OWI), Interactive Computer Technology (ICT), and rhetoric and composition studies. More research is needed to further support the ways this pedagogy, enabled and enacted through GAFE, benefits student learning within and beyond the traditional boundaries of a composition classroom or course.

The authors have not promoted specific practices that can or should be implemented in the face of the remediated composing experience afforded by GAFE. This has been intentional. Their experiences and pedagogical decisions were influenced by personal and professional preferences, institutional policies and procedures, student capabilities and access to technology, and a host of additional local considerations too numerous to include. These are the situational variables of our profession, and each teacher must develop practices in response to these variables. What we discovered, and what we promote in this chapter, is that GAFE -- and potentially other pervasive cloud-based collaborative composing tools that are in development and will be released in the future -- fundamentally changes the way we and our students think about composing. This fundamental change requires an equally fundamental response in composition theory and composing praxis. Grounded in OWI principles and careful attention to the primacy of pedagogy over technology in the composition classroom, and supported with the results of primary research, the authors imagine this chapter as a theoretical foundation for scholars and teachers to begin the process of developing pedagogical practices and assessment tools that take full advantage of pervasive collaborative composing using cloud-based tools. The authors, too, commit themselves to this task, taking to heart the encouragement to conduct “ongoing research into their programs and courses” found in OWI principle 15 (CCCC, 2013).

AUTHORS' NOTE

Google Apps for Education was renamed G Suite for Education as this volume was going to press.

REFERENCES

- Barrett, H. C. (2006). Using electronic portfolios for formative/classroom-based assessment. *Classroom Connect Connected Newsletter*, 13(2). Retrieved from <https://electronicportfolios.org/portfolios/ConnectedNewsletter.pdf>
- Bazerman, C. (1994). Systems of genre and the enactment of social intentions. In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (pp. 79–104). London, UK: Taylor & Francis, Ltd.
- Bazerman, C. (2004). Speech acts, genres, and activity systems: How texts organize activities and people. In C. Bazerman & P. Prior (Eds.), *What writing does and how it does it: An introduction to analyzing texts and textual practices* (pp. 309–340). New York, NY: Routledge.
- Bezemer, J., & Kress, G. (2008). Writing in multimodal texts: A social semiotic account of designs for learning. *Written Communication*, 25(2), 166–195. doi:10.1177/0741088307313177
- Bowie, J. L. (2012). Rhetorical roots and media future: How podcasting fits into the computers and writing classroom [Audio podcast]. *Kairos*, 16(2). Retrieved from <http://technorhetoric.net/16.2/topoi/bowie/index.html>
- boyd, d. (2007). Why youth (heart) social network sites: The role of networked publics in teenage social life. In D. Buckingham (Ed.), *Youth, Identity, and Digital Media*. Cambridge, MA: The MIT Press.
- Brandt, J. E. (2012). Google Apps for Education and accessibility: Review of research. *Maine CITE*.
- Brech, L. K. (2005). Enhancing online collaboration: Virtual peer review in the writing classroom. In K. C. Cook & K. Grant-Davie (Eds.), *Online education: Global questions, local answers* (pp. 141–156). Farmingdale, NY: Baywood.
- Brown, M. E., & Hocutt, D. L. (in press). All composition is local, even in the Googleverse: Glocalizing the composition classroom with Google Apps for Education. In R. Rice & K. St. Amant (Eds.), *Thinking globally, composing locally: Rethinking online writing in the age of the global internet*. Boulder, CO: University Press of Colorado.
- CCCC. (2013, March). A position statement of principles and example effective practices for online writing instruction (OWI). *National Council of Teachers of English*. Retrieved from <http://www.ncte.org/cccc/resources/positions/owiprinciples>
- Clark, J. E. (2010). The digital imperative: Making the case for a 21st-century pedagogy. *Computers and Composition*, 27(1), 27–35. doi:10.1016/j.compcom.2009.12.004
- Cook, K. C. (2005). An argument for pedagogy-driven online education. In K. C. Cook & K. Grant-Davie (Eds.), *Online education: Global questions, local answers*. Farmingdale, NY: Baywood Publishers. Baywood's Technical Communications Series.

- Cuestas, A., & Fazzi, V. (2012). The use of ICTs in the English class: An enriching experience. *Puertas Abiertas*, (8). Retrieved from http://www.memoria.fahce.unlp.edu.ar/art_revistas/pr.6019/pr.6019.pdf
- Danowski, D. (2006). Anyone? Anyone? Anyone? Leading discussions in cyberspace: e-Journals and interactivity in asynchronous environments. In J. Alexander & M. Dickson (Eds.), *Role Play: Distance Learning and the Teaching of Writing* (pp. 97–108). Cresskill, NJ: Hampton Press.
- Davis, M., & Yancey, K. B. (2014). Notes toward the role of materiality in composing, reviewing, and assessing multimodal texts. *Computers and Composition*, 31, 13–28. doi:10.1016/j.compcom.2014.01.001
- DePew, K. E., & Lettner-Rust, H. (2009). Mediating power: Distance learning interfaces, classroom epistemology, and the gaze. *Computers and Composition*, 26(3), 174–189. doi:10.1016/j.compcom.2009.05.002
- DePew, K. E., Spangler, S., & Spiegel, C. L. (2014). Getting past our assumptions about Web 2.0 and community building: How to design research-based literacy pedagogy. In M. Limbu & B. Gurung (Eds.), *Emerging Pedagogies in the Networked Knowledge Society: Practices Integrating Social Media and Globalization* (pp. 120–143). Hershey, PA: IGI Global. Retrieved from.
- DeVellis, R. F. (2012). *Scale development: Theory and application* (3rd ed.). Los Angeles, CA: Sage Publications, Inc.
- Duffy, J. (2014, April 2). *The best cloud storage solutions*. Retrieved August 30, 2014, from <http://www.pcmag.com/article2/0%2c2817%2c2413556%2c00.asp>
- Eyman, D., & Ball, C. E. (2014). Composing for digital publication: Rhetoric, design, code. *Composition Studies*, 42(1), 114–117.
- Gaillet, L. L. (2009). A socially constructed view of reading and writing: Historical alternatives to “Bridging the Gap.” In L. Ostergaard, J. Ludwig, & J. Nugent (Eds.), *Transforming English studies: New voices in an emerging genre* (pp. 163–178). West Lafayette, IN: Parlor Press. Lauer Series in Rhetoric and Composition.
- Gee, J. P., & Hayes, E. (2011). *Language and learning in the digital age*. New York: Routledge.
- Google Apps Help. (2014). Google Apps user guide to accessibility. *Google Apps Help Center*. Retrieved from https://support.google.com/a/answer/1631886?hl=en&ref_topic=3035040
- Gurung, B. (2014). Emerging pedagogies in the networked knowledge communities. In M. Limbu & B. Gurung (Eds.), *Emerging Pedagogies in the Networked Knowledge Society: Practices Integrating Social Media and Globalization*. Hershey, PA: IGI Global. doi:10.4018/978-1-4666-4757-2.ch001
- Halasek, K., McCorkle, B., Selfe, C. L., DeWitt, S. L., Delagrang, S., Michaels, J., & Clinnin, K. (2014). A MOOC with a view: How MOOCs encourage us to reexamine pedagogical doxa. In *Invasion of the MOOCs: The promises and perils of massive open online courses* (pp. 156–166). Anderson, SC: Parlor Press.
- James, R. (2014). ICT’s participatory potential in higher education collaborations: Reality or just talk. *British Journal of Educational Technology*, 45(4), 557–570. doi:10.1111/bjet.12060

Pervasive Pedagogy

- Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford, UK: Oxford University Press. Clarendon Lectures in Management Studies.
- Limbu, M. (2013). Digital and global literacies in networked communities: Epistemic shifts and communication practices in the cloud era. In G. Verhulsdonck & M. Limbu (Eds.), *Digital Rhetoric and Global Literacies: Communication Modes and Digital Practices in the Networked World*. Hershey, PA: IGI Global. Retrieved from.
- McKee, H. A., & DeVoss, D. N. (Eds.). (2013). *Digital writing assessment & evaluation*. Logan, UT: Computers and Composition Digital Press/Utah State University Press. Retrieved from <http://ccdigitalpress.org/dwae>
- Miller, C. R. (1984). Genre as social action. *The Quarterly Journal of Speech*, 70(2), 151–167. doi:10.1080/00335638409383686
- Miller, C. R. (1994). Rhetorical community: The cultural basis of genre. In A. Freedman & P. Medway (Eds.), *Genre and the new rhetoric* (pp. 67–78). London, UK: Taylor & Francis, Ltd.
- Neff, J. M., & Whithaus, C. (2008). *Writing across distances & disciplines: Research and pedagogy in distributed learning*. New York, NY: Lawrence Erlbaum Associates.
- Nelson, R. M., & DeBacker, T. K. (2008). Achievement Motivation in Adolescents: The Role of Peer Climate and Best Friends. *Journal of Experimental Education*, 76(2), 170–189. doi:10.3200/JEXE.76.2.170-190
- Porter, J. E. (2014). Framing questions about MOOCs and writing courses. In *Invasion of the MOOCs: The promises and perils of massive open online courses* (pp. 14–28). Anderson, SC: Parlor Press.
- Reid, A. (2008). Portable composition: iTunes University and networked pedagogies. *Computers and Composition*, 25(1), 62–78. doi:10.1016/j.compcom.2007.09.003
- Rice, J. (2006). Networks and new media. *College English*, 69(2), 127–133. doi:10.2307/25472197
- Robins, S. (2007, October 24). *Second Life in education* [Video file]. Retrieved from <http://youtu.be/ueAcz7ZyFpM>
- Rowe, M., Bozalek, V., & Frantz, J. (2013). Using Google Drive to facilitate a blended approach to authentic learning: Authentic learning and Google Drive. *British Journal of Educational Technology*, 44(4), 594–606. doi:10.1111/bjet.12063
- Schuetze, H. G., & Slowey, M. (2002). Participation and exclusion: A comparative analysis of non-traditional students and lifelong learners in higher education. *Higher Education*, 44(3/4), 309–327. doi:10.1023/A:1019898114335
- Tulley, C. (2013). Migration patterns: A status report on the transition from paper to eportfolios and the effect on multimodal composition initiatives. *Computers and Composition*, 30(2), 101–114. doi:10.1016/j.compcom.2013.03.002
- Warnock, S. (2009). *Teaching writing online: How & why*. Urbana, IL: National Council of Teachers of English.

Yancey, K. B. (2004). Made not only in words: Composition in a new key. *College Composition and Communication*, 56(2), 297–328. doi:10.2307/4140651

Yu, R. (2014, May 2). Cable companies expand public Wi-Fi for customer loyalty. *USA Today*. Retrieved August 29, 2014, from <http://www.usatoday.com/story/money/business/2014/04/30/cable-wifi/8525347/>

KEY TERMS AND DEFINITIONS

24/7 Availability: In general, refers to continuous uptime of network services and users' ability to access network-based resources at any time.

Affordances: Capabilities or uses offered by a design element or technology and perceived as beneficial by the user. Based on the work of James Gibson and Don Norman.

Cloud-Based: Internet-based storage solutions accessed using a secured login, often via web browser. Files are stored on servers not owned by the individual, organization, or institution using the files and are accessible to the user at any time from a variety of platforms and devices.

Collaborative Composing: Use of multi-user technology to accomplish synchronous and asynchronous writing or creation among a group of users.

Constraints: Limits to use available in a design element or technology. Generally opposed to affordances. Based on the work of James Gibson and Don Norman.

Google Apps for Education (GAFE): The suite of cloud-based applications available from Google for educational use. Although this chapter focuses on Docs and Drive, other applications include Sheets, Slides, Forms, Gmail, Hangouts, and more. In October 2016, GAFE was renamed G Suite for Education.

Learning Management System (LMS): The Web-based tool used by educational institutions to manage instructional tasks and services. Among often-used systems are Blackboard and Canvas.

Networked Knowledge Communities (NKC): Sometimes referred to as a community of practice or a virtual community of practice, Networked Knowledge Communities are distinguished from a social network of individuals by a shared responsibility and outcome(s). Members collaborate together to create and construct knowledge.

Non-Traditional Student: A growing population of students in higher education, these students are often age 25 and up, non-residential, part-time, working a full-time or part-time job, supporting a family, or a combination of these.

Pervasive Pedagogy: Instruction that is not constrained by the confines of classtime, classroom space, or a particular hardware or device, but that is available and provided at any time, from multiple platforms.

ENDNOTES

¹ We echo the CCCC's "A Position Statement of Principles and Example Effective Practices for Online Writing Instruction (OWI)" in seeking universal accessibility for instructional technology. GAFE is not universally accessible, but we have recently seen Google make efforts to address this concern. Brandt (2012) notes that "Google has expressed some willingness to achieve success in

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terms of accessibility of the product and continues to work in that direction,” while Google Apps Help (2014) offers accessible affordances for each of its Apps. In this case, we are referring more specifically to the affordances widespread wifi, browsers, devices, and applications offer users to access GAFE applications and services.

- ² We chose two different Likert-type scales to reflect the different kinds of questions we posed. As advocated by DeVellis (2012), questions regarding preference used an even number of options on the Likert and Likert-Type scales to avoid a default to the middle, rather than making a choice. However, when asking participants about how their expectations matched their experience, we chose a five-point scale with a mid-point value -- “matched my expectations” -- that fell directly between the “better than expected” or “worse than expected” values. We chose a five-point scale rather than a three-point scale to provide students the opportunity to make nuanced distinctions between the declarative “worse than expected” or “better than expected” values and the less distinct “somewhat worse or better” values.