

The Role of Digital Literacy Activities in Students' Writing Processes

By

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## Abstract

This study examines the digital literacy activities (DLAs) of students composing on computers to provide detailed, thick description of digital writers' composing processes. Past research into writing processes provided a foundational understanding of composing and codified regularities of composing that all writers engaged in, attempting to delineate a universal writing process. These foundational findings, however, were critiqued for being too monolithic and linear in their descriptions of writing processes, failing to take into account the nuance of the ways individual writer's processes varied. As well as being critiqued for being monolithic, current research into digital composing processes notes that early studies into the writing process are outdated as many of these studies were undertaken prior to the advent of the personal computer (Haas; Takayoshi; Yancey). More recent studies of writing processes that involve computers rarely acknowledge that digital composing processes "weave together culture, the individual, and literacy" (Takayoshi "Social Worlds" 551). This study accounts for this gap in research by using digital screen capture (DSC) technologies to study the composing practices of students writing on computers, providing a framework of DLAs writers employ while composing digitally. Studying DLAs allows writing process scholars and digital writing researchers to see the ways in which digital environments have changed our social, communicative, and linguistic practices. Such study also provides a picture of the ways that writers work in digital environments to undertake various literacy practices. Besides studying how students engage in DLAs, I study how students value them to provide context for my analysis of DLAs.

The study included twelve participants enrolled in English 102 at the University of Kansas in the Spring of 2015. Students completed an autoethnography assignment that asked them to learn about their writing processes by studying DSC recordings of themselves writing.

Students were able to choose the topic of the writing sessions that were recorded and were asked to study those recordings in order to answer their own research questions about their writing processes. As this was a teacher-research project, students' written materials were collected and graded over the course of the semester prior to materials analysis. Materials analysis only began once final grades were submitted. The materials studied include students' DSC recordings of writing, pre- and post-surveys taken at the beginning and end of the unit, and the autoethnography essays, reflection essays, and journal writings that students completed as part of the unit.

Analysis of the DSC footage revealed seventeen DLAs that students engaged in while writing on computers; these DLAs fit into overarching categories of Writing Processes, Utilizing Technologies, and Consulting Resources. This study demonstrated that students employ many literacies while working in computer environments and these literacies mostly help them achieve their goals. This study also reinforced findings that digital writers frequently engage in editing during their generating writing processes but showed new ways that digital composers recursively fit revision into their drafting processes. Students' written reports in which they shared their perceptions of their DLAs revealed that many student writers rely on handwritten notes to organize and prewrite, which contradicts other research into digital composing processes (Ackerfeldt; Haas); moreover, students' written reports demonstrate that students evaluate their DLAs transactionally, a finding shared by Pigg et al. Finally, this study reveals the ways that DLAs as affordances and constraints help and hinder digital writers when achieving their goals. Moreover, the study shows that student writers have an underlying awareness of the affordances and constraints provided by digital tools—though they seldom recognize that a DLA that was an

affordance at the beginning of their writing processes turned into a constraint at a different stage in their writing processes.

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## Chapter 1: Contextualizing Digital Literacy Activities and Writing Processes: A Literature Review

[T]he field of Rhetoric/Composition has yet to acknowledge, truly acknowledge, that changes and developments in writing tools have changed writing, literacy, and communication practices in fundamental ways—that, given how writing happens in the 21<sup>st</sup> century, all composition research needs to be computers and writing research. (Porter xii)

Empirical research on composing processes is virtually absent in our field. What do contemporary writers actually *do* when they compose? (Takayoshi, “Social Worlds” 550)

### Introduction

As Kathleen Blake Yancey has argued, the invention and availability of the personal computer has transformed conceptions of writing processes in digital contexts (“Writing in the 21<sup>st</sup>” 4). By 2008, the presence of computers in schools and at home led the NCTE Executive Committee to issue a position statement in which it defined 21st century literacies as “demand[ing] that a literate person possess a wide range of abilities and competencies, many literacies. These literacies are multiple, dynamic, and malleable” (“NCTE Position”). The position statement was soon followed by Kathleen Blake Yancey’s 2011 report to the NCTE in which she describes the need to support 21st century writing through a deeper understanding of digital literacies and situates these literacies within the history of studies of writing processes. Yancey notes that, in the age of digital composing, “writers are everywhere, yes, but so too are audiences” (4), and she views interactions of digital writers with each other and their audiences as a networked “extracurricular social co-apprenticeship” (4). Writer/reader interactions within digital networks encourage readers/writers to learn from and engage with each other, and the employment of digital literacies in such spaces is strongly driven by social and technological factors (Yancey 4). In regards to developing new curricula that support 21st century literacies, Yancey argues that future instruction should move past prioritizing print literacies over digital

literacies. She contends that readers' and writers' literacies develop nonhierarchically regardless of print and digital contexts, and so writing pedagogy should formally integrate digital approaches and critical literacies into the composition classroom to support requisite digital and technological skills.

Following Yancey's study on the connections between digital literacies and studies of writing processes, and her call for critical engagement with digital literacies, Pamela Takayoshi conducted descriptive research on the effect of multiliteracies,<sup>1</sup> such as digital literacies, on writing processes. Situating her research, Takayoshi notes that, "for a discipline whose key term is *composition* [author's emphasis] . . . it is odd that over the past two decades we have so completely neglected to examine in any systematic or fine-grained way composition as a process" ("Social Worlds" 551). Takayoshi suggests that by focusing on the "literate contexts of writing," composition studies have largely ignored "the composing processes of writers within those contexts" ("Social Worlds" 551). Reviewing recent literature, Takayoshi concludes that the field has moved away from studying composing processes, which leads to the field's overall failure in understanding what writers "do when they compose with technologies, multiple audiences, contexts, and purposes that were unimaginable during the height of composing process research studies" ("Social Worlds" 552). Takayoshi calls for further study of digital composing processes and notes that the inherently social nature of writing is no longer up for debate because, by now, the vast majority of writers are using permanently internetworked, always connected computers. She also comments on existing, computer-based technologies that enable renewed study of these composing processes ("Social Worlds" 552). Takayoshi's

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<sup>1</sup> "Multiliteracies" is a term proposed by the New London group. They use this term to describe the "multiplicity of communication channels and increasing cultural and linguistic diversity in the world today" (Cazden et al 1). The New London group advocates for this term as it encompasses a broader range of literate acts that individuals must negotiate in their personal, social, civic, and work lives.

argument for the return to the study of process echoes those of many other composition scholars as well as digital and computer writing researchers who wish to account for digital environments' alterations to and shaping of those processes (Eyman and Reilly; Haas; McKee and DeVoss; Porter; Yancey). According to Takayoshi, existing research no longer accurately reflects how "contemporary writers' composing processes explicitly weave together culture, the individual, and literacy" ("Social Worlds" 552).

This study attempts to fill some of the gaps identified by Takayoshi by providing a thick description of writers' composing processes and by analyzing concomitant interwoven literacies, answering Yancey's call to further study 21st century literacies. In order to study students' writing processes, this project studies digital literacies through a methodological framework that combines thick description with activity theory in order to describe students' digital literacy activities (DLAs) when writing in digital contexts.<sup>2</sup> I define "digital literacy activities" as using digital tools to learn, communicate, generate ideas, and/or research while engaging in computer-based writing processes. My definition of DLAs derives from Rodney H. Jones and Christoph A. Hafner's definition of digital literacies as "the ability to adapt the affordances and constraints of [digital tools like computers and mobile phones] to particular circumstances" (13). Jones and Hafner connect the digital aspect of digital literacies to social activities associated with digital media that allow for communicating, thinking, relating with others, and creating and maintaining a social identity (13). For Jones and Hafner, the combination of social literacy practices and digital tools combine so that studying DLAs involves examining the ways digital environments mediate the actions that individuals can take in "making meaning . . . relating to other people and showing who we are . . . doing things in the world . . . [and] developing new ideas about the

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<sup>2</sup> My use of DLA derives from my dissertation proposal meeting in which Dr. Peter Grund suggested the term as a way to combine my research focus with my methodology.

solutions to the problems that we face” (Jones and Hafner 12). By studying DLAs, then, we can see the ways in which digital environments have changed our social, communicative, and linguistic practices; we can also see the ways that we use digital environments to achieve various literacy practices.

The context of my study is the digital environment recorded from students’ computer screens, and so my study captures the multiple modes (auditory, visual, verbal) with which students engage when employing their literacies in these digital contexts. This study describes students’ DLAs as integral parts of their writing processes and uncovers students’ valuation of their DLAs. The study combines analyses of digital screen capture (DSC) recordings of student writing (which will be explained more fully later in the chapter) with assessments of students’ research notes, essay assignments, reflections, and survey responses to unearth the DLAs used during composing and the ways students value those DLAs.

My study seeks to answer the following research questions:

1. What DLAs *do* students engage in while writing?
2. What do students report about their DLAs and how they value them?

In order to answer these questions, I designed a descriptive study into the writing processes, digital composing processes, DLAs, and personal DLA assessments of writers enrolled in my English 102 classes at the University of Kansas in the Spring semester of 2015. In what follows, I provide an overview of relevant literature on writing processes, followed by discussions of DLAs as affected by multiliteracies. Next, I survey previous studies of digital composing that situate my study, ending with an overview of DSC methodologies and analytical framework that inform my study design, which I present in Chapter 2. For digital researchers and writing instructors, my study reveals the DLAs with which first year college students engage

when writing in digital environments. Through my analyses, I show these DLAs to be interconnected multiliteracies. By studying students' writing, I reveal the ways in which students recognize the connections between the DLAs they employ and how that awareness complicates their evaluations of their DLAs. My study also reveals the ways students' evaluations of their DLAs vary depending on the varied writing, social, and personal contexts that necessitate employing their DLAs. I end my discussion of my findings by offering directions for further research, indicating where further direct instruction with writing would assist students in using those DLAs when composing across digital environments.

## **Digital Literacies and Writing Processes**

### *Studies of Writing Processes*

As composition studies developed as a scholarly field, scholars in the field began studying stages of writing processes from different theoretical perspectives. Beginning in the 1960s, expressivist scholars helped move composition studies past a current-traditional paradigm of writing that viewed form and correctness as the sole purview of writing instruction (Berlin and Inkster; Faigley). The expressivist movement had emphasized pre-writing as necessary for thought-generation prior to beginning the writing process and encouraged writers to search for their most spontaneous, original thoughts (Faigley 654). Criticism of expressivist research concerned the ways it measured value in writing, looking at concepts like integrity and sincerity of ideas (Faigley 654). Despite this criticism, some expressivist perspectives on pre-writing, promoted by Peter Elbow and Ken Macrorie as generating thought and inspiration, have found pedagogical success across writing classrooms in the forms of brainstorming and other exercises.

As research into writing processes continued to progress, composition scholars examined the actions involved in writing processes as a whole, in order to discover what people do when they write. According to Janet Emig, research into writing and composing processes developed from a need to “delineate *the*, even *a* writing process or to ascertain whether the process has constant characteristics across writers” (“Review” 235, author’s emphases). To complete these studies, researchers used lab settings to watch writers in the process of writing and, occasionally, as in Sondra Perl’s landmark study, researchers asked writers to talk through their composing process aloud.<sup>3</sup> Process scholars articulated a need to move beyond the paradigms of current-traditional rhetoric (Berlin and Inkster 1), which emphasized the finished product of writing. In opposition to this focus on the end product, process scholars called for further study of how texts come into being (Emig “Review” 238; Olson 233; Perl xi). Process researchers examined the individual steps and thoughts that writers generated as they put their ideas into writing to codify regularities and patterns that held true across writers in different contexts. These patterns were used to delineate “the” composing process (Perl 40).

Initial studies of writing processes contributed to the formation of composition studies as a field and provided it with specific research frameworks. From these studies, scholars learned that “writing is an ‘activity’ composed of many activities;” that many of these activities are recursive; that writers write for social reasons; that writing can be generative; and that experienced writers are more aware of their rhetorical situation than inexperienced writers (Olson 233). Despite rich initial findings, researchers into composing processes faced criticisms because of small sample sizes, methodological issues, and because, as Emig, Olson, and Perl

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<sup>3</sup> Although this method of gathering data for study has been heavily critiqued due to the fact that talking aloud and writing in lab settings does not create an accurate reflection of most writers’ processes, it is still in use. See Kirkpatrick and Klein; Takayoshi; Ericsson and Simon.

have noted, their work was often framed as delineating a single, universal composing process. The theory of a single composing process led scholars to ignore the ways in which writing is a “radically contingent [and] radically situational” activity (Olson 235).

Recognizing that cognitive theories of composing aimed at a generic, overarching model of human language acquisition and composing practices, Patricia Bizzell critiqued Flower and Hayes’ cognitive process of writing. In “Cognition, Convention, and Certainty: What We Need to Know about Writing,” she notes that as “inner-directed,” cognitive theorists, Flowers and Hayes’ model associated writing merely with audience awareness. In essence, Flowers and Hayes recommended student writers create text that engaged with the audience by using interesting language, but, as Bizzell warns, neglected to consider the ways that audience’s genre expectations would affect their engagement with any given text. Bizzell contrasted the findings of “inner-directed,” cognitive theorists and outer-directed, “social” theorists and highlighted that socially-oriented scholars’ emphasis on the socially situated nature of language acquisition actually frames students’ understanding of how to write (480). In discussing differences between “inner” and “outer-directed” theorists, Bizzell posits that the next steps to learning more about writing processes involves bridging the work of the two groups. The Flower-Hayes process model, Bizzell contends, “describes the *form* of composing processes” but that the content of writing processes derives from the “knowledge of the conventions of discourse communities” (author’s emphasis, 491). Through her critique, Bizzell encourages scholars to consider the social. In particular, she introduces composition scholars to the concept of discourse communities as a rich site for future composition research.

Other scholars such as Lester Faigley and James Berlin have joined Bizzell in discussing social theories and their contributions to scholarly understandings of composing and literacy

(Faigley 653). In his review, “Competing Theories of Process,” Faigley argues that “a social view of writing moves beyond the expressivist contention that the individual discovers self through language and beyond the cognitivist position that an individual constructs reality through language. In the social view, any effort to write about the self or reality always comes in relation to previous texts” (661). Faigley observes that social research frameworks added methodologies such as ethnography to composition studies researchers’ methods. Through ethnography, scholars such as Shirley Brice Heath find that the literacies children learn at home and in the world often have goals that conflict with classroom and academic literacies (Faigley 661). Theories of processes and classroom practices have been enriched by these competing views, provided that scholars recognize the “historically dynamic” nature of composing processes (Faigley 662). While acknowledging the strengths and weaknesses of expressivist, cognitivist, and socially situated theories of composing, Faigley cautions researchers should not expect their findings to be fixed or static.

The emerging appreciation for the role of social contexts, as summarized above, demonstrates that researchers’ foci shifted from the study of composing processes to the social circumstances influencing writers. Scholars have determined that navigating those circumstances requires various literacies and that such literacies, in turn, influence writers’ activities in completing writing tasks. Research into the socially inflected contexts of writing prepared the way for the study of literacies and their acquisition, which I review in the next section.

*Connections between Writing Processes and Multiple Literacies*

As Greg Olson and other Post-Process scholars contend,<sup>4</sup> acknowledging writers' social context, particularly their intersecting identities, enables a more complete understanding of writers' rhetorical awareness and allows the field to theorize 21st century literacies. In 1996, owing to increased interest in cultural and linguistic diversity, the New London Group called for an expansive definition of literacies to better “negotiate[e] a multiplicity of discourses” and to account for texts generated by users of emerging technologies (2). In moving between studying writing processes to multiliteracies, scholars acknowledged the ways literate practices were dictated by communities of practice and began to study the ways writers invoked different identities through the literacies they privileged in their writing. Recognizing the multiple literacies, communities, and identities of writers required scholars interested in studying writing processes to expand their view of how to study those processes. Previous research had prioritized academic identities and literacy practices, ignoring the multiliteracies that student writers brought with them to the classroom and the multiliteracies that students would be required to use outside of the classroom environment. By 2008, the idea of multiple literacies or multiliteracies had become so well-established that the NCTE adopted a position statement calling on writing teachers to prepare students for the full range of literacies they would require, particularly remarking that “[b]ecause technology has increased the intensity and complexity of literate environments, the twenty-first century demands that a literate person possess a wide range of abilities and competencies –many literacies . . . [that are] multiple, dynamic, and malleable” (1). The position statement's urgency demonstrates that changing literacies have complicated and

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<sup>4</sup> “Post-Process” scholars are composition theorists who acknowledge the limitations of writing processes scholarship (Olson 233-4). Olson connects the movement's criticism of process to theory building; in particular, he notes that process scholarship posits one universal truth about writing, which post-process scholars such as Thomas Kent dismiss as “misguided, unproductive, and misleading” (qtd. in Olson 235).

expanded composition scholars' understanding of literacies beyond reading and writing processes. Composition studies now frames reading and writing as small parts of writers' literacy toolkit. As with composing processes, these literacies are situationally and individually contingent, and, by necessity, readers and writers adapt them in response to the social, cultural, and technological contexts.

More recently, literacy scholars have integrated theories from multimodal, new media, and digital scholarship to target aspects of reading and composing that individuals and groups employ when engaging in mediated writing tasks, such as moving between documents, instant messaging, SMS text messaging, and searching between different internet resources. Borrowing from scholars of multimodality like Jodi Shipka and Gunther Kress, multiliteracies scholarship recognizes the different embodied, temporal, visual and spatial affordances arising from reading and creating written and visual texts. In *Literacy in the New Media Age*, Kress reminds the field that written texts' affordances are "distinctly different" from those of visual texts (1). Writing, Kress notes, follows the mode of speech in that its organization derives from linear, temporally arranged sequences, whereas image-based texts take their organization from the arrangement of different visual elements (2). In *Toward a Composition Made Whole*, Shipka adds to Kress's discussion by connecting multimodal and visual literacies to computer technologies, although she is careful not to equate the two. Shipka traces the effects of multimodal literacies across physical and digital contexts and notes their influence on who we communicate with and "how, when, and why" we do so (35). Shipka's focus on multimodal literacies demonstrates the ways that physical and digital literacies coincide and intersect.

Where Kress focuses on the proliferation of image-based texts in a screen-dominated society, Shipka criticizes multimodal and new media scholars' emphasis on digital technologies

as too confining. She sees this focus as forestalling discussion of composing tools that afford other ways of communication, thereby limiting the study of literacies (21). Moreover, Shipka contends that ongoing technological and digital developments complicate studies of literacies and writing processes. She cautions that “the main challenge facing process researchers today has to do with finding ways to trace the dynamic, emergent, distributed, historical, and technologically mediated dimensions of composing practices” (36). Although my own study focuses on digital literacies, its descriptive nature provides insight into other modes that are at play while students compose. I uncover aspects of embodied behaviors informing composing processes when students take breaks and leave the computer, and I find that students’ writing is inseparable from visual and sonic modes because students control the appearance of content on their screens and play music throughout these processes. Students also sometimes consult print resources, employing print literacies, in order to complete their digital compositions: my students moved between print and digital literacies interchangeably to complete their writing goals. In their written reports, students note the ways that these distributed literacy activities have value to them as part of their writing processes. By studying the digital literacies of students writing with computers, alongside physical and embodied literacies, I provide insight into multiple modes of composing, ranging from the visual, auditory, textural, and embodied. Although this study focuses on describing DLAs, the descriptive nature of the project sheds light on other, interwoven literacy activities that permeate digital composing processes.

Studying DLAs also necessitates studying the texts that they are used to create and the tools available to students who wish to use DLAs to create multimodal compositions. New media scholars such as Anne Frances Wysocki, Cheryl E. Ball, and Ryan M. Moeller have contributed to discussions of how to create, read, and rhetorically analyze multimodal texts in digital

environments while exploring the affordances and limitations of doing so. Recent studies explore how multimodal compositions are created, distributed, read, and responded to, and theorize rhetorical awareness as it is engendered through the creation of multimodal compositions. In “The Multiple Media of Texts,” Wysocki shows that social contexts shape literacy practices, specifically that digital genres draw on existing written genres to create new forms. Instructing her readers in the rhetorical analysis of multimodal, digital texts, Wysocki relates new media compositions to the rhetorical flexibility and affordances available to their creators. She argues that “[s]omeone composing a text that has visual materiality has to pick and choose among available strategies to build a text that attracts a desired audience, is understandable to that audience, and moves it toward the ends desired by the composer” (3). Wysocki posits that rhetorical and audience awareness are a literacy skill with which writers must engage when creating multimodal, digital compositions. In studying students’ DLAs in situ, my study moves beyond rhetorically analyzing digital texts and instead examines the activities that writers employ minute by minute, demonstrating that digital tools shape students’ DLAs in specific ways. For example, while digital contexts allow students to control their workspace and add design elements to their compositions, other tools embedded in computer software, such as the spellcheck feature, disrupt students’ writing processes, causing them to shift between DLAs and potentially lose their generative thought process. While some students’ editing processes reveal that they considered audience factors while writing, most student reflections suggest that they prioritized finishing the essay over readers’ response to their writing; I will further develop these findings in Chapters 3 and 4.

Arguably, all writers choose among potential strategies to attract an audience. However, in the realm of new media studies, scholars have had to break down the assumptions and

hierarchies of pre-existing genres to foreground changes to traditional genres and shift attention to production within digital environments, particularly the many rhetorical choices available to digital creators and readers. As Ball and Moeller discuss in “Reinventing the Possibilities: Academic Literacy and New Media,”

terms like *organization* or *structure*, which are so important in written texts, do not fully encompass the meaning-making process a reader participates in when encountering a text that has an open structure or one that is organized around links outside of itself. In this case, terms like *design*, *navigation*, *interactivity*, or *reading* do a better job of explaining what processes belong to the text’s production and can be anticipated in advance by the author/constructor of a text and those that rest solely upon the attentive reader who chooses what to read and when. (4, authors’ emphases)

By expanding on the possible ways digital texts in online environments can be created, read, and navigated, Ball and Moeller argue that creators, readers, and navigators engage across multiple levels with these texts and remain aware of available rhetorical options. The various levels of engagement indicate some of the many forms that DLAs can take. My study seeks to describe, through the data gathered, the forms that these DLAs take for first-year student writers.

In discussing DLAs, scholars have noted that composing in digital spaces changes how readers view texts. Computerized, networked writing allows for more than a linear order of engagement, permitting readers to navigate laterally and enabling writers to incorporate multi-layered media into their texts. Depending on the design of such texts, their rhetorical features open up multiple points of entry and interaction for readers and creators. In “The Rhetorical Work of Multimedia Production Practices,” Jennifer Sheppard connects the literacy moves unlocked by digital media production to traditional text-based literacy and rhetorical concerns,

noting that “writers/designers” of such content still focus on purpose, audience, and context (122).<sup>5</sup> However, she also argues that “writers/designers” of digital media texts take these concerns a step further as technological considerations can interfere with the writer/designer’s ability to reach their intended audience and achieve their purpose (122-3). For Sheppard, the literacy considerations required for designing effective digital texts require writers/designers to consider issues of delivery and reception by readers/viewers. She observes that some content, like advanced scientific concepts, can be best explained to certain groups, like sixth-grade students, through visual animated images, rather than through scientific text (124-5). According to Sheppard, the DLAs required to consider these aspects of rhetorical awareness in digital spaces are ones that should be valued and taught. From watching my students DSCs, students engaged in a variety of DLAs to try and achieve rhetorical goals and connect with their audiences. Through analyzing students’ written reports regarding their DLAs, my study reveals some of students’ attitudes toward DLAs and the ways they affect students’ ability to reach their intended rhetorical goals.

Mike DePalma and Kara Poe Alexander echo Sheppard’s position that students’ rhetorical knowledge may limit the effectiveness of the new media texts they create, regardless of the affordances provided in digital contexts. In their article, “Negotiating the Challenges of Multimodal Composition,” the authors contend that

new media technologies ha[ve] allowed [FYC students] to develop particular capacities for navigating new technologies [but] the extent to which these literacies have prepared students to produce rhetorically sophisticated texts is a different question altogether . . . although particular kinds of print-based rhetorical knowledge and composing experiences

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<sup>5</sup> A term Sheppard uses throughout the article to “call attention to the diverse practices of both form and content development to which multimedia composers must attend” (122).

will enable students to successfully engage in multimodal composing tasks, some of their knowledge and experiences might possibly hinder their efforts. (184)

The array of rhetorical choices available to digital composers adds to those available in traditional print compositions and complicates the literacy practices available to composers and readers. Moreover, DePalma and Alexander's contention that the ability to use digital tools does not automatically confer the ability to create sophisticated texts demonstrates an underlying issue with studying the literacies students utilize in digital environments. While some students engage their DLAs to use dictionaries, synonym websites, and assignment sheets to tailor their writing for audiences, other students become so overwhelmed by the ecology of the digital environments that they ignore effective rhetorical options in favor of completing their assignments and leaving the computer. DePalma and Alexander caution that students use their literacies to navigate digital tools but often have problems controlling those tools. This caution reflects the effects of mediation on students unfamiliar with the full range of literacies required in multimodal, digital contexts—examples of which my study further provides. My project focuses on how students' value these DLAs and the ways they acknowledge the advantages and difficulties involved in employing DLAs to create digital compositions. Examining how students value DLAs, particularly after students have studied those DLAs themselves, I reveal that they see their knowledge, experiences, and tools as sites of potential. Students' analyses of their composing processes suggest that they saw the DLAs they used as tools; students recognized that some of these tools helped them compose and discovered that tools they often relied on, like listening to a specific playlist or following the word processor's editing suggestions, didn't actually help them fulfill their goals during the recorded writing sessions.

My own study contributes to the field's understanding of how students engage with digital activities during the writing process on computers, particularly in how far they use digital tools to help them write across different rhetorical contexts. By studying these DLAs, I find that multiple, fluid activities, multiliteracies, and multitasking are at work during students composing processes. Their use of DLAs to control their digital environment, edit their compositions, complete research, communicate, listen to music, and answer questions related to their assignments enable and constrain their composing. Through my study, I determine that digital knowledge, literacies, and activities contribute to writing processes by promoting DLAs centered around the editing and re-reading processes—processes which students report as useful but as dominating the time they spend composing in a way that they feel is detrimental to their composing processes as a whole. I will further discuss these issues in Chapters 3 and 4.

Given the current ubiquity of writing with computers in the first-year writing classroom, Yancey's call for renewed, 21st century, curricula for writing have become all the more urgent. As Shipka, Sheppard, DePalma and Alexander, and many others have noted, teaching students to use technology does not automatically help them consider audience concerns or rhetorical effectiveness when composing in digital environments. Writing with computers necessitates revised pedagogies and renewed studies of writing that reflect the full range of modes available to digital composers, the difficulties in teaching students to engage with those modes, and the changes to composing processes engendered by the dynamic nature of digital composing. Writing technologies have undergone rapid changes since the advent of the personal computer in 1975 (Abbate 1996). As these technologies continued to shift, the DLAs associated with them have changed as well. In the next section, I review research into writing with computers and

conversations around digital writing processes as these conversations further situate my study and its design.

### *Digital Writing Research into Writing Processes*

Analogous to Takayoshi's call for a renewed, systematic research into composing processes, researchers in the field of technology and writing studies offer a range of perspectives on her argument. In 2004, the authors of *Writing: A Ticket to Work . . . Or a Ticket Out* report that, "because of email, more employees have to write more often" (4). Christina Haas and Anna Ackerfeldt suggest that the increase in writing extends to schools as well as their research shows that students using computers respond in greater length to a prompt than students writing on paper (Ackerfeldt 187; Haas 95). Moreover, their findings, along with those of Paul Stapleton, reveal that students writing in digital environments plan less prior to beginning to write and edit more than students using pen and paper (Ackerfeldt 176; Haas 94; Stapleton 154). These findings highlight some of the differences between digital writing processes and earlier composing practices; my study extends this by seeking to further describe DLAs students engage in during their writing processes.

Scholars focusing on the technological aspects of writing with computers have researched computers, word-processing software(s), and digital platforms that encourage writers to interact with a digital public (Ackerfeldt; Haas; Hawisher et al.; Selfe; Shepherd; Takayoshi). In her 1990s landmark study of literacy and computers, Haas follows the design of early process research by using interviews, logging of writing-related tasks, and feature analysis to examine how writers read their own writing online. Haas frames her research through the theoretical lens of the "Technology Question;" a question that Haas defines as having to do with the materiality

of thought and language through technologies of writing. Haas' "Technology Question," asks, "What does it mean for language to become material? That is, what is the effect of writing and other material literacy technologies on human thinking and human culture? (6)" To answer this question, Haas "look[s] at computers, not through them" to determine how word processors affect the "materiality of literacy" (6). Haas finds that writers had problems accessing large sections of text and reorganizing their documents, suggesting that writers' ability to comprehend the entirety of their work is more limited than that of writers of material documents. Moreover, Haas finds that readers had difficulties with spatial recall of where different information appeared in digital documents, although this issue did not seem to be as grave for users with "advanced" text editors, which more closely resemble physical texts than older word processors (64). At the time of Haas's study, word processing software had not yet assumed the visual design of a piece of paper as most modern software does. Her findings indicate that the emulation of physical objects aids readers' ability to comprehend texts.

Similar to older process studies, Haas used pen-and-paper writers as her control group. As noted above, she found that writers working with word processors spend less time planning before they start writing. Further, writers opted for less conceptual planning and more sequential planning when using word processors and had an increased awareness of low-level writing concerns like editing and spelling compared to pen-and-paper writers (96). Through her analysis of planning and planning notes, Haas connected the materiality of the writing modality to the writer's cognition. The computer's responsiveness allows a higher incidence of writing activities like "the production of intact prose" (96). In contrast, the tangibility of pen and paper increased writer's planning ability, particularly the conceptualization of writing ahead of time (115). Haas's study of computers as material objects that socially construct and constrain knowledge

added to the field's understanding computer technology's contributions to changing literacy practices. Her findings also demonstrate that digital environments shape DLAs because the design and affordances of the digital writing platform shapes writers'/designers' rhetorical knowledge, their writing practices, and how they read text while writing.

Where Haas's study contrasted writing and reading strategies in computerized and paper-based modalities, Pamela Takayoshi uses digital screen capture to study short-form, interactive writing and the processes that accompany these writings within the social networking site (SNS), Facebook ("Short-Form" 1). As I have previously discussed, Takayoshi argues that digital writing researchers should return to a focus on writing process in digital contexts, arguing

Multimodal composing, contemporary composing technologies, and internetworked literate contexts are the central focus of computers and composition scholarship, but we have little disciplinary understanding of how writers write and how language is shaped within technologically mediated literate practices . . . there is little scholarship that deeply attends to the practices, processes, and larger social, cultural, and technological ecology in which this writing takes place. (2)

Takayoshi reviews computers and composition research since the 1980s and notes that scholars have studied word processing, email, chat and discussion boards, instant messaging, and SNS. She also notes that scholars have contributed to multimodal scholarship through studying non-linguistic modes such as visual, aural, video, performative, and three-dimensional texts ("Short-Form" 3). In reviewing this scholarship, Takayoshi emphasizes the field's commitment to studying writing, but she also finds that little scholarship focuses on composing processes. She contends that the social turn in composition and a shift to "theorizing and investigating the context of writing" is responsible for this dearth in scholarship ("Short-Form" 3). Although her

article reports the findings of multiple studies into short-form writing that she has undertaken, Takayoshi's aim is to call for a deeper investigation of "what writers do when they compose the short-form, internetnetworked writing increasingly required across a variety of literate contexts" ("Short-Form" 2). Through her research, Takayoshi demonstrates that students' writing processes in this space are drastically different from the non-internetnetworked writing studied during the 1970s and 1980s. Regarding students' writing for Facebook, Takayoshi reports that students writing in these contexts have "truncated and joined together" the processes of drafting and revising ("Short-Form" 6). Moreover, Takayoshi observes that the writer's attention is consistently pulled away by other activities occurring on the site, which she sees as requiring the writer to perform "mental juggling" during the composing processes. Takayoshi's evocative research reveals that writers in these contexts engage in a "variety of literate activities" ("Short-Form" 7) and highlight the need for further studies of the composing processes in digital, internetnetworked environments like Facebook. Takayoshi's article reinvigorates the study of writing process in digital spaces and proves that work like hers directly supports literacy studies. Similar to Takayoshi's findings, my study suggests that various DLAs compete for writers' attention while composing in internetnetworked environments, causing them to shuttle between writing, reading, researching, and synchronous and asynchronous communication while composing, findings which I will further develop in later chapters.

Researchers of computerized composition acknowledge the multiplicity of writing processes and assume that technology has shifted how and what people read and write. In 2010, Michigan State University's WIDE center surveyed 1,366 first-year composition programs to identify genres of college students' writing (Grabill et al., "Writing Lives" 3). The study found that two of the three most written genres produced by students, such as lecture notes, emails, and

SMS text messages, were digital and that the remaining third had the potential for being used digitally (Grabill et al., “Writing Lives” 2). Crucially, students’ internetworked composing practices move between physical and digital modes. Students take notes and plan in physical as well as digital environments and they do so systematically and generatively to create larger projects (Zawilski qtd. in Yancey, “Fresh Eyes” 64). In later chapters, I include some discussion of the ways DLAs intersect with other embodied and print literacies, such as physical note taking, outlining, and reading textbooks and course materials—and detail the ways students in my study used them to bolster and complete their digital writing goals.

Zawilski’s study describes students internetworked and extra-networked writing processes. For example, students move between tablets to laptops, read their drafts before exploring sample texts online, and navigate to other internet spaces to listen to music while writing. In my study, students often made handwritten outlines and notes to track what they planned to compose digitally or consulted physical textbooks to find information to include in their digital texts. Yancey notes that all of these digital and physical interactions shape modern composing practices and should be studied further (Yancey, “Fresh Eyes” 65). Moore et al. remind scholars that questions such as “*what precisely* are students writing when they use specific technologies to write in specific genres? *How* are they using these technologies to write these genres?” have yet to be answered (“Revisualizing” 11, authors’ emphases). Through studying DSC recordings, my study answers some of these questions as my analysis of students’ preferred DLAs tracks students’ writing, along with the computer-based digital technologies with which they engage when composing on computers. Moreover, in analyzing how students value their DLAs, I show the way they view these literacy activities as being supported by Physical Literacy Activities (PLAs).

*Past Studies into Students Valuing Writing and Digital Literacies*

In this section, I review scholarship that discusses how students value the different kinds of writings they produce as this scholarship helps me answer my second research question. Researchers have asked students about the kinds of writing they value directly, such as the Writing in Digital Environments Research Center's (WIDE) survey and white paper from 2010 (Grabill et al. "Writing Lives"). Research articles deriving from the Stanford Study of Writing also begin to answer the question of how students value their various writings and writing activities by interviewing students and studying how their relationship to writing changed over time (Fishman et al; Lunsford et al.). The Stanford Study of Writing began data collection in 2001 and finished in 2006, so their research captures students' attitude toward writing and the role of digital tools during a specific point in time and technological development; scholars from the 2010 WIDE Survey followed up on their research by repeating their survey across different institutions in 2013. In combination, this survey research into how students value writing spans across a decade, one in which digital composing practices dominated students' writing practices.

Despite the very different student populations studied and the time that passed, the studies' findings shared many themes regarding how students valued their writing practices. These studies found that writers valued writing for its transactional value, for personal fulfillment, for maintaining relationships, for supporting social goals, for coordinating their learning and their lives, and for providing them with immediate audience response (Fishman et al; Lunsford et al.; Grabill et al; Pigg et al). Similarly, students in my study report valuing writing for transactional means such as good grades and for personal fulfillment such as writing journal entries and short stories. In discussing the writing they valued, my students focus on DLAs that helped them improve their writing, largely focusing on editing practices or practices

that decreased the time it took to complete a writing task. These findings, which will be further discussed in Chapter 4, remain relatively constant across students' evaluations of their writing, and suggest that students want their DLAs to help them create writing that receives academic approbation as quickly as possible.

As well as finding what students' value in writing, these and other studies reveal aspects of writing practices that students use frequently but tend not to value highly. For example, Grabill et al.'s survey found that students wrote for social media sites multiple times per day but valued those compositions less highly than other types of writing that they wrote far less frequently like résumés (6-8). The reasonings for this evaluation was partially based on students' transactional view of writing. Résumés help writers get jobs, and students are capable of using other writing platforms than a specific social media site to maintain their social relationships and perform their identities. However, another reason that writing for social media sites was seen as less valuable had to do with the transient nature of the sites themselves. Between 2001-2006, eighteen social networking sites launched, including Myspace, Facebook, and Twitter ("Timeline"). In those years and the years that followed, students saw these sites rise and fall in popularity, so while they may have written on such networks, the writings were ones that they did not see as having a permanent effect. This may be why the 2008 Pew Research, "Writing, Technology and Teens," reported that "the digital age presents a paradox. Most teenagers spend a considerable amount of their life composing texts, but they do not think that a lot of the material they create electronically is *real* writing" (Lenhart et al., authors' emphasis).<sup>6</sup> Students value most the writings that have long term effects on their lives. While writing digitally has

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<sup>6</sup> By 2018, the PEW Research Center reported that teenage writers social networking practices had shifted from sites like Facebook to Instagram and Snapchat. This switch between the most used social networking sites happened in a span of just three years, indicating how quickly the popularity of such sites shifts (Anderson and Jiang 1).

become the main way that students write (Grabill et al. "Writing Lives" 6), what they are writing for and who they are writing to has a strong impact on how they perceive the value of their writings.

A key finding in much of the literature regarding student valuing writing has to do with identifying as part of the community for which the student writes for and receiving positive audience responses and feedback to their writing from that community. These findings connect demonstrate the ways in which identifying as a community insider and a writer influence students' attitudes and evaluations toward their writing. In "Performing Writing, Performing Literacy," Fishman et al. describe students writing for self-sponsored settings as having a greater degree of audience awareness and being more willing to be brave in their writing content and genre to achieve a desired effect (230). Fishman et al. contrast this confidence in writing extracurricularly with the writings students do in their first few years of college coursework, noting that students perceive introductory level writing work as stifling, boring, and "bullshit" (230). This tension between extracurricular confidence and developing as academic writers spans across undergraduate and graduate writers. Kevin Roozen's "Exploring the Interplay of Vernacular Literacies and Disciplinary Engagement" reveals the tensions involved for graduate students in becoming academic insiders and integrating their varied writing knowledge between contexts. Roozen's case study of Kate Shearer (a pseudonym) shows that students utilize extracurricular writing literacies to varying success in academic environments. Kate successfully employs literacies learned as a community insider in the fanfiction community to help her understand academic writings. She does this by drawing cartoons to understand the Burkian Pentad and writing fanfiction integrating Socrates' dialog to Phaedrus to create her own interpretation of the meaning of that exchange (Roozen 153-4). In this way, her abilities as a

fanfiction writer and the literacies associated with that discourse community helped Kate to understand unfamiliar academic writing. Creating this bridge allowed her to use extracurricular literacies advantageously for her academic career goals.

However, Kate's role as an insider within fanfiction communities and familiarity with the literacies practiced by those communities did not always aid her in developing the literacies valued by her academic community. In her fiction writing class, the professor asked her to drop the course because they perceived Kate's writing as too science-fiction genre-based (151). Ultimately, Kate dropped the course and switched from the creative writing to the rhetoric and composition track because it allowed her to continue to study fanfiction writers for her MA thesis and use the literacies she valued in academic contexts. Kate's story reveals an understandable tension that students face between their curricular and extracurricular writings. In the extracurricular spaces, writers feel their writing generates positive responses and creates change (Gere 1083; Lunsford et al.; Nobles and Paganucci 24). For their curricular writings, students who identify as part of the academic community tend to value their academic writing more, recognize it as their property, and see its role in contributing to their future career goals (Lunsford et al.), as can be seen in my discussion of students' reports in Chapter 4. Ann N. Amicucci's interview with first year students highlight this tension as well, particularly when Sarah notes that she would value her academic writing more if she was allowed to use the language from her short-form, social writings without having to code-switch into standard edited English (487-8). This research indicates that students value the language literacies associated with their social communities to such an extent that they prefer to use those literacies to mediate their communication between writing contexts. Across these studies, students' valuing of writing was tied to the social identity they perceived as associated with the style of writing they created.

Students valued and owned their writing if they considered themselves as community insiders. Consequently, students devalued or did not feel ownership of essays they were required to write for academic work unless they viewed themselves as future academics (Lunsford et al.)

Such connections between discourse communities and students' evaluations also connect to how students view the DLAs they use to create said writings. Often, students' evaluation of DLAs is based on the rhetorical affordances and constraints that DLAs offer when creating multimodal or multimedia texts, and students' evaluations of their DLAs are often tied to audience reception to their texts. Part of the reason that students value writing based on audience reception is because, as literacy practices are inherently social practices, the effects of these practices are tied to the writer's goals in their social contexts. As James Paul Gee suggests, employing their various literacies allows writers to navigate a myriad of social spaces (36). Gee also argues that writers' success in using their literacies within social spheres affects their standing within that social arena—so much so that employing literacies successfully influences writers' social confidence (36). In a predominantly computerized society, digital literacies are tied to social status and educational success (Selfe 7) and include, but are not limited to, information and visual literacies centered on screen literacies (Cadzen et al; Kuiper et al.). Moreover, digital literacies require that writers continue to learn and engage with new applications and communicative technologies to safeguard their social standing. By tracking students' DLAs and contrasting their use with students' valuation of them, this study assesses the rhetorical cachet students' associate with their DLAs. Many student reports focused on DLAs that increased the speed or quality of writing or on DLAs that they perceived as distracting. The framing of DLAs in this way reflects students' product-oriented mindset and suggests that students have internalized that certain DLAs are associated with academic and professional

success and efficiency. Moreover, students' focus on DLAs that help them complete tasks quickly suggests that they find writing processes to be time-consuming.

As well as valuing writing for their communities, studies have found that students valued writing that allowed them to use digital literacies as mediational tools across contexts. Such evaluations were based on the ways that the DLAs helped the student to develop relationships and coordinate activities. Evaluations were also derived from students' positive experiences in digital spaces and on the students' abilities to use digital tools to improve their writing. Pigg et al. note that students connect SMS text messages to relationships and coordinative work that connects literacy practices across different social and technological ecologies (108). In the same vein, students reported valuing writing "[p]ractices such as emails and self-sponsored academic texts like lecture notes" because these forms "provide similar avenues for coordinating and maintaining alignment with professional and academic communities" (Pigg et al. 108). Although students acknowledge the value of these DLAs, they also reported mixed attitudes in how they value digital writing practices finding them "sustaining" in their abilities to help students coordinate their lives but otherwise "burdensome" (Pigg et al. 110). Because of the conventions of some digital writing practices, such as the need to reply to a text message, some students view them as a "hindrance, especially as [they] intersect with other kinds of writing that matter . . . more" (110). However, students also noted that these types of writing have become so commonplace as to be unavoidable. As such, digital writing practices have become integral writing practices for these students. According to the Pew Research Center, "95% of teens have access to a smartphone and 45% say they are online 'almost constantly'" (Anderson and Jiang n.p.). This indicates that students' writing practices and DLAs may be in competition with each other, which connects to the student in Pigg et al.'s study who viewed SMS texting as a

hindrance. In my study, students engaged with various forms of social, digital literacies and reported finding some helpful and some hindering. However, the degree to which they found them helpful or hindering changed depending on how they were cued to discuss these DLAs. When studying their writing processes for their autoethnographies, students noticed the ways that socially motivated writing activities slowed down their academic writing processes. When completing surveys on how they viewed such DLAs, some students found them to be distractions while others viewed these DLAs as helping them focus, suggesting that evaluating of DLAs and writing changes situationally.

Beyond connecting DLAs to coordinating activities and maintaining relationships, students associated DLAs with the quality of their writing. In “Student Perceptions of Writing Quality Using Digital Tools and Online Writing Environments,” Susanne Nobles and Laura Paganucci report, “[i]n response to open ended questions on the survey, 88% of respondents perceived that digital tools and writing online helped [students] to be better writers . . . respondents noted specifically digital tools affordances for increased organization/structure/clarity, spelling, and vocabulary development” (23-4). Students who have positive experiences and view of the digital tool they used while writing tend to have a higher positive perception of their writing quality overall (Nobles and Paganucci<sup>24</sup>). Students also reported valuing digital tools that increased the speed of their writing. Nobles and Paganucci note that students’ belief in the enhanced quality of their digital compositions may stem from the authority they cede to digital tools such as spelling and grammar check when editing their writing (25). Past research from Tim McGee and Patricia Ericsson has shown that student writers tend to defer to the computer’s authority in terms of spelling and grammar check (Nobles and Paganucci 25). As such, Nobles and Paganucci concede that students may perceive their writing

as having a higher quality because it received approval from digital authorities (25). After studying their writing processes, my students reported that digital editing tools helped them polish their writing but hurt their ability to stay focused on writing tasks. Many of my students noticed the ways that spelling and grammar check changed their writing focus when they were trying to generate text. In Chapter 3, which presents my own analysis of students' writing, I found that students deferred to digital editing tools and that doing so was an ingrained part of their digital composing practices, with students relying on autocorrect features to fix elements of their writing. Although my students' autoethnographies noted their struggles with editing tools, many valued these tools for their ability to help them increase the efficiency with which they wrote correctly, which again relates to the transactional value students place on writing and other DLAs. Students value resources that they understand and know how to use when creating written texts. Students dislike and devalue writing for situations and audiences they do not understand, and they dislike tools whose literacy value they have yet to learn.

In the next section, I review digital writing research using DSC methodologies to demonstrate the rich findings available to researchers engaging with these technologies. I then move into a discussion of the analytical frameworks I used to guide my analysis of the digitally screen captured materials that I collected in this study.

### **Digital Writing Research and Digital Screen Capture (DSC) Methodologies**

By studying DSC recordings of students composing processes, my study addresses some of the lingering questions from researchers like Grabill et al. and Takayoshi, by attempting to determine how writing processes and literacies have changed in the wake of technological change. As existing scholarship attests, DSC methodologies are useful avenues for studying

digital composing practices. Scholars began codifying digital research practices, such as DSC, in the mid-2000s. Heidi A. McKee and Dànielle Nicole DeVoss include a chapter on DSC in their 2007 edited collection, *Digital Writing Research: Technologies, Methodologies, and Ethical Issues*. In this section, I review writing process scholarship related to DSC methodologies as they shape the design of this project. Most useful for my own purposes, in “Capturing the Activity of Digital Writing,” Cheryl Geisler and Shaun Slattery describe a methodology based on activity theory for using DSCs to study writing processes in different contexts and for different populations. In addition to reviewing how they have used DSC in their own scholarship on composing in digital personal management systems and technical writing, Geisler and Slattery provide a general writing-research related methodology and coding process and make a convincing case that DSC can usefully supplement digital composing research as analyses of screen-captured recordings track the activities involved in digital composing. Moreover, they recommend using screen captures as a secondary process-tracing method like an event log (186-7), which uses computer logging programs to track user operations (van der Aalst et al. 1128).

In their explanation of the process, Geisler and Slattery point out that “video screen capture does not raise issues of distortion” such as think-aloud protocols might (187). For digital writing scholars, Geisler and Slattery contend, reviewing screen captures of writers’ activities can “provide a rich sense of writerly activity by providing a detailed record of the knitting together of mediating artifacts and the larger digital environment” (190). The point of using screen-capture methodologies to study writing, then, is to create “portraits of actual practice,” to “add complexity to current accounts of digital writing,” (Leon and Pigg 4), and to “[make] visible phenomena that might otherwise have gone unnoticed in digital writing” (Geisler and Slattery 187). Materials collected from such projects can be analyzed quantitatively to generate

statistics regarding the number of words written in a period of time, the length of pauses in writing, and other such concrete features (Ackerfeldt; Seror). However, these materials can also be analyzed qualitatively to uncover possible trends and avenues for further research (Geisler and Slattery; Leon and Pigg).

Previous studies that have used DSC technology to record digital writers have sought to understand, for example, how “the layouts of tests and the use of different technologies shape pupils’ possibilities for representing their knowledge” (Ackerfeldt 174). Ackerfeldt’s findings aligned with earlier studies that showed that pen and paper writers engage in more planning than digital writers; interestingly, she also found that physical constraints like space affected the length and type of answers students provided—when writing on paper, students shaped the length of their responses to the space provided, whereas digital writers with word processors wrote more. Digital writers’ responses were not constrained in the same ways as writers composing in physical spaces (182). In a 2013 study, Jeremie Seror uses DSC to track the “visual records of L2 learners learning to write for university courses” (5). Seror uses his study to argue for the utility of screen capture as a method of studying L2 writers composing processes, and his initial findings suggest that students engage in a “stop and go approach with L2 students editing themselves as they went along,” which Seror attributes to linguistic challenges experienced by the writer (8). My own findings suggest that such linguistic challenges and shuttling between generating of text and editing are common among native speakers as well, indicating that such movement are intrinsic to digital composing processes, particularly among student writers.

Studies of more advanced writers add to the data discovered via DSC and suggest that digital composing processes vary based on the writers’ age and experience. In their study of graduate student writers, Kendall Leon and Stacey Pigg examine the ways graduate students use

academic and personal writing to further their professional goals. In particular, they look at nontraditional digital activities that graduate students engage in as part of their professionalization processes. Using screen captures, time use diaries, and interviews, Leon and Pigg find that graduate writers' digital compositions often navigate multiple motivations, audiences, and genres. They connect their findings of students' multitasking to the findings of Paul Prior and Jodi Shipka, who in their article, "Chronotopic Laminations: Tracing the Contours of Literate Activities," found that the chronos, or "chains of places, times, people, and artifacts . . . tied together" across the literate activities involved in writing sessions blended unpredictable, digital social spaces (Prior and Shipka 180). For Leon and Pigg, the most interesting aspect of their findings was affective; participants reported feeling discomfort because they did not feel their writing practices had the expected level of professional focus required of academic work (10). Studies such as Leon and Pigg's connect to the ways that engaging with the writers adds to the researchers' ability to understand the DSCs and the valuations that writers place on their DLAs.

Thus, for digital writing researchers engaged in mixed methods, descriptive projects using DSC provide copious and activity-rich materials for study. My research shares a descriptive purpose with prior studies, but the participants and rhetorical situation studied in my investigation differ from those of previous scholars. While I share an analytical framework with Geisler and Slattery, they do not share my focus on providing thick description of the digital composing practices of college writers; however, I do share a similar affective focus with Leon and Pigg and pick up on and extend the knowledge gained from these previous studies.

### **Activity Theory and Writing Processes Analyses**

Following Geisler and Slattery's explication of using activity theory to study DSCs, and because I focus on activities in digital contexts, I utilized activity theory to study DLAs and digital writing processes. My guiding framework for this study involves using activity theory as a lens to study students' DLAs in digital composing environments. As David R. Russell describes it, activity theory "traces cognition and behavior, including writing, to social interaction . . . [it] look[s] at the reciprocal mediation of behavior in mutual exchange and negotiation . . . mov[ing] from the social to the individual in [its] analysis" ("Rethinking" 509). This focus on the individual derives from activity theory's roots in psychology, as modern theoretical approaches to activity grow out L.S. Vygotsky's work (Bazerman and Russell 1). While scholars have employed activity theory in different ways, using metaphors of context or of dynamic systems and networks, at its core, activity theory states that the subject has a goal they want to achieve and that they use mediational means, such as objects or tools, to achieve that goal (Russell, "Rethinking" 510). Charles Bazerman and David R. Russell explain that activity theory does not prioritize a goal or objects used to achieve that goal, but the social, historical, cultural, and linguistic forces that motivate the activities and structure how the individual uses tools (1). Objects, then, have "rules of objects" and are "mediating artifacts . . . The principles by which they are formed and maintained and changed are those of activity. Texts . . . are one material tool or technology among many. But texts powerfully and pervasively mediate and remediate human activities" (1). Bazerman and Russell argue for activity theory's potential in studying writing due to the fact that writing systems structure modern life (1). Using activity theory to study the activities of writing provides a means of studying textual production and use within organized settings. For my study in particular, examining individual writing activities within the contexts of digital environments and the American university system provides insight

into the social, historical, and contextual forces at work on students composing in the 21st century.

As well as providing insight into the culturally, sociologically, and historically shaped activities with which the individual engages while producing texts, activity theory allows researchers to see the overlapping social spaces and priorities at work within the individual while engaging in writing activities. Prior and Shipka note that understanding writing as an activity that is undertaken with tools to achieve certain goals adds nuance to previous task-based or limited-context studies (180). Regarding the need to incorporate activity theory into writing studies, Prior and Shipka argue that,

[w]ithout a theory of activity that attends to the intersection of durable projects, individual goal-oriented acts, and the affordances of the mediational means and that also acknowledges the fundamental heterogeneity (and hence lamination) of activity, studies of writing . . . seem to suggest that a named social space is a bounded, definite object. (207-8)

For Russell, Prior and Shipka, as well as other scholars interested in the internetworked nature of social tasks and identities, activity theory provides a fuller picture of individuals' writing behaviors and their movements between social contexts. Russell reminds readers that this kind of social interweaving catalyzes change in writing genres ("Rethinking" 517-8). Moreover, he contends that, in addition to individuals, genres themselves influence genres, arguing that "written genres very often are powerfully linked to genres in other media as well, either directly or indirectly" ("Rethinking" 514). With respect to digital writing, the variety of available genres and social arenas derive from, mimic, and are linked to one another through various digital connections and tagging systems. Incorporating a framework based on activity theory into digital

writing research allows researchers to capture individuals' use of the tools available to them in digital settings, describe social connections and situations that link the writer through digital networks, and demonstrate writers' wide range of activities while composing. Studying such information allows researchers to describe the nested layers of goals at work when individuals engage in writing.

Combining screen capture methodologies with an analytical framework derived from activity theory allows my study to describe and analyze the DLAs students engage in as part of their digital writing processes. In connecting activity theory to DSC research methods, Geisler and Slattery state that,

[i]n addition to looking at context, [activity theory] suggests that we look closely at both the tools that mediate our behavior and at the moment-by-moment activities by which they play out over time . . . Within a broad framework of research purposes, then, video capture technologies provide a useful means to capture . . . writerly activity by providing a detailed record of the knitting together of mediating artifacts and the larger digital environment. (190)

Geisler and Slattery consider the detailed record of writing provided by DSC as one that allows researchers to look into the broader social frameworks that influence writers, particularly in digital environments. For Geisler and Slattery, employing activity theory as a means of "focusing the researcher's gaze" extends the ways that other writing researchers have used activity theory and firmly connects this theoretical framework to digital writing research. To do so, they condense activity theory and present the following list as a summary of activity theory and the principles it uses to direct researchers in understanding human behavior:

- First, human behavior is goal oriented . . .

- Second, human behavior is hierarchical. The things we do are organized as a series of nested behaviors. At the highest level are our *activities* pursued in the service of our larger goals . . . [they] tell us why we do things. Within these activities, we may undertake any number of actions to achieve those goals. Actions tell us *what* we are doing. And within these actions, we may engage in any number of operations to accomplish our actions . . . [they] tell us *how* we do what we do.
- Third, human behavior is both external and internal . . . and these two processes interact.
- Fourth, human behavior is always mediated. Tools—both physical and symbolic, both internalized and in the world—become incorporated into the way we do things . . . knit[ting] us together with the environments in which we act.
- Fifth . . . human behavior develops over time. Activity is not stable over time, but rather develops in two distinct ways. At the level of the individual, activities develop as new symbolic and material tools knit and reknit us to changing environments . . . and goals. At the level of culture, activities develop as new symbolic and materials tools that structure and restructure the invitations an environment offers its members. (188-9, authors' emphases)

For the context of my study, Geisler and Slattery's abbreviated account of activity theory helps focus my analysis of DSC materials and accompanying written materials. In considering students' DLAs as goal-oriented rather than chaotic or ephemeral, I accept that multiple goals are at work across the materials captured. Students obviously work with the goal to accomplish the assigned task, but they also have other goals while completing their task. Moreover, the tools

with which they interact and the obstacles they face when accomplishing their assigned task shape their writing and ideas. As writers, they use their literate, social, and technological knowledge to organize language and complete their tasks using the mediational tool of the computer. The computer, its software and hardware, their physical location, their interests, and their bodies act together in creating the text. Their ideas are driven by their discourse communities, their social and cultural literacies, and the social roles they perform at the time of writing. For students working on computers, social roles are inflected by the technologies they use, the social sites they interact with, along with the music or other media they consume while composing.

In the next section, I review the study I conducted and preview the remaining chapters that report on the findings of my study.

### **The Current Study**

In order to study students' DLAs while writing in digital contexts, I designed an autoethnography assignment in which students were required to record themselves while writing using the screen-capture function of VLC, a free media player with screen-capture capabilities. Students recorded their writing with a particular research question in mind that dictated the kind of writing they completed (i.e., journal writing or completing a writing assignment for another class) and used their research question to decide how they would code and analyze their recordings. Students then wrote their autoethnography to report what they had learned about their writing processes and wrote a subsequent reflection essay about what they had learned throughout the unit. The reflection essay, along with the pre-survey at the beginning of the unit and the post survey at the end of the semester, asked students to consider parts of their writing

processes that concerned their digital literacies and invited them to reflect on how they valued DLAs. In my study, I use these student-generated materials to answer the following research questions:

1. What digital literacy activities *do* students engage in while writing?
2. What do students report about their DLAs and how they value them?

My study, whose methodology and execution will be described more fully in the next chapter, adds to existing research by capturing a fuller picture of students' writing processes particularly their employment of DLAs. I am especially attentive to how students integrate non-academic digital contexts into their academic work because writing serves as a mediating tool across social contexts and students' preference for different literate activities depends on the social contexts in which they employ those literacies. I contribute to digital, multimodal, and new media pedagogies by delineating and describing the array of DLAs that students employ while writing in digital spaces. In so doing, I reveal the ways these DLAs depend on and enable each other, and the ways student writers move among different types of DLAs at different stages of their writing processes. In analyzing students' valuing their DLAs, I reveal the ways students recognize the interconnected nature of DLAs as well as students' varied reasons for valuing their DLAs as part of their writing processes.

## **Chapter Overviews**

*Chapter 2: Study Design and Methodology* explains the study methodology and study design as geared towards my research questions. Following Geisler and Slattery's chapter "Capturing the Activity of Digital Writing," I outline how I designed a First Year Composition unit around students' writing processes using screen capture technology. The recordings and

writings from this unit, combined with surveys taken during and after the unit, form the corpus of materials described and analyzed in this study. This chapter further reviews how activity theory and digital research methods informed my analysis of recorded student writings, essays, reflections, and other relevant documents.

*Chapter 3: Describing and Analyzing Digital Literacy Activities* explores my analysis of thirty DSC recordings. Moreover, this chapter provides fine-grained descriptions of individual DLAs students used and connects those DLAs to larger categories of digital activity that this study uncovered. In this descriptive chapter, I show that students move between DLAs rapidly and that, through digital composing, student writers combine their various DLAs throughout their writing processes. This chapter examines the range of students' digital activities and traces their adaptation of those activities and their digital environments to their writing goals.

*Chapter 4: Analyzing Students' Reports and Evaluations of Digital Literacy Activities* presents my analysis of students' written materials (12 sets of coding notes, 12 autoethnographic essays, 12 reflection essays, 11 pre-surveys and 12 post-surveys). In this chapter, I explore students' positive and negative evaluations of their DLAs. I also contrast the DLAs I found in my study of the DSCs with the DLAs that students discuss in their own writings and use this comparison to draw conclusions about what DLAs go unnoticed by digital writers and why students ignore or undervalue these DLAs. In this chapter, I provide examples of from students' writings of their descriptions of their DLAs and contrast these descriptions with analysis of students' activities from visual records of their DSCs.

*Chapter 5: Discussions, Conclusions, and Directions for Further Study* discusses the study as a whole, draws conclusions about DLAs and how student writers use them, theorizes why students may value them the way they do, and suggests directions for future research. From

this discussion, I provide a revised autoethnography assignment designed to help students study and understand their DLAs.

## Chapter 2: Study Design and Methodology

### Introduction

Although composition scholarship has generated much knowledge about writing processes among different groups, in different situations, and using different tools, studies of writing with computers do not fully depict how students integrate digital tools into their writing processes. As noted in Chapter 1, much research focuses on students' use of digital tools, but few studies thoroughly describe how students actually use those tools (Pigg et al.; Takayoshi; Fishman et al.). In her "Short-Form" article, Takayoshi calls for in-depth examinations of computer-based composition practices, and her most recent article, "Writing in Social Worlds: An Argument for Researching Composing Practices," identifies the need for further descriptive studies of composing processes in digital environments (552).

To examine what students do while writing in digital environments, I adapted Elizabeth Wardle and Douglas Downs' autoethnography assignment from *Writing about Writing* into the Unit 1 autoethnography essay assignment of my two Spring 2015 English 102 sections at the University of Kansas, which had 31 students enrolled across the two sections.<sup>7</sup> The original prompt asked students to "record . . . your total writing process as you complete a writing assignment for a class" (322). Adapting this assignment to my research, I tasked students with using free screen-capture recording software to record everything that happened on their computer while they were writing to gain a fuller picture of their DLAs. Although I changed how students recorded themselves for this assignment, my goal was the same as Wardle and Downs': for students to record, study, and learn about their digital writing processes.

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<sup>7</sup> See Appendix A for the full assignment prompt.

The present study draws its data from this assignment. They include students' digital screen-captured recordings of their writings (DSCs), students' autoethnography essays, their reflection essays on the assignment,<sup>8</sup> their notes taken while recording, daily journal entries from the unit, and survey responses given at the end of the unit and at the end of the semester. This chapter details the study methodology and provides a more in-depth discussion of the study's curricular context, data collected, analytical approach, and limitations than was discussed in Chapter 1.

As referenced in Chapter 1, the study works to answer the following research questions:

1. What DLAs *do* students engage in while writing?
2. What do students report about their DLAs and how they value them?

In what follows, I define key terms and describe the methods I used to answer these questions.

### **Defining and Assessing “Digital Literacy Activities”**

As noted in Chapter 1, I work with Jones and Hafner's definition of digital literacies as “the ability to adapt the affordances and constraints of [digital tools like computers and mobile phones] to particular circumstances” (13). Jones and Hafner's definition derives from the concept of multiliteracies put forth by The New London Group in 1996 which argued to expand definitions of literacy to incorporate the “competent control of representational forms” across a variety of media and technologies (Cadzen et al. 61). As I referenced in Chapter 1, the NCTE acknowledged that modern society demands that “a literate person possess a wide range of abilities and competencies –many literacies . . . [that are] multiple, dynamic, and malleable” (1). By studying students' writing in their DSCs, I reveal the web of literacy activities involved in

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<sup>8</sup> See Appendix B for the full assignment prompt.

digital composing processes, and the juxtaposition of the DLAs discussed shows the ways students engage their DLAs as part of their larger multiliteracies.

To arrive at a deep description of students' DLAs, I combine this understanding of digital literacies with Cheryl Geisler and Shaun Slattery's concepts of operations and actions. Operations, according to Geisler and Slattery, relate to the "lowest level of doing . . . [at the level of] repeated tasks writers perform" (194), while actions "represent a constellation of operations, tool[s], and artifact[s] that usually show up across multiple frames" (196). I used these definitions to code my visual records, noting the DLAs that students were performing, like writing, and the range of tools, such as word processors and thesauruses, that they used to create the artifact, which was the text they were writing. I define "digital literacy activities" as using digital tools to learn, communicate, generate ideas, and/or research while engaging in computer-based writing processes. Thus, DLAs take many forms, including:

- Using word processing software to write, re-read, and edit a document,
- Using online resources and reference materials related to the course to flesh out ideas, consider variation and word choice, and answer style-related questions,
- Listening to music while writing,
- And, engaging with social applications while writing.

When I looked for students' DLAs, I studied all of the actions they took and processes they engaged in as writers that were included in their DSCs. From there, I coded students' DLAs into overarching categories of activity based on the shared characteristics of the actions. Completing this coding process allowed me to answer research question 1.

### **Defining and Assessing "Valuing DLAs"**

In order to answer research question 2, I considered how students reported their DLAs in juxtaposition with the variety of DLAs they actually engaged in during their DSCs. Assessing how students valued their DLAs involved comparing the findings students reported for their DLAs in their assignments and contrasting those reports with the DLAs shown in the DSCs. This evaluation involved noting DLAs that students associated with positive outcomes, the ones that they associated with negative outcomes, and the ones they associated with neither positive nor negative evaluations. Answering this question also involved examining students' writing for DLAs that they demonstrated in their DSCs but did not mention in any of their written materials, as their lack of discussion could indicate that they consider that DLA unimportant or do not note it at all. I had invited students to engage in metacognitive reflection regarding their DLAs, and then I examined those reflections to gauge students' valuations of their DLAs. As Raffaella Negretti notes, "metacognition enables individuals to acquire insight into their own strengths and weaknesses" (145). In students' writings, such metacognitive reflections often associated a particular DLA with writers' perceived strengths and weaknesses. For the purposes of finding out how students value their DLAs, it was necessary to ask students to engage in self-reflection in the autoethnography, their reflection essays, and their surveys, to assess how students talked about outcomes based on DLAs in their unit essays, and to examine students' positive and negative associations with the DLAs as showcased in their reflections. In what follows, I discuss my method of textual analysis and coding of students' writing to gauge their valuation of their DLAs.

## **Study Design**

Below, I describe how I designed the unit to generate the necessary research data for my study before discussing how I analyzed the materials gathered. As part of the class, students were informed that Unit 1 had been designed as part of a human research project and were given the informed consent forms regarding the project upon IRB approval.<sup>9</sup> All students had to complete the unit as part of the course, but they were aware that participating in the study was optional and based on their signing the informed consent forms. In order to be an ethical instructor and minimize research bias, I did not look at the informed consent forms or students' survey responses until after final grades had been submitted at the end of the semester. During the course of the class, all written materials were collected and evaluated for their academic merits. The creation of the visual records of DSCs and written materials coding processes began the summer after the course had ended, after final grades had been submitted.

### *Curricular Context*

The second semester, first-year writing course at the University of Kansas constitutes the context for this study. This class focuses on research methods and inquiry.<sup>10</sup> Students researched and analyzed their writing processes via an autoethnographic assignment. Except for the final survey, all of the materials collected for this study derive from this assignment. A final survey, delivered at the end of the semester, determined how students' attitudes toward DLAs changed over the course of the semester when they were not actively studying them anymore.

For the unit in question, students were tasked with writing an autoethnography. As I mentioned earlier, I tailored Wardle and Downs' autoethnography assignment, which asks students to use a camcorder to record a writing session, study the footage, and then describe and

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<sup>9</sup> This is STUDY00002197 with the University of Kansas.

<sup>10</sup> See Appendix C for English 102 course goals.

examine their writing processes (322). From my study, I found that investigating their writing processes allows students to learn about themselves as writers. By recording their writing session and studying those recordings, many students discovered that activities while writing differed from their pre-existing expectations. In their autoethnographies, students reported finding that DLAs they used regularly affected their writing processes in ways they had never noticed. For example, many students discovered that the affordances offered by their word processors actually constrained their ability to generate writing. As will be further explored in the limitations section, some students noted that the act of recording their writing processes changed where and how they scheduled their writing sessions as well as some of the actions they undertook while writing; however, these students still reported learning beneficial information about their writing processes and what they did while writing from studying their altered processes. Despite the changes to processes caused by recording, students' recordings revealed the DLAs they engage with regularly while writing. The recordings show students navigating between different software programs and websites with proficiency. In this way, the recordings show many of the DLAs students employ during digital writing sessions, even if they aren't being employed in the same way they would have been for an unrecorded session.

As well as differing from Wardle and Downs' autoethnography assignment in terms of using screen capture technology to record instead of using a camcorder, my study differs from that of Wardle and Downs' because their assignment tasked students to study their writing process using their assigned writing homework from one of their academic classes. Some of my students were unable to fulfill this aspect of the assignment because many second semester, first-year students only took one course that actually assigned writing, which was my English 102 course. In essence, they were unable to study writing for another class as they had no writing

assignments only quizzes, tests, and exams. As my assignment asked them to study their writing processes, I hadn't given them an assignment they could respond to via writing either, which necessitated broadening the assignment so that students could record themselves while completing any kind of writing task. Students with writing assignments from other classes that they could record followed the original assignment guidelines, but students who had no class-based writing outside of English 102 decided to complete the recording using informal writing, such as creative writing journals or non-academic writing tasks. Some students took the original writing assignment even further and recorded both academic texts and creative texts to determine how their writing processes varied when writing for different rhetorical situations. The variety of writing recorded and the goals students had in studying their writing processes influenced what and how they recorded their writing for the unit, which is one of the major limitations of this study and will be discussed in further detail below. At the same time, the many writing situations and topics of my dataset created a far richer picture of students' DLAs than would have emerged if the prompt had specified that students should respond to a single writing situation.

The autoethnography assignment and the readings and writings associated with it created the context for this study, and students were informed that their videos would be studied after the class ended if they consented to be part of my research project. The autoethnography assignment was stated as follows:

For this assignment, you will conduct a study similar to those conducted by Perl and Berkenkotter. You will examine yourself and your own writing processes and write an autoethnography in which you describe these processes. Your method will be to observe, record, and take notes on your own writing process. You are required to use a screen capture technology such as Camtasia to capture your digital composing process and you

may use an audio or video recorder to record yourself while you write. All of your recordings will be turned in (either physically, digitally, or as a transcript) as an appendix to your essay. Your purpose is to try to learn some things about your actual writing practices that you might not be aware of and to reflect on what you learn based on the concepts you have learned in this Unit. (1)

For this assignment, studying writing processes and connecting those processes to the individual writer was contextualized through reading composition scholarship about writing processes as well as published authors' essays wherein the writer described and analyzed their writing process. To meet these goals, students read:

- Sondra Perl's "The Composing Processes of Unskilled Writers,"
- Carol Berkenkotter and Donald Murray's "Decisions and Revisions: The Planning Strategies of a Publishing Writer, and Response of a Laboratory Rat: Or, Being Protocolled,"
- and Mike Rose's "Rigid Rules, Inflexible Plans, and the Stifling of Language: A Cognitivist Analysis of Writer's Block."
- All of these readings were accompanied with a "Framing the Readings" piece from *Writing about Writing*.

Though students found these readings difficult, they used them to learn about writing processes and came to understand that a person could have multiple such processes. These readings also taught students how to perform research on writing processes and to approach writing as a means of completing research. Despite my best efforts to the contrary, many students walked away from these readings thinking that there was a way to "improve" their writing processes, by which they

generally meant decreasing the time it took to complete a final composition. Nevertheless, they all seemed fascinated by the idea that their writing processes were flexible and need not be fixed.

Students recorded and studied their writing processes using screen-capture software with which they gained familiarity during instructor-led lab sessions and on their own outside of class. As KU computer labs had VLC media player available on all workstations and, as VLC has an inbuilt screen-capture function,<sup>11</sup> students were taught to use VLC for their screen captures, although some students chose to use other programs like Apple QuickTime. Students composed their autoethnography after studying their recordings, and then wrote their reflection essays on what they had learned in the entire unit.

### *Participants*

Upon IRB approval of the study, students were given the informed consent form and pre-survey. Sixteen students across two sections of English 102 elected to participate in this study, although four of these participants had to be removed as they did not submit sufficient usable materials. As such, there are twelve study participants. All participants had taken English 101 at KU. This is significant because first-year college writing classes tend to encourage students to use particular digital tools while writing on computers, and students shared some knowledge of specific digital tools like Blackboard and Microsoft Word before entering the course. All twelve participants uploaded at least one video file to the course's Google Drive successfully. Due to problems with DSC software, there is one screen recording that was filmed using a cellphone instead of VLC. The recordings that I analyzed for this study include twenty-nine screen-captured recordings of students writing on their computer and one cellphone recorded video of a

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<sup>11</sup> According to their website description, VLC is a "free and open-source cross-platform multimedia player" ("VLC Media Player").

student writing on her computer. These recordings include multiple recordings from some students because they recorded academic and creative projects and because some students completed their writing assignments in more than one sitting or studied more than one of their writing assignments.

The age range for the twelve students was between 18 and 34, though eleven of the twelve students were traditional 18 or 19-year-olds, and the 34-year-old was the only non-traditional participant. Two participants were male and ten were female. Even though students were at the same place in their education at KU, these students had varied educational experiences with some having attended public high schools, some private high schools, and one having completed a GED. These demographic variables may feed into how students engaged with their writing processes and their digital literacies, although I do not connect my study of students' materials to the demographics or generalize from this small set. The small number of participants and the recordings of varied length and differing rhetorical situations constitute further limitations of this study, which will be discussed in the limitations section. However, the small number of participants enabled me to provide thick descriptions of DLAs employed by students writing on computers and report on the ways students valuing of these DLAs vary at different stages of their writing processes.

### *Data Collection*

I incorporated five data sources for this project: students' responses to surveys, DSC and video recordings of students' writing, students' journal notes on coding their recordings, students' autoethnography essays, and students' reflection essays. The degree of reporting and analysis vary across these materials, which is why collecting, collating, and studying them was

necessary. Below, I describe the materials collected and tie them to my research questions. Following this discussion, I will explain how I extracted the data from the materials and analyzed the data.

### *Survey of Skills*

Surveys were given after Human Subjects Committee approval.<sup>12</sup> The first survey was given in the middle of the semester at the end of the assignment unit, and the second was given on the last day of class. For the survey process, one student collected all consenting students' responses and delivered them to me in a sealed envelope, which I did not open until after final grades had been submitted. Surveys were analyzed as part of the written materials coding and analysis process, and my analysis of these surveys allowed me to answer research question 2: What do students report about their DLAs and how they value them?

The survey questions most applicable to answering this research question were:

12. What kind of digital tools do you use when you write for school contexts?  
What kind of digital tools do you use when you write outside of school contexts?
13. In your own words, how do you think digital activities such as texting, using Facebook or Twitter, or Google searching affect your writing? In what ways do these activities help or hinder your ability to write inside and outside of school contexts?

Q12 helped answer the first part of research question 2, "What do students report about their DLAs?" by asking students to describe how they use digital tools for different tasks. Q13 answers the second part of research question 2 as the wording, "help or hinder" encourages

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<sup>12</sup> See Appendix D for a complete reference to the survey questions.

students to consider whether they value different tools as helpful. Because research question 2 focuses on students' recognition and evaluation of their DLAs, I also coded any parts of the surveys where they referenced digital tools, how they used them, and how perceived those tools—generally along the lines of being helpful or hindering productivity.

The first eight survey questions were used to generate demographic information about the participants and to learn more about how they thought about writing, what genres of writing they viewed as writing, how they thought about different aspects of their writing processes, and the ways they valued curricular and extracurricular writing. In contrast to questions one through eight, which related to identity and concrete experience, questions nine through sixteen were open ended, opinion-based, short answer questions. Given that these aspects of the survey were short answer and open-ended, students responses varied and did not always relate to research question 2. However, when students' responses to questions 10-16 referenced a DLA or expressed an opinion about a DLA, then that response was coded to show students recognizing DLAs or valuing them—the full extent of this coding will be explained further in the Written Materials Analysis section of this chapter. However, Questions 12 and 13 were the two survey questions most tailored to research question 2 and the ones for which students' responses were most relevant.

Of the participants, eleven were present on the day that the first survey was given, and twelve were present on the day the post-survey was given. For the purposes of this study, I have only analyzed the eleven pre-surveys and twelve post-surveys completed by students who submitted usable recordings. Both surveys were identical in their questions, although students' responses to the questions changed when they were not cued to thinking about their digital literacies and writing processes, which will be discussed further in Chapter 4.

### *Screen-Captured Recordings of the Writing Processes*

During Unit 1, students used digital software to record their writings. This allowed them to meet the goals of the assignment “to observe, record, and take notes on your own writing process. [Students] are required to use a screen capture technology such as Camtasia to capture [their] digital composing process.” These DSCs allowed me to answer RQ 1: “What DLAs do students engage in while writing?”

To create these DSCs, students were asked to use free screen-capture software available online or on their computers. As was discussed in the Curricular Context section, we spent a day in the computer labs, and I taught students to use VLC for screen capture. I also reviewed how to download this program onto their own computers and included a *How-to Geek* written and video tutorial on how to use this program in the courses’ Blackboard sites.

Although I instructed students in VLC use, some students, those with Apple laptops, elected to use the QuickTime media recorder as their screen-capture software instead of VLC. Students chose to do this because installing VLC on Apple computers and using it to capture screen recordings was more complicated than on Windows PCs. VLC and QuickTime work somewhat differently, as VLC only records activities on the computer monitor, and QuickTime can access the computer’s microphone to capture sounds in the room as well. Only one student’s recordings included sound, and I will make note of this in my later analysis of their DLAs.

In the next section, I present a table that describes all of the students’ submitted recordings, including their rhetorical purposes for writing and the number and length of recording submitted by each student. These recordings help me answer research question 1 because they provide insight into the DLAs that students employ for different writing situations and in different physical contexts. Recordings from lab session days contrast with recordings

from students working on the weekend or at night on their personal computers, and these contrasts help illustrate the ways that DLA use relates to social situations as well as the writer's purpose. Students in lab sessions were less likely to use Internet music applications while writing, preferring to listen to playlists on their phones. By contrast, students working on their laptops in their own rooms used integrated music players to play music through their computer or relied on web-based music players like Spotify and Pandora. Recordings from students in the lab-based sessions included the same writing DLAs as recordings taken outside of classroom settings, but those recordings tended to be more focused on writing than the writings and recordings students completed outside of class. As will be mentioned in my limitations section, the act of being recorded affected how students engaged with their DLAs. Students limited their recordings to what they felt was relevant to studying writing processes and often ended recordings early in order to engage in other activities or completed some DLAs on their smart phones, which were not captured in the recordings. In this way, students' recordings reinforced what they perceived and valued as their writing processes—their recordings reveal the DLAs that they see as relevant to their writing processes because students chose to include those activities as part of their recordings. Writing in a classroom environment instead of their normal writing environment also affected what students chose to include in their recordings.

In all, the twelve participants submitted twenty-nine DSCs and one cellphone recorded screen video. As the study focuses on analyzing DLAs, not print literacy activities, I removed the two handwriting recordings and focused my analysis on video recordings of computer-based writing. The length of the DSC recordings varied; the longest DSC recording submitted was two hours in length and the shortest four minutes. Including these outliers, the median recording length was 24 minutes and 14 seconds; with the outliers removed, the median recording length

was 26 minutes and 20 seconds. Length played a crucial role in my analysis as longer recordings included more variety in writing processes and DLAs utilized. In contrast, the shorter recordings mostly focused on one aspect of the students' writing goals and thus showed a very focused set of DLAs. Both recording types demonstrated how students utilize DLAs when doing computer-based writings.

Once students completed their recordings, I asked them to upload those recordings to a password-protected folder on Google Drive for storage. Each student had their own folder and, because they were in control of recording themselves while studying their writing, they both recorded and uploaded their screen-captures from a wide variety of locations, on and off campus. These files were stored on Google Drive for multiple reasons. First, for the students completing the project, it served as a means of accountability. By uploading the videos, students demonstrated that they had fully engaged in the unit project. Next, by uploading the video, students were spared from having to store large video files on their own computers. Finally, students' recordings remained in their password-protected folder until the semester was over; and, other than checking to make sure students had submitted a video recording to substantiate their work, those videos remained unwatched until final grades were submitted.

Below is a table describing the materials collected from the twelve participants of this study. All participants submitted an autoethnography essay, their journal coding notes, and their reflection essay for the unit; eleven students responded to the pre-survey and all twelve responded to the post-survey.

All twelve participants submitted at least one DSC recording and, as will be discussed in the limitations section, some of these recordings only captured partial portions of students' writing processes because of students' difficulties using the screen captured recordings.

Table 1: Description of Students' DSCs

Student	# Of Videos and duration	Research Focus
<b>Annie, <sup>13</sup> 1</b>	Two DSC recordings: <ol style="list-style-type: none"> <li>1. Popular music recording: 12 min 35 seconds.</li> <li>2. Classical music recording: 15 minutes.</li> </ol>	Student 1 studied her writing processes by responding to a journal prompt.  For one session, she listened to music with lyrics while writing. For the other, she listened to classical music.  Her study was to see how her writing processes change when listening to classical music instead of her normal work playlist.
<b>Beverly, 2</b>	Five DSC recordings: <ol style="list-style-type: none"> <li>1. Journal response writing: 9 minutes 18 seconds</li> <li>2. Revising autoethnography Draft recording 1: 17 minutes 38 seconds</li> <li>3. Revising autoethnography Draft recording 2: 36 minutes 17 seconds</li> <li>4. Revising autoethnography Draft recording 3: 17 minutes 34 seconds</li> <li>5. Writing Reflection Essay: 2 hours</li> </ol>	Student 2 studied her writing processes when she changed her physical environment.  She responded to journal prompts in her normal setting (control) and in a loud classroom setting.  She also included partial recordings of her initial study and full recordings of her writing the autoethnography essay and the reflection essay.
<b>Bryn, 3</b>	Four DSC recordings: <ol style="list-style-type: none"> <li>1. Drafting autoethnography: 23 minutes 3 seconds</li> <li>2. Drafting autoethnography, recording 2: 11 minutes 1 second</li> <li>3. Finishing autoethnography: 33 minutes 05 seconds</li> <li>4. Writing reflection essay: 52 minutes 39 seconds.</li> </ol>	Student 3 studied her writing processes and contrasted her normal, handwritten method with typing without pre-writing.  Both of her writing process studies were written in response to journal prompts.  She also included recordings of writing the autoethnography essay and the reflection essay.
<b>Daniel, 4</b>	Six DSC recordings: <ol style="list-style-type: none"> <li>1. Essay for Spanish class experiment: 1 hour 37 minutes and 15 seconds</li> <li>2. Essay for Spanish class control: 41 minutes 25 seconds</li> <li>3. Autoethnography rough draft, recording 1: 9 minutes 37 seconds.</li> </ol>	Student 4 studied whether or not he could speed up his writing processes by not pausing to look up words (which was his normal method of writing).  He hoped to find that by focusing on writing the assignment, instead of checking for grammar and vocabulary as he wrote, he could speed up his writing processes and make his writing more coherent.

<sup>13</sup> To protect students' privacy all students named in this dissertation have been given pseudonyms.

	<ol style="list-style-type: none"> <li>4. Autoethnography rough draft, recording 2: 14 minutes, 14 seconds.</li> <li>5. Autoethnography rough draft, recording 3: 27 minutes 44 seconds.</li> <li>6. Reflection essay, 1 hour 46 minutes 40 seconds</li> </ol>	<p>He submitted a recording of his normal process and of his altered process in responding to Spanish assignments.</p> <p>He also included recordings of writing the autoethnography essay and the reflection essay.</p>
<b>June, 5</b>	<p>One DSC recording:</p> <ol style="list-style-type: none"> <li>1. Autoethnography drafting and editing: 22 minutes 47 seconds</li> </ol>	<p>Student 5 studied her writing processes with and without her ADHD medication to determine if she was more creative with or without it but had issues with recording her writing study, which made it impossible to contrast the DLAs she used with those she claimed to use in her Autoethnography. She submitted a DSC recording of drafting and editing her autoethnography during an in-class lab session.</p>
<b>Kristie, 6</b>	<p>Two DSC recordings:</p> <ol style="list-style-type: none"> <li>1. Make+Design Assignment, recording 1: 26 minutes 42 seconds.</li> <li>2. Make+Design Assignment, recording 2: 29 minutes 54 seconds</li> </ol>	<p>Student 6 wanted to study her writing processes for informal versus formal writing.</p> <p>She recorded herself writing two different assignments for her Make+Design Class.</p>
<b>Lisa, 7</b>	<p>One DSC recording:</p> <ol style="list-style-type: none"> <li>1. Reflection essay: 24 minutes 54 seconds</li> </ol>	<p>Student 7 studied her writing processes for writing a speech versus writing an informative essay.</p> <p>She had issues recording her study but submitted a DSC of writing her reflection essay which was included in the corpus to answer research question 1.</p>
<b>Gwen, 8</b>	<p>One DSC recording:</p> <ol style="list-style-type: none"> <li>1. Informal writing prompt response: 13 minutes, 32 seconds</li> </ol>	<p>Student 8 studied how her writing process changed when handwriting as opposed to typing.</p> <p>For this study, the only recording provided was of her typed informal writing processes.</p>
<b>Summer, 9</b>	<p>Two DSC recordings:</p> <ol style="list-style-type: none"> <li>1. Formal vs. informal recording: 31 minutes, 17 seconds</li> <li>2. Reflection essay: 13 minutes, 32 seconds</li> </ol>	<p>Student 9 studied how her writing process changed when writing a formal school assignment compared to an informal journal assignment.</p> <p>She included her recording of her study and a short recording of her reflection essay.</p>
<b>Merilyn, 10</b>	<p>One DSC recording:</p> <ol style="list-style-type: none"> <li>1. History essay recording: 1 hour, 8 minutes, 4 seconds</li> </ol>	<p>Student 10 studied her general writing process for a history assignment.</p>
<b>Victor, 11</b>	<p>Four DSC recordings:</p> <ol style="list-style-type: none"> <li>1. Response to a prompt: 52 minutes 20 seconds</li> <li>2. Drafting and Editing Unit 1 essay: 13 minutes, 53 seconds</li> </ol>	<p>Student 11 studied his normal “flow” approach to writing and compared it with a process that involved taking more breaks while writing.</p> <p>He included recordings from his study, a recording of his drafting the Unit 1 autoethnography essay, and two recordings from writing the reflection essay.</p>

	<ol style="list-style-type: none"> <li>3. Writing Unit 1 reflection essay: 39 minutes 17 seconds</li> <li>4. Writing Unit 1 reflection essay, recording 2: 4 minutes 17 seconds</li> </ol>	
<b>Zelda, 12</b>	<p>One phone captured screen recording.</p> <ol style="list-style-type: none"> <li>1. Computer writing recording: 9 minutes 57 seconds long.</li> </ol>	<p>Student 12 wanted to study the difference between writing a homework assignment by hand and compare it to typing her response.</p> <p>Her computer-writing recording was included in the corpus materials because her activities on screen were clearly captured.</p>

### *Coding Notes & Daily Journal Entries*

In order to complete their autoethnography assignments, students had to be able to accurately analyze the footage of their DSCs. In order to complete this process, students took handwritten notes during their recording sessions to record what they were doing off-screen while they recorded. All students in the class completed these notes, though I only analyze the notes of the study participants. Students used their coding notes to help them answer their own research questions, so they often took notes on what different pauses in the recording session indicated. Students' coding notes varied based on their research focus. Zelda, who was interested in studying her writing process and comparing handwriting with computer-based writing, used tally marks to track how often she edited, did Internet research, looked at the dictionary, and reviewed the prompt between the two types of writing. By contrast, Daniel was less focused on tallying specific parts of his process and instead took notes on the varied activities he engaged in both on- and off-screen. His journal notes include phrases like, "9:39 Re-reading and considering restructuring; 9:39 sending WhatsApp message to my friend in Met. for advice." Some notes include tallies of the number of times students checked their phones; often,

students coded these notes as “distractions,”<sup>14</sup> indicating their attitude toward their other digital literacies.

Students’ coding notes of their recordings were invaluable because they helped me fill in students’ off-screen activities during the recording session. Students’ coding notes were collected as part of students’ daily journal entries during Unit 1. These journal entries were in class writings during the first ten minutes of class, which students used to reflect on ideas from the readings for the day. In the daily journal entries from Unit 1, students engaged with ideas having to do with writing processes and digital literacies. The Unit 1 journal entries were collected and scanned into PDFs at the end of the Unit. The original journals were graded and returned to students during the semester, while the PDFs were coded and analyzed as part of this study’s materials. Students’ notes and daily journal entries include further description of the DLAs they employed while writing and recording and indicated their attitude toward their DLAs. In combination with their autoethnography essays, survey responses, and reflection essays, these notes and journals helped me answer research question 2, “What do students report about their DLAs and how they value them?” because students’ writing and analyses demonstrated how they valued different DLAs. For instance, Bryn’s and Beverly’s coding notes and essays revealed that they valued *Generating New Text* instead of *Editing* existing text as they saw *Editing* as slowing down their writing processes. To draw this conclusion, the two integrated their tally marks from

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<sup>14</sup> The idea of being distracted while writing and studying one’s writing processes is one that students encountered in their readings. Two published student autoethnographies from *Stylus: A Journal of First-Year Writing* emphasized distractions as did one of the reflections by a professional author that was included in the *Writing about Writing* readings. In the assigned reading, “My Writing Process and the Importance of Flow Writing,” student writer Zachary Talbot focused on the pervasiveness of distractions from writing regardless of where or what he was writing. The word distraction appears at least once on every page of his three-page essay (24-27). By contrast, Whitney Brown’s *Stylus* sample includes the term distraction twice in a discussion of her recording methodology. Susan Sontag’s article, “Directions: Write, Read, Rewrite. Repeat Steps 2 and 3 as Needed,” also includes a brief reference to distractions from writing. Any of these readings or class discussions might have cued students’ interest in studying actions and environmental factors that distracted them from their writing.

their coding notes into their essay to analyze them, which allowed me to understand how students report on their DLAs and how they value them.

I collected students' coding notes and journal entries at the end of the unit by which time the autoethnography and reflection essays had been completed. I then used the EyeBook scanner available from the University library to make PDFs of those notes and returned the originals to the students after I had graded the unit. I uploaded these PDFs into NVivo Pro 11 for Windows and used its coding function to analyze them.<sup>15</sup> In NVivo Pro 11, it is possible to select text in Word documents, PDFs, and spreadsheets. After selecting the text, the user can click a "code to node" or "create node" button. For material that belonged to the same thematic category, I would select the relevant section of text, and code it to the thematic node. As my analysis revealed new categories, I would add new nodes. Then, I would go back through all of the documents to code for those nodes as well to ensure consistency of coding. When I had finalized all thematic codes, I re-evaluated all materials to ensure that the materials had been coded consistently.

### *Autoethnography*

Students posted their autoethnography essays digitally to an assignment drop-box in Blackboard when the original assignment was due. Clean, ungraded copies of these essays were downloaded to complete this study. In keeping with the number of participants, twelve autoethnography essays were collected and analyzed. Upon completion of the course, I moved these essays to a secure, private, hard drive. I used these essays to answer research question 2, "What do students report about their DLAs and how they value them?" as the ways students analyzed their recordings revealed their attitudes and perceptions of both digital tools and DLAs.

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<sup>15</sup> NVivo is a qualitative analysis software available for purchase that allows researchers to integrate different documents and media into one program for different forms of analysis.

These self-reports also provided valuable contrast with my own analyses of the DSCs and Unit 1 materials.

### *Autoethnography Reflection Essay*

There were twelve reflection essays collected for this study. The reflection essay invited students to reflect on the different parts of drafting their essay and conducting their research. Students posted their final drafts digitally to Blackboard. Clean, ungraded copies were downloaded to complete this research. The reflection essay asked students to describe how they viewed their writing processes and digital activities after completing the unit. The reflections helped me understand which digital activities students see as central to their writing processes, which digital activities they notice engaging in while writing, and their reported attitudes and perceptions toward DLAs and digital resources, all of which allow me to answer research question 2.

### **Data Analysis**

My multi-step data analysis was optimized for answering my research questions and analyzing the material gathered. Following Geisler and Slattery's activity theory framework, I initially made visual records of the DSC recordings in an Excel spreadsheet and used those records to analyze the DLAs in which students engaged. The framework and processes will be discussed below. Students' written materials were analyzed through close reading in NVivo 11 for the emergence of categories of DLAs and themes of value. Each step of the analysis is described in more detail below.

## *DSC Video Visual Record and Analysis*

### STAGE ONE: VIDEO VISUAL RECORD AND INITIAL ANALYSES

In order to answer research question 1, I engaged in descriptive coding practices, with terms derived from Geisler and Slattery to code digitally captured writing processes. The coding terms guiding my study originate from Geisler and Slattery's chapter on combining activity theory with screen-capture methodologies. Geisler and Slattery recommend dividing the analysis of DSC materials into two phases because of the difficulty of understanding a recording of someone else's activities. They note that "[u]nderstanding what is happening depends on the researchers' level of familiarity with the writer's task and the software and operations they use. Viewing the recorded session several times is often necessary" (Geisler and Slattery 193). The coding terms for the first level (LV 1) of DSC analysis, which Geisler and Slattery note can be more easily and "directly 'read' from a video captured frame" (193) include: time, artifact, writer/s, operation, and tool (194-5). In the table below, corporate entities are included as writers because, as Geisler and Slattery note, these entities write the applications and operating systems. As my coding of materials progressed, the ideas of corporate authorship of software and application became less relevant to my study; however, as my analysis of the DSCs reveal, Microsoft Word and other word processing applications *do* act as writers in students' drafts, which I will discuss further in Chapter 3.

Table 2: Geisler and Slattery's Coding Terms for LV 1 Analysis

<b>Term</b>	<b>Definition</b>	<b>Example</b>
<b>Time</b>	The time when an activity began	:02 begins writing
<b>Artifact</b>	The thing read or written during that activity	"Unit 1 Essay," "English 102 Syllabus," Purdue Owl
<b>Writer/s</b>	The person or entities who created the artifact or that are taking action in the frame of the DSC	Student, Microsoft, Apple, Blackboard
<b>Operation</b>	The task being completed	Writing, reading, editing, consulting course materials

<b>Tool</b>	The mediating device aiding the writer in achieving their objective	Word processor, Internet browser, iTunes, Pandora, keyboard, operating system, and mouse
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LV 1 coding was done manually. Using VLC media player in combination with Microsoft Excel, I would watch the recordings and note the *time*, *artifact*, *writers*, *operations*, and *tools* in a separate Excel spreadsheet for each DSC. Thus, when the student began an activity, I noted the time that it began and the artifacts in use, referring specifically to the software programs that made the activity possible. The figure below shows an example of one of my visual records.

Annie, 2nd video, listening to music w/o words

Time	Artifact (thing read/written)	Writer	Operation	Tool	Operational Analysis	Notes on modes in use	Duration
0:00	"who is your hero and why?"	Annie and MS Word	Opened document to begin writing	MS Word		colors and texts associated with Microsoft Word, Mac OS, application tiles in the home bar, etc.	1 second
0:01	Hero document	Annie and MS Word	Annie begins writing the hero text	MS Word	Writing response to prompt	Annie hit play on quick time earlier in this document. Spotify is playing classical music quietly in the background.	1 minute 5 seconds
0:01:06	hero document	Annie and MS Word	Annie rereads the "Some hardships included . . ." line that she had just written. She deletes the phrase "each other" and replaces it with "one another."	MS Word	editing	The main modes in use are the white "blank paper" background of a new MS Word document, the black of the text, the greys of the Word file menu, and the music playing in the background. Other modes and activities seem mostly ignored.	4 seconds
0:01:10	hero document	Annie and MS Word	Annie returns to writing in lieu of editing	MS Word	writing	The main modes in use are the white "blank paper" background of a new MS Word document, the black of the text, the greys of the Word file menu, and the music playing in the background. Other modes and activities seem mostly ignored.	15 seconds

Figure 1: Annie Classical Music Visual Record

Following Geisler and Slattery's guidelines for activity theory and digital coding, when observing the writer involved in the activity, I noted not only the student, but also the individuals or corporate entities (Google, Microsoft, Apple, etc.) responsible for the writing of the software

application. In this way, my analysis captures not only how students use digital artifacts, but also the social collective at work in making such activities possible.

When analyzing the operation involved, my first-level notes consisted of a mix of simple description, i.e., “student writes,” and more complex descriptions of the writing processes, “student writes, pauses, deletes to a red-highlighted word that MS Word indicates is misspelled, and retypes the word.” In this way, my coding of the operations incorporates the nexus of activity at work for writers involved in DLAs. As my purpose was descriptive, I also coded any places where activity occurred that was directed by an entity other than the student writer, such as when iMessage chat bubbles popped up or when the computer’s operating system provided an announcement.

Finally, I noted the tools in use by the writer to complete the operation. When noting these tools, I included references to the operating system, computer, keyboard, mouse, and software used and visible from student’s computer screens that I could view in the DSCs.<sup>16</sup> If it was obvious that students were engaging with physical literacies, such as incorporating a quote from a text not visible in the DSC, I coded that to the appropriate category of activity. Moreover, if students were iPhone users with Apple laptops, then I would be able to see their text messages as they popped up on their computer screens. As these were digital messages that students engaged with during their writing sessions, I included these activities in my analysis. In this way, I captured the tools that students use while engaging in DLAs and connected them to the physical devices and physical literacies that interact with the DLAs in use.

## STAGE TWO: SECOND-LEVEL ANALYSES

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<sup>16</sup> I could view the mouse cursor when students used the mouse and the text that appeared on screen as they typed on their keyboards.

In order to be descriptive and fully capture the range of DLAs that students employ while writing, I moved past my first-level visual recording (LV 1) of the DSCs described above to a second level (LV 2), fine-grained analysis, which I completed using NVivo Pro 11 for Windows. During LV 1, I had created a visual record of the video recordings using Excel spreadsheets and the above categories described by Geisler and Slattery.

In moving from LV 1 to LV 2, Geisler and Slattery encourage researchers to infer second-order phenomena, a necessary part of screen-capture-based research as it allows researchers to interpret the operations that occur across several frames of video footage (195). To make these inferences, Geisler and Slattery recommend studying LV 1 transcripts and using them to move into another round of coding of emerging themes based on the focus of the research. In the case of my study, moving to LV 2 coding involved reviewing LV 1 operations and drawing conclusions about how they combined with the writer and the tools to create *activities*, or DLAs, which I will explain in more detail below. Geisler and Slattery offer broad, activity-theory based categories that I began with and used to develop my own, more specific descriptive codes. The second-order phenomena Geisler and Slattery suggest using include: *duration*, *actions*, *breakdowns*, *artifact ecologies*, and *transitions*; I provide a summary of Geisler and Slattery's definitions of these terms and examples from my spreadsheet in table 3.

Table 3: Geisler and Slattery LV 2 Activity Theory Terms

<b>Term</b>	<b>Definition</b>	<b>Example</b>
<b>Duration</b>	Amount of time writer spends on an operation	:02-:15 Student writes
<b>Actions</b>	A description that combines the operations, tools, and artifacts used across multiple frames of recording. (Operation + tool + artifact = action)	Student writes in Microsoft Word, backspaces to a red underlined word, fixes spelling, then continues writing = <i>Editing While Writing</i> .
<b>Breakdowns</b>	The site of development as the individual struggles in the face of conflicting goals, inadequate tools, etc.	Student changes the normal combination of artifact, operation, and tool and uses them in a new combination to achieve a goal.

<b>Artifact ecologies</b>	Artifacts used conjointly during a specific action as either a primary or secondary focus for the writer	Student opens assignment prompt, blank draft, and Pandora in Safari to complete homework. The blank draft is the primary focus while the prompt and Internet browser are secondary foci.
<b>Transitions</b>	Repeated movements between artifacts and operations	Moving from generating <i>writing</i> to <i>reading while writing</i> to <i>editing</i> while moving between the essay draft and the assignment prompt.

In order to do the more fine-grained second-level analysis, I used In NVivo Pro 11 to create descriptive codes for the ways that *operations*, *tools*, and *artifacts* combined to create *activities*. To do this, I re-read each Excel spread sheet file and created codes for the various ways that writers combined and used different *operations*, *tools*, and *artifacts*. So, if an *operation* in one of the Excel descriptions stated, “Brynn re-reads,” I used NVivo Pro’s coding node function to code that activity as “*Reading*.” For more complicated descriptions, such as “Bailey writes, backspaces, edits, and deletes,” I created the overarching, descriptive code of the DLA, which was “*Editing while Writing*.” After I coded the visual records for the variety of DLAs that students used while writing, I reviewed my codes for interpretive bias and to remove codes that no were no longer relevant as I had narrowed my research questions. I then repeated my LV2 coding process with the revised coding framework to ensure that I didn’t miss any activities. Finally, I organized the DLAs into three categories based on how closely related the activities that they described were. DLA categories will be described in further detail below and analyzed in Chapter 3.

In my first few rounds of LV 2 coding,<sup>17</sup> I focused on the categories of *activities* and *artifact ecologies*. Optional elements of Geisler and Slattery’s recommended analytical codes, such as *transitions* and *breakdowns*, weren’t useful for this study. The process of coding transitions created a vague, unspecific node that I replaced with more specific descriptions of DLAs, while the category of breakdowns was too interpretive for the materials in this study.

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<sup>17</sup> I read, coded for themes, and revised my coding multiple times to ensure that coding was consistent.

Only a few students submitted recordings long enough for their normal writing processes to be apparent in the recordings.<sup>18</sup> To code for *activities* and *artifact ecologies*, I used NVivo Pro 11 to select operations and tools that combined to create *activities*. In NVivo Pro 11, I used the node function to create a thematic parent node that I named “LV 2 CODING.” Within that parent node, I created sub-nodes for *activities* and *artifact ecology*. This ensured that all of the descriptive coding I completed for answering research question 1 was isolated from the descriptive coding I completed to answer research question 2. I did not code the part of the visual records that described the time an operation began and ended to *duration* as I could not conceive of a way to analyze that as a thematic node.

While *activities* were a very broad category that needed more detail for this study’s purposes, *artifact ecologies* were at work at an active and passive level throughout all of the recordings. Digital writers work with the networked ecologies of their computer’s operating system and their word processing programs at minimum. Many student writers expanded on the artifacts at work during their writing processes by including Internet browsers, music players, and instant messaging programs with which they interacted throughout their recordings. For the sake of specificity and to derive more insight from my coding, I only coded *operations* to *artifact ecologies* when students were using their computer mouse to move through a series of digital tools on a frame-by-frame basis. So, if a student first started their recording in VLC, then moved to their file system to open their essay, then moved to their browser to go to the course web page and open the prompt, and then went back to their browser to open Pandora before returning to

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<sup>18</sup> By “normal writing processes,” I mean the DLAs with which students engage when they aren’t recording their screens for a class assignment. Because of the nature of the recordings gathered, I assume that writing processes were altered.

their essay, I selected that series of *operations* in the Excel record and coded it to the node *artifact ecologies*.

As mentioned above, coding the DSCs for detail regarding students' DLAs required going into more specifics regarding the category of *activities*, and so I further specified Geisler and Slattery's coding term for *activities* by noting the patterns that emerged in my creation of and analyses of the visual records. To be more specific as to what was meant by *action* and to be able to draw conclusions about what DLAs students use and how they use them, I came up with categories naming specific kinds of actions. Although I had named some of these *actions* during LV 1, I refined them during my LV 2 coding in NVivo Pro 11 by making further sub-nodes under the category of *activity*, resulting in seventeen specific categories to more comprehensively define the nature of these *activities*. Table 4 below names the *actions* in which students engaged in their DSC recordings. The labels for these activities emerged from the repeated actions captured in the DSCs. The table is organized with the most frequently used *actions* at the top and the least frequently used *actions* at the bottom.<sup>19</sup>

Table 4: Terms Used to Describe Activities in LV 2 Analysis

Term	Definition
<b>Generating New Text</b>	<p>This <i>activity</i> indicates that the writer is actively creating new text for the project they are working on.</p> <p><i>Generating New Text</i> was coded 776 times across 29 of the 30 DSC visual records.</p>
<b>Reading Their Writing</b>	<p>This <i>activity</i> indicates that students have stopped writing in their document and have moved into a short pause and then moved into editing or writing a different section of their document.</p> <p>The <i>activity</i> includes instances when students open a resource and move up and down along it and when students scroll up and down their project slowly and occasionally edit or add to it.</p>

<sup>19</sup> In Chapter 3, discussion of these actions will be focused on their relationship to one another as well as their frequency, which means similar types of *activities* will be grouped together for discussion.

	<p>This code refers to students reading and re-reading their own writing.</p> <p><i>Reading Their Writing</i> was coded 727 times across all 30 DSC visual records.</p>
<b>Editing while Writing</b>	<p>This <i>activity</i> indicates that the student actively engages in local-level editing activities during the process of <i>Generating New Text</i>.</p> <p>This activity can include right-clicking to get rid of a red underlined portion of text, but it can also include rewording a section of the document, or making larger, conceptual changes to the topic they are working on.</p> <p><i>Editing while Writing</i> was coded 687 times across 29 of the 30 DSC visual records.</p>
<b>Using Computer Knowledge</b>	<p>This <i>action</i> indicates that student’s movement between different operating-system and application processes indicates deeper knowledge of the computer.</p> <p>This <i>activity</i> can include using the file system to navigate between documents, using keyboard shortcuts, and navigating the operating system task manager.</p> <p><i>Using Computer Knowledge</i> was coded 687 times across all 30 DSC visual records.</p>
<b>Controlling Word Processing Features</b>	<p>This includes <i>activities</i> students take that indicate they understand how to control the features of MS Word (or other word processing software) and use them to achieve specific tasks. This includes navigating autocorrect, using spell check, formatting text, and other such features.</p> <p><i>Controlling Word Processing Features</i> was coded 464 times in all 30 DSC visual records.</p>
<b>Consulting Course Materials</b>	<p>This <i>activity</i> describes when students use materials provided by an instructor to answer questions they have or to help them achieve their writing goals.</p> <p>This involves going to the course Blackboard site, re-reading the prompt, reviewing course readings, and reviewing any other information provided by the instructor.</p> <p><i>Consulting Course Materials</i> was coded 255 times to 27 DSC visual records.</p>
<b>Ceding Control to the Word Processor</b>	<p>This <i>activity</i> is taken by digital tools like the word processor and includes instances of word processing programs acting as an “assistant” to the writer by autoformatting, correcting, under-lining, performing spell check, and/or helping the student look up words or synonyms in their text.</p> <p>This is an <i>activity</i> outside of the student’s direct control.</p> <p><i>Ceding Control to the Word Processor</i> was coded 241 times to 26 DSCs visual records.</p>
<b>Completing a Final Round of Editing</b>	<p>This <i>activity</i> indicates the set of editing steps students go through at the end of the writing processes when they are done drafting their writing. This differs from <i>Editing while Writing</i> because students have ceased <i>Generating New Text</i> when they engage in this stage of editing.</p> <p>This <i>activity</i> includes steps like running spell check, moving to the top of the document, and working their way down and manually fixing red and blue</p>

	<p>underlines from Word, and incorporating sources into their Works Cited page.</p> <p><i>Completing a Final Round of Editing</i> was coded 198 times to 19 DSC visual records.</p>
<b>Searching for Appropriate Language</b>	<p>The category of <i>activity</i> includes instances when students use the search feature of a program or online database to find and assess information to incorporate into their writing.</p> <p>This can involve students using a reference resource like an online thesaurus, or a Spanish dictionary, or the Purdue Owl website to change an element of their writing.</p> <p>This can also involve learning more about language and usage or be a sign that the student has engaged with learning about incorporating other sources or using MLA formatting guidelines.</p> <p><i>Searching for Appropriate Language</i> was coded 186 times to 27 DSCs visual records.</p>
<b>Incorporating Scholarly Research Practices</b>	<p>This <i>activity</i> includes any time a student engages with Word/document formatting features to meet style specifications put forth by MLA.</p> <p>This category can also include times when students use Internet resources to look up MLA formatting for in-and end-text citation. There is some overlap with this DLA and Consulting Internet Tools to Learn.</p> <p><i>Incorporating Scholarly Research Practices</i> was coded 167 times to 28 DSC visual records.</p>
<b>Revising</b>	<p>This <i>activity</i> involves students engaging in nonlinear editing to add new content or reorganize a paragraph. It often involves going back to the middle of a sentence or paragraph and adding new ideas and details, deleting what was there, and reconsidering the idea of the sentence or paragraph as a part of the whole work.</p> <p>Students engage in this kind of editing while they write.</p> <p><i>Revising</i> was coded 139 times to 22 DSC visual records.</p>
<b>Adjusting Music Apps</b>	<p>This category of <i>activity</i> includes when a student deliberately engages with a musical application in any way before returning to their writing.</p> <p>This differs from being interrupted because the student deliberately acts upon the artifact of the music player, whereas being interrupted means that an artifact like a music player infringes on an <i>action</i> that a student is taking. This range of activities was often associated with <i>Interacting with Social Apps</i>.</p> <p><i>Adjusting Music Apps</i> was coded 114 times to 10 DSCs visual records.</p>
<b>Being Interrupted by an Application</b>	<p>This category of <i>activity</i> includes any time an application distracts the writer from their original purpose. This could take the form of OS messages that pop up and instant messaging applications that intrude upon the writer's screen.</p> <p><i>Being Interrupted</i> was coded 104 times to 11 DSCs visual records.</p>

<b>Preparing a Space to Write</b>	This <i>activity</i> describes actions students engage in prior to starting their writing. This <i>activity</i> describes students controlling the visual space of their computer screen and the different artifacts they open or set up as part of their preparation to write.  <i>Preparing a Space to Write</i> was coded 103 times to 22 DSCs visual records.
<b>Interacting with Social Apps</b>	This category of <i>activity</i> includes any instance of students using social applications, such as their email or instant messaging applications. This DLA often overlaps with <i>Adjusting Music Apps</i> .  <i>Interacting with Social Apps</i> was coded 43 times to 15 DSCs visual records.
<b>Making Notes about Writing</b>	This category of <i>activity</i> includes moments when students leave notes to themselves in their documents about what they should add or have instances of such notes in their drafts that appear during the recordings. Often, this category includes students using formatting tools to change how their notes appear in contrast with the body of their text.  <i>Making Notes about Writing</i> was coded 29 times to 12 DSCs visual records.
<b>Organizing Writing</b>	This <i>activity</i> includes instances when students' editing practices indicated that they were considering their ideas from a global perspective and moving sections of text around to where they thought it made sense.  <i>Organizing Writing</i> was coded 18 times to 12 DSCs visual records.

Because of the multifaceted nature of digital literacy, many of these categories overlapped in their coding as students' activities reflected more than one activity at a time. When that was the case, I coded the activity described on the visual record to all of the appropriate nodes. This means that some categories often occur in combination, while others stand on their own. For example, the categories of *Drawing on Digital Artifacts* and *Using Computer Knowledge* often co-occurred because being able to run and move between multiple software programs at the same time requires a certain level of understanding of computers. Similarly, *Reading Their Writing* and *Editing while Writing* were activities that worked together and tended to overlap because, as Takayoshi's study of short form writing shows, digital writers tend to engage in cyclical drafting, reading, and re-reading processes with "their writing as it progress[es]" ("Short-Form" 6). My findings suggest that digital tools shape writers' activities in ways that necessitate further studies of digital composing (Takayoshi, "Social Worlds" 552).

### *Written Materials Analysis*

In order to answer research question 2, “What do students report about their DLAs and how they value them?” I analyzed how students’ writing described the DLAs and how they associated their DLAs with different values. To complete this analysis, I conducted a close reading of students’ written materials in NVivo 11 Pro. As I read students’ written materials, which included their autoethnography essays, their reflection essays, their daily journals and coding notes, and their survey responses, I selected text and coded it to an NVivo coding node that was separate from the coding node that I had used for answering RQ 1. In my RQ2 coding node, I created the categories of:

- “Students’ References to DLAs Visible in the DSCs;”
- “DLAs that Students Report but that Don’t Appear on DSCs;”
- “Students’ Negative Attitudes toward DLAs;”
- And, “Students’ Positive Attitudes toward DLAs.”

In NVivo 11 Pro, I selected sections of students’ texts and grouped them into these categories. Besides this level of coding, I also went through and catalogued all written materials to the seventeen DLAs described in table 4. In that way, I guaranteed that I would know not only what values were associated with DLAs, but also which DLAs students valued. Below, I provide further explanation of how students’ writings were selected for each of these categories.

#### CATEGORY 1: STUDENTS’ REFERENCES TO DLAS VISIBLE IN THE DSCS

I selected text and coded it the category of “Students’ References to DLAs Visible in the DSCs,” if students’ referred to a specific DLA in their written material.<sup>20</sup> If a student described a series of activities in their written text that matched the DLAs from the LV 2 coding, then I coded that written section of text to that category; my thematic codes for DLAs were comprehensive enough to encompass students’ discussions of their activities. For example, Bailey’s informational chart from her autoethnography essay was coded as *Editing while Writing* because she tracked how often she made and corrected “spelling mistakes.” Similarly, the DLA of *Generating New Text* was coded when students referenced writing activities. Their descriptions of writing ranged from written genres and digital composing tools in their survey responses to discussions of their writing processes and their attitudes toward them in their autoethnography essays and their reflection essays. Coding the written materials to this node involved reading the written materials and coding any text that referenced DLAs visible in the DSCs. In discussing this category in Chapter 4, I focus on how students’ written discussion of DLAs contrasts with the DLAs they used in the DSC recordings. I also discuss the contrast in which DLAs have the highest frequency of coding in the written materials versus the DSCs.

#### CATEGORY 2: DLAS THAT STUDENTS REPORT BUT THAT DON’T APPEAR ON DSCS

The varied length, content, and writers’ focus for their projects combined with the existence of smartphones means that some of the DLAs that students engaged in may not have been captured in the DSCs. For the purpose of thoroughness and to get a fuller picture of students’ DLAs and the DLAs they notice, I coded the written materials for activities that

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<sup>20</sup> In my coding, I used the LV 2 terms to describe *activities* from the coding of research question 1 as my main referent point for DLAs that students engaged with while writing. So, if students’ writings referenced *Editing while Writing* or *Consulting Course Resources*, I highlighted and coded that section of their written material to its own node.

students claimed to have completed that were not visible onscreen during their DSCs. For instance, as Beverly had difficulty recording her first journal entry for her writing process study, a statement in her autoethnography essay that “[she] worked on the first prompt for about an hour and a half and only had 584 words on the page” serves as a series of activities that she describes but that did not occur in any of the DSC recordings. Similarly, in Annie’s coding notes from her second recording, she notes that a “FB notification pops up” and that she ignored it. However, as that notification occurred on her phone, it was not onscreen during the DSC recording process, so the notification and her ignoring it are *actions* that were not noted in the analysis of the DSC footage. Studying this aspect of students’ DLAs through their self-reporting helps me account for some of the DLAs that students engaged with using digital technologies other than their computers during their recordings of the DSCs. As these activities were largely social or writing oriented, the actions students describe engaging with fit into the coding described in table 4.

### CATEGORY 3: STUDENTS’ NEGATIVE ATTITUDES TOWARD DLAS

For this category of written materials analysis, I used NVivo Pro 11 to select text and code it to the Negative Attitudes toward DLAs node anytime students wrote that they associated a DLA with a negative outcome or emotional state. When Marilyn writes in her Pre-Survey response “[digital activities] slow me down. [they] are usually a distraction,” that example was coded to Students’ Negatives Attitudes toward DLAs. Zelda’s discussion of having to stop and edit to add accent marks to her Spanish essay writing was partially coded to positive attitudes toward DLAs and partially coded to negative attitudes. In her autoethnography, Zelda writes, “I . . . found that my ideas would be flowing very smoothly, but I would abruptly have to stop to

enter a word that needed an accent mark. Although it is a fairly easy and quick process, it is something that I don't notice doing when I handwrite my assignments. It also interrupts the flow of my writing.” Here, Zelda’s positive valuing of her DLA of *Generating New Text* comes through from her comment that her writing was very smooth. However, negative value for this DLA comes from the interruption of her flow and the added mixed emotions toward having to *Edit* her writing.

From this example, Zelda reveals the complexity of student’s valuing of their DLAs. Later, in her reflection, Zelda notes that she will type future Spanish essays because doing so will save her the time she normally spent transcribing her essays, though she again notes the ways that adding accent marks and checking spelling on the computer interrupts flow writing. Examples like this one show that some of students’ negative attitudes toward their DLAs vary at different stages of their writing processes and that the same DLA can function as an affordance and constraint simultaneously. In analyzing the instances where students demonstrate their negative attitude toward their DLAs, I note how those negative perceptions vary across different written materials and draw conclusions about what motivates students’ negative attitudes toward different DLAs at different stages in the unit and course.<sup>21</sup>

#### CATEGORY 4: STUDENTS’ POSITIVE ATTITUDES TOWARD DLAS

As with the previous Category, students’ writing was selected to this Category when students referenced a DLA and associated it with positive emotions or outcomes. For Gwen,

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<sup>21</sup> I say “and course” because the Unit 1 Autoethnography project included all materials for the study except for the Post-Survey, which was given on the last day of class. Students’ negative attitudes toward their DLAs differed across the Unit and ENG 102.

studying her recording in the autoethnography essay caused her to draw positive conclusions about the DLA of *Generating New Text* in digital environments. She notes that:

when writing on computer I don't let my surroundings distract me as much. I found that I have long periods of consistent writing (average 3 minutes) and get large chunks of my paper done . . . I tend to focus more when I am on the computer . . . and not to be distracted by other technologies around me . . . [f]or example, I checked my phone minimally and never really stopped to watch the TV that was on.

Phrases like “I tend to be more focused” indicate that Gwen values being focused while writing, and the fact that she had a stronger focus in her digital writing indicates that she developed positive perceptions toward the DLA of *Generating New Text* as a result of her study. In my analysis of students’ texts to answer research question 2, I use the students’ own language to describe their DLAs and the activities and outcomes they associate with DLAs to draw conclusions about what motivates their positive perceptions of their DLAs.

### **Limitations**

The setting, number of participants, and nature of the study presented several challenges. The small number of participants and rapid changes to digital technologies mean that the findings of this study show only a small picture of the DLAs students used during a specific window of time. Despite these limiting factors, this study does provide new information about digital composing practices. The descriptive categories of DLAs formulated from the study can act as a guide for future digital writing scholars studying composing processes as they can use the above DLAs as a framework for their own research. Moreover, my analysis of students’ valuing of their DLAs confirms much of the existing scholarship regarding students’ attitudes

toward writing while specifically demonstrating that they value digital activities differently depending on the transactional value of the DLA and also on the ways they value the final product they created. If the DLA enabled students to create a work they were proud of or to enjoy the writing process, then they were more likely to report valuing it positively, which suggests that surveying students' valuing of DLAs at different stages of writing and for different kinds of writing can inform future research.

The variable nature of students' recordings acted as one of its other limitations. As not all students used the same recording software, the DSCs vary in their content. Some include sound in the student's environment, although most do not. A few students had issues with the recording software, and their DSCs only capture a part of their writing process instead of the entirety of writing and revising a draft from start to finish. Moreover, because of students' difficulties with the screen-capture software, they often opted to record their writing in one sitting because they did not want to go through the trouble of stopping and starting multiple recording sessions. As a result, the activities that took place in each recording were also varied. Some recordings took place in the initial drafting process, some took place in the middle of the drafting process, and one took place during a student's time spent finalizing their draft for submission, which is why no *Generating New Text* occurred during that recording. While these factors present drawbacks to the study, they also serve as one of its strengths; few writers sit and complete a draft in one sitting, so the variable recordings at different parts of students' writing processes provide a more complete picture of a full array of writing processes. Moreover, student writers seldom write in one ideal setting. They are often asked to write during classes or fit writing time into the middle of their day. As such, their DLAs fluctuate depending on their writing situation, and so the

variable nature of these recordings demonstrates the ways students adapt their DLAs to their busy lives.

Not only were the processes of recording, their durations, and selections of recordings different, but so, too, were the kinds of writing being recorded. Ten of the twelve participants submitted recordings that focused on their writing a school-related genre, while two students only submitted creative pieces that responded to a section of creative writing prompts that I provided for anyone interested in studying their creative writing as part of their autoethnography. It is highly likely that the nature of the writings influenced the DLAs that students engaged with during their recordings. However, this limitation is also a benefit of the study as the recordings show the variety of ways students write for their classes and utilize their DLAs, the attitudes they have toward different genres of writing and DLAs that may vary by genre of writing, and the DLAs that remain consistent across academic and creative writing.

Moreover, the very act of recording their writing processes influenced the DLAs students with which engaged during their recordings. As Daniel notes in his reflection essay, “when I wanted to check Facebook, screw around, or just stop writing, knowing the screen capture was running definitely drove me back to the page” (3). Students were keenly aware that the recording was happening and that they had a particular purpose for recording their writing processes. Their desire to study particular aspects of their writing processes also limits the DLAs captured in the recordings. In regard to answering research question 2 about how students value their DLAs, students’ written reports would have been influenced by the knowledge that they would be graded by me as their teacher, which may have made them more positive in their evaluations of their writing processes--though they were unaware of my research questions. Despite these limitations, students’ motivation to learn about their writing processes also increased their

engagement with the assignment and their awareness of the DLAs they use in their everyday writing. All students in the study concluded their autoethnographies or reflections by saying that they understood their writing processes better after completing the project and had a greater appreciation for some aspect of their writing processes that they had taken for granted prior to the study.

Although this study—in seeking to capture the rich, complex range of fluid, overlapping DLAs, has some limitations, its findings and methods provide valuable knowledge to digital writing researchers and teacher-researchers. Examining students' writing processes and DLAs through these DSCs was valuable because it revealed the interconnected, multifaceted nature of writing in digital environments in a far more specific way than past studies have been able to discuss. This study's description of students' DLAs and how students' value those DLAs can help researchers better understand students' understanding of and perspectives toward DLAs. Moreover, the students who participated in the project learned more about writing processes, DLAs, and completing their own research studies, which helped them better understand writing process research.

## **Conclusion**

This chapter reviews the research questions, materials gathered, and methods of analysis for this study and prepares readers for the description and analysis of DLAs in Chapter 3 and the written materials analysis of students' valuing of their DLAs in Chapter 4. The above explanation of my materials gathering processes, coding processes, and study limitations frame the results of my study. Chapter 3 will provide in depth description of the different DLAs revealed in the DSCs and how students used them. Chapter 4 will provide textual analysis of the

written materials and discuss students' positive and negative values toward their DLAs as well as what students notice about their DLAs. Chapter 3 presents findings that answer research question 1 and Chapter 4 presents findings that answers research question 2.

## Chapter 3: Describing and Analyzing Digital Literacy Activities

### Introduction

In this chapter, I discuss my analysis of students' digital screen-captured recordings (DSCs). I use this analysis to answer research question 1,<sup>22</sup> presented in Chapter 1 as:

3. What digital literacy activities *do* students engage with while writing?

I begin with a discussion of the DLAs students employed in the DSC recordings, and then present my activity-theory-based textual analysis of these DLAs.

### Students' Engagement with DLAs while Writing

In watching the DSCs, it quickly became apparent that writing in digital environments involves a series of interconnected activities, tools, and applications as students composing on computers make use of a wide variety of resources during their composing sessions. For example, students' DSCs often began in the same way. The recording always began with the student minimizing VLC or QuickTime, the application they used to record their screen. Once this application was minimized, the recording revealed multiple open word processing documents and an open browser window, often with multiple tabs. During their composing sessions, students would begin in their browser, reviewing instructions for how to record their screen. Then, they would move to a music app (if they used one) to control the volume or playlist that was running in the background. After that, they would turn to their word processing document and either begin or continue writing. This work in the word processor constantly changed between *Generating New Text*, *Reading Their Writing*, and *Editing while Writing*, and

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<sup>22</sup> Given the depth of analysis required to answer research question 1, research question 2 will be answered in Chapter 4.

these activities could be left at any moment to *Consult Resources* or engage in *Incorporating Scholarly Research*, which involved using the browser. This example demonstrates that, as Geisler and Slattery noted, activity theory coding of DSCs involves capturing the *artifact ecology* of the digital environment.

Thus, Geisler and Slattery's notion of *artifact ecology* forms the basis for understanding students' activities through the DSCs. For Geisler and Slattery, *artifact ecologies* consist of computer programs and applications between which writers move to achieve their writing goals; Geisler and Slattery see these ecologies as consisting of tools that writers often apply *simultaneously* (196, my emphasis). In the DSCs, student writers generally employed several digital artifacts at once, which means that all of students' activities, whether writing, editing, revising, consulting resources, or listening to music fell within this overarching category of activity. The *activities* involved in moving between two open documents or between a document and a web browser necessitated students move through these *artifact ecologies*, which I term *Drawing on Digital Artifacts* for the sake of parallelism with the other DLAs described. Instead of referring to an isolated action taken by students, *Drawing on Digital Artifacts* describes the networked infrastructure of the computer and its programs which allows multiple applications to run passively or be acted upon intentionally by the user. *Drawing on Digital Artifacts*, then, consists of the interconnected programs and applications at work within digital structures that writers use to create and engage with media in digital environments. *Drawing on Digital Artifacts* is the umbrella activity that incorporates all other activities students engage in while writing on computers by combining tools, artifacts, and operations to meet Geisler and Slattery's definition of actions.

The three main categories within *Drawing on Digital Artifacts* in terms of DLA hierarchies are *Writing Processes*, *Utilizing Technology* and *Consulting Resources*. These categories fit within the larger category of *Drawing on Digital Artifacts* because the processes and activities within these categories—like writing and editing, using spell check, searching a thesaurus, listening to music, or checking email—all require *drawing on digital artifacts*. Figure 2 shows the DLAs grouped by the categories to which they belong.

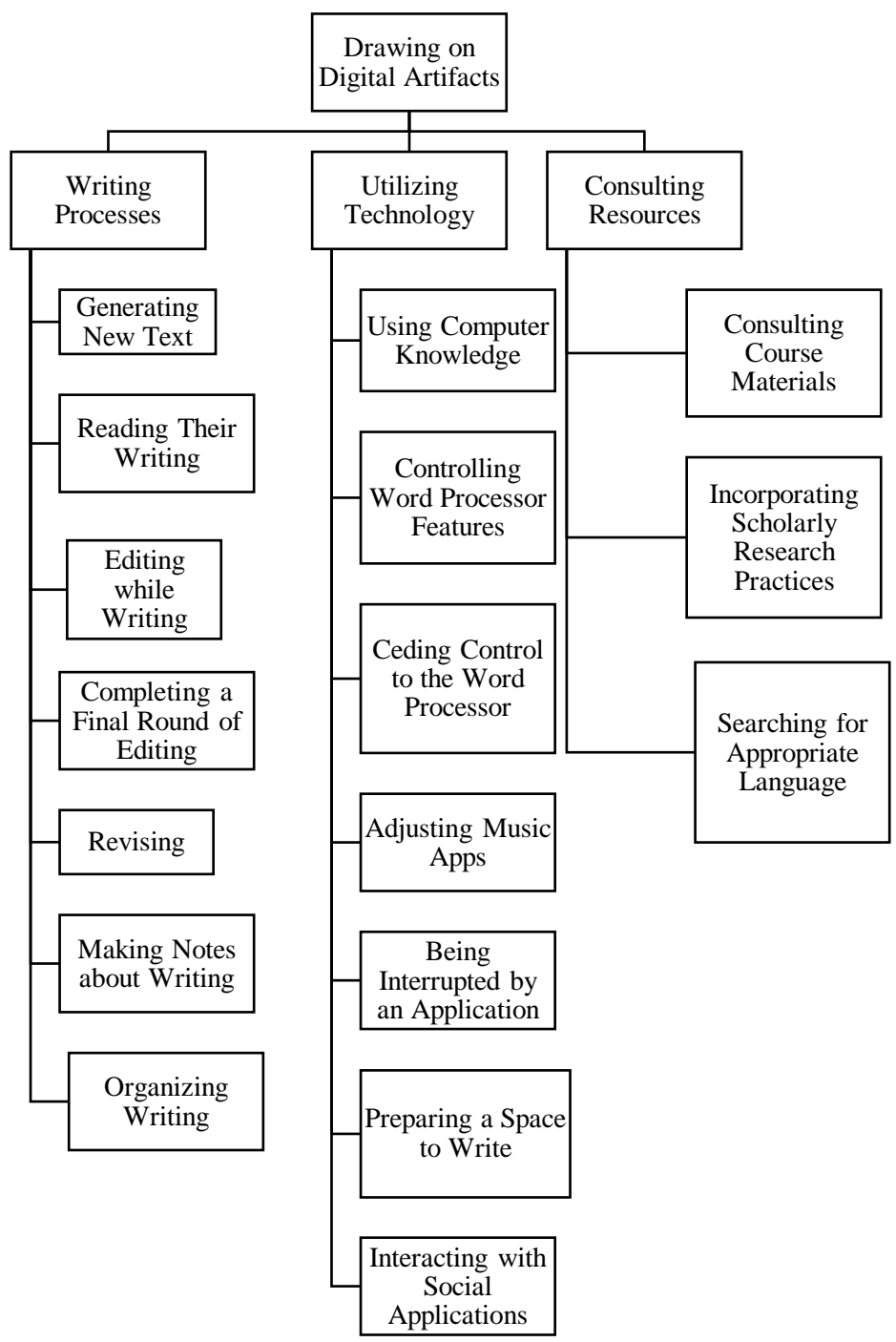


Figure 2: DLAs Grouped by Overarching Category

Below I discuss the DLAs, grouped by their overarching categories and organized in descending order by total number of references. Although I discuss each DLA discretely, participants'

employment of these DLAs overlapped as they switched between DLAs to achieve different goals.<sup>23</sup> In my discussion of each DLA, I note the other DLAs that often co-occurred with the DLA being discussed.

### *Writing Processes*

All of the DLAs in the category of Writing Processes reference actions students completed when they were actively engaged with a word processing application, working to generate, edit, re-read, and revise text that helped them meet their writing goals.<sup>24</sup> *Generating New Text* was only coded when students were actively generating new material in their document, and it was an activity that was most frequently interrupted by students *Reading Their Writing* and *Editing*. *Reading Their Writing* and *Editing* are the nodes that most frequently co-occur as students moved between these DLAs so swiftly that the actions often appeared simultaneous. Figure 3 and table 5 below visualize the hierarchy of these DLAs and the frequency of the DLAs within the category of Writing Processes.

*Generating New Text*, *Reading Their Writing*, and *Editing while Writing* were the top three DLAs coded across the thirty DSCs (Appendix E). *Generating New Text* has the highest number of coding references and was coded in all but one DSC. It's followed by *Reading Their Writing*, which was coded in all 30 DSCs, and *Editing while Writing*, which was coded in twenty-nine DSCs. As students submitted DSCs that focused on writing sessions, it is unsurprising that the DLAs within the category of Writing Processes were the most prevalent. The most interesting aspect of this finding is that in DSCs where students were writing for a

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<sup>23</sup> For a complete chart that outlines the frequency of all DLAs, see Appendix E: DLA Coding Frequency Table.

<sup>24</sup> Having worked with students in class and read their autoethnographies where they discussed what they wanted to learn about their Writing Processes and the kind of writing task they had decided to record made it possible to identify students' writing goals in each DSC recording.

variety of purposes—some school related some not—*Reading Their Writing* and *Editing while Writing* occurred with almost as great a frequency as *Generating New Text*.

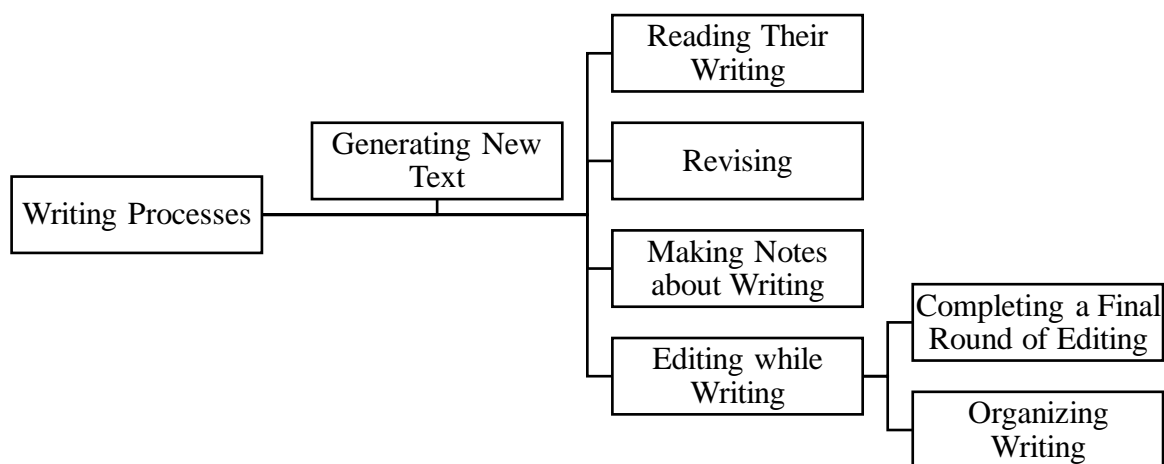


Figure 3: Writing Processes Category and Its DLAs

Table 5: DLAs within Writing Processes Category and their Coding Frequency

<b>DLAs in Writing Processes</b>	<b># Of DSCs in which the DLA was recorded</b>	<b>Total references</b>	<b># Of Students per DLA</b>	<b>Avg number of references</b>	<b>Highest and Lowest frequency coded</b>
<b>Generating New Text</b>	29	776	12/12	26.76	177 (Daniel) 2 (Beverly)
<b>Reading Their Writing</b>	30	727	12/12	24.23	158 (Daniel) 2 (Victor)
<b>Editing while Writing</b>	29	687	12/12	22.06	150 (Daniel) 3 (Beverly)
<b>Completing a Final Round of Editing</b>	19	139	9/12	10.42	40 (Daniel) 1 (Bryn and Victor)
<b>Revising</b>	22	139	11/12	6.32	52 (Daniel) 1 (Annie, Beverly, Daniel,

					Lisa, Gwen, Zelda, Summer)
<b>Making Notes about Writing</b>	12	29	7/12	2.42	5 (June) 1 (Daniel and Victor)
<b>Organizing Writing</b>	12	18	7/12	1.5	4 (Bryn)  1 (Annie, Beverly, Daniel, June, Kristie, Lisa)

Unsurprisingly, *Editing while Writing* and *Reading Their Writing* were thoroughly interwoven in students' Writing Processes. Very few students managed a steady flow of writing that lasted longer than two to four minutes at a time before they felt compelled to stop, read, and edit what they had written. This connects to Takayoshi's findings in "Short-Form" that digital writings involve a continuing process of drafting, reading, and re-reading (6). In the case of students in my study, the movement between *Generating New Text* and *Editing while Writing* was often prompted by the word processor highlighting misspelled or ungrammatical text. Occasionally, the *Editing while Writing* portion of their Writing Processes would lead to larger *Revising* activities, and students would use their DLAs to move and re-organize text. By contrast, students engaged in *Reading Their Writing* as a deliberate choice, either to check the wording of what they just wrote or to take a break while their next thoughts were generating. Regarding *Making Notes about Writing* and *Organizing Writing*, some students had developed note-taking systems that made use of their word processor's formatting features and allowed them to find places where they would want to add ideas later, while other students took advantage of their digital environment to cut and paste different paragraphs together to move and make new paragraphs; both activities had fewer than 30 references across the DSCs. Unlike many of the Writing Processes activities, the note-taking processes visible during the DSCs were all inherently digital and involved manipulating, formatting, and using other digital tools. However,

only seven students engaged in these activities across twelve of the thirty DSCs. It's possible that these DLAs have low representation because of the nature of the project. Students sat down to write in one session instead of many. This is an area of digital composing processes that merits further investigation. Below, I describe how students engaged in DLAs related to their other Writing Processes in more depth, reviewing the ways student writers enact these processes differently, the time they devote to these processes, and the ways these processes overlap and affect each other.

### GENERATING NEW TEXT

The DLA of *Generating New Text* had 776 references, was coded to all participants, and appeared in twenty-nine of the thirty DSCs. Of the DSCs coded to this DLA, the highest rate of *Generating New Text* was in one of Daniel's DSCs where he returned to *Generating New Text* from other activities 141 times. At one hour and 47 minutes, this DSC recording was not the longest recording included in the study, although it was the longest recording in which the student continued to write throughout most of the DSC.<sup>25</sup> None of the other students were coded to this node in the hundred range, and the second-highest rate of coding to the *Generating New Text* node belonged to Beverly who was coded to this node 78 times during her two-hour recording session writing her reflection essay.

From examining the DSCs, a clear finding regarding students' *Generating New Text* is that it is a recursive activity that they begin, stop, and come back to throughout their writing sessions. Moreover, the reasons for these starts and stops have as much to do with the nature of

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<sup>25</sup> Many of the longer DSC recordings have pauses in activity that indicate that the student left the computer for some time before returning to the writing session.

digital composing software as it does with students' need to pause writing in order to think about what they want to write. For example, the reason that Daniel's DSC was coded to *Generating New Text* so many times was because of the amount of time he spent pausing, re-reading what he had written, revising for word choice, and then starting up *Generating New Text* again. While students like Daniel moved back and forth between writing, reading, and editing, other students' pauses in writing were caused by typing issues, like Beverly, who would begin a word, hit the wrong letter on the keyboard, delete to fix it, and then keep *Generating New Text*. Even for students who had a clear grasp on touch typing, the time students spent *Generating New Text* without pausing to delete, re-read, or line edit was short. The greatest length of time students spent *Generating New Text* without moving to a different artifact or changing activities was one minute and ten seconds at a time, and this duration of focused activity was achieved on a few occasions by Summer, Marilyn, and Annie. The next longest duration of time spent focused on *Generating New Text* was between 20 and 35 seconds, which multiple students reached on occasion, normally toward the end of their Writing Processes prior to *Completing a Final Round of Editing* (June, Kristie, Victor). However, these long periods of straight writing did not constitute the norm and were achieved only occasionally. In general, student writers rarely sustained long periods of generative writing, and this was likely due to the nature of writing in a digital environment as much as any cognitive processes involved in thinking about what to write.

From viewing the DSCs, it became very clear that word processing tools meant to foster editing and correction also stymied writers in developing their ideas, prompting them to move from the *Generating New Text* to the *Editing* DLA. Since the time of the study, correctness tools and features have been integrated into smartphone keyboards, cloud-based word processing programs, and social media sites. The DLAs students engage in are highly influenced by the

programs they use to achieve their writing goals as well as students' understanding of the audience who will read their writing. For short form compositions where students know their audiences, editing tools may be easier for writers to control. As Takayoshi found in her study of short form writing, these writers tend to use audience awareness as a part of their Writing Processes, and so would read the writing carefully and consider its effect before posting it online. By contrast, student writers working on long form digital documents often lack a strong understanding of their audience, have been taught to prioritize correctness over their own authorial intentions, and are unable to conceptualize their full document (Eyman and Reilly; Haas). All of these factors contribute to students' digital composing processes and encourage students to view their drafting processes as a finalizing process—students spent almost as much time *Editing* as *Generating New Text* in these sessions because the other Writing Processes they engaged in allowed them to polish what they had written for the approval of the strict grammarian they perceived as the reader of their writing.

Despite competing motivations and tools that encouraged students to move away from *Generating New Text* in favor of other activities, some students did generate writing for longer durations. The common factors that encouraged students to do so were: (1) responding to prompted questions and (2) having completed relevant readings prior to their writing session. These differences are clearest in the contrasts between Summer's two DSCs. Her first DSC records her writing a response to science questions and then recording a creative writing journal, and her second DSC is of her writing the reflection essay. In both her science writing and her writing of the reflection essay, Summer had longer periods of writing that corresponded to questions for which she had prompts. By contrast, her creative writing response, for which she had to generate new ideas, never had as long of a duration of *Generating New Text*.

Unsurprisingly, then, the processes involved in generative writing are related to both thinking and planning. From watching the DSCs, it seems clear that students writing in response to a prompt generated text more quickly, and this suggests that familiarity with a topic rather than generating their own topics enable writing. This finding aligns with a wealth of research into cognitive Writing Processes and, moreover, suggests that previous knowledge and experience enable writing and idea generation in digital contexts, much in the same way it does in material contexts (Britton, et al.; Flower and Hayes; Perl; Rose).

## READING THEIR WRITING

The second-most frequent DLA after *Generating New Text* was *Reading Their Writing*, which was coded to all participants and DSCs, and had 727 references across the DSC transcripts. Students engaged in the DLA of *Reading Their Writing* for a variety of goals that related to their writing: to check what they had just written, to see what they had written after leaving their writing and coming back to it, and to evaluate their work during their *Completing a Final Round of Editing* processes. Given the interconnected nature of reading and writing, it is unsurprising that students combined these processes throughout their computer-based writing. Some students, like Daniel and Marilyn, shuttled between digital documents and artifacts with ease. Students like Beverly and Summer had difficulty moving between these resources, often losing track of the document they wanted to read when using their digital tools. Still, the number of times all students returned to *Reading* demonstrates its importance for digital writers in achieving their goals for their digital composing sessions. Throughout the DSCs, student writers were constantly evaluating the correctness and effectiveness of their writing, and they mainly completed these evaluations by reading what they had written.

For most students, *Reading Their Writing* focused on reading what they had just written and was quickly followed by the activities associated with *Editing while Writing*. This often took the form of a focused set of repetitive actions. The student would write, pause, move their cursor back a few characters, words, or lines, and then edit something in their draft. For students who just paused when *Reading Their Writing*, the node was only coded when pausing was followed by the activity to move back and edit. Other students had more obvious reading practices, moving their mouse or cursors across the lines of the text they had just written.

*Reading Their Writing* helped students achieve their writing goals because it allowed them to track what they had just written. For example, Annie engaged in the DLA of *Reading Their Writing* as a means of considering word choice, which often led to her *Editing*. Annie shuttled between *Reading* and *Editing* processes, not just evaluating in her head, but also on the screen, writing different versions of the same idea repeatedly to determine which one she liked the sound of the best. Because Annie's recordings included sound, it was easy to connect her *Reading her Writing* and *Editing* practices to the way the writing sounded as she often tried different phrasings aloud. In this way, Annie's *Reading Their Writing* was inherently interconnected to *Editing while Writing* and to considerations of style. She wanted her ideas to read in a very specific way and tested how they read as she wrote. She also engaged in this thorough *Reading Their Writing* process during her *Completing a Final Round of Editing*. The writing session that Annie recorded focused on her completion of a reflective writing prompt and not an academic piece. As such, she may have felt more ownership of her writing and the ideas conveyed in it. Findings from the Stanford Study for Writing suggest that some self-sponsored writings "invite self-consciously rhetorical writing and an increased sense of a real audience for writing," as Annie showed (Fishman et al 231).

For Annie, the interconnected activities involved in *Reading Their Writing* served as time to both evaluate and add to her writing. She, and the other student writers who engaged in this thorough re-reading process like Beverly, Daniel, Bryn, and Kristie, all read their texts to look for red underlines and highlights, activities which led them into *Editing*. However, these students also re-read to reassess the entire text—*Reading Their Writing* supported their overall goal of creating a polished, final text. Students’ goal for *Reading Their Writing* remained relatively consistent throughout the DSCs—to address issues of correctness, to reword ideas to meet audience needs, or to read course materials and internet sites that would help them polish their final text. The when of *Reading Their Writing* tended to vary, with students like Summer completing *Reading to Edit* tasks during the *Generating New Text* phase of her writing unlike the students listed above who did so after they had completed *Generating New Text*.

#### EDITING WHILE WRITING

*Editing while Writing* ranks just below *Reading Their Writing* in its frequency of occurrence. This DLA was recorded to all twelve participants across twenty-nine of the thirty DSCs and had 687 coding references. The only reason *Editing while Writing* was not recorded to all DSCs is because of the distinction between the DLAs of *Editing while Writing* and *Completing a Final Round of Editing*. The DLA of *Editing while Writing* involved different kinds of editing activities that included backspacing to fix a typo, completing line edits before or after having finished the line, and engaging with correcting words that the word processor suggested were misspelled. Students engaged with it so habitually that it was clearly an integral part of their digital Writing Processes.

Students often engaged in this DLA when directed to do so by word processing features, suggesting that these features encourage writers to move from writing to editing, a finding shared across much research into digital writing (Ackerfeldt; Dave and Russel; Takayoshi). Beyond being prompted, students would move into this DLA when they felt stymied in their thought processes as indicated by pauses in their DSCs and discussed by the students in their written materials; they seemed to use *Editing while Writing* as a kind of mental break from the work of *Generating New Text*. Some students also engaged with *Editing while Writing* compulsively, pausing to fix words that their word processors indicated were wrong the moment a spelling or grammar highlight appeared. This type of *Editing while Writing* reflects research that has found that students engage in more line editing on computers than global document revision (Ackerfeldt; Collier; Dave and Russell; Haas). Beyond *Editing* to take a break and *Editing* compulsively, students moved from *Generating New Text* to editing to meaningfully assess the state of their writing and to consider the “sound” of their writing relative to their audience, like what was seen in Annie’s *Reading Their Writing* activities.

Student writers who engaged in *Editing while Writing* as a form of mental break did so because they were still focused on achieving their larger writing goal but needed time to think or pause. Students like June used these pauses to reassess their writing. For June in particular, going through and fixing blue underlines suggesting that she change the verb “be” to “remain,” “stand,” or “stay,” and other such minor corrections gave her the time she needed to return to *Generating New Text*. It also allowed her to re-enter her text after she had been away for it for some time. June’s *Editing while Writing* practices demonstrate the way that DLAs support writers trying to achieve their writing goal when they need time to process their thoughts before returning to *Generating New Text*.

Beyond using *Editing* to reengage with a text, student writers also engaged in this activity to reassess their writing. After moving from *Generating New Text* to turn down the volume on her music, Beverly returned to her reflection essay, deleted sections of a paragraph she had written, and then replaced those sections quickly with rewordings of the same ideas. In this way, *Editing while Writing* let her play with phrasing her ideas while taking a break from generating completely new text. Such activities suggest that students engaged in the DLA of *Editing while Writing* as a repetitive activity that they could return to when they need a pause in their Writing Processes.

For students who were compulsive editors, the actions involved in removing editorial markings from text would distract them from the larger purpose of their writing session or cause other smaller difficulties. For example, Kristie's attempts to manually fix the spelling of a word before returning to writing brought her entire *Generating New Text* process to a close as she stopped to run spell-check fix an issue of "their/there" confusion. A larger example of supplementary activities interfering with the larger goal of the writing session occurred, when Beverly spent over two minutes trying to fix the spelling of the word "subconsciously." Beverly tried right clicking, tried manually fixing the word and seeing if Word would give her better suggestions for it, and tried a completely new spelling, all to no avail. She attempted to work backwards from consciously, but she failed to spell that correctly, so the red underline did not go away. Eventually, she went to Google for spelling help. This series of missteps demonstrates how fixated digital writers can become when engaged with *Editing*, allowing the end goal of the *Editing* activity to supersede their larger writing purpose. Beverly's need to have the right word at the right place in her essay served to completely stop her *Generating New Text* because she focused on word choice over *Generating New Text*. This kind of difficulty is one unique to

digital writers while *Generating* their texts—without the underline feature in Word, Beverly would have written the word and continued writing without knowing she had misspelled it. Instances like these in which the word processor’s actions redirected students’ DLAs were also coded to the DLA of *Ceding Control to the Word Processor* as these tools often redirected student writers to move from *Generating New Text* to *Editing* it.

As was discussed in the *Reading Their Writing* DLA, *Editing* activities were sometimes motivated by audience considerations purposes, and students would take the time while *Editing* to play with wording and consider how their writing “sounded.” In some cases, this was accompanied with long pauses to *Read Their Writing*, but in others, the *Editing* was embedded as part of their activities when *Generating New Text*. Students played with word choice, trying to find phrases that more accurately conveyed their meaning or that made them feel like their writing “sounded” better—which generally meant more academic. As Ken Macrorie notes in “The Poison Fish,” students often result to using boring, academic-sounding words to meet their perceived expectations of what they believe teachers want to read (299). In watching the DSCs, students wrote perfectly clear sentences, and then edited those sentences to add longer words and more elaborate phrasing. The edits added to the word count, but changed the sentence’s meaning very little, if at all. Such *Editing* to rephrase occurred during Summer’s DSC when she began a paragraph with a general topic sentence, deleted it, and then revised her topic sentence to begin with an introductory, framing device. For Beverly, this kind of *editing* involved deleting entire sentences and then rewriting them with completely different phrasing while keeping the meaning of the original sentence. Daniel, too, would delete words and phrases just so he could write the same idea in a different way. Not all students engaged in this level of *Editing while Writing*, with many like Lisa sticking to the fixing typos version of this part of her Writing Processes. It was

unclear from the DSCs as to what motivated some students to consider making their writing sound more academic or edit for different stylistic effect as part of their *Editing while Writing* activities, but the fact that some students did take the time to do this speaks to a high level of rhetorical awareness among student writers. The four distinct kinds of *Editing while Writing* all focused on making line edits and all helped students achieve their larger goal of creating a piece of writing that fit their purposes for writing. However, these activities varied in ways that sometimes had to do with when the student was writing—if they were returning to a work after a pause or had been writing for a while, they would move to *Editing*—and had to do with students’ ability to control their word processor or desire to control how their text was written. In all, *Editing while Writing* was an activity that was central to their Writing Processes and integral to supporting their larger goals during their writing sessions.

#### COMPLETING A FINAL ROUND OF EDITING

The DLA of *Completing a Final Round of Editing* had 198 references, was coded to nineteen DSCs, and was used by nine of the twelve students. The *Completing a Final Round of Editing* DLA was indicated when students stopped producing new text and began different levels of *Editing* to finalize their writing. Students *Completing a Final Round of Editing* focused on going through processes that would finalize their writing for submission and only focused on rephrasing existing text. This DLA often occurred in its own DSC separate from students *Generating New Text* DSCs or happened at the end of a DSC recording. Despite the recursivity of Writing Processes, there comes a time when the writer decides they are done *Generating New Text* and *Revising*, and this DLA captured the activities student writers engaged in during the end stages of their Writing Processes.

As a part of students' Writing Processes, the *Completing a Final Round of Editing* DLA was a distinct form of editing completed separately from *Generating New Text* and *Editing while Writing* DLAs. As this DLA involved rereading their work to change it, this DLA was coded to the DLA of *Reading Their Writing* as well. Because students used this form of editing to add in-text citation information and finalize their Works Cited page, this DLA often coincided with the DLAs of *Consulting Course Materials*, *Incorporating Scholarly Research Practices*, and *Searching for Appropriate Language*.

Students' activities in *Completing a Final Round of Editing* reflected different goals in finalizing their writing as well as different processes. For many students, the *Completing a Final Round of Editing* DLA was indicated by a cessation in *Generating New Text* combined with *Reading Their Writing*, focused engagement with their word processors' grammar error markings, or by running their word processor's spelling and grammar check.<sup>26</sup> For the most part, students relied on the additional features of their word processors in all of their *Editing* processes, which makes both this DLA and *Editing while Writing* appear as distinctly digital variations of a multifaceted writing process. Students like Annie and Daniel went back and forth between correcting underlined words manually and reading the hints of spelling and grammar checks; unlike other student writers, they used their *Completing a Final Round of Editing* activities to learn more about writing and to think about what they had written. For Annie, when Word suggested that she subordinate a reference to herself in a sentence, she took the time to both re-read her sentence and Word's explanation for the suggestion before she disregarded it. Her attitude toward spell check in the *Completing a Final Round of Editing* activities demonstrated that she had a strong understanding of her writing and knew what she wanted it to

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<sup>26</sup> In newer versions of word processing technologies, these spelling and grammar checkers have been renamed, "Editor" in Microsoft Office programs and Spelling and Grammar in the Google Office Suite.

do. Where other student writers like Beverly accepted Word's corrections without question, Annie's brisk back-and-forth movement between fixing her writing herself and reading Word's suggestions demonstrated a strong dedication to her writing. However, despite this focus and drive, Annie relied on Word to direct *Completing a Final Round of Editing* activities because she focused on the words it had highlighted and marked for correction, indicating that she depended upon the word processor to direct her gaze. In this example, Annie took advantage of the affordances of digital writing tools to learn more about writing, but she also ceded some control of her actions to the word processor by allowing it to direct her focus.

In contrast to Annie, Bryn's activities while *Completing a Final Round of Editing* suggest that student writers have flexible practices in regard to making use of the support tools provided to them by digital technologies. Similarly to Annie, Bryn reviewed her document for editing and grammar highlights at the beginning of her *Completing a Round of Editing*. However, Bryn only looked at the word underlined blue, read the sentence again, and decided she disagreed with the marking without clicking to view Word's suggestions or trying to find out why it had highlighted her text. After evaluating Word's editorial markings, Bryn saved her essay, gave it a new title and document name, and began the process of re-reading her essay, starting from the beginning. During this re-reading process, Bryn added punctuation, fixed formatting inconsistencies, made sure all of her font choices were Times New Roman, and changed word choices and phrasing in her essay. She maintained her focus on this level of activity for the full 33 minutes of the recording, only stopping her *reading* and *editing* to check that VLC was recording and that her Google Drive upload was continuing.

Although this *Completing a Final Round of Editing* had similarities to *Editing while Writing* since Bryn still had typos and had to fix them as she changed the wording in her

document, the writing she added to her essay lacked substantial changes and did not add new ideas to the paper. Instead of adding new writing to her essay, she focused on changing the wording, not the meaning of her paragraphs and sentences. Bryn, like Annie, showed a desire to control her writing but did so differently. Bryn never used the full spell check when *Completing a Final Round of Editing*. Instead, she re-read and re-wrote, fixing typos, but focusing more on changing parts of the writing based on the effect that she wanted it to have. Her editing focus was not solely directed by addressing Word's highlights; addressing these highlights was just the first step in her *Completing a Final Round of Editing* processes. Bryn's *Completing a Final Round of Editing* showed a dual focus; on the one hand, she wanted to clarify her ideas, and this desire was reflected when she fixed punctuation, added details, and reworded ideas. However, she also wanted to create a "final" document, and this desire was reflected by her focus on formatting and adding her Works Cited information when she arrived at the last page of her essay.

The varying ways students enacted their *Completing a Final Round of Editing* DLAs suggests that these kinds of digital editing practices are highly individualized. Moreover, although some students changed wording and moved some ideas into different paragraphs, student writers seldom engaged in global revision practices during this stage of their Writing Processes. More interestingly, these examples, in contrast to those in the previous section, show students willingness to resist the editorial suggestion of the word processor. The variability of students' activities in my study both aligns with and contradicts other writing research. Students who *ceded control to the word processor* behaved in ways that Heilker found when he noted that students read editorial suggestions as authoritative and ceded control of their language to their perception of the word processor as an expert writer (qtd. in Eyman and Reilly 106). However,

the ways some students engaged in *Completing a Final Round of Editing* shows that students' behavior varies. While some students followed this practice in this and other DLAs, the two examples above show student writers working with technology as part of their Writing Processes without ceding control of their writing to their word processors.

## REVISING

The DLA of *Revising* had 139 references, was coded to 22 DSCs, and was used by eleven of the twelve students. This DLA was seen when students practiced *Generating New Text* in a nonlinear manner by going back to the middle of a sentence or paragraph and adding new text to the middle portion of seemingly finished parts of writing. Students often added new ideas and details, deleted ideas, moved ideas to different locations, and reconsidered the purpose of a sentence or paragraph as those features fit into their entire work. These activities often occurred as soon as a student finished *generating* a new paragraph as part of their generative Writing Processes and relied on their *Reading Their Writing* activities. Although most students engaged in *Revising*, they did not do so often in their DSCs, indicating that this DLA is not one on which they rely—or, at least not in ways that were visible in their digital contexts during their DSC recording sessions.

As a DLA, *Revising* was connected to students' intention to control the finished product of their writing. Upon finishing a paragraph, Daniel and Annie would pause, re-read the paragraph, and move ideas around in and between paragraphs. The clearest examples of this enactment of the DLA come from Daniel, who reread his paragraphs from bottom to top after he had finished writing them.<sup>27</sup> By contrast, Annie often re-read and edited from the middle of her

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<sup>27</sup> This was indicated by the manual movement of his cursor upward through the paragraph.

paragraphs, but she also worked backwards to revise ideas and word choice. Annie and Daniel were unique in the DSCs because they fully engaged in *Editing while Writing*, *Completing a Final Round of Editing*, and *Revising* and did so with a clear intent to control the final product of their writing. Other students like Beverly and Marilyn clearly engaged in *Editing while Writing* activities and wanted to create good writing, but they had less control of their word processor's editing features and less focus on their paragraphs and essays as holistic works—meaning that when they reviewed a paragraph, they seldom reorganized it or *generated new text* to put within it. These students re-read paragraphs after *generating* them but didn't re-read from top to bottom and didn't follow their re-reading with revising of ideas. By contrast, Annie and Daniel's reading of the paragraph from bottom to top while writing it or after finishing it allowed them to consider the global effects of the paragraph on the essay and how it fit into the work as a whole. Other student writers like Bryn and Beverly only focused on revising as *editing*—they made sentence level changes that didn't affect how their essay was written or read as a whole.

Among the students, Daniel, the only non-traditional student in the study, engaged in this activity the most, *Revising* 52 times in his reflection essay and 23 times in one of his literature essays. By contrast, the other students engaged in this kind of process two or three times during their writing, with the highest number of instances among traditionally aged students being in one of Kristie's DSCs where she engaged in this *Revising* process five times. In general, *Revising* required an awareness of global factors of writing, and this was a level of awareness that only some writers engaged in. In part, this may be due to cognitive reading issues at work when reading and revising on computers. Haas noted that computer writers reported difficulties in reading their text because they were unable to get a sense of how the text as a whole read (118). Haas argued that this "text sense" is needed to determine if a text needs organization or

revision, and that it is difficult for writers to have a sense of their full document, particularly a long document, when reading or revising on screen. She identified text sense as a “complex constructive reading problem—a problem of reading to construct, or reconstruct, the macrostructure meaning of one’s own text” (118). In my study, the students who engaged in paragraph level revising focused on reconsidering the content and organization of a single paragraph at a time. Those who revised this way did so consistently, which may have helped them have a stronger “text sense” of how the content of the paragraph they had written fit with that which had come before.

### *Utilizing Technology*

The category of Utilizing Technologies encompasses DLAs that showed students employing technologies to control their digital environments, make the most of their word processing system, learn about language to make it fit the expectations of an imagined audience, search for information to help them solve writing dilemmas, and to control the visual and aural aspects of their writing environment. Engaging in these activities allowed students to achieve their writing goals, but also revealed students’ affective and social goals that competed for their attention during their writing sessions. Although many of these DLAs reveal the ways that digital activities help students work to achieve competing goals at the same time, activities associated with these DLAs demonstrated the gaps in students’ knowledge of computers and the ways those gaps impinged on their abilities to achieve their immediate tasks and goals. Figure 4 and table 6 below demonstrate the hierarchy of this category of DLAs and the frequency of the DLAs within Utilizing Technology.

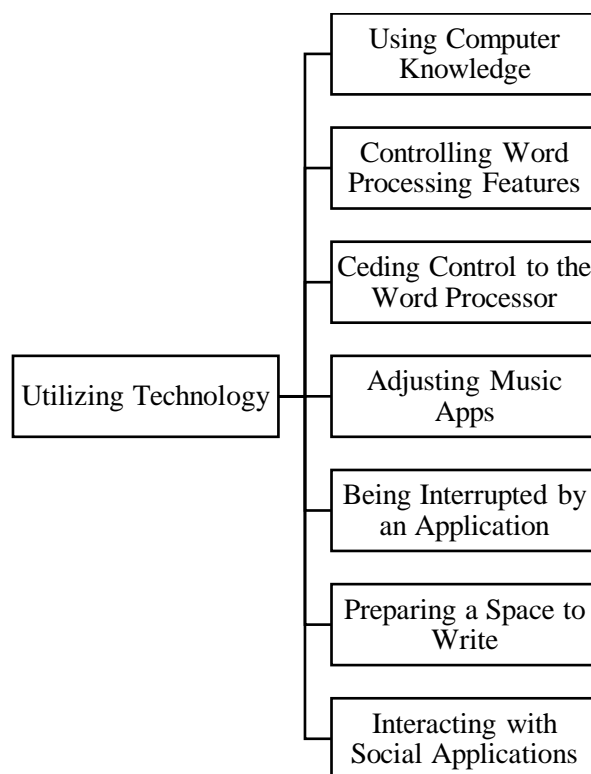


Figure 4: Utilizing Technology and Its DLAs

Table 6: Frequency of DLAs within the Category of Utilizing Technology

<b>DLAs in Utilizing Technology Category</b>	<b># Of DSCs DLA Was Recorded To</b>	<b>Total References</b>	<b># Of Students per DLA</b>	<b>Avg number of references</b>	<b>Highest and Lowest Frequency Coded</b>
<b>Using Computer Knowledge</b>	30	490	12/12	16.33	105 (Daniel) 3 (Bryn and Annie)
<b>Controlling Word Processing Features</b>	30	464	12/12	15.5	47 (Daniel) 2 (Victor)
<b>Ceding Control to the Word Processor</b>	26	241	11/12	9.3	29 (Beverly) 1 (Daniel)
<b>Adjusting Music Apps</b>	10	114	8/12	11.4	50 (Beverly) 1 (Annie, Kristie, and Victor)
<b>Being Interrupted by an Application</b>	11	104	6/12	9.45	44 (Beverly) 1 (Victor and Daniel)
<b>Preparing a Space to Write</b>	22	103	11/12	4.7	17 (Beverly) 1 (Bryn, Daniel, Kristie, Summer, Victor)
<b>Interacting with Social Applications</b>	15	43	8/12	2.87	15 (Beverly)

					1 (Daniel, Kristie, Lisa, and Victor)
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## USING COMPUTER KNOWLEDGE

The DLA of *Using Computer Knowledge* had 490 references, was coded to 30 DSCs, and was used by all students. This DLA was coded when students' activities demonstrated their knowledge of their computer's operating system, its shortcuts, navigation panes, and other such features. Although Daniel performed this DLA the most at 105 times while writing his reflection essay, Beverly used it 53 times in her reflection essay recording as well. The lowest rate at which this DLA was coded was three times across three separate DSCs. The examples of students' employment of *Using Computer Knowledge* demonstrates the ways that digital tools allow writers multiple ways to achieve simple tasks. Users' understanding of the affordances and constraints afforded by these tools can be influenced by technological change, user knowledge, and other mediating constraints.

An example of students *Using Computer Knowledge* to achieve writing goals that foregrounds the ways students' knowledge of the computer differs can be seen in Zelda and Daniel's DSC in which they completed assignments for their Spanish classes. As Spanish has many letters and symbols not found in the English alphabet, Daniel and Zelda had to go through a specific series of steps to be able to complete their assignments with the correct spelling. For both students, completing these steps involved *Using Computer Knowledge* differently. For Daniel, *Preparing to Write* this assignment involved *Using Computer Knowledge* to change the language on his computer to Spanish. The effect of this change became apparent a few minutes into his DSC when, after writing his first few sentences, Daniel opened a new tab in his browser and completed a Google Image search for a Spanish keyboard because switching his language's computer changed the keyboard's output. He was able to make the accented letters necessary to

write different verb tenses in Spanish simply by clicking the correct key. Like Daniel, Zelda *used computer knowledge* to insert the necessary letters into her Word document, but she did so differently and with a different level of effectiveness. Where Daniel's system change made it so that even his word processor was helping him by completing spelling and grammar check in Spanish, Zelda did not change the language options in her computer or her word processor. Instead, she simply began typing in Spanish in her Word document, which led to Word creating many red highlights in her document because it was set to correct her writing as though she was writing in English. Zelda relied on her knowledge of the language to check and correct her spelling. Because she did not change the language options, Word did not help her with the spelling and grammar of her document, and Zelda had to insert the necessary accent marks into her document intentionally. She did this by going to the insert menu, searching for the necessary symbol, like an *í*,<sup>28</sup> and pasting it into her document. Then, when she needed to reuse that symbol, she would copy and paste it as needed within her text.

*Using Computer Knowledge* was a DLA influenced by students' understanding of the tools available to them in individual apps and as part of navigating their computer's resources. As such, students being able to navigate the file system, find open application windows in more than one way, or even turn off and adjust operating system notifications demonstrated the DLA. Given updates and changes to operating systems, *Using Computer Knowledge* is a DLA that will continue to evolve. Like *Drawing on Digital Artifacts*, *Using Computer Knowledge* is a DLA that can enable and constrain other activities—students who were unable to resolve low power or operating system updates during their recording sessions had to stop writing. As such, *Using*

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<sup>28</sup> I was surprised that neither of them learned the keyboard shortcuts for inserting the accent marks over the letters and that Zelda did not switch the language in her Word document to Spanish so that spelling and grammar check would help her fix misspellings and typos. The difference in how different digital writers work to achieve the same outcome demonstrates how widely DLAs vary and how utilizing this DLA may depend on personal preference.

*Computer Knowledge* allowed students to simplify some tasks and control aspects of their writing environment.

## CONTROLLING WORD PROCESSING FEATURES

The DLA of *Controlling Word Processing Features* was used in all 30 DSCs by all twelve of the students and had 464 references. Given the ways in which word processing programs have been developed to assist the writer, competency in using their features to achieve specific goals during the writing process is a necessity. This DLA was coded when students showed such competencies. All students in the study shared a general knowledge of what colored underlines indicated in their respective word processors, and most used basic word processor formatting features such as changing the font, font size, and paragraph spacing. How students used this DLA reflected different kinds of word processor literacy, with students like Daniel being proficient with the thesaurus feature of Google docs, and students like Bryn casually using the different formatting icons in the different Word tabs align, format, and move different sections of her text. The pervasiveness of the *Controlling Word Processing Features* DLA suggests that understanding and controlling word processors are a key set of activities that digital writers engage with to accomplish their writing tasks.

Given the ubiquity of these features in digital writing tools like word processors, the most interesting enactment of this DLA included instances where students had to undo the automatic changes that the word processor made to their writing. For instance, when Lisa mistyped the word “writing” in her document, accidentally writing it as “wiitring,” Word automatically corrected her misspelling, but replaced the word with “wiring.” Because Lisa was watching her screen as she typed, she was able to catch this autocorrect feature and replace “wiring” with

“writing.” Beverly and Kristie were not always as aware of the problems that autocorrect caused in their essays and failed to notice these issues. Such instances in which students were unable to control their word processor and all of its features will be discussed in more detail in the next section, *Ceding Control to the Word Processor*.

## CEDING CONTROL TO THE WORD PROCESSOR

*Ceding Control to the Word Processor* was a DLA that developed from watching the DSCs. This DLA describes the effects of digital tools as partners to digital writers. Coded 241 times across 26 DSCs to eleven out of twelve participants, this DLA depicted how students relied on their word processor and its editing features to find and correct errors in their writing. Such practices included students omitting apostrophes when they wrote contractions or capitalizing the personal pronoun “I” because they assumed that their word processor would automatically correct these features. This DLA includes the changes that word processors would make to students’ writing which those students did not notice or that changed the meaning of what they were writing in ways the student did not intend. As a part of digital Writing Processes, spelling and grammar tools are often viewed as an affordance; students are encouraged to use spellcheck prior to finalizing a paper, which makes them associate these features with their goals of creating a finished piece of writing. However, the results of this partnership between student and word processor often affects students’ ability to *generate new text* as well as encouraging students to cede ownership and control of their writing to their digital co-writer. This DLA is like *Controlling Word Processing Features* as both DLAs are firmly situated within the artifact of the word processor and encourage students to actively monitor their screen for unexpected changes or activities during all stages of their Writing Processes. The difference between these two has to

do with how students responded to changes the word processor made. When *Controlling Word Processing Features*, students acted to control and stop changes that were being made by their word processors. By contrast, *Ceding Control to the Word Processor* was coded when students passively accepted changes that the word processor had made to their document.

The DLA of *Ceding Control to the Word Processor* was a DLA that occurred in two main fashions. In the first, the DLA was an action undertaken by the word processor when the student was *Generating Text*. The student was so focused in that aspect of their Writing Processes that they didn't notice that the word processor had changed an aspect of spelling or document design. The second way this activity occurred was when students were in *Editing* or *Completing a Final Round of Editing* and allowed spelling and grammar changes to be made by the word processor without considering how the changes affected their work as a whole.

This DLA was unique in that enacting it did not always involve the students' deliberate actions in trying to achieve a particular goal; instead, it relied on (1) students' inaction and lack of awareness of the computer's activities; and (2) students' willingness to cede ownership of their writing to the computer. Heilker notes that this is a common issue that student writers have, namely that they assume the word processor has the same degree of authority over their writing as a human instructor (qtd. in Eyman and Reilly 106). In the case of this aspect of the DLA, students used their *Computer Knowledge* to recognize the autocorrect features of their word processors and engaged in practices that relied on the autocorrect functionality or monitored their screens closely to gauge how effectively their word processors were contributing to their writing. Often these changes involved Word automatically fixing typos, as when Lisa mistyped the location of the "i" and "e" in the word "receiving." This kind of example, as with the contractions and pronoun examples discussed above, encouraged students to rely on autocorrect

and other such functions, a tendency which often caused students to question their own writing and writing knowledge. When Merilyn misspelled “through” by putting a “t” on the end, Word’s red underline caused her to question her spelling enough that she replaced it with “threw.” Because she assumed Word knew more about language than she did, Merilyn replaced a word with the wrong homonym instead of realizing she just had a typo.

Students who actively *ceded control* of their writing often did so by accepting spelling and grammar suggestions without re-reading the text of the document. This habit of relying on the word processor to edit her writing led Merilyn to submit a final draft in which she had written the word “peruse” instead of “pursue.” *Ceding Control to the Word Processor* during the editing and proofreading parts of her process meant that Merilyn’s text did not reflect her own ideas accurately.

As the ubiquity of *Editing while Writing* DLA suggests, word processing features like spell and grammar check influence digital writers’ processes greatly, and the *Ceding Control to the Word Processor* DLA demonstrates that students’ editing practices are not just directed by their word processors. The word processors over-write students’ text or cause students to doubt their writing knowledge, which affects students’ ability to *Generate New Text* as the word processor is always waiting to correct what they have typed. It is unclear whether the kind of writing students completed influenced their willingness to allow their word processor to edit and change their writing, but this DLA occurred frequently enough within the DSCs to show that it was a regular activity for many student writers. While all of the students in the study benefitted from spelling and grammar tools as an affordance when writing and editing their projects, the need to actively monitor their drafts to ensure that the changes made matched students’ intentions likely acted as a constraint on their composing processes.

## ADJUSTING MUSIC APPS

*Adjusting Music Apps* was coded to ten DSCs, had 114 references, and was used by eight participants. The students who used this DLA, like Beverly and Annie, did so consistently throughout their DSCs. For these students, *Adjusting Music Apps* involved engaging with different music programs and *Using Computer Knowledge* to control what was happening with these applications. The ways students integrated these applications into their Writing Processes suggest that *Adjusting Music Apps* served as a form of taking a break to think, though some of the actions involved in *Adjusting* these applications, like lowering music volume or skipping to the next track before returning to writing indicate that students found the music distracting in that moment. For the most part, students had adapted their Writing Processes around their musical applications to such an extent they were able to ignore many of the more distracting features of those programs. For example, Beverly used iTunes while she wrote, which meant that every time a song changed, a new song title, album art, and artist description would pop up in the bottom right-hand corner of her monitor. This activity on the part of the application seems to be something that Beverly was so familiar with that she generally ignored it and continued writing despite the visual interruption. This form of interruption seemed to be an integral part of Beverly's Writing Processes and four of her five DSC recordings included this activity. Beverly was a dedicated iTunes listener and had an Apple computer, which meant that she had adapted her Writing Processes around these focused interruptions. In this sense, she used the applications to increase her focus as ignoring the pop ups from iTunes seemed to help her concentrate on her writing tasks.

By way of contrast, Annie, also an Apple user, listened to Spotify throughout her DSC recordings, which did not have pop-up notifications of new songs. Listening to Spotify was part

of Annie’s Writing Processes—for her research into her Writing Processes, she had created two playlists, one with the “work” playlist she used for doing everyday homework and an automatically generated Classical Music playlist on Spotify. Despite the use of a consistent playlist and the lack of visual interruption, Annie seemed more greatly influenced by the music playing in the background as she often sang along with it or stopped her writing to switch songs that were in play,<sup>29</sup> suggesting that her focus was as much on the music playing as it was on the writing task in front of her. The DSCs showed a contrast between the ways students used musical applications to control their focus while writing. Beverly’s only real reaction throughout the recordings was to use her keyboard shortcuts to adjust the volume of the music being played, which she only did nine times across her five recordings that had a combined duration of three hours and nineteen minutes. In juxtaposition to Beverly, Annie stopped *Generating New Text* to sing along and change songs seven times in her total of two DSC recordings that lasted fifteen and thirteen minutes, respectively. These students relied on listening to music as part of their Writing Processes, and their activities in *adjusting* their music suggest that for Annie, the content of the music playing was something she wanted to focus on as much as or more than *Generating New Text*. Beverly’s *Adjusting Music* activities demonstrate that she wanted to hear the music but didn’t want it to dominate her thoughts while *Generating New Text*.

#### BEING INTERRUPTED BY AN APPLICATION

*Being Interrupted by an Application* describes a series of activities where the digital artifacts students had incorporated into their digital workspace acted upon the students instead of the other way around, like *Ceding Control to the Word Processor*, though in the case of *Being*

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<sup>29</sup> Annie was one of the only students to submit DSCs that included the sound of the room around her. Hearing her sing and talk was part of the analysis of her DSCs.

*Interrupted*, more computers programs were involved. *Being Interrupted by an Application* had 104 references across eleven recordings, which showed six students whose writings were interrupted and disturbed by digital artifacts. Some of these interruptions were by programs that students had open, but others were not. Just as when writing in a physical workspace, external factors are in play in the digital environment that affect the writers' abilities to achieve their goals and influence their Writing Processes.

Forms of *Being Interrupted by an Application* varied in the extent of control that students had over them. Messaging applications that popped up were forms of applications that students chose to leave running intentionally, whereas low-battery messages or moments where the operating system popped up to inform the student of computer space issues were interruptions over which students had little control and which forced students to stop writing. During his writing of his first essay for Spanish class, Daniel's operating system interrupted his Writing Processes twice within three minutes with the same message about his computer running slowly. Although these two instances of *Being Interrupted by an Application* occurred during a time where Daniel was taking a mental break by *Interacting with Social Applications* and reading *Facebook*, other instances of *Being Interrupted by an Application*, like Adobe Reader's pop-up message about needing to update, did occur while he was writing and interrupted that DLA.

## PREPARING A SPACE TO WRITE

Eleven of the twelve students who submitted recordings engaged in *Preparing a Space to Write*, and this activity was coded to the twenty-two DSCs and had 103 references. Students engaged in the DLA of *Preparing a Space to Write* by managing the digital space where their writing took place, which allowed them to capitalize on digital resources and expand their

material workspace. This DLA involved organizing the visual field of the applications displayed on the monitor and arranging digital resources in the taskbar. These activities enabled students to control the visual environment of their digital workspace.

For writers like Marilyn, *Preparing a Space to Write* was an integral part of beginning her Writing Processes and a series of actions that demonstrated how interconnected different digital elements were to that beginning.<sup>30</sup> She started her recording by finishing a YouTube video about how to use screen capture technology. Then, she paused the video, closed the YouTube tab, and moved to a Pandora tab and hit play. After minimizing her browser, Marilyn's desktop showed two open Microsoft Word documents, one with the homework assignment prompt that she was responding to and one blank document. She spent minutes adjusting the size of both Word documents so that they would fit side by side in her monitor, focusing on the size of the frames for each software program as well as the level of zoom. These activities helped her achieve the goal of having the assignment prompt and the blank document side by side in her monitor, in a layout that mimicked a physical desk in which she could have a homework assignment and a notebook side by side. The time that and Marilyn spent organizing her workspace suggested that the activities she engaged in were ones that she found important to her goals of completing her writing assignment.

*Preparing a Space to Write*, then, allowed students to control and prepare their workspace at the beginning of their Writing Processes. However, the affordances that the digital workspace provided which allowed students to engage with multiple digital artifacts was also a

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<sup>30</sup> I choose Marilyn as an example because of how invested she was in maintaining her laptop's desktop as a nexus of all the materials she needed to complete her writing task, but all students engaged in similar activities when *Preparing a Space to Write*, *Consulting Course Materials*, and *Searching for Appropriate Language*. Marilyn just had better control of her workspace than many of her classmates.

constraint because moving between these programs often caused students difficulties. Beverly's *Preparing a Space to Write* activities were often the same across the DSCs, but when revising her autoethnography essay, her searching through her desktop files and open Word documents before clicking on the one she planned to work on took some time and didn't end in her revising the autoethnography essay; instead, she focused on formatting a blank document for her next reflection essay. Completing this sequence of *Preparing a Space to Write* activities involved Beverly engaging in the DLAs of *Adjusting Music Apps*, *Drawing on Digital Artifacts*, *Reading Their Writing*, and *Using Computer Knowledge*. Despite having difficulties tracking the document she intended to work on, Beverly's need to have multiple writing programs open at once connects to other research about digital writers. The students that worked with Takayoshi had similar writing practices as they worked on multiple short-form writings at the same time, moving between Facebook messages, emails, and social media posts (8). The affordance of the digital workspace allows writers to move between activities quickly but doesn't always allow students to have a firm grasp on where a document is, which can cause shifts in focus and goals. Beverly's practices of *Preparing a Space to Write* necessitated that she transition between Utilizing Technology, Consulting Resources, and spatially organizing her digital workspace in order to achieve her goals, and these are activities in which all students in the study engaged when *Preparing* their digital workspaces.

*Preparing a Space to Write* involved controlling the workspace, creating a digital and physical environment, and completing set-up activities that students felt were necessary for achieving their writing goals. While many of these goals pertained to completing the writing task ahead, others had more to do with social connections and entertainment that students sought as distractions for their writing. On many occasions, the tools students used to prepare to write

acted as distractions from their main goals, drawing them to complete other, tangential tasks. In many ways, this level of activity shows the interconnected nature of different writing tasks and goals; *Preparing a Space to Write* involved DLAs from the Writing Processes category, the Utilizing Technology category, and the Consulting Resources category and clearly necessitated students *Draw on Digital Artifacts* as well. This is because most of the DLAs in the DSCs intersect at some level. *Preparing a Space to Write* also served as a site where students demonstrated the inherent flexibility and difficulty of writing as work. Students with multiple documents and resources open moved between them and, when tired, confused, or frustrated, moved onto simpler tasks, indicating a desire to accomplish something, even if the actions they completed did not help them complete their larger writing goals.

## INTERACTING WITH SOCIAL APPLICATIONS

The DLA of *Interacting with Social Applications* was coded 43 times, occurred in 15 of the 30 DSCs, and was engaged in by eight students. Although Instant Messaging and social networking sites like Facebook dominate standard definitions of social applications, I included all forms of communication in this DLA, and so students checking their email was an activity that was included in the DLA of *Interacting with Social Applications*.

Despite the social and presumably distracting nature of this kind of activity, the DSCs showed that students primarily interacted with their email to achieve a goal that related to their writing situation and was therefore co-coded to *Using Computer Knowledge*. Lisa and June, for example, checked and read their email before using that system to send the drafts they were working on in a campus computer lab to themselves. This helped them achieve the goal of being able to continue to work on their draft later. For students who did engage with email for reasons

outside of achieving their writing goals, checking email served more as a pause, suggesting that they had yet to engage with *Generating New Text activities* or were finishing their writing session. Daniel, for instance, only checked his email once in the six DSCs he turned in and only after he had been recording and writing for over an hour and twenty minutes. By contrast, Victor checked his email in all four of his DSCs, either at the very beginning or very end of his DSCs. In their study of graduate student writers, Leon and Pigg found that graduate student writers had evolved similar strategies of moving between social applications and school documents during writing sessions and did so because they found moving between these activity systems to be the more efficient (7). Similarly, in my study, the four students who engaged in *Interacting with Social Applications* did so as an integral part of their Writing Processes. Daniel and Victor's activities in this regard demonstrate the affordance of digital artifacts in allowing writers to move back and forth between areas of activity and kinds of focus.

Students' engagement with messenger applications during their Writing Processes suggest that they are motivated to stay socially connected during their Writing Processes and that they have worked interruption and moving between activities into their normal Writing Processes. The ways students *Interacted with Social Applications* such as messenger applications and their email varied by student, application, and computer OS. For the students working on Apple Macintosh computers (Macs), the messenger application on their computers synced with the messenger application on their phone. For Beverly, *Interacting with Social Applications* was coded to four of her five DSC recordings, but generally happened on a passive level. Of the nine times that messages popped up, Beverly only engaged with them three times and paused because of them once. Although she received instant messages off and on during the recordings, she only engaged with them toward the end of her writing process, when she had stopped generating new

essay material. This suggests that she wanted to be socially connected but didn't want that connection to interfere with her immediate writing goals. Beverly's passive interactions contrasted with Annie, who responded to and read chats at the beginning, middle, and end of her DSC, though she only interacted with social applications during one of her recordings. For Annie, interacting with instant messaging applications was a recurring activity throughout one of her recordings, and she interacted with her messaging application for over two minutes in a twelve-minute-long recording. Annie's engaging in the DLA of *Interacting with Social Applications* drew her away from her writing frequently, suggesting she had built interruption and moving between activities into her Writing Processes.

The most surprising finding for this portion of the study is that only one student spent any time on Facebook or other social media during the DSCs. Daniel spent six minutes out of one of his DSCs—an hour and 37-minute-long recording session—on Facebook. This break came after he had been writing and editing for an hour and ten minutes, and he returned to editing his essay once he had finished reading Facebook. Daniel being the only student to visit Facebook or another social media site during the recording could be because he was the only non-traditionally aged student in the study and understood its purposes better than many of his classmates. As such, he tried to record his normal Writing Processes without letting the recording interfere with his activities. Moreover, Daniel submitted the largest amount of recorded writing in the study and spent the most time at his computer for those recordings. Thus, he may have had a greater disregard for stopping his recording to go to Facebook than students who focused their recorded writing sessions on completing the assignment.

Given the popularity of social media at the time of the study,<sup>31</sup> the fact that only some students engaged with it or other social applications seemed odd. During the time of the study, spring 2015, many students owned smartphones. This fact, combined with their awareness of being recorded, means that any digital social activities students engaged with during their writing sessions probably happened offscreen. Because of these factors, it is interesting to see the social activities that students did while recording because young people's engagement with these platforms seems to be moving to their phones, according to Pew Research Centers "Mobile Fact Sheet," so future digital research studies may be less able to study how students engage in these activities on a computer or through DSCs on a computer as a method of gathering materials.

### *Consulting Resources*

The category of Consulting Resources encompasses all of the DLAs relating to students engaging in digital research practices like going to their classes' Blackboard site or reading an assignment prompt. This category also involved looking up information related to citations and searching for more information in online databases. The DLAs in this category vary in their frequencies with *Consulting Course Materials* being the DLA most used--264 times by all students and *Incorporating Scholarly Research Practices* being the least coded at 167 times also by all students. Figure 5 and table 7 below demonstrate the hierarchy of this category of DLAs

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<sup>31</sup> According to the Pew Research Center's Report, "Social Media Update 2016," 88% of 18-29-year-olds had Facebook accounts and 82% of Facebook users had some level of college education (Greenwood et al. 4). The statistics of users in this age group for other social media sites was lower, but the frequency for social media users visiting the site had 76% of users visiting the site daily and 55% of those users visiting the site multiple times a day (Greenwood et al. 4). In her 2015 report "Teens, Social Media, and Technology Overview 2015," Amanda Leinhardt notes that 24% of teens are constantly online, which she notes as being "facilitated by the availability of smartphones" (n.p.).

and the frequency of the DLAs within Consulting Resources. The DLAs that are most frequently coded are at the top of the table while the less frequently coded ones are toward the bottom.

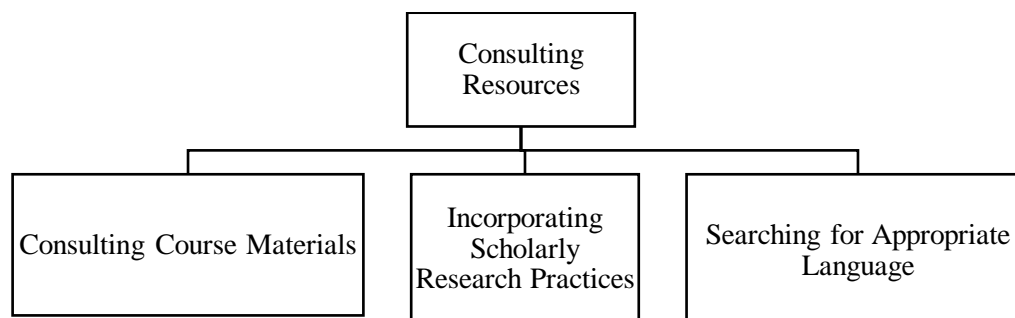


Figure 5: Consulting Resources Category and Its DLAs

Table 7: DLAs in the Consulting Resources Category

DLAs in Consulting Resources Category	# Of DSCs DLA Was Recorded to	Total References	# Of Students per DLA	Avg number of references	Highest and Lowest Frequency Coded
<b>Consulting Course Materials</b>	27	264	12/12	9.44	47 (Daniel)  1 (Annie, Beverly, Bryn, Daniel, and Kristie)
<b>Incorporating Scholarly Research Practices</b>	28	167	12/12	5.96	28 (Daniel)  1 (Annie, Bryn, Daniel, Gwen, and Victor)
<b>Searching for Appropriate Language</b>	27	186	12/12	7.52	43 (Daniel)  1 (Beverly, Kristie, Summer, and Victor)

## CONSULTING COURSE MATERIALS

The DLA of *Consulting Course Materials* had 264 references, was coded to 27 DSCs, and was used by all students. The students who engaged in this DLA the most, Daniel and Beverly, did so during their recordings of writing their reflection essays. As the reflection

involved students answering specific questions in essay form, it was unsurprising to see them move back and forth between their writing and the assignment prompt. The other highest instance of this DLA occurred in Merilyn's history DSC, where she consults the prompt and other course-related materials twenty-one times. Unlike Daniel and Beverly, however, Merilyn's *Preparing a Space to Write* practices ensured that she could access her assignment prompt throughout the writing process—where Daniel and Beverly had to switch documents or go to a different browser tab to read instructions, Merilyn's workspace layout ensured that her assignment prompt was side by side with her essay. All students engaged in this DLA in some way, largely because they were writing for a course and needed to consult the assignment sheet and supplementary readings in order to complete their writing task.

For the most part, the instances of *Consulting Course Materials* coincided with instances where students were trying to solve problems or answer questions about their writing. For example, to format her document, Merilyn went back to the syllabus to determine the course number. To remember the title of Benjamin Franklin's autobiography, she moved her mouse over to it on the assignment sheet. To answer detailed questions about the text, Merilyn opened a tab for SparkNotes in her browser and read through the first chapter summary—an activity that she eventually abandoned because the SparkNotes page was too slow to load. When SparkNotes failed her, there was a long pause in the DSC, followed by Merilyn integrating quotes and summaries from Franklin's text into her homework response, which I inferred to mean she was reading the book off-screen.

As the previous examples indicate, *Consulting Course Materials* was generally co-coded to *Reading Their Writing*, and sometimes to *Incorporating Scholarly Research Practices* and *Searching for Appropriate Language*. For instance, when *Completing a Final Round of Edits* on

her autoethnography essay, Beverly spent over a minute moving back and forth between Annie Lamott's "Shitty First Drafts," the English 102 Blackboard site, and her Works Cited page, working to create the citation entry. Referring to the course site helped her find the PDF of the text she had quoted, the text itself provided her with the information she needed to complete her citation entry, and she spent some time *Consulting Course Materials* for instructions on how to cite her sources. These activities worked together to help her finish her essay, and it was this kind of transitioning between resources and looking for information, which made the *Consulting Course Materials* DLA so integral to students Writing Processes for completing course-based writing assignments.

#### INCORPORATING SCHOLARLY RESEARCH PRACTICES

The *Incorporating Scholarly Research Practices* DLA related to activities students engaged in that had to do with finding and citing information and meeting scholarly research requirements regarding, finding information, citation, and paper formatting. As such, this DLA was frequently co-coded with *Searching for Appropriate Language*, *Reading Their Writing*, and *Consulting Course Materials*. Moreover, the aspects of this DLA that related to paper formatting were also coded to *Controlling Word Processing Features* as students had to utilize these skills to format page numbers, center the title of their work, format paragraphs, and double space their essays. In total, this DLA was coded 167 times to 28 DSCs and was used by all students.

For the most part, this DLA was displayed by students writing on longer, academically oriented topics in their DSCs. Daniel displayed this DLA the most when writing his reflection essay, primarily when incorporating quotes from his autoethnography essay and changing the formatting of his draft. Bryn and Beverly similarly made sure that their document used MLA

style headings, line spacing, and alignment. When Beverly and Daniel went to Google and EasyBib to look for MLA citation information to cite sources in their autoethnographies, the actions of going to Google and sifting through information to find valuable sources was co-coded to *Searching for Appropriate Language*.

Interestingly, both Beverly and Daniel gave up on using EasyBib to cite their sources and instead used other sources to create their citation entries. This was interesting because both students were citing well-known articles for which EasyBib could have generated the information. However, both students did not fully understand how to use this resource, inserting links into the search bar instead of article titles, which led to their difficulty. Beverly's struggle to cite "Shitty First Drafts" was particularly interesting to watch because the citation was handwritten on the bottom of the first page of the PDF. But, because she never scrolled past the title, she was not able to find this information.

Students also *Incorporated Scholarly Research* by using digital search engines to search for information to help them complete their writing task, often searching for information about how to make MLA citation entries or for information about the topic of their writing, and these searches revealed some of students' difficulties in finding good information online. For students searching for MLA citation information, their searches ranged across course documents on Blackboard, search engines, and MLA citation engines. In some cases, as with Daniel, his search of course materials suggested he was looking for a title of a specific document that would have the information he needed. His inability to find it led him to search a variety of online sources, and he had to gauge the credibility of these sources as he searched among them. Beverly engaged in a similar search across course materials but took the time to re-read documents in order to find the information she needed to cite her articles. Summer searched both the National Oceanic and

Atmospheric Administration website and the Google search engine to find information she needed to answer questions about reactions between CO<sub>2</sub> and water. In reviewing her search engine results, she took the time to read summaries of three different articles. The time these students took to complete these activities suggest that they were motivated to find good information to support their goal of their completion of their drafts. As digital writers, these students had access to a wide range of online information, which acted as an affordance to their writing and to their learning.

*Incorporating Scholarly Research*, then, afforded students the materials they needed to incorporate other's work into their writing. The activities involved in this DLA enabled them to enter disciplinary conversations, learn about MLA style, and consult information that broadened their perspectives and enabled them to conduct the research that their writing assignments required.

#### SEARCHING FOR APPROPRIATE LANGUAGE

This DLA had to do with students using Internet and word processing tools to learn about language or to search for information relevant to completing their writing task. It was coded to 27 DSCs 186 times and used by all twelve participants. Students' activities in *Searching for Appropriate Language* reflected their perceptions of their audiences' expectations of their vocabulary, students' interest in learning more about language and writing, and students' need to support their academic arguments with quoted materials. Many of the activities coded to this DLA were co-coded to *Consulting Course Materials*, *Incorporating Scholarly Research Practices*, and *Using Computer Knowledge* to move between source materials and to copy content from one application to another.

Students used digital tools like online search engines and thesauruses to find language that they thought was appropriate to their writing situation and to learn about language. This took the form of looking up word collocations when writing in a second language or looking up word spellings when trying to incorporate more precise or academic language into their writing. Examples from the DSCs included Daniel reading about the interchangeability between like and as on Stackexchange.com, and Beverly's decision to write "subconsciously" in her essay by going back and forth between her browser and word processor instead of copying and pasting. While her series of activities in that *Editing* session showed that she was struggling, they also suggest that she was trying to learn the word. In other recordings, she had shown her ability to copy and paste between these two. Here, her desire to learn the word superseded her writing goal of *Generating New Text*.

Some of students' activities in this DLA suggested they were applying writing rules that they had heard in the classroom. When she felt that her writing was too repetitive, June went to Google to look up another word for "shocked." This was like Annie's looking for a word for "loving," in her journal entry about her dad. In that entry, Annie was trying to write a sentence that described her father with three adjectives, and so she used her computer's dictionary application to look for synonyms of one of them so she wouldn't repeat herself. In order not to offend her readers, Kristie used her thesaurus app to replace the phrase "person's butt" with "individual's behind." These examples show students using digital tools to accommodate the needs of a potential reader with an understanding that the reader knew these rules and expected the student-writers to follow them.

Finally, some students' *Search for Appropriate Language* was motivated by the nature of academic writing as they had to search for quotes to support their points. To write his reflection

essay, Daniel moved back and forth between his autoethnography, the reflection prompt, and his reflection draft. Doing so required that he search through his autoethnography for quotes that would help him support the claims he made in his reflection essay.

## Conclusion

Overall, the variety of activities students engaged with in the DSCs demonstrates what researchers like Leon and Pigg have found--that student writers are multitaskers and participate in different kinds of writing work at different stages of their Writing Processes. Moreover, the analysis of these DSCs shows that students employ many literacies while working in computer environments and these literacies mostly help them achieve their goals. Clearly, the focus of the autoethnography and of this study directed some level of students' activities and may have helped them maintain focus on their writing during the DSC recordings. Despite the artificial nature of the study, students' activities within the DSCs were complex and multifaceted.

From these DSCs, we see that writers in digital environments spend almost as much time *Editing while Writing* as they do *Generating New Text*, and that students' movement between different DLAs is connected to their *Reading Their Writing* habits. The properties of advanced writing processing tools require that writers focus *Control Word Processing Features* lest they end up *Ceding Control to the Word Processor*. This finding mirrors that of Haas in her 1990s studies of writing on computers where she found that writers working with word processors had an increased awareness of more low-level writing concerns like editing and spelling (96). However, changes to word processing software and that software's ability to automatically format and make changes to writers' text has, likely, increased that focus as the blue, red, and green underlining features in modern word processors direct digital writers' gazes to local issues

as soon as they appear, and these underlines are often associated with an onscreen animation to draw the writer's attention to these issues. Haas found that students writing on pen and paper spent more time planning their writing before they started and that digital writers jumped straight into producing a polished draft (115).

In contrast, my study of the DSCs and uncovering DLAs like *Generating New Text*, *Editing while Writing*, and *Revising* show that some student writers did engage with global writing concerns but did so as they were constructing the draft, particularly after finishing and before beginning new paragraphs. The contrast between Haas's findings and my own may have to do with the fact that during her study, word processors did not resemble physical paper as much as modern word processors do. From my review of students' DSCs, the students who edited for global concerns also tended to have stronger control of their writing processor's tools and greater knowledge of how to use their computers than other students in the study. Moreover, the difference between my findings and those of Haas could be because my participants had more experience employing digital literacies as the tools that require them were more readily available to them than for Haas' participants.

In their review of the literature regarding students writing and editing on computers, Eyman and Reilly note that most students complete local *Editing while Writing* on computers but seldom engage in global revision practices (103-4). Scholars like Hill, Wallace, and Haas have concluded that this tendency can be dually attributed to the software tools that direct students' gaze to local issues as well as to students' limited understanding of global revision processes (Eyman and Reilly 103). In order to consider a piece of writing as a whole, it is important for writers to recognize that the draft has a beginning, middle, and end. The long pauses at the beginning of new paragraphs and paragraph level *Revising* practiced by some study participants

suggest that students engaged in these practices at the paragraph level because that was the unit of the paper that was easiest to conceptualize in the visual space of the monitor. As DLAs like *Preparing a Space to Write* suggest, digital writers manipulate their digital spaces to control what appears in their field of vision, which may allow them to employ different kinds of cognition and be able to better assess some of the physical properties of their writing.

While the DSCs indicate that students engage with planning and global concerns on some level while writing, viewing the DSCs also suggests that digital student writers do not have full control of their writing or of their writing space. The connected nature of students' activities mirrors the interconnectivity at work between the writer and the text they are writing because, as the DLAs of *Ceding Control to the Word Processor* and *Controlling Word Processing Features* show, there are ways in which digital texts try to write themselves—regardless of the writer's goals and intentions. This fact and the manners in which different applications impinge on digital writers' activities reveal the digital writing environment to be a site of conflicting goals and objectives as digital writers use their workspace to accomplish multiple goals simultaneously. Although writers may intend to generate text, complete research, or revise and rewrite their drafts during any stage of their Writing Processes, the activities available to them while writing on computers constantly vie for their attention: editing tools draw writer's attention to correctness; operating systems provide announcements about battery usage and storage; instant messaging applications allow students to feel less isolated while writing but also distract them from their writing. As can be seen in the *Adjusting Music Apps* DLA, digital writers attempt to use the overlapping programs and media available to their advantage, simultaneously reading assignment instructions and related material while listening to music and having their draft open in front of them. However, these affordances have limited efficacy in helping writers to focus on

their tasks and rely on writers having control of a wide range of literacies. Without the literacies of knowing how to control word processors, browsers, music software, and operating systems, many digital tools whose affordances students use to control their writing and work environment also create constraints as digital writers negotiate with interruptions from tools, changes tools make to their writing, and interactions with software which often puzzle users. For students writing in the digital environment, this negotiating between literacies is an ongoing and normal part of their Writing Processes.

In Chapter 4, I will discuss and analyze students written materials, including their autoethnographies, reflection essays, notes, and pre- and post-survey responses. I use this analysis to answer research question 2: What do students report about their DLAs and how they value them?

## **Chapter 4: Analyzing Students' Reports and Evaluations of Digital Literacy**

### **Activities**

#### **Introduction**

In this chapter, I discuss the twelve participants' autoethnographies (12), reflection essays (12), journals and coding notes (12), and pre- and post-survey responses (23). This allows me to answer research question 2: What do students report about their Digital Literacy Activities (DLAs) and how they value them?

As I mentioned in Chapter 2, only twelve students submitted all materials for the study, although one student, Zelda, was not in class on the day the Pre-Survey was distributed. Drawing on the written materials, I compare my findings from the Digital Screen Captures (DSCs) with students' reports and findings from their own analyses to understand which DLAs students recognize using and which ones they take for granted, ignore, or don't find worth noting. Finally, I look at the language students use to describe each DLA, particularly whether that language signals positive or negative connotations, and I use these findings to describe students' sentiments and perceptions toward their DLAs.

Tracking students' use of DLAs and comparing that use to their self-reports enables me to articulate students' DLA awareness. Although students do not use the categories of DLAs that I describe in Chapter 3, they do refer to activities associated with those DLAs, and so I apply my DLA categories throughout the discussion. As was noted in my limitations section in Chapter 2, students wrote all of their work understanding that it would eventually be read and evaluated by me as an instructor, which may have altered the perceptions they chose to share in their evaluations of their DLAs. Despite these limitations, students' written reports reveal tension, and ambivalence toward their DLAs. In this chapter, I analyze students' evaluations of their DLAs

and the ways those evaluations change based off the students' perceptions of the affordances and constraints of their DLAs at different stages of their composing processes. Students' reports reveal the connections they make between DLAs and the ways they view digital tools as shaping when and how they use DLAs. Students evaluate DLAs negatively when they perceive them as impeding learning, distracting from a goal, or when students perceive them as unhelpful in creating the final product. Students describe DLAs positively when those DLAs help them learn about writing and develop as writers, when they promote focus, and when DLAs help them generate ideas. Students' evaluations demonstrate the transactional value students place on their DLAs as part of their writing processes and show that students' priority in evaluating their DLAs involves instrumentalizing them to create the best final product in the fastest amount of time. By comparing students' written materials with the information gathered from looking at students' DSCs, I provide a richer contextualization of the DLAs described in Chapter 3 and fill in some of the gaps from the DSC footage. The analysis provided in this chapter concludes that students based their evaluations of their on the transactional value beyond grades, considering the ways that DLAs added to or detracted from the time and labor needed in completing the final draft. Moreover, students' reports on their DLAs reveal that they recognize the affordances and constraints that DLAs provide. Finally, the reports suggest that students learned about how DLAs usefulness varied depending on when students tried to use them during their writing processes. These conclusions add interesting findings and avenues of exploration to ongoing research into digital composing processes.

As I described in Chapter 2, the coding of the written materials followed four categories, and my discussion below follows my analysis of those categories in order. Category 1 presents my analyses of students' references to DLAs that were visible in the DSCs. Category 2 presents

my analyses of DLAs that students report but which were not visible in the DSCs; I analyze these findings to provide insight into the ways that phones and other technologies contribute to students' DLAs and to provide a richer picture of the DLAs with which students engage while writing. Category 3 presents my findings regarding students' negative attitudes toward their DLAs. Finally, Category 4 presents my findings of students' positive attitudes toward their DLAs. Students in the study often describe a DLA positively in one portion of their written materials and negatively in others, suggesting that they see the value of the affordance and constraints of their DLAs and recognize their DLAs' limitations. Moreover, students' positive and negative evaluations of DLAs and recognition of the affordances and constraints of those DLAs reflect the ways students view DLAs as helping them achieve their writing goals, revealing students' main priorities during their Writing Processes.

### **Category 1: Students' Reports on their DLAs**

As students' writing often focused on the DLAs that reflected their interest in their Writing Processes, as opposed to describing their complete processes, they did not always discuss the DLAs that I saw them employ in their DSCs. However, despite our different foci in reviewing the recordings and discussing DLAs, students discussed many of the DLAs that I observed in the DSCs. As the conclusion of Chapter 3 suggests, the most unique themes from this study have to do with (1) digital writers' quick movement between activities related to *Reading* practices fostered by digital environments; (2) writers' need to control their digital resources and struggles to do so; and (3) the ways that the constraints and affordances created by digital activity systems vary depending on students' writing goals and stage of writing. Looking at students' written materials provides more insight into how students perceive their DLAs in

different situations, and often the mode of writing affected how students described their writing. As Janet Emig notes, self-reflexive writing “focuses on the upon the writer’s thoughts and feelings concerning his experiences,” and such writings are often written with the writer as the intended audience (“Composing” 4). In students’ journal entries and reflection essays, they often engage in such reflective writing and are more open-minded in their discussion of how they value their DLAs. By contrast, in their autoethnography essays intended for an academic audience, students tend to be more critical in their discussion.

In the next section, I discuss the ways that students’ journals, coding notes, essays, reflections, and surveys reveal that they recognize the interconnectivity of their DLAs and their struggles to achieve their goals when employing these DLAs in digital environments; this discussion is based on the frequency of the DLAs occurrence, much as in Chapter 3. Following that, I discuss the ways that students perceived their digital environments altering their engagement in DLAs, particularly focusing on the ways that their *Reading* practices are shaped by the need to *Control Word Processing Features*. I include this discussion as it provides a student perspective on activities analyzed in Chapter 3 and reveals different aspects of *Reading Their Writing* than other parts of the discussion.

#### *Writing Processes as Inherently Interconnected DLAs*

Students tended to talk about *Generating New Text* as an inherently interconnected DLA, and they often discuss it in concert with other DLAs. For example, in her coding notes Bryn writes, “while creating ideas was on the phone and watching TV.” Zelda and Summer connected *Generating New Text* to *Consulting Course Materials* and *Searching for Appropriate Language*, with Zelda saying that her writing process involved “read[ing] the prompt . . . then start writing,”

and Summer noting that her unplanned writing for her chemistry lab required her to “go back and reread the prompt ten times.” Moreover, students’ description of *Generating New Text* emphasizes different stages of their Writing Processes from brainstorming, outlining, and editing, to making notes and includes their physical setting and digital tools like music and thesauruses.

Moreover, when discussing the interconnectivity of their DLAs, students revealed that they had internalized Writing Processes that call for drafting, rereading, and revision. Of the eleven students who connected *Generating New Text* to writing environments and other stages of their Writing Processes, six students referenced *Completing a Final Round of Editing*, nine students mentioned the importance of *Editing while Writing*, six students emphasized *Organizing Writing*, nine students mentioned *Preparing a Space to Write*, and seven students discussed prewriting activities connected to *Making Notes about Writing*. Annie’s description of her normal processes in *Generating New Text* made this connection explicit. She said that she “need[ed] a silent space to work . . . and start[ed] with an outline that wasn’t really an outline [but that] consist[ed] of anything and everything on the topic at hand . . . [and that she] tend[ed] to rewrite the original draft up to three times.” Lisa also made connections between *Generating New Text* and other stages of Writing Processes, noting that what I have called *Completing a Final Round of Editing* was her favorite stage in her Writing Processes because it allowed her to make the paper “flow together” when most of the writing was complete. Daniel’s discussion of Writing Processes focused on the ways he varied his Writing Processes depending on assignment or writing type. He wrote that, “sometimes [he would] make an outline, and others [he would] start from scratch, ramble for a few pages, and then heavily revise.” He specifically tied writing with an outline to writing for classes in his Spanish major. Other students, like June, had only

thought about Writing Processes in terms of those taught in English classes. She elaborated on the importance of brainstorming, outlining, drafting, and revising as parts of her processes and tied this knowledge to high school English instruction. These examples show that students have learned about Writing Processes and how DLAs are supported by other DLAs across physical and digital environments. Some of these descriptions are reflective and emphasize the personal nature of students' Writing Processes, while others reinforce ideas of a singular writing process as taught in many English classes.

In discussing their interconnected DLAs, students revealed personal preferences for different parts of the Writing Processes. Lisa, Daniel, and Merilyn reported an awareness of their own, unique, Writing Processes which they relied on for completing assignments. This awareness led to students revealing the connections they saw between Writing Processes DLAs and Consulting Resources DLAs. As a Spanish major writing literary analyses in a language in which he was not fluent, Daniel's Writing Processes emphasized consulting internet and textual resources about vocabulary and syntax to ensure that his prose was formally correct. His DSCs and his autoethnography demonstrate the fundamental importance of consulting word collocation tools and determining meaning as key parts of his Writing Processes. Daniel's study design for examining his Writing Processes, comparing his usual Writing Processes with a writing session during which he did not pause writing for research, suggests that he believed establishing a writing flow and editing later might improve his usual Writing Processes. For Daniel, and eight other students in the study, goals of having a finished draft that was written quickly defined his idea of "improving" his Writing Processes. Though he also believed that if he knew his Writing Processes, he would become a better planner of future writing sessions. However, in his analyses of his study, Daniel found that the time spent *Generating New Text* and *Editing while Writing* did

not significantly differ between his two recording sessions. Moreover, he preferred the quality of the draft created with his normal Writing Processes to the one created from associative or “flow” writing. Daniel’s analysis of his DSCs shows that he valued the interconnectedness of the *Generating New Text*, *Reading Their Writing*, and *Searching for Appropriate Language* DLAs in helping him create his draft.

Daniel’s experiment also helped him realize the value of planning on paper prior to sitting down to write. As was discussed in Chapter 1, much scholarship on digital Writing Processes has shown that students do not usually engage in pre-writing and planning strategies when writing on computers (Ackerfeldt; Haas; Stapleton). During the process of writing his autoethnography, Daniel “made a more detailed outline and sketched out ideas, while still leaving [his paper] structurally loose.” Daniel’s conclusion on this process was that while he didn’t like skipping the part of his process that involved *Incorporating Scholarly Research Practices* and *Searching for Appropriate Language*, he learned to value “setting aside time at the beginning exclusively for planning and sketching out ideas” as doing so “helped [him] flesh out ideas and concepts.” Daniel’s findings from his autoethnography demonstrates that student writers can learn to engage in, and appreciate, preplanning outside of the digital environment.

In total, ten students in the study noted or discovered the importance of on-paper brainstorming while completing the autoethnography. Some students, like Beverly and Bryn, learned that creating a paper outline by hand was crucial to their success in completing their digital compositions. Other students were more flexible in their need to outline by hand, like Lisa’s preference to jot down notes and Daniel’s digitally finalizing his handwritten outline and adapting it to the thoughts that arose during his composing processes. Of the students in the

study, only two seemed disinterested in creating a physical paper outline, preferring to outline their work using their word processing tools.

While some students reported needing to do pre-planning by hand, the need to do so varied by the type of writing they were completing; students reported that less formal and shorter writings did not require preplanning. For Summer, her comfort in completing “formal academic” writing derived from familiarity with the assignment genre. As a college student, she was accustomed to answering questions that allowed her to use website-based articles and other resources to inform her responses, so she felt no need to plan, digitally or by hand, when responding to short-answer homework questions and lab reports. However, when asked to respond to creative writing prompts, Summer felt compelled to plan out her response on paper before she could begin composing digitally, which she attributed to a “lack of confidence” in her creative writing ability.

In general, the student reports in my study contrasted with the findings of digital research by scholars like Haas and Ackerfeldt because ten of my twelve students reported engaging in paper-driven, pre-planning activities as a normal part of their Writing Processes. This might be due to the fact that students’ self-reported practices differed from the ones they actually practiced, or due to differences between my study environment and those of previous studies. Ackerfeldt’s study of digital versus paper writing took place in a testing environment, which would change the pressures students would feel while completing the writing task, especially when compared with my study where students had control of the writing and recording sessions and could complete them in their preferred writing environments. From my study, students’ reports of the importance of planning and prewriting on paper as part of their writing process suggests that paper composing grounds digital writers, helping them focus when employing their

DLAs. This aligns with Jane Vincent's survey of students across ten countries. The students whom Vincent surveyed reported using pen, or pencil and paper, to record quick, hand-written notes or to make notes on printed articles; the same students preferred to work online when they had to include digital features such as hyperlinks (102). Vincent attributes these differences not just to the modalities allowed by the form of composition but to students' ability to choose the form of writing that best suits their needs. In a normal college setting (as opposed to a testing or laboratory environment), students make use of the material and digital tools that best suit their needs and the needs of the document. For formal documents that need heavy editing, Vincent found that students prefer to write with computers (102). For note taking, generating ideas and learning, my students and those whom Vincent studied prefer working with pen and paper. This suggests that students recognize the affordances of physical notetaking practices as well as the ways that generating new ideas can be constrained in digital environments.

While students' journals, coding notes, and autoethnographies focused on their studies of their Writing Processes, their surveys and reflections expanded that discussion,<sup>32</sup> contrasting DLAs they used in school with those they used outside of school contexts. In school contexts, those DLAs included *Incorporating Scholarly Research Practices*, *Consulting Course Materials*, *Searching for Appropriate Language*, *Preparing a Space to Write*, *Reading Their Writing*, and *Controlling Word Processing Features*. In discussing these DLAs, nine students described *Consulting Course Materials* and *Searching for Appropriate Language* as forms of inspiration and as being generative. Beverly noted that she needed to use class resources to find examples, and Summer noted that social media and internet searches "can bring about inspiration and new ideas" on what to write (Pre-survey). In her post-survey, Annie reported "tweeting helps my

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<sup>32</sup> See Appendix B for the reflection prompt and Appendix C for the survey instrument.

creativity,” and Beverly, Bryn, Daniel, and Annie focused on the ways in which word processing tools and online dictionaries and thesauruses helped them shape their writing. In her pre-survey, Bryn noted that “for both school and leisure, I use Word and usually Google for ideas and dictionary.com for new words, synonyms, and the thesaurus.” Bryn and the other students listed above reported using these resources to vary language choice, to do research into grammatical and syntactical correctness, and to revise and edit what they had written. The connections students made between different DLAs demonstrate an underlying factor at play for the majority of the students in the study: Students are using their DLAs to do research, get inspiration, check word choice, and edit their writing because they are using their DLAs and the resources those DLAs make available to them in order to learn more about writing while they write.

Although not all students connected non-academic resources to this process of learning about writing, the fact that some did reveals students relying on social networks outside of the academy to help them learn, which suggests that at least some students don’t see writing as an exclusively school-based practice. This contrasts with the findings of Aimee C. Mapes and Amy C. Kimme Hea in their report on their 2018 longitudinal study of student writers’ relationships with their cellphones, “Devices and Desires.” Mapes and Hea found that student writers’ definitions of writing were generally limited to academic writing despite their reliance on their phone for communicating with their social networks (75-77). For my study, students discussed writing as more than what they did for their course work. They saw writing practices across different contexts as influencing each other, as when Annie reports in her post survey that the language she uses to create text messages “worsens [her] writing because [she] uses slang and shorthand like ‘Rn,’ ‘LOL’, and ‘af.’” Other students, like Lisa, saw stylistic adaptation of her language working in the other direction with her academic knowledge of grammatical

conventions shaping her texting word choice. As with the Stanford Study of Writing, students in my study report having a strong sense of purpose and ownership of their extracurricular writing, with many students defining what they value in good writing based on their rhetorical situation for those non-academic texts (Fishman et al. 231). Lisa and Annie's written materials show that they have different concerns that influence their written communication, with Annie prioritizing her audience in her writing style, and Lisa prioritizing academic correctness. Both of these students connected writing style to specific ideals of good and bad writing.

Interestingly, some students like Bryn, Victor, and Kristie noted that they used computers to write for classes and phones to communicate outside of school contexts, with Kristie noting that her phone was the only tool she used to write outside of school. This aligns with Mapes and Hea's findings that students don't view their phones as composing devices, though they are willing to use them for reading and writing activities (77). Clearly, the ways students conceive of writing and writing tools vary greatly on an individual basis; nevertheless, students' written reports reveal digital and physical literacy activities connect to one another through and across media and contexts—in school and beyond.

#### *An Altered Process—Digital Tools Influencing DLAs*

This section provides insight into the activities of *Reading Their Writing* and *Controlling Word Processing Features*, both of which had high frequencies of coding in the DSCs but were seldom discussed in students' written materials. Nine students mention *Reading Their Writing* 45 times across twenty written documents, and six students mention *Controlling Word Processing Features* twelve times across six documents. Despite this low rate of coding to the written materials, these DLAs merit discussion as they provide a student perspective on activities analyzed

in Chapter 3 and reveals students' perception and awareness of the connections between these DLAs.

Due to the students' focus in answering their own questions about their Writing Processes during the autoethnography, they often limited their discussion to DLAs that related to what they wanted to learn. In contrast, students' survey responses and reflections were more open ended, allowing them to discuss broader enactments of their DLAs, and so these documents revealed a different aspect of *Reading Their Writing*, which was its connection to *Controlling Word Processing Features*. These students found that *Controlling Word Processing Features* was the only way to avoid *Ceding Control to their Word Processor*. As was mentioned above, student discussion of the connection between these two DLAs was rare. Despite this rarity, the issue is worth noting because it reflects the constraints placed on digital composers by their digital composing tools and the ways those constraints shape an individual's DLAs. Moreover, this discussion provides insight into the ways students perceive *Reading* as part of their writing processes, an activity that dominated the DSCs, but which was mentioned less frequently in the written materials.

In her reflection essay, Gwen noted that if she did not read what she had typed as she typed, the computer would make automatic changes to her writing that did not reflect what she wanted to communicate. Zelda noticed the same problem, pointing out that autocorrect would change words as she typed. Between these two examples, Gwen's conflict was more straightforward. Autocorrect would change one word in English to another, and she did not know how to change the option for this in her program settings. Zelda had the same problem but was typing a paper for a Spanish class and had not changed the language settings in her word processor to that language.

For students composing on computers, composing processes become more complex because of the ways word processors suggest and potentially enforce stylistic, orthographic, and grammatical suggestions. When writing with pen and paper, students have full control of spelling and how and when editing processes take place. However, the features of many modern word processors have altered when and how editing occurs, causing writers to read not just to track their content but also for word-processor created underlines of misspelled words and grammar issues. These writers have to monitor their screens closely to ensure that the program doesn't make changes to their drafts that alter the meaning of what they write. In this way, such programs increase students' hyper-focus on grammatical correctness, remove their ability to focus on *Generating New Text* during the drafting process, and reinforce the need to write a "perfect" first draft. These practices connect to Takayoshi's research into short-form composing technologies, where she found that, "every writer in the larger study drafted, read and re-read their writing as it progressed and revised or edited mid-sentence" (Takayoshi, "Short-Form," 6). Takayoshi's findings and my own suggest that the ways that word processing features shape DLAs may be deterring students from engaging in the drafting, peer review, and revising stages of their Writing Processes because of the effort these programs require of writers when composing their text. Alternatively, these findings indicate that, for some students, drafting and revising are not separate processes, and the combination of these activities may be partly triggered by their reliance on computer spell checks.

The ways that word processing features heighten student writers' focus on the *Editing while Writing* DLA could explain why nine of the twelve students reported *Editing while Writing*, but only a few noted *Revising* or discussed their practices regarding *Completing a Final Round of Editing* in their own analysis of their DSCs. From the written reports, students seldom

perceive re-reading and revising as part of their normal writing practices. Instead, they focus on revising while drafting, with Bryn framing revising as a pause from typing where she “read[s] what [she’s] typed and revise[s] and type[s] some more.” Bryn’s journal entries connect *Editing while Writing* to *Revising*, but she notes a distinction between the two DLAs. She calls *Editing while Writing* “backspacing” and *Revising* “rewording and rewriting.” More than demonstrating the interaction between digital tools and Writing Processes, Bryn’s description reveals differences in digital Writing Processes. Similarly, Annie calls *Editing while Writing* “deletions.” Her autoethnography coding notes reveal that she used a tally system to keep track of this DLA and had 69 deletions marked in her first DSC and 43 on her second. Annie’s coding notes suggest that she noticed the difference between *Editing while Writing* and *Revising*.<sup>33</sup> In her listening to classical music notes, Annie left a note at the bottom of the page that says, “deletions are more for grammar and word choice,” which suggests that she noticed a difference between the two DLAs, even if she didn’t know what the difference was.

Lisa articulates the difference between *Editing while Writing* and *Revising* quite clearly, noting that when writing a formal paper, she focused on “correctness” and writing each sentence “to perfection” (Unit 1 essay). She contrasts this with her process of writing a speech, in which she would “jot down all of her ideas in half formed sentences and then go back to revise and edit. Nearly every time after [she had] read what [she had] previously written, additional ideas would come to [her], giving [her] more to work with.” To Lisa as well as Daniel, the two forms of editing have very different purposes. *Editing while Writing* is a way of controlling language (and responding to the computer’s editing marks) whereas *Revising* allows the writer to develop their

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<sup>33</sup> As was mentioned in Chapter 3, *Editing While Writing* involved editing to correct typos and line edits, whereas *Revising* was a form of nonlinear revision that helped students add new ideas and details to their writing.

ideas and reconsider the rhetoricity of the text. These reports reinforce the finding that students understand that their DLAs may differ depending on the genre, assignment, or type of writing.

### **Category 2: DLAs Not Visible in DSCs that Students Noted in Written Materials**

Students' reports suggest that some literacy activities that related to and enabled their Writing Processes for a given session occurred offscreen. Such literacy activities included outlining and pre-writing, which often occurred by hand on physical paper, making these literacy activities physical, not digital. In Chapter 3, I noted that these activities rarely occurred in the DSCs with only seven students spending brief amounts of time *Organizing Writing* and *Making Notes about Writing*. By contrast, students heavily reported relying on these DLAs in their written material with all twelve students referencing the importance of *Making Notes about Writing* and ten students discussing the value of *Organizing their Writing*. The difference between coding for these two activities suggest that they primarily happen physically, not digitally. In fact, students engaged in a variety of physical literacy activities (PLAs), such as when Zelda and Daniel checked language dictionaries for words or when Marilyn read from her textbook to complete her *Autobiography of Benjamin Franklin* essay. These PLAs enabled students to complete their digital writing tasks. In order to work with physical texts while writing digitally, these written documents would also have defined students' writing workspace, shaping how they *Prepared* their physical *Spaces to Write*. Moreover, some of these tasks, like reading the *Autobiography* and consulting the dictionary required students to use their skills in *Consulting Resources* as they *Searched for Appropriate Language*, *Consulted Course Materials*, and *Incorporated Scholarly Research Practices*.

However, unlike the Writing Processes DLAs reviewed in Category 1, students discussed some of these overlapping DLAs and PLAs as outside of their understanding of their Writing Processes. For example, in Marilyn's autoethnography, she had established pre-writing and editing as two categories that she would study prior to completing her recording. After reviewing her DSC, she found other PLAs like "reorganizing [her] desk" and "looking out the window," which connect to my category of *Preparing a Space to Write*, to be surprising elements of her Writing Processes. Despite engaging in numerous other Consulting Resources activities like going to SparkNotes or reading the textbook offscreen, the only element of *Reading* and *Consulting Course Materials* that Marilyn acknowledged as part of her processes was reading the assignment sheet. Through this example and others like it, students reveal the ways that literacy activities can be invisible to those engaged in them. Such invisible DLAs and PLAs may reflect the relatively low transactional value of these PLAs and DLAs and their low connection to students' overall academic writing goals (Grabill et. al; Fishman et. al, Lunsford et. al). For Marilyn, reading the text and consulting material enabled writing her assignment. She valued the writing itself because it enabled her to get a good grade, but the text that enabled that writing held little relevance to her or she didn't recognize its role in *Generating New Text*.

In the section that follows, I move into students' reports regarding DLAs they employed outside of the DSCS. These reports emphasize DLAs that students perceive as part of their normal Writing Processes and include discussions of students' awareness of the effect of recording their Writing Processes for their autoethnography essay. As such, this discussion references students' discussion of activities that occurred off-screen during the DSC recordings. It is followed by discussion of the DLAs that students consider part of their normal processes that they didn't engage in during their DSC recordings.

*Reports on DLAs Used Outside of DSCs*

In this section, I discuss the DLAs students engaged in outside of the DSC recordings, on their smartphone or other device, as well as the DLAs they discuss as part of their normal writing processes that they avoided due to the process of being recorded during their writing session. The DLAs students reported engaging in prior to recording or offscreen had to do with what I have categorized as Utilizing Technology in the form of *Interacting with Social Applications*. Some students, like Annie, engaged in DLAs prior to recording as part of their preparations for their experiments, which shows that some aspects of Utilizing Technology, like *Preparing a Space to Write*, connect to Writing Processes but not necessarily viewed as part of such processes. For Annie, this involved creating her playlists for her DSCs in Spotify, a step which was a necessary part of her Writing Processes, especially for the autoethnography assignment, but which she clearly viewed as a step to engage in outside of her formal sit down to write sessions. While Annie used her computer for music, text messaging, and Facebook notifications, Bryn's phone acted as her offscreen site for *Social Interactions* and *Adjusting Music Apps*. In her reflection, Bryn referred to her hand-written coding notes from recording the DSC to discuss the DLAs she engaged with that weren't recorded by her screen-capture device. Bryn notes her lack of awareness of her reliance on these activities as part of her Writing Processes, saying "I didn't realize how often I checked my phone to reply to a text or change my Pandora station until I watched the recording . . . [i]t's interesting and slightly terrifying to see my dependence on the phone screen." Other students' autoethnographies reveal that they consider *Interacting in Social Applications* to be a normal part of their Writing Processes that was disturbed by the act of recording, with Beverly noting that problems she had with her recording involved, "not getting distracted by [her] phone" as this is "normally [how] I write."

While the students in my study all had a strong concern with uncovering aspects of their Writing Processes that could be seen as hindrances or distractions, their main way of dealing with the potential disruption caused by these devices and networks was to ignore them. None of the students noted steps they could have taken to minimize the distractions caused by their devices prior to recording, and this reveals how the depth of students' reliance on their smartphones influences their everyday lives. Findings from a 2015 Pew Research report echo the conflict reported by my students. In "U.S. Smartphone Use in 2015," Aaron Smith found that 18–29-year-olds felt they had been "distracted" and "made angry" by their phones, but this age group also indicated feeling "happy or grateful as a result of their phone" (Smith 40). These mixed feelings toward smartphones may explain students' ambivalence toward them, particularly when considered in context with their Writing Processes. On the one hand, smart phones enable social relationships (Mapes and Hea). At the same time, the social goals that smartphones promote compete for students' attention during their academic writing.

As well as discussing the DLAs they engaged in off-screen, students discussed the DLAs they would have engaged in if they had not been being recorded during their writing sessions, noting that they were aware of and self-conscious about DLAs like *Interacting with Social Applications*. Students like Bryn and Daniel noted that the process of recording their writing sessions changed the DLAs with which they engaged. According to Bryn in her Unit 1 essay, "I also noticed that since I knew I would be recording myself and would have to turn in those recordings, I found myself not getting as distracted as normal" (2). Kristie noted something similar in her Unit 1 essay, but she tied it to the difficulty of using the recording technology, saying "Knowing that I was going to be recorded . . . altered how much time I took [for] breaks (it pushed me not to take breaks because then I would have to start a new recording)" (2). Daniel

noted that, “Doing the recording to generate those data had a real impact on the writing process itself . . . when I wanted to check Facebook, screw around, or just stop writing, knowing the screen capture was running definitely drove me back to the page.” Using DSCs to study their Writing Processes changed those Writing Processes in ways that might have negatively impacted students’ ability to rest or generate ideas. Throughout the written materials, students frame social media and text messaging as pauses, distractions, and/or as inspirations for and from developing their writing. These conflicting interpretations reveal tensions caused by the interplay of DLAs, the ways students have been trained to prioritize separating work from their social lives, and the ways students understand their writing lives outside of college to have different value than the ones they have inside school settings (Fishman et al; Leon and Pigg; Takayoshi “Short Form”).

#### **Students’ Valuation of their DLAs: Categories 3 and 4**

As was referenced in Chapter 1, past studies of students’ valuing their writing found that students value writing for its transactional value, for personal fulfillment, for maintaining relationships, for supporting social goals, for coordinating their learning and their lives, and for providing them with immediate audience response (Fishman et al; Grabill et al; Lunsford et al.; Pigg et al). When combined with students’ reports on their DLAs and the positive and negative value that students associate with their DLAs, these past findings suggest that students make their evaluations (1) in the context of their immediate goals for their writing; (2) according to the values of the cultural context in which the writing takes place; (3) based on the degree of satisfaction students feel with the process involved in creating the writing; and (4) based on their sense of ownership and pride in the final product that their processes generate. Thus, a paper with transactional value may have positive associations with its Writing Processes and DLAs if

the student received the outcome they wanted from that transaction. For a homework assignment, that would mean earning a good grade; for a resume, that would mean getting the job. Because of these variable contexts for and responses to their writing, the values that students place on the DLAs they used during the composing process varies. This means that students like Annie who report needing to listen to music in order to write also have negative evaluations of this DLA's effects on their Writing Processes.

Despite the conflicting, contradictory, and overlapping nature of the ways students value their DLAs positively and negatively, I have separated students' evaluations of their DLAs into negative and positive evaluations to simplify the organization of this discussion. In so doing, I reveal the complicating, contextual factors that influence students' valuations of their DLAs, having to do with the affordances and constraints that their DLAs force upon student writers at different stages of their Writing Processes.

### *Category 3: Students Negative Evaluations of DLAs*

In their negative evaluations of their DLAs, students reveal that DLAs take on negative associations when they are considered "distracting," when they impede learning, and when they are challenging, unfamiliar, or unproductive. However, it is worth noting that, as students' evaluations changed across the written materials, some negative evaluations of DLAs that occurred in the earlier documents developed into positive evaluations over the course of studying their writing processes and merit discussion in this section as they demonstrate the ways that students revised their negative evaluations as they worked their way through the autoethnography unit.

When determining that a DLA was distracting, students fell back on the transactional idea that time spent writing their essays was only valuable if they were in the act of *generating* their *text*. This perspective, combined with students' goals for studying their Writing Processes, framed much of the affective value they associated with their DLAs. For example, although she reported relying on *Adjusting Music Apps* as a key component of her Writing Processes, Annie also concluded that listening to music with lyrics was a distraction, saying "I had numerous distractions that affected my writing process . . . includ[ing] singing out loud . . . and change in the choice of song. I was less focused with music I was familiar with and could sing and/or hum along with." Annie drew this conclusion after watching her DSC of her normal Writing Processes with her normal Spotify playlist. She based this conclusion on the number of times she had to stop and delete while writing, noting that in one of the trials for her autoethnography where she listened to classical music there were fewer typos and less need for deletions.

Interestingly, this evaluation of music as a distraction is based largely on a metric of efficiency. In the conclusion of her autoethnography, Annie notes "[a]lthough it is fun to sing along to our favorite songs while doing something that isn't so fun, it affects the overall quality of your piece of writing." While she had more fun writing while listening to the music she enjoyed, she concluded that the writing of her classical music piece was more coherent and effective for her audience. Here, Annie reveals the ways that DLAs address different goals and needs and how those goals and needs are at conflict when students do their academic coursework. Annie's normal playlist reflected her likes and interests when hanging out with her friends, one of whom was present and sang along with her during the first recording. From her study, Annie learned that engaging with DLAs that supported her social goals interfered with the metrics of success that she connected with her academic work—much like Roozen's study of

Kate, Annie had to make a choice to prioritize DLAs that supported academic goals as opposed to ones that supported her social needs.

Other students had similar concerns about distractions from DLAs that were embedded in their Writing Processes, with Lisa, Marilyn, Kristie, and Daniel all reporting that moving into *Editing while Writing* interfered with their *Generating New Text*, particularly when editing for issues of correctness. Kristie found this difference easy to notice as she recorded herself writing a formal and informal assignment. After studying her DSCs, she found that “[she] spent almost three times more on retyping [her] formal essay than . . . [the] informal essay. This is because [she] over thought what [she] was saying when [she] wrote the formal essay . . . the formal essay took a lot more time and energy . . . [she] spent more time retyping.” Despite finding that she spent more time retyping during her formal writing, Kristie reported being surprised by the amount of retyping that she had to do with her informal writing, too, saying “I would rewrite several sentences over again before I was [finished] revising.” Kristie viewed this need to retype as a distraction that affected the efficiency of her writing because it took time and drew her thoughts away from *generating* content. Similarly, Lisa reported that *editing* consumed her Writing Processes, noting that “[she] couldn’t continue on with [her] writing until [she] completed a sentence to perfection. . . this seemed to move a little slower, because [she] would get caught up the correctness of the grammar . . . rather than the thoughts.” These examples show that negative evaluations of Writing Processes can be muddled. Both Kristie and Lisa framed their concerns with *Editing* in terms of the time it added to their Writing Processes. However, they were also concerned with *Editing* distracting them from their ideas. Kristie, in particular, reported that writing a paper filled her with the same kind of anxiety that taking a test did, and so her fixation on perfect wording may connect back with a need to succeed academically.

While these varying evaluations of distraction largely focused on the ways that certain DLAs added time to Writing Processes, they also showed that students valued their ability to finish a thought or write in a way that met the expectations of their teacher-as-audience. Other negative evaluations of DLAs revealed the nuance involved in students' evaluation of their DLAs, with Annie writing in her survey responses that "texting worsens [her] writing" and attributing this worsening to the shorthand language with which digital writers engage. Negative evaluations like these indicate the ways in which students perceive DLAs as having value within school contexts. Annie's reports indicate that she saw her writing as good if it was appropriate for school. Consequently, she described digital resources and DLAs that helped her write for school with positive values. Her negative opinion of texting, specifically, which I would categorize as *Interacting with Social Applications*, reflected her negative perception of digital resources that encouraged her to engage with different rhetorical priorities from those found in academic contexts.

By contrast, Daniel began his autoethnography project with a negative evaluation of his DLAs from the Consulting Resources category, assuming that they took up too much of his writing time and impeded flow writing, noting that he "spent a frustrating amount of time" on "auxiliary tasks" like "checking syntax, reading as [he] was writing, and going to reference books and websites for advice on grammar and punctuation." Through his study, he realized that these practices gave his "brain time to rest, manufacture fresh connections and refine ideas already in the text." It took studying his DLAs and performing a contrastive analysis of the writing he produced when emphasizing different aspects of his Writing Processes for Daniel to realize the benefits of *Reading Their Writing* and Consulting Resources. This realization enhanced Daniel's understanding of writing as process driven; where he began studying his

Writing Processes to streamline them in order to generate the end piece of writing more efficiently, his end realization that the quality of the finished writing was improved if he engaged in other DLAs as part of his processes helped him understand the ways that processes inform product. This suggests that studying DLAs and Writing Processes can help students learn more about the benefits of employing their DLAs strategically, particularly at different stages of their Writing Processes.

In addition to basing evaluations on the constraints that DLAs imposed via their difficulty and the time they took, students' evaluations were also based on their conflicting goals for and emotional associations with their DLAs. Moreover, students' negative reports often centered on DLAs that were perceived as interfering while they were either beginning to write, such as their anxiety with using the DSC recording technology, or in the middle of their drafting process, such as their obsessive need to line edit for perfect text while working on their initial draft. Students reports suggest that they hold negative evaluations of DLAs that they perceive as being outside of their control or as interfering with the goals they were trying to achieve. In the next section, I review how students provided positive reports on DLAs that they felt they had more control of or that helped them achieve their goals.

#### *Category 4: Students Positive Evaluations of DLAs*

As with students' negative evaluations of their DLAs, students' positive evaluations also reveal their transactional attitudes toward the time and difficulty involved in creating a piece of writing. The DLAs that students valued positively saved time; helped them control and organize their writing; helped them generate ideas and content; helped them focus; helped them develop

as academics; and helped them develop as writers. In their positive evaluations, students focused on the affordances their DLAs provided.

The DLAs that students associated with saving time included *Making Notes about Writing* and *Organizing Writing*. As I mentioned earlier, other studies of writing on computers, like Haas's, found that digital writers engage in few pre-writing activities. However, in her reflection on the autoethnography, Beverly writes, "I learned that I like to plan out what I am writing before I start in on the actual paper . . . by planning I find that it saves some time [sic]." Similarly, Bryn reflects "I learned that writing isn't all bad. It depends on how I plan, if I do, and how I construct my papers. Planning or 'pre-work' is something that I really need to begin doing, even if it is just handwritten notes. I saw that while writing this paper . . . [having notes] helped me stay on track and connect my paragraphs and ideas better than usual." Daniel agreed, concluding "I saw in stark terms how helpful an outline can be . . . the outline I generated beforehand for Essay 2 gave me a great jumping off point. In the future, I am going to encourage myself to use and develop them to a greater degree." These reports clearly demonstrate the positive associations with *Making Notes about Writing* and planning as PLAs. Students view these PLAs, and DLAs for digital notetakers like Daniel, as instrumental in staying focused, which suggests that these roadmaps may help prevent DLAs like *Editing while Writing* from overtaking students in their Writing Processes. Students' positive evaluation of these DLAs and PLAs derives from the ways they enhance their focus on writing when they sit down at the computer and on the ways these activities shorten the amount of time students spend writing.

Students' positive evaluations of their DLAs reveal that they weren't only concerned with efficiency and focus. Other positive evaluations discussed DLAs that helped students generate ideas and content in their essays. For Beverly, this involved *Consulting Course Materials* for

ideas, while Summer had to complete internet research and look at social networking sites for inspiration. In her journal entries, Summer described “require[ing]” research, thinking, and planning to create her writing and described herself as a “confident” academic writer. She also noted that “surfing the web” or talking to her roommate served as inspiration when she “[could]n’t figure out what to write about.” Similarly, Marilyn referenced the need for “background and examples” because they helped her build on her writings and helped her “grow overall.” These students note the affordances of the *Consulting Course Materials* and *Interacting with Social Applications* DLAs, which allow students to learn about how others have engaged with the genres of writing assigned to them during pre-writing, planning, and drafting sessions. Moreover, the types of resources students report consulting reflect their perceptions of their readers. Summer’s overplanning helped her ensure that her final product met her own standards and those of her intended audience.

By contrast, Marilyn’s need for examples shows that she viewed her writing as part of a social process that should be influenced by the works of other writers. This practice also helped her ensure that her writing matched that produced by others in similar social contexts. In this way, resource-centric DLAs allow students to receive help developing their writing without having to stop what they perceive as their Writing Processes, suggesting that even when considering how their writing fits into a specific social context, students’ positive evaluations of their DLAs remains tied to the ways those DLAs enable their ability to produce text appropriate to their audience and purpose.

Students reported valuing the DLAs of *Preparing a Space to Write* (nine students) and *Adjusting Music Apps* (six students) because these DLAs helped them focus. Both Beverly and Annie reported needing music as part of their writing environment, and both students’

autoethnographies showed that they had learned more about how this DLA fit into their Writing Processes from completing the assignment. Beverly noticed that her music needed to be quiet and almost inaudible, and Annie concluded that the music she listened to shouldn't have lyrics. Bryn and Gwen found that having other background noise, like the TV on, helped them focus because the act of ignoring the noise helped them focus on what they were writing. These activities connect to Prior and Shipka's finding of writers' "environment-selecting and structuring practices," which they define as "the intentional deployment of external aids and actors to shape, stabilize, and direct consciousness in service of the task at hand" (219). Unlike other students, Gwen valued focus more than the time it took to create her draft. She reported that pausing and taking breaks helped her generate new ideas and renew her focus. In terms of *Preparing a Space to Write* and Consulting Resources, Merilyn relied on *Adjusting Music Apps* as well, but also needed to have the assignment prompt on the same screen as the document she was writing to help her maintain focus on the questions being asked. Students' emphasis on focus here demonstrates the ways in which DLAs and students' awareness of their DLAs enable Writing Processes. As with all writers, students have a large variety of activities that they could engage in other than writing. These reports reveal that these students recognize and appreciate the ways they can deliberately employ their DLAs in order to complete their writing tasks.

Students link their discussion of Consulting Resources with their ability to create a final draft they are proud of, revealing connections between their evaluation of DLAs and the affordances that they perceive the DLA providing in terms of generating a quality final product. Specifically, students viewed activities that I associate with my codes of *Searching for Appropriate Language* and *Incorporating Scholarly Research Practices* as DLAs that helped them create a final draft with strong content that worked for their intended audiences. For

example, Annie was invested in using scholarly resources and thesaurus.com to make her writing read the way she wanted it to, as was Daniel. Daniel acknowledged that Consulting Resources and *Incorporating Scholarly Research Practices* “broke the flow of [his] writing, but this slowness improved [his] output . . . [this] method . . . produced work of markedly better quality, and was a much more pleasant experience.” This emphasis on quality and emotional comfort drives students’ employment of DLAs because DLAs from the Consulting Resources category enable students to enhance their writing—which allows them to be pleased with the end product of their writing processes.

While some of students reports foreground the ways they view DLAs as helpful in completing a successful final draft, other positive reports reveal students’ valuing the Writing Processes as well as the final product. Beverly's reflection focused on how her Writing Processes let her generate ideas. She discussed how the draft and final version of the paper were very different in their foci. In this way, she saw *Generating New Text* and *Revising* as generative. Marilyn reported that her writing was “more successful when [she didn't] overthink [her] writing and just lets [her] ideas flow.” She used this evaluation to prioritize the order of her writing process—refusing to move into editing until she had completed a draft. These positive evaluations of *Generating New Text* and DLAs from Writing Processes reflect the ways that students have refined the DLAs they employ in order to help them achieve their writing goals. Students’ emphasis on using tools to vary their language and their emphases on correctness show the ways they think about their, largely academic, audiences. As my limitations from Chapter 2 suggest, desire for a good grade and awareness of me as the teacher/reader/researcher may have motivated students’ concern with the quality of their writing and influenced their positive evaluations of their DLAs. However, students’ positive evaluations of the experience they had

while creating that writing suggests that they find satisfaction from creating their written products and not just from the transactional value they place on the final, graded draft.

## **Conclusion**

From their written materials, it appears that students' motivation to study their Writing Processes derived from a desire to be more efficient. This ideal of efficiency was formed through students' perceptions. Students who performed multiple recordings and analyzed those sessions tied their positive evaluations of DLAs to the ones that they saw or felt helped them spend less time planning their writing, more time *Generating New Text* without pausing, and not having to stop and *edit while they wrote*. Based on their comments in their autoethnography, ideal Writing Processes involve uninterrupted flow writing, with few students wanting to review what they had written in order to assess it or change it for a reader's gaze. This ideal and their written reports regarding their writing suggest that students do value their writing transactionally as Grabill et al. concluded, but a key part of this transaction involves the amount of time good writing takes to produce as well as the labor involved in producing it. As in reports from the Stanford Study of Writing, my students reported valuing their DLAs for reasons related to their goals as students, as academics, and as writers (Fishman et al.; Lunsford et al.). In addition, through studying and observing their writing processes, they developed a heightened awareness of themselves as writers—not just students writing for an academic exercise. Students reports also reveal that they recognized that their DLAs offered them affordances and constraints; and students' conclusions in their autoethnographies and reflection essays show that, by studying their Writing Processes, students learned that some DLAs worked together better than others to enable those processes.

Moreover, students recognized that elements of their environment, like word processing features and music, heightened their emphasis on some DLAs over others, like students' increased focus on *Editing* rather than *Generating New Text*. Unlike what has been found in other studies of Writing Processes, many of my students reported valuing outlining and pre-writing, digitally and physically. This change may be due to the enhanced editing features embedded in word processors. Because these features emphasize correctness during the drafting process, students may be moving their pre-writing offline as a means to create a roadmap unassailable by the digital editors embedded in their computer systems. Students' awareness of their DLAs and attempts to streamline them for their academic Writing Processes is a potential avenue for further study, as is studying students' movements between offline and online writing.

As I will discuss in the next chapter, the autoethnography project truly raised students' interest and enthusiasm in learning about their personal Writing Processes and made students more aware of the individuality and plurality of Writing Processes. Because the goal of the autoethnography project guided students to study their writing processes, that goal encouraged them to focus on writing processes instead of other factors at play when writing on computers, which could have limited students' responses. Moreover, despite the ways in which students' writing reflected awareness of there being more than one writing process and their interest in their own Writing Processes, much of their motivation in learning about these processes stemmed from a focus on a product. Students designed their studies and analyzed their DSCs with an end goal of becoming quicker, more efficient writers. This focus on product over process may derive from students' conflicting schedules and anxieties about writing in general and for college in particular. Instructors who decide to use an autoethnography assignment like this one should consider teaching students about the benefits of certain DLAs at different stages of their

Writing Processes because, as Daniel demonstrated, studying DLAs and Writing Processes can help students learn more about the benefits of employing their DLAs strategically. For example, *Consulting Course Materials* and *Making Notes about Writing* can work well at the beginning of Writing Processes to help students begin *Generating New Text*. Instructors could work with students to help them learn about which DLAs work best for them and when using those DLAs is most helpful.

In the next chapter, I will present a set of recommendations for working with students' DLAs in composition classrooms. As well as suggestions for classroom practices, I offer a revision of the autoethnography assignment in which students are asked to study their digital literacies as part of their Writing Processes. The goal of this revision is to help students learn more about their Writing Processes as a whole and to help them recognize that “distractions” can be a necessary, generative part of Writing Processes. The next chapter also presents suggestions for areas of further study in the arena of digital writing research.

## **Chapter 5: Discussions, Conclusions, and Directions for Further Study**

### **Introduction**

In this chapter, I return to my research questions and summarize how my study's findings contribute to current research into digital literacy activities and students' valuing of those activities. I also review factors that may have influenced my findings. From there, I provide suggestions for integrating DLA awareness and instruction into composition classrooms and offer a revised autoethnography assignment that asks students to study their DLAs as part of their writing processes. I conclude by discussing avenues for future research revealed by my research process and findings.

### **Students' Digital Literacy Activities and Evaluations of Them**

Here, I situate my main findings in terms of the research questions that I sought to answer, presented in Chapter 1 as:

1. What DLAs *do* students engage in while writing?
2. What do students report about their DLAs and how they value them?

I also enumerate the contributions of my study in relation to writing process and digital writing scholarship.

#### *Students Engaging in DLAs*

Past research into writing processes has suggested steps for students to take when engaging in writing processes, from invention and brainstorming to research to drafting and revising (Elbow; Macrorie; Murray; Perl; Sommers). My study adds to our understanding of writing processes by providing descriptive frameworks for the DLAs students engage in while

writing on computers. Although my study is small, the interconnected DLAs that I uncovered and the ways students engaged in them suggest that digital composing activities can happen very quickly, are often interdependent, and can be revelatory in terms of the multiple goals writers have for their composing sessions. In addition to revealing the DLAs writers engage in, I also presented an analysis of how students value their DLAs, noting that students' reports on their DLAs demonstrate their recognition of some of the affordances and constraints provided by different DLAs at different stages in the writing processes; their developing understanding of how different DLAs help them achieve their writing goals; and, an awareness of the ways students' evaluations of DLAs vary depending on students' goals and where they are in their writing processes.

In Chapter 3, I presented my description of the DLAs that students employed while writing during their DSC recording sessions. From this description and analysis, it is clear that students engage in many DLAs while writing in digital environments, and that the enactment of these DLAs require negotiation in order for digital composers to achieve their many goals. This supports Olson's contention that writing is a "radically contingent and radically situational" activity—though in the case of digital writers, the situation changes by the minute as their mediated actions lead them to engage in different kinds of activity (235). For my students, negotiating between their DLAs most often took the form of balancing between *Generating New Text* and *Editing while Writing*, a finding that aligns with those from other studies of digital and physical composing processes (Ackerfeldt; Haas; Perl). My project shows that *Reading Their Writing* and *Editing while Writing* are DLAs that students engage in throughout their Writing Processes and that some students spend as much or more time in these activities than in any other.

This finding regarding *Editing while Writing* relates to the ways students *Control Word Processing Features* and aligns with student reports from other activity-theory based studies of digital composing processes. In “Tools Matter: Mediated Writing Activity in Alternative Digital Environments,” Kory Lawson Ching’s student Joseph reported, “it is harder to free write because [Google Docs] constantly points out nonstandard grammatical features in my text and I am forced to account for the squiggly line” (359). Other students in Ching’s study found that having a tool that requires you to fix mistakes as they occur as the default was highly problematic when it came to *Generating New Text*, noting that the feature serves to “break up the flow of thought to be told that one just did something ‘wrong’” (359). The reports of my students in Chapter 4, as well as Ching’s own conclusion from his study, suggest that the “when” of activity matters. Students who engage in *Editing* and *Revising* deliberately as part of their processes, including taking breaks, report having much more control and comfort with these activities than those who do so compulsively throughout their writing sessions.

My project revealed “general,” DLAs—some that all participants engaged in and others whose enactments were rarer, but still seen across multiple users; these DLAs varied on the level of the individual user. I situate DLAs within my overarching, descriptive categories, which include Writing Processes, Utilizing Technology, and Consulting Resources activities. As students’ DSCs varied regarding the stage of writing recorded, not all students engaged in all of the DLAs within these overarching categories. However, the DSC coding revealed that all students in the study engaged in DLAs from within these broader categories, and students’ engagement in DLAs from these categories revealed the ways students’ priorities shifted throughout their writing sessions. For example, all students *Consulted Course Materials* during their recording sessions to look at assignments or readings or class information; however, only

some students engaged in *Searching for Appropriate Language* to find information and most of the information they searched for had to do with looking up words or synonyms. These overarching categories of activity point to the wide array of resources available to digital composers and demonstrate some of the ways the tools employed mediate writers' actions during their composing sessions. As Ching notes in his activity theory analysis of student writers' reflections, "Technological mediation, then, is transformative; it leaves its mark upon the user. In the case of writing, we should expect technologies like word processing software to shape not only texts but also the habits and durable practices of writers who compose them" (348). My findings regarding DLAs and overarching categories of activities provides a greater understanding of what those habits and durable practices look like for first year writers studying their composing processes.

Moreover, my analysis of the DSCs and description of students' DLAs showed the difficulties students encounter when working in digital environments and the ways these difficulties impede students' ability to achieve their writing goals. As was noted in Chapter 3, the DLAs of *Controlling Word Processing Features* and *Ceding Control to the Word Processor* reveal the technologically centered, digital problems that writers encounter when working on computers. The DSC recordings show that students have issues *Generating New Text* and are not always successful in *Incorporating Scholarly Research Practices*, but students' failure or success in engaging in those activities can reflect students' learning processes. *Controlling Word Processing Features* and *Ceding Control to the Word Processor* were distinctive activities because they related to students' problems in controlling the technologies they used to compose. Throughout the course of the DSCs, students' engagement in these DLAs often overlapped as

they struggled to control their word processor's autocorrect features and negotiate spelling and grammar suggestions.

For students who weren't as aware of these features, the word processor made changes to their text while they typed. Students who watched the monitor carefully while they typed were often able to catch these changes and make sure that the automatic writing meant what they wanted it to mean, but the need to constantly watch the screen and monitor the text for wrong words reinforced students' need to *Edit while Writing* even when their writing priority was *Generating New Text*. This autocorrect feature combined with the way word processors underline misspelled words and grammatical errors heightens students' awareness of local writing issues, forcing them to spend as much time *editing* what they type as they do *generating* their writing.

#### *Co-occurring DLAs and What They Reveal about Digital Composing Practices*

In my discussions in Chapters 2 and 3, I noted that students moved between DLAs so quickly that sections of the DSC visual records often contained data that were coded to two or more DLAs. As Chapter 3 focused on describing and analyzing the DLAs individually, I refrained from discussing this overlap in too much detail. Here, I take a moment to demonstrate the interconnection between DLAs and foreground students' shuttling processes by discussing DLAs that were commonly coded together, which I term "co-coded." Tables 8 and 9 show the main DLAs from the Writing Processes category and how frequently they were co-coded to DLAs in the Utilizing Technology and Consulting Resources Categories respectively. I offer these tables as a means of providing some insight into how DLAs overlap or are often so rapidly moved between as to seem almost simultaneous in their occurrence.

Table 8: Co-coding Between Main Writing Processes DLAs and Utilizing Technology DLAs

<b>Utilizing Tech and Writing Processes Co-Coding</b>	<b>Completing a Final Round of Editing</b>	<b>Editing while Writing</b>	<b>Revising</b>	<b>Generating New Text</b>	<b>Reading Their Writing</b>
<b>Using Computer Knowledge</b>	81 Co-Coded 5 students	113 Co-Coded 6 students	43 Co-Coded 2 students	119 Co-Coded 8 students	221 Co-Coded 10 students
<b>Controlling Word Processing Features</b>	102 Co-coded Students 9	239 Co-coded Students 11	14 Co-coded Students 7	212 Co-coded Students 11	247 Co-coded Students 11
<b>Ceding Control to the Word Processor</b>	54 Co-coded 7 students	170 Co-coded 10 students	3 Co-coded 3 students	130 Co-coded 10 students	118 Co-coded 9 students
<b>Adjusting Music Apps</b>	0 Co-coded 0 students	4 Co-Coded 2 students	0 Co-Coded 0 students	13 Co-Coded 2 students	12 Co-Coded 2 students
<b>Being Interrupted by an App</b>	1 Co-coded 1 student	4 Co-coded 2 students	0 Co-coded 0 students	8 Co-coded 2 students	7 Co-coded 2 students
<b>Preparing a Space to Write</b>	3 Co-coded 2 students	14 Co-coded 6 students	0 Co-coded 0 students	21 Co-coded 9 students	39 Co-coded 9 students
<b>Interacting with Social Apps</b>	0 Co-coded 0 students	2 Co-coded 1 student	0 Co-coded 0 students	4 Co-coded 2 students	15 Co-coded 5 students

From this table, the necessity to *Control Word Processing Features* as a dominating DLA becomes apparent, as students engaged in these processes 239 times during their *Editing while Writing Activities*, 247 times during their *Reading Their Writing* activities, and 212 times while actively *Generating New Text*. These high frequencies of coding occurred among eleven of the twelve study participants. This finding demonstrates the way that word processing features force students to move into *Editing*. While watching the DSCs, it became apparent that most students would stop *Generating New Text* and move to *Editing* anytime they saw their word processor underline text. The co-occurrence between *Reading Their Writing* and *Controlling Word Processing Features* is somewhat ambiguous because students had to *Read* in order to enact that

*Control*, suggesting that the two DLAs interdepend on each other to such an extent as to never be independent. To *Control Word Processing Features*, students must be actively engaged in *Reading Their Writing*. The DLAs with the lowest rate of co-occurrence reveal how the stage of Writing Processes affects the DLAs employed. Students in the *Revising* stage don't need to *Prepare a Space to Write* or *Adjust Music Apps* as they've already done so. The co-occurrence between *Ceding Control to the Word Processor* and *Editing while Writing* suggests that students grant their word processors authority over their writing, and the high rate of *Ceding Control to the Word Processor* and *Controlling Word Processing* tools while *Generating New Text* suggests how completely digital correctness tools try to influence and control writers' writing.

Table 9: Co-coding between Writing Processes DLAs and Consulting Resources DLAs

<b>Consulting Resources and Writing Processes Co-Coding</b>	<b>Completing a Final Round of Editing</b>	<b>Editing while Writing</b>	<b>Revising</b>	<b>Generating New Text</b>	<b>Reading Their Writing</b>
<b>Consulting Course Materials</b>	29 Co-coded 5 students	51 Co-coded 6 students	2 Co-coded 1 student	86 Co-coded 10 students	192 Co-coded 11 students
<b>Incorporating Scholarly Research</b>	65 Co-coded 8 students	67 Co-coded 7 students	7 Co-coded 1 student	67 Co-coded 9 students	58 Co-coded 10 students
<b>Searching for Appropriate Language</b>	27 Co-coded 4 students	38 Co-coded 8 students	2 Co-coded 1 student	48 Co-coded 9 students	102 Co-coded 10 students

As with table 8, some of the co-coding in table 9 reveals DLAs that rely on each other. When students *Consult Course Materials* and *Search for Appropriate Language*, they often have to *Read* the text they engage with, which explains the high co-coding between these two DLAs and *Reading Their Writing*. However, the high co-coding between *Generating New Text* and

*Consulting Course Materials* foregrounds students' reliance on prompts and instructions to understand their writing purpose and develop their writing goals. *Incorporating Scholarly Research Practices* and *Completing a Final Round of Editing* often co-occurred because students worked on MLA citation and Works Cited pages at the end of their Writing Processes. However, the high rate of co-coding for *Incorporating Scholarly Research Practices* during *Generating New Text* and *Editing while Writing* suggests that students writing in school contexts employ academic research processes throughout all stages of their Writing Processes. These *Incorporating Scholarly Research Practices* could be as basic as formatting their document to fit MLA style or incorporating a source's ideas in the middle of the draft. Still, the ways students returned to these activities throughout the different stages of their Writing Processes suggest that they were aware they were writing for an academic audience and wanted their writings to meet the standards of that audience. It also demonstrates the way recursivity continues to be part of writing processes in digital environments. As Nancy Sommers has argued, we separate composing processes into pre-writing, writing, and revising because describing these processes linearly is the easiest way to introduce them to students. Sommers notes that viewing writing processes as recursive "simply means that the composing process is characterized by significant recurring patterns and the repetition of the same subprocesses throughout the writing processes" (42). She ties this discussion to how writers use their revision practices to make their final draft of writing fit their emerging vision of their work. My students engaged in *Incorporating Scholarly Research Practices* recursively, which suggests that they were actively engaged in trying to make their final draft meet their goals for form and audience and engaged in activities that helped them do so throughout their composing sessions.

Finally, my findings in Chapter 3 demonstrate that students do engage in global writing concerns and *Revision* but do so in a truncated fashion that occurs during their *Generating New Text* and *Editing* activities. While only some of my participants engaged in recursive *Revising* practices, the fact that they did so contrasts with findings from other digital writing studies like those of Haas. The ways that these students engaged in *Revision* suggests that Haas' notion of "text sense," which is the writer's ability to have a full understanding of their document as a whole, is at work in digital environments but at a more local level. The students who engaged in recursive *Revising* as breaks in their *Generating New Text* activities may have done so when they did because they were able to create a concrete mental grasp on their writing at the paragraph level, even if they were unable to do so for the entire paper.

#### *Students' Reports on Noticing and Valuing Their DLAs*

In Chapter 4, I discussed what students' written reports reveal about how they value their different writing activities. In this discussion, I showed students' awareness of the interconnected nature of DLAs and the ways students move in a nonlinear fashion between activities and stages of their writing processes. Students' reports in their autoethnographies suggest that their evaluation of their DLAs depended on how the DLA helped them create a quality finished draft in reasonable amount of time. For example, students viewed *Generating New Text* as positive and wanted to spend more time to doing that and less time *Editing while Writing*. Moreover, their conflicting evaluations of DLAs like *Adjusting Music Apps* demonstrate that DLAs that are necessary to *Prepare a Space to Write* serve an affective or focus-based function. Students' autoethnographies revealed that *Adjusting Music Apps* could be a distraction from writing, but their surveys and reflections suggest that these activities are still necessary parts of the process

because they help students meet their goals in establishing their writing environment. Prior and Shipka found similar affective networks of environment “structuring practices” that writers used to support meeting their writing goals while supporting their needs to take breaks or pause in their writing sessions (219).

Students’ reports reveal the connections they make between DLAs and the ways they view digital tools as shaping when and how they use DLAs as well as how they perceive the DLAs that they use. DLAs that students view as obstructing learning and/or goal achievement were described negatively. These included *Editing*, *Adjusting Music Apps*, *Interacting with Social Apps*, and *Controlling Word Processing Features*. DLAs received positive evaluations when students perceived them as enhancing their knowledge about writing, assisting in idea generation, and promoting focus. Some DLAs that received positive evaluation were *Searching for Appropriate Language*, *Consulting Course Materials*, *Making Notes about Writing*, and *Organizing Writing*. Regarding when to use a DLA, some DLAs received positive reports if they were used at a specific phase in students’ Writing Processes. For example, students’ journals and reflections showed that they value the DLAs of *Interacting with Social Applications* and *Searching for Appropriate Languages* from the Consulting Resources category to help them find inspiration and example text during their brainstorming and pre-writing. The ways students’ evaluations of their DLAs vary demonstrates the transactional value students place on their DLAs and how that value differs based on the time when they engage in the DLA and the stage of their Writing Processes. Students’ autoethnographies revealed that their priority in evaluating their DLAs involved streamlining their Writing Processes to *Generate New Text* that would achieve their writing goals as quickly and painlessly as possible.

## **Pedagogical Implications of Studying DLAs**

### *Reshaping Classroom Practices by Integrating DLAs*

As was mentioned above and reported in Chapter 4, students written reports demonstrated that their evaluations of their DLAs had changed based on studying their DSCs. Daniel and Annie both learned about how long used DLAs affected their Writing Processes differently than they had expected, with Daniel realizing that his DLAs of Consulting Resources were necessary to creating quality writing, and Annie realizing that her normal lyric-heavy playlist negatively affected her composing practices, while classical music helped her maintain a focus on writing without causing typos or slowing her processes down. This suggests that there are benefits to having students study their Writing Processes with a particular focus on their DLAs and for instructors to teach students about the broad range of DLAs available and the ways they interact for different students. Doing so can heighten students' awareness of the plurality of their Writing Processes and help them move past textbook understandings of what Writing Processes are. In general writing and composition textbooks, textbook writers, instructors, and the field of composition studies tend to focus on only text-based concerns. My study of DLAs examines other multimodal and material factors such as the affective, technological, and environmental, that shape processes. Studying DLAs can also help students gain a richer understanding of the ways that context, location, and goals affect their writing sessions and the DLAs they engage in during those sessions.

As well as fostering this awareness or understanding of how writing processes are shaped by context, studying DLAs can help students understand the importance of developing their digital literacy skills—particularly fostering their willingness to learn more about the applications they use to complete their writing. As my discussion of the DLA of *Ceding Control*

*to the Word Processor* in Chapter 3 suggests, word processing technologies are constantly at work to enforce correctness on students' texts. When students learn to recognize this, they may see the benefit of learning more about how to turn those options off, particularly during their more generative writing sessions. As Ching contends, "Research focused on digital writing tools, then, not only helps us better understand the impacts of technology, but also equips us to make conscious choices about how we design and select the technologies that shape our writing experience" (349). Asking students to study their DLAs helps them understand that their writing tools contribute to their writing environments as much as the music they listen to and the location they write in. Learning about these DLAs may not help students create their draft in the fastest amount of time possible, but it may help them develop their control and comfort of their writing sessions.

In the next section, I provide a suggested curriculum for using the autoethnography assignment to help students learn more about their DLAs. I provide this curriculum to ensure that the field of composition studies becomes aware of the importance of DLAs, how writers engage in them, and how DLAs interact, and occasionally interfere, with one another they interact. This curriculum serves to augment our understanding of composing processes and to help digital composing teachers and researchers consider different ways to look at writer's activities when composing on computers.

### *Taking a Closer Look: Reimagining the Autoethnography Assignment*

In their textbook, *Writing about Writing*, Wardle and Downs provided an autoethnography assignment designed to help students study their writing processes and learn what those writing processes were. This autoethnography asked students to "conduct a study . . .

[to] examine yourself and your own writing processes and write an autoethnography in which you will describe them” (322). The curricular context they provide for this assignment focuses on designing a writing classroom in which Writing about Writing (WAW) is the center focus, as opposed to writing classrooms that ask students to write about literature and other “content.” Wardle and Downs frame their autoethnography assignment in the context of research into writing processes in a class designed to help students learn more about the field of writing studies. They provide students with a range of articles, discussed further below, that study different aspects of composing processes and that employ a variety of study designs.

These readings and framings work well with the assignment prompt because they help students learn more about creating a research question, designing a methodology to answer that question, and using the method to do writing research. They also help students understand what researchers have learned about writing processes. For the English 102: Inquiry course at the University of Kansas, the assignment is appropriate because it fits the course outcomes to “use writing and reading for inquiry, thinking, learning, and communicating” and to “work with demanding readings and learn to interpret and evaluate these readings” (“FSE ENG 102 Goals”). As my autoethnography assignment (Appendix A) was the first assignment in the class, some of the academic articles in the unit were difficult for students to parse, and so my first recommendation is that this project occur as a second or third unit in a first year writing class, or that teachers give students at least six weeks to make their way through the entirety of the unit (from introducing the assignment, planning what and when they will record, and doing all of the readings that help students understand how writing research can work).

Besides suggesting changes to the length of the unit, I also recommend that teachers consider adopting the entirety of the assignment that Wardle and Downs offer in *Writing about*

*Writing*, the full text of which is in Appendix F. My edits to their assignment prompt, Appendix A, helped me encourage students to learn more about conducting an experiment, using digital screen-capture technology, and writing a research article. However, Wardle and Downs' second option for having students study their writing processes was to have them create a "Portrait of a Writer," which involves having students "tell the story [of themselves] as a writer" (325). Having students do reflective pre-writing on their writing processes prior to beginning the autoethnography would allow them to have a point of contrast after they had finished recording their writing processes—students would be able to see how their DSCs bring out parts of their processes that aren't reflected in their "Portraits." Combining the "Portrait of a Writer" with the autoethnography and ending with a final reflection on the unit as a whole, will help students understand more about their full processes, see the ways that digital tools influence those processes, and learn which combinations of PLAs and DLAs help them feel successful as writers.

As well as incorporating a broader range of WAW assignments into this unit, allowing students multiple methods to study their digital and physical literacy activities (DLAs and PLAs) could help them understand their full range of activity. In my original version of the assignment prompt, most of what I changed from Wardle and Downs was that I asked students to use screen-capture technology to record themselves and that I condensed some of the wordage and writing options to ensure that the finished genre of the paper was more of a research article as I was teaching the unit in a research writing class. For teachers adapting this assignment to other classes and audiences, allowing students to use a basic video recorder, like the camera app on their smartphones, that captures them working at the computer and their voices in conjunction with a screen capture technology like VLC or QuickTime will help capture the full range of their

activity, and may help students understand what was happening at different stages of their writing processes. Wardle and Downs recommend that students use video recording and talk aloud to themselves to help them know what was happening from moment to moment during the writing session (323). If students are willing and able to do so, this could be a helpful method to include in the recording session and might provide more concrete information to code and analyze than my students had from their handwritten notes—tally marks for the number of times you stopped to edit or delete can only tell you so much.

Another aspect of writing processes that I omitted from the assignment prompt and that Wardle and Downs don't spend much time on is prewriting and brainstorming. Wardle and Downs' prompt recommends that students keep a log during their prewriting time, which could be helpful. However, when the teacher is talking to students about their research questions, one such question could be to have students focus on their pre-writing and planning activities. As Chapters 3 and 4 of this dissertation suggest, much of students planning practices are physical not digital. If students decide to study this aspect of their DLAs from the beginning of the unit, then stressing to them that they can use their phone to record themselves as they write by hand would be a good way for them to gather information about those activities. For students interested in learning about how planning and note-taking help their writing processes, recording their physical literacy activities throughout digital writing sessions would be an important way of gathering information about how these DLAs and PLAs work to support their writing.

Below, I offer set of recommended readings and a sequence of activities for those interested in adapting this assignment for their curriculum. At the end of this chapter, I include appendices of Wardle and Downs' full assignment as well as a revised Reflection essay prompt at the end of this dissertation in the hopes that they will help future writing teachers generate

more ideas about ways to teach students to understand their digital and physical writing processes.

## RECOMMENDED UNIT READINGS

As well as spending more time on the unit to really help students unpack the readings, I recommend making the readings more expansive. I suggest including some general writing process studies but also providing readings with more emphasis on research into digital composing as these studies can better help students understand the range of research questions available to them when learning about writing processes. Instead of focusing solely on studies that emphasize composing processes, interspersing these readings with writings that discuss literacies and mediated activity can help students brainstorm their research question and learn to consider the ways that digital tools shape their literacies. For my students, they didn't truly understand how studying writing processes mattered to them until they read the essays by popular authors discussing their writing processes, so maintaining a balance between academic and popular work can be important for helping students think about studying composing for this unit.

All of the readings below are presented in recommended reading order, though for all of these lists, chronological order would also work as a teaching strategy. For the older research studies, providing students with historical context is important. For the digital composing studies, explaining to students what older computer models look like would also help them understand some of the descriptive words and terms used in the articles.

- Readings that provide a general overview of research into writing processes, which were included in the *Writing about Writing* textbook:

- Berkenkotter, Carol. “Decisions and Revisions: The Planning Strategies of a Published Writer.” *College Composition and Communication*, vol. 34, no. 2, 1983, pp. 156-69.
  - Murray, Donald M. “Response of a Laboratory Rat—or, Being Protooled.” *College Composition and Communication*, vol. 34, no. 2, 1983, pp. 169-72.
  - Rose, Mike. “Rigid Rules, Inflexible Plans, and the Stifling of Language: A Cognitivist Analysis of Writer’s Block.” *College Composition and Communication*, vol. 31, no. 4, 1983, pp. 169-72.
- Readings from popular authors that discuss their writing processes which were included in the *Writing about Writing* textbook:
- Lamott, Anne. “Shitty First Drafts.” *Bird by Bird: Some Instructions on Writing and Life*, Anchor, 1994, pp. 21-27.
  - Haruf, Kent. “To see Your Story Clearly, Start by Pulling the Wool over Your Own Eyes.” *New York Times*, 20 Nov. 2001.
  - Sontag, Susan. “Directions: Write, Read, Rewrite. Repeat Steps 2 and 3 as Needed.” *New York Times*, 18 Dec. 2000.
  - Diaz, Junot. “Becoming a Writer.” *O, The Oprah Magazine*. Oprah.com, 13 Oct. 2009.
- Readings that provide a framework for understanding digital literacies that I would add and that I have used in digital writing classes:
- Jones, Rodney H. and Christoph Hafner. “Mediated Me.” *Understanding Digital Literacies: A Practical Introduction*, 2nd ed, Routledge, 2021, pp. 1-20.

- Cazden, Courtney, et al. “A Pedagogy of Multiliteracies: Designing Social Futures.” *Harvard Educational Review*, vol. 66, no. 1, 1996, pp. 60-92.
- Yancey, Kathleen Blake. “Writing in the 21<sup>st</sup> Century.” *National Council of Teachers of English*, 2009,  
[www.ncte.org/library/NCTEFiles/Press/Yancey\\_final.pdf](http://www.ncte.org/library/NCTEFiles/Press/Yancey_final.pdf).
- National Council of Teachers of English. “NCTE Position and Guidelines: NCTE Framework for 21st Century Curriculum and Assessment.” *NCTE: National Council of Teachers of English*. National Council of Teachers of English, Feb. 2013.
- Readings that provide a general overview into digital writing research:
  - Haas, C. “Seeing It on the Screen Isn’t Really Seeing It: Computer Writers’ Reading Problems.” *Critical perspectives on computers and composition instruction*, Edited by G. E. Hawisher & C. L. Selfe, Teachers College Press, 1995, pp. 16-29.
  - Collier, R., & Werier, C. “When Computer Writers Compose by Hand.” *Computers and Composition*, vol. 12, 1995, pp. 47-59.
  - Ching, Kory Lawson. “Tools Matter: Mediated Writing Activity in Alternative Digital Environments.” *Written Communication*, vol. 35, no. 3, 2018, pp. 344-75. [doi.org/10.1177/0741088318773741](https://doi.org/10.1177/0741088318773741)

## SEQUENCE OF ACTIVITIES

1. Introduce Assignments

The value of using the 3-part assignment sequence of Portrait of a Writer, autoethnography, and reflection is that doing so helps students learn more about their full range of DLAs and PLAs and how they are employed at different stages of their writing processes. It can also help students understand that the value of their DLAs and PLAs changes depending on when they are writing and the stage of their writing. Finally, this process may help students understand the ways that writing processes have contextual and affective components, letting them understand that breaks, pauses, and distractions can be generative, particularly if they help students to recharge before moving into a longer period of *Generating New Text*. If you are using the full three-part sequence, then begin the unit by introducing the entirety of the assignment to students. This could take time, so you may want to begin with a brainstorming version of the Portrait of the Writer assignment, and then introduce the autoethnography and reflection.

## 2. Begin Unit Readings

Move through the suggested readings in the way that makes the most sense to you after working with your students. The general overview of writing processes readings can be helpful because they show students what the field has learned and how it has done so. Moreover, the focus of these readings, like the rules that writers consider while writing, could be an interesting avenue for students to consider when developing their own research questions. However, for the sake of time, you could skip these and begin with the digital literacies readings before moving into the digital writing research articles. If you really had to pare down this reading list, the most formative readings are: Yancey's "Writing in the 21<sup>st</sup> Century," Jones and Hafner's "Mediated Me," and Ching's "Tools Matter." These pieces get to the heart of digital literacies, digital writing research, and ways that studying activities help us understand digital writing processes. Ching's overview of past research into digital writing as well as his incorporation of his own

students' voices can be very helpful for helping students see how to learn about digital writing processes by studying and reflecting on them.

### 3. Draft the Portrait of a Writer

As you are moving through the readings, take some time in class to have students write their "Portrait of a Writer." This activity asks students to "spend a substantial amount of time reflecting on [themselves] as a writer," using the readings as a framework for students' reflective processes. As a pre-writing activity, asking students to complete this reflective writing can help frame what they decide to look at during the autoethnography, as you can discuss how they can study the DLAs associated with their writerly identities.

### 4. Form Research Questions

In helping students prepare to record for their autoethnographies, it will be important to help them come up with research questions, as those will help them decide the kind of writings they will record. In my study, students like Daniel designed their recording sessions based on preconceived notions they had about their processes before they started. Daniel assumed that his *Searching for Appropriate Language* activities were interfering with his *Generating New Text*, so he conducted one recording where he followed his normal writing processes and one recording where he wrote notes to himself that told him what to look up without pausing his writing to look up more information. For your students, studying their Portraits can help them decide what kind of writing they want to record themselves doing, as students often have writing habits that are specific to technologies used to write and to genres of writing. My students also gained inspiration for their research questions from the readings. Bryn, Gwen, and Zelda all recorded themselves writing by hand and writing on computer to see how physical versus digital writing shaped their writing processes because of research they had read during the unit.

### 5. Plan Autoethnography Recording

The basic assignment of the autoethnography is to have students record themselves writing an assignment for one of their college courses and asks students to set aside multiple writing sessions to finish that assignment. However, depending on their year and major, this may not be feasible as not all students are in courses that require writing. If students can do this kind of recording, then emphasizing capturing their whole processes and writing in more than one session will be important. If students don't have other writing assignments, then providing them with a creative writing prompt and a general essay prompt can be an avenue to help record themselves doing two different types of writing. This can be useful for students interested in studying how their DLAs and processes change based on their writing style.

Other options for having students record their writing is to have them change the tools they use to do that writing. In my study, students compared handwriting to digital writing, but Ching asked his students to use writing tools other than their normal word processors to compose for a class or activity of their choice over a semester. Having students write journal entries, notes, or any other page long genre in a tool like Written Kittens, which provides positive reinforcement by showing a picture of a kitten every 100 words, or Write or Die, which provides negative stimuli when writers don't reach a word count in a certain amount of time and which doesn't include an automatic spellcheck feature, can help them learn more about how the tools they use inform their writing processes.

### 6. Complete Autoethnography Recordings

Take time in class to make sure students have access to the resources they need to complete their recordings. Students often don't know how to use screen capture technology and may only have access to video equipment via their smartphones. When I taught this unit, I spent one class day in

a computer lab showing students how to use VLC to record, but I also provided them with tutorial videos on how to use different screen capturing technologies that they could (and did) consult when they began their recording processes. To save in class time, teachers can flip this instruction by having students watch tutorials for screen capturing and practice using the technology at home before they come to class. Given the increased use of online lecture software, there are a wide variety of tutorials available for programs like VLC, QuickTime, and Screen-Cast-O-Matic—all of which have some form of free option, depending on the computer operating system. Before you set up this practice session recording homework, take time in class to see what technologies students can access. Brainstorm with each student to make sure the recording processes they choose will capture the DLAs and PLAs they need to study to answer their research questions.

#### 7. Introduce DSC Analytical Coding

Begin this stage of the unit with a practice coding activity like the one suggested by Wardle and Downs, which you can read in Appendix F. The coding processes for DSCs can be very demanding if students are too fine grained in their analyses. For an in-class assignment, focus on having students work on developing inductive coding to find themes of activity in their recordings. Instead of focusing on duration of activity, ask students to code by focusing on writing processes such as notes, brainstorming, planning, *Outlining*, *Generating New Text*, *Editing*, and *Revising*; issues of technology such as attempts to *Control Their Word Processor* and find information by *Consulting Course Materials* or *Searching for Appropriate Language* or other research activities; and issues of affect such as life stresses, motivations they employed at different moments, and *Preparing a Space to Write* activities they engaged in physically and digitally. If students have the time and access to the technology, then they could even complete

this coding processes by annotating their DSC recordings directly by using the University of Minnesota's Video Ant software (<https://ant.umn.edu>), which can automatically generate a datafile from any notes left on video files.

This analytical coding processes is valuable, particularly in a first-year writing class that focuses on research writing. The ability to generate thematic codes helps students learn the analytical reading habits they will need to write literature reviews—making this connection explicit to students in class can help them understand why they are doing so. While the DSC coding analysis emphasizes looking at activity, it also emphasizes the practices needed to create a thematic code. These practices will be integral to students conducting larger research studies and are transferable beyond the first-year writing classroom. Students in my study who had experience conducting lab research found this analytical process familiar, and even Humanities majors like Daniel recognized the value of analyzing patterns to draw conclusions as an important part of their research processes.

#### 8. Draft Autoethnography Essay

Once students have completed their coding, have them study their codes and use the codes to find out what is interesting either by its abundance or absence. They should also consider how (and if) their coding helps them answer their research questions. In my class, I had students present this essay in the Introduction, Methods, Results, and Conclusions format because doing so gave them experience with designing a research study, conducting it, analyzing their findings, and presenting their results to readers. The value of having students complete a research question driven writing assignment in the first-year writing classroom is that it teaches students to go through these processes and helps them realize that they are capable of doing their own original research. Moreover, for students in the writing classroom, writing that starts with a research

question can help student writers see the value of exploring a concept prior to writing about it. In order to teach students how to write a researched argument, it can be helpful to have them begin with a research question prior to conducting secondary research because doing so helps them avoid the trap of starting with an argument and only finding source material that supports that argument. Having students write the autoethnography around answering their research questions achieves the same goal. Instead of starting with a thesis and only looking at the parts of the recording that support their thesis, students can examine the recording, create their thematic codes, and then learn the answer to their research question based on that coding.

#### 9. Draft Reflection

Before writing their reflection, have students reread their Portrait of a Writer and their autoethnography, then ask them to consider what they learned about themselves as a writer during the unit and what their use of DLAs reveal about their writing processes. Depending on the kind of research they did, asking students if they will change the writing tools they use based on what they learned would also be appropriate. I include a revised version of my reflection prompt as Appendix G.

In the next section, I discuss avenues of further research for digital writing research inspired by the methods and findings of my research study.

### **Areas for Future Research**

#### *Contributions of the Current Study*

For this study, I asked students to use digital screen capture technology to record their computer screens while writing to see what they could learn about themselves as writers from watching their recording processes. Digital writing scholars such as Ackerfeldt, Geisler and

Slattery, Leon and Pigg, Pigg et al, and Takayoshi have used digital screen capture in their research. In particular, Geisler and Slattery have noted that digital screen capture can provide valuable supplemental information to writing researchers without causing the same kinds of disruptions to writing processes that think-aloud protocols can cause. Combining DSC recordings with other forms of materials analysis allows researchers to collect and analyze a rich data set, which fosters fine-grain analysis of those materials.

From my study, I have found DLAs that enable students' writing processes, adding to writing researchers' understanding of how writing processes function in digital environments. Existing studies have showed that digital composers edit more, particularly at the sentence level and have attributed that editing to the presence of word processing tools and writers' difficulties conceptualizing the entirety of their draft when they can only perceive it through the screen (Ackerfeldt; Haas; Hill, Wallace, and Haas). My study adds to this finding by demonstrating that spellcheck features have evolved to increase writers' focus on surface level errors even further; moreover, I show that some digital writers move into global revision efforts at the level of the paragraph in order to control the way their paper fits together as a whole, which suggests writers are adapting in order to revise despite their limited text sense. I also show that writers move between DLAs quickly and recursively and are motivated to do so by their shifting goals as they create their texts. Finally, I found that all participants had individual approaches to their writing processes, but still moved through many of the same DLAs despite the differences in how they engaged in them. Moreover, my findings in Chapter 4 demonstrate that the DLAs students engaged in and the ways they valued those DLAs connected to the affordances and constraints that a DLA provided at any given point in time.

My investigation into DLAs adds to future avenues of research into the composing processes because my findings in Chapter 4 suggest that modern composers use their phones, their computers, and pen and paper to create their daily compositions; thus, future studies should be more intentional about capturing off screen activity as well as on. This finding combined with the fact that my participants weren't composing in lab conditions suggests that there is room for future studies to combine screen capture and other recording methods to capture the lived experience of modern writers and to witness the ways that they combine DLAs and PLAs. In particular, studying the stages of the writing processes where writers are more comfortable using PLAs than DLAs would be an enlightening avenue of study.

#### *Avenues for Future Digital Writing Research*

Digital writing research continues to work within an unstable landscape that is difficult for researchers to negotiate. Since the time of the study, correctness tools and features have been integrated into smartphone keyboards, cloud-based email, and social media sites. As such, it would be interesting to see how editing and revising function in shorter documents. In Takayoshi's study of short-form writing, she found that writers engaged in audience awareness to shape their writings, but another angle for this area of research would be to consider how much of these writers' editing processes are driven by technology as opposed to the writer's desire to engage an audience. There is room to look at these editing tools from a variety of angles, from considering how they affect students non-academic writing to considering the socio-political ramifications of their ubiquity in American school systems, universities, and businesses.

In general, the pervasive nature of digital tools that enforce Standard Edited English is an area rich for study, particularly for those interested in linguistic social justice. As Anne Curzan has argued in *Fixing English*, “The most ubiquitous prescriptive grammatical force in the world at the beginning of the twenty-first century [Microsoft Word Grammar Check] is not teaching grammar but rather flagging ‘errors’ and offering ‘correct’ alternatives with little and sometimes no explanation” (92). Prescriptive tools have become embedded in digital environments from word processors, to Grammarly, to the autocorrect and autogenerate text options in Microsoft Office, the Google Workplace suite, and within smart phones. In 2014, Curzan noted that Microsoft’s Grammar Check obfuscates the sources of the rules it enforces, labeling all nonstandard usages as “errors” without any regard for dialectal variations or informal registers (79). This enforced standardization has an effect—Curzan’s research reveals the ways prescriptivism has affected language over time, shaping not only which usages are in favor but which usages survive at all (87). Prescriptivism is at work in school-based language instruction as well, and “few, if any college students have been let in on the secret that prescriptions of Standard English are neither natural, logical, nor productive of language that is ‘better’ (in any meaningful sense of the word)” (McGee and Ericsson qtd. in Curzan 78). Digital grammar editors’ focus on rules and error over descriptive understandings of grammar reinforces Standard Edited English as the language of white supremacy (“Statement on White Language Supremacy;” “This Ain’t Another Statement”). Students with little computer knowledge and who are uncertain about the language they use at home and how it is received in and by schools managed by dominant white culture have no means of arguing back against a technology that automatically evaluates the way they write as an “error.” Future researchers investigating these “features” of digital writing environments may need to examine the ways that they affect the

rhetoricity of the text. Writers writing outside of academic and business audiences seldom wish to sound like an academic or businessperson but want to use language that works within their discourse communities. While some of these autocorrect features can adapt to the abbreviations commonly found in text messaging, they don't do well with other Englishes such as African American Vernacular English or for students, like Zelda, who write in foreign languages but don't know how to change the language settings in their word processors. For authors composing in non-Standard forms and other languages, these technologies are particularly troubling.

Other DLAs that are worth investigating connect to ongoing studies of the ways that audience awareness and other contextual factors, like the specific focus of the students' studies and their research questions and goals, shape students' engagement with digital tools. My findings from Chapters 3 and 4 suggest that rhetorical task shaped DLA usage, particularly in regard to the ways students Consulted Resources during their writing sessions because they were interested in meeting audience expectations. Other research into digital composing processes has shown that students need instruction developing rhetorical and audience awareness. DePalma and Alexander's study demonstrated that students creating digital multimodal texts need help understanding the ways design features matter in textual production. From my study, another avenue to consider is the ways that students' reliance on digital tools like online thesauruses, their desire to *Search* for and cultivate *Appropriate Language*, reflects their understanding of academic audiences and of academic language. Moreover, studying this aspect of students' DLAs adds to our understanding of how teaching writing as rule-driven instead of practice-driven shapes students' writing processes. Mike Rose's study of writer's block found that trying to write while thinking about writing rules caused problems by oppressing students' creativity and stifling their ideas. In my study, students pausing to look up words often did so as part of

their *Editing* processes, activities which also interrupted *Generating New Text*. Future research could consider the ways that rhetorical awareness of the teacher as audience influences when and how students engage in these activities.

For researchers interested in studying digital composing practices using DSCs, using an assignment like Wardle and Downs' autoethnography is particularly fruitful as it helps researchers learn how writers view their own processes. From my own experience, I suggest that future researchers engage in this kind of project using a team approach working with at least one other teacher who will grade the autoethnography and written materials during the semester, while someone who is less familiar with the writers and their goals develops the initial codes from the DSCs as this will allow for less bias when interpreting students' activities. The codes that I developed were refined many times in the last six years, and I imagine the process might go more quickly with a bigger research team. For time consuming processes like coding DSCs, teacher-research can have limitations. Still, the affordances of completing these processes for students from my own classroom allowed me to use my research to inform my future teaching practices and cultivate enthusiasm and reflection among my students for such research projects.

## **Conclusion**

Regarding research with word processors, David R. Russell and Anish M. Dave write, "A good deal of research . . . has closely examined the writing practices and processes . . . [and] [t]hrough qualitative means they have shown that writing processes are indeed plural and complexly woven into the fabric of student life" (406). Despite instruction in writing processes, writing for classes, and writing to communicate being part of their daily lives, students don't always see the ways that their writing processes vary based on assignment and stage in their

writing processes, or understand the ways their writing for one audience can influence how they write for another. This could be because writing courses emphasize the linear and monolithic writing process rather than engaging in a more nuanced discussion of these processes. Moreover, students (and adult writers) seldom realize the full extent to which the tools they use can dominate the flow and stage of their writing. For all who read this study and learn about DLAs, I hope they see aspects of their own writing processes that can benefit from the analyses put forth in these chapters and recommend that they use this knowledge to prioritize the aspect of their DLAs they employ at the various stages of their writing. For those who wish to generate ideas and plan a document, consider working on paper. For those who prefer typing when creating new text, I strongly recommend going into the file settings and turning spell check and automatic text correction tools off. The analysis I provide can help future digital researchers explore these issues for writing in different contexts and with different technologies. For teacher-researchers in particular, my findings can help inform the ways that we think about the writing activities we assign, how we discuss and frame writing processes, and the suggestions we provide when helping students work with word processing tools.

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## Appendices

### Appendix A: Autoethnography Prompt

#### The Autoethnography

##### Goals of this unit:

1. Maintain and continue to improve the abilities gained in English 101,
2. Use writing and reading for inquiry, thinking, learning, and communicating,
3. Work with demanding readings and learn to interpret and evaluate these readings,
4. Write in ways appropriate to academic rhetorical contexts,
5. Recognize and critically evaluate how a writer's choices (content, organization, format, rhetorical moves, style, grammar, etc.) reflect and represent multiple cultural and/or historical perspectives,
6. Engage in collaborative work at a variety of levels (research, inventions, writing, etc.) to prepare students for team/group situations, communication in the workplace, and lifelong learning,
7. Engage in a variety of research methods to study and explore topics,
8. Learn and use at least one system of documentation responsibly.

##### Purpose:

For this assignment, you will conduct a study similar to those conducted by Perl and Berkenkotter. You will examine yourself and your own writing processes and write an autoethnography in which you describe these processes. Your method will be to observe, record, and take notes on your own writing process. You are required to use a screen capture technology such as Camtasia to capture your digital composing process and you may use an audio or video recorder to record yourself while you write. All of your recordings will be turned in (either physically, digitally, or as a transcript) as an appendix to your essay. Your purpose is to try to learn some things about your actual writing practices that you might not be aware of and to reflect on what you learn based on the concepts you have learned in this unit.

##### Brainstorming

To make this assignment as useful as possible, you need to plan ahead, so figure out what you will be writing for this course or other classes in the next few weeks and decide which writing assignment or assignments you will use to analyze your writing process. Consider the following:

- What kinds of assignments are the easiest or most difficult for you to write?
- What kind of assignments would be the most useful to examine yourself writing?

Plan ahead by practicing with different recording equipment available to you.

##### Researching

As you write the assignment for which you will study your writing habits, record yourself every time that you work on it—this includes time when you are thinking and planning for it, or when you are revising. Remember:

- You may not be near your recording device(s) when you are planning; if that is the case, then keep a log in which you note your thoughts about the assignment and how long you spend working on it.

When you have finished writing the paper, watch your recordings and take notes on what you do from moment to moment. This means writing down a description of what you were doing, what music was playing, if you spoke to anyone. You will use this transcription of your writing process for your analysis.

### **Analyzing**

You will need to come up with a code for analyzing the writing process, drawing on Perl's coding system, or develop with your own code for analyzing context (where and when you wrote, what distractions you faced, your attitude, any deadlines, etc.), planning, brainstorming, large-scale revision, small-scale revision, pausing, etc. Apply the code you come up with to the notes you took on your recording of your writing process.

You will turn in this coding system with your paper as an appendix. See our sample projects for ways to code the writing process and analyze your data. When you analyze your writing process, you should answer the questions: "What is interesting about what you found? What immediately jumps out at you? Did you do some things a lot and other things rarely or never? How does your analysis suggest that you compare to writers like Tony or Murray?"

Your audience for this essay will be your 102 classmates and the purpose of this assignment is for you to learn some things about your actual writing practices that you might not have been aware of, and to share what you've learned in the context of the various readings we did on writing process (Perl, Murray, and Berkenkotter).

Your written analysis of your writing process should be written in an MLA formatted paper between 800 and 1000 words in length. The only outside sources you should incorporate into your essay should be the readings from this unit. If you use these sources, you should follow MLA citation guidelines for your in-text citations and works cited list.

### **Questions to Consider for Invention**

- How would you describe your writing processes (planning, drafting, revising, and editing)?
- Are there aspects of your processes that are impacted by digital technologies?
- Consider what you write and do not write currently.
- Consider how you prepare—and do not prepare—to write a paper.
- Think of any kinds of writing that you enjoy and any kinds of writing you dread. What kinds of assignments/genres of writing are easiest or most difficult for you to write?
- What kinds of assignments/genres would be the most useful to examine yourself writing?

### **Steps:**

1. Choose a writing assignment from one of your classes that you can record.
2. Download free screen capture software on your computer and learn how to use either your computer's recording device or your phone to record yourself while you work on writing this assignment.
3. Record and take notes on yourself writing your assignment.
4. Transcribe your recordings and review your notes.

5. Come up with a coding system to define the different activities you engage in while writing an assignment.
6. Apply your coding system to your notes.
7. Use the Invention questions to come to a conclusion about your writing process based on your notes and coding.
8. Use your analysis to write a paper in which you explain and support your conclusions about how you write, why you write that way, and what you have learned about your writing process from researching it.
9. Organize your ideas around your controlling idea (evaluating how your writing process works)
10. Decide what evidence you have that best demonstrates your claim.
11. Write a rough draft.
12. Go see Julie or the Writing Center if you are struggling.
13. Attend peer-review workshops.
14. Make changes based upon feedback from workshops.
15. Go see Julie or the Writing Center if you are struggling.
16. Edit and proofread.
17. Draft your reflection essay.
18. Edit and proofread your reflection essay.
19. Go see Julie or the Writing Center if you are struggling.
20. Make changes to your reflection essay.
21. Turn in essay, invention work, observation notes, recordings, drafts, and so on.

**Important Dates:**

**Wednesday, February 4:** Invention Workshop

**Monday, February 9:** Writing Workshop

**Wednesday, February 11:** Peer Review Content Workshop

**Friday, February 14:** Working with and understanding peer review feedback day.

**Monday, February 16:** Final draft of essay (and accompanying materials) due.

To earn the minimum grade of a C, your essay must...

1. Be in MLA format including paper formatting guidelines, citation guidelines, and works cited page.
2. Be handed in on time.
3. Have been peer-reviewed in both workshops.
4. Meet the word length requirements (between 800-1000 words).
5. Reveal something about the relative writing process to your audience.
6. Have a controlling idea (claim) with evidence from your research that supports it.
7. Be cohesive and organized around your controlling idea.
8. Be specific and give details and examples.
9. Include your research notes, recordings, transcriptions, codings, invention exercises, all of your drafts, and your reflection essay.

## Appendix B: Autoethnography Reflection Prompt

### Autoethnography Reflection Questions

Directions: In MLA format, construct a short essay (completely separate from your Unit 1 essay) that responds to these questions. Your reflection is due with your Unit 1 essay at the start of class and is worth 5% of your overall grade for this class. Successful reflection essays **are a minimum of 750 words** in length, avoid vague language, and provide excellent details and examples with specific explanations.

1. What exactly did this assignment ask you to do? What was the purpose of this essay assignment? Give examples, explain, and be specific.
2. What personal motivations helped you in completing this essay assignment? Give examples, explain, and be specific.
3. How did you get started on this project? What questions did you have and how did you go about answering them? How did your ideas develop as you began writing? How did your ideas change toward your final draft?
4. How was the writing situation for the Unit 1 essay similar to ones that you have encountered in the past? How was this one different? Give examples, explain, and be specific.
5. What did you learn in a previous English class that you used for this first essay? Which class? Give examples, explain, and be specific.
6. What have you learned outside of school contexts that you used in this first essay? What digital and social resources did you use to help you complete this assignment? Give examples, explain, and be specific.
7. How can what you learned in this unit be applied in other courses? Give examples, explain, and be specific.
8. What did you learn about your writing in this Unit? Give examples, explain, and be specific.
9. What did you learn about your writing from reviewing your writing and the feedback that you received from others during this unit? Give examples, explain, and be specific.

## Appendix C: English 102 Course Goals

### Course Objectives

By the end of English 102, students should be able to do the following:

- 1. Maintain and continue to improve the abilities gained in English 101.**
- 2. Use writing and reading for inquiry, thinking, learning, and communicating.**
  - a. Work with demanding readings and learn to interpret and evaluate these readings,
  - b. Use writing as a problem-solving process that fosters the discovery, analysis, and synthesis of new ideas,
  - c. Analyze and synthesize multiple points of view so as to understand that multiple perspectives on an idea are in operation at the same time.
- 2. Write in ways appropriate to academic rhetorical contexts.**
  - a. Recognize and critically evaluate how a writer's choices (content, organization, format, rhetorical moves, style, grammar, etc.) reflect and represent multiple cultural and/or historical perspectives,
  - b. Engage in collaborative work at a variety of levels (research, inventions, writing, etc.) to prepare students for team/group situations, communication in the workplace, and lifelong learning.
- 4. Engage in a variety of research methods to study and explore topics.**
  - a. Propose, plan and complete research projects using research methods appropriate to the writing task,
  - b. Effectively integrate a variety of appropriate sources into their writings,
  - c. Learn and use at least one system of documentation responsibly.<sup>34</sup>

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<sup>34</sup> (Taken from the First- and Second-Year English program at the University of Kansas: <https://fse.ku.edu/102>)

## Appendix D: Pre- and Post-Survey of Writing Skills for English 102 Students Spring 2015

This research project investigates students' digital activities while composing essays for their 102 class to study how students use such activities for rhetorical invention. In addition, it investigates how students gain and transfer writing knowledge when they have a strong understanding of the writing process. Your participation in this research project is completely voluntary and has no impact upon your grade in this course. You are not required to participate and may withdraw from the research project at any time. Your name or likeness will not be directly identifiable.

1. Name (optional): \_\_\_\_\_
2. Gender: \_\_\_\_\_ 3. Age: \_\_\_\_\_
4. Year in College: Freshman Sophomore Junior Senior Other: \_\_\_\_\_
5. Years at KU: 1st 2nd 3rd 4th 5th Other: \_\_\_\_\_
6. Educational Background (circle all that apply):

Public HS   Private HS   GED   Abroad   Comm College   Transfer

6a. Did you take English 101?    Yes \_\_\_\_\_ No \_\_\_\_\_

Where did you take English 101? \_\_\_\_\_

7. What types of writing have you done in the past? List all that you can think of.

8. What do you write the most? In other words, what types of writing?

9. In your own words, define or describe what you consider to be your "writing skills." Which of these do you feel will you use in your course work? Do you use any of these skills outside of school contexts? Give examples if needed.

10. In your own words, describe what you think helps you begin to write or what has helped you in the past. Do you begin brainstorming on paper or digitally? In class? Do you write lists? Describe your initial writing process. Give examples if needed.

11. In your own words, describe your process for writing outside of schoolwork. What kinds of writing do you do outside of school and what kind of process do you engage in, if any, to complete that writing?

12. What kind of digital tools do you use when you write for school contexts? What kind of digital tools do you use when you write outside of school contexts?

13. In your own words, how do you think digital activities such as texting, using Facebook or Twitter, or Google searching affect your writing? In what ways do these activities help or hinder your ability to write inside and outside of school contexts?

14. What connections do you see between your writing inside of school and outside of school? How do you think your writing class will prepare you for writing outside of classroom situations?

15. Would you be willing to meet with the researcher after this semester for a follow-up interview, if needed? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, what is the best way to contact you?

## Appendix E: DLA Coding Frequency Table

The Table below describes the DLAs students engaged with that were coding during the LV 1 analysis and consistent through the LV 2 analysis. The table is organized with the DLAs performed across the greatest number of DSCs at the top and the DLAs that occurred less frequently at the bottom.

Table 10: DLA Coding Frequency Table

<b>DLA Coding Nodes</b>	<b>Number of References across Sources</b>	<b>Number of DSC Recordings (30 total)</b>	<b>Number of Students Coded to DLA (12 total)</b>
<i>Generating New Text</i>	776	29	12
<i>Reading Their Writing</i>	727	30	12
<i>Editing while Writing</i>	687	29	12
<b>Using Computer Knowledge</b>	490	30	12
<b>Controlling Word Processing Features</b>	464	30	12
<b>Consulting Course Materials</b>	264	27	12
<i>Ceding Control to the Word Processor</i>	241	26	11
<i>Completing a Final Round of Editing</i>	198	19	9
<b>Searching for Appropriate Language</b>	186	27	12
<b>Incorporating Scholarly Research Practices into your Writing</b>	167	28	12
<b>Revising</b>	139	22	11
<b>Adjusting Music Apps</b>	114	10	8
<b>Being Interrupted by an Application</b>	104	11	6
<b>Preparing a Space to Write</b>	103	22	11
<b>Interacting with Social Applications</b>	43	15	8
<b>Making Notes about Writing</b>	29	12	7
<b>Organizing Writing</b>	18	12	7

**Appendix F: 1 Wardle and Downs' Writing about Writing Processes: Assignments and Advice, pp 322-327**

To help you learn and explore the ideas in this chapter, we are suggesting three Assignment Options for larger writing projects: Autoethnography, Portrait of a Writer, and a Combination Assignment.

*Assignment Option 1. Autoethnography*

For this assignment, you will conduct a study similar to those conducted by Perl and Berkenkotter, but instead of looking at someone else, you will examine yourself and your own writing processes and write an autoethnography in which you describe them. Your method will be to record (preferably with video and audio) your total writing process as you complete a writing assignment for a class. Your purpose is to try to learn some things about your actual writing practices that you might not be aware of and to reflect on what you learn using the terms and concepts you've read about in this chapter.

*Brainstorming*

To make this assignment as useful as possible, you need to plan ahead, so figure out what you will be writing for this or other classes in the next few weeks, and make a decision about what you will study. Consider the following:

- What kinds of assignments are easiest or most difficult for you to write?
- What kinds of assignments would be the most useful to examine yourself writing?

Make sure that you know how to use your computer's recording device, if it has one; if you have a camera and video recording capabilities in your computer, make plans to capture yourself on video, too. (If your computer has none of these capabilities, discuss alternate means of recording your process with your instructor.)

*Researching*

As you write the assignment that you will study, record yourself every time that you work on it—this even includes times when you are thinking and planning for it, or when you are revising. Keep the following in mind:

- You may not be near your recording device(s) when you are planning; if that is the case, then keep a log in which you note your thoughts about the assignment.
- When you sit down to type the paper, think out loud the entire time. This will feel strange, and it will take some effort. Do your best.

- Try to externalize everything you are thinking. If you have trouble knowing what to say, go back to Perl and Berkenkotter and look at the kinds of things that Tony and Donald Murray said aloud when they were being studied.

When you have completely finished writing the paper, listen to the recording of yourself and transcribe it. This means typing everything that you said on tape, even the “ums” and “ahs.” Type up this transcription to use for your analysis. It will be helpful to double space (or even triple space) the transcript so that you can make notes on it.

### *Analyzing*

Alone or with your class, as your teacher directs, come up with a code to help you look at your transcription. To help you generate the code, return to Berkenkotter, Perl, and Stark. What did they look at when they analyzed their transcriptions? Some suggestions for things you might include would be notes about context (where and when you wrote, what distractions you faced, your attitude, any deadlines, and so on), and codes for planning, brainstorming, large-scale revision, small-scale revision, pausing, and so on.

What you want is a code that will help you understand what is happening when you write. Beware of the following potential pitfalls:

- If the code is too vague, you won't learn anything at all.
- If the code is too detailed (for example, if you try to do what Perl did and record the exact amount of time you took for each action), you might never get done coding.

We recommend coming up with a code with the rest of your class, and then trying to see that code on a practice transcript that your teacher provides. This will help you see if the code is useful.

Once you have settled on a code, use it to analyze your transcript. Try one or more of the following methods:

- Get a box of highlighters of different colors, and use each color to highlight the parts of the text that correspond to parts of the code (for example, pink is for planning).
- Simply underline parts of the transcript and label them in shorthand (e.g., *P* is for planning).
- Use your word processing program's highlighting or “track changes” feature to insert comments in the margin.

Once you have coded the transcript, go back and look at what you did, and consider the following:

- What is interesting about what you found?

- What immediately jumps out at you? Did you do some things a lot and other things rarely or never?
- How does your analysis suggest you compare to Tony and Donald Murray?

Like some of the authors in this chapter, you might make some charts or tables for yourself, in order to visually explore what percentage of time you spent on various activities.

### *Planning*

What are you going to write about? You don't need to go into excruciating detail about everything you coded. Instead, you should decide what you want to claim about what you found:

- How would you describe your writing process?
- What are the most important take-home points from your analysis?
- Are there aspects of your process that are definitively impacted by technologies like instant messaging, social networking, Skype, or even word processing?

Decide what your claims will be and then look back at your analysis and decide what bits of data you would like to use in your paper to help support your claims.

At this point, you and your teacher will need to discuss what genre you are going to write. Who is your audience? What is your purpose? You might write about your findings in an informal reflective essay in which you discuss your process and compare yourself to some of the writers in the chapter. Or your teacher might want you to write a more formal, researched argument. In this case, you should use Perl and Berkenkotter as models. Note that they open their articles by discussing other research on their subject (also called “establishing the territory”) then noting one or more gaps or niches or questions in the existing research (for example, no one has studied a “normal” college writer, or no writer has studied herself using these research methods), then explaining their research methods, and finally discussing their findings.

### *Drafting*

Your drafting processes will vary depending on the genre (text type and purpose that you and your teacher agree upon):

- If you are writing the reflective essay, you are most likely writing for yourself (writing to learn) and to share what you learn with your teacher, who wants to encourage you in your efforts to become a better writer. Consider what claims you want to make in this reflective essay, and begin drafting. As you revise the essay, consider the appropriate tone and length, given your purpose(s).
- If you are writing a more scholarly research article, you might begin by outlining the various sections of your paper: In your introduction, what other research will you cite? Whose work provides important background information for your study? What is the gap

or niche that your study fills? How will you describe your research methods? What are the main claims you want to make in the findings?

One trick that some writers use is to write headings for each section, with main claims underneath. Then the writer can go back and write one section at a time in order to break up the writing.

Once you have a “shitty first draft,” revise it to make it a little more coherent. Then share it with a classmate, being sure to tell him or her [or them] what genre you wrote and what kinds of help you would like him or her [or them] to give you.

### *What Makes It Good?*

The purpose of this assignment was for you to try to learn some things about your actual writing practices that you might not have been aware of, and to reflect on what you learned using the terms and concepts you’ve read about in this chapter. Does your paper demonstrate that this purpose was achieved?

In addition, your readers will want to learn something from having read your paper. Does your finished text clearly convey your insights and findings?

### *A Caveat*

We have found that some students just “go through the motions” when they complete this assignment, and don’t make an attempt to learn something about themselves as writers. When those students write their papers, they have very little to say about results or insights. They tend to say pretty clichéd things like “I am very distracted when I write. I should try to write with fewer distractions.” In general, if the insights of the paper were obvious to you before you ever conducted the autoethnography, then you have not fully engaged in the project and are unlikely to receive a good grade on it.

### *Alternative Autoethnography Assignment*

Instead of studying yourself writing one assignment, compare yourself writing two very different kinds of texts (maybe in-school and out-of-school, or humanities and science) and analyze them to see whether—or how—your process changes depending on what you write.

### *Assignment 2. Portrait of a Writer*

The authors in this chapter clearly believe that good writing takes hard work and multiple drafts and that many of us are hampered from being better writers by the “rules” and misconceptions we have been taught about writing.

This is true even of very famous people who write a lot every day. Sonia Sotomayor, who at the time this book went to press had recently joined the United States Supreme Court, has been widely criticized for her writing. She even criticizes herself, saying, “Writing remains a challenge for me even today—everything I write goes through multiple drafts—I am not a natural writer”

([http://www.politico.com/blogs/joshgerstein/0609/Sotomayor\\_writing\\_a\\_challenge\\_even\\_today.html](http://www.politico.com/blogs/joshgerstein/0609/Sotomayor_writing_a_challenge_even_today.html)).

Here she conflates being a “good” writer with being a “natural” writer; she seems to believe that some people are born good writers and some people aren’t. Her conception is that a “good” writer only has to write one draft; anyone who has to write multiple drafts must be a “bad” writer. Even from this one short quotation, you can see that Sonia Sotomayor’s conceptions of writing are limiting and would not hold up if closely examined by the researchers and professional writers in this chapter.

Use what you have read in this unit to consider the story you have to tell about yourself as a writer. How do you see yourself as a writer? Is that self-perception helping you be the best writer you can be? The purpose of this assignment is for you to apply what you have learned in this chapter to help you better understand why and how you write—and how you might write differently.

### *Brainstorming*

Try the following to generate material for your assignment:

- Go back to the discussion and activity questions you completed as you read the articles in this chapter. What did you learn about yourself and your writing processes there?
- Consider what you write and don’t write currently.
- Consider how you prepare—or don’t prepare—to write a paper.
- Think of any kinds of writing that you enjoy, and any kinds of writing that you dread.
- Freewrite about the writing rules that block you, and the writing rules that aid you.
- Make a list of all the metaphors or similes about writing and revision that you and your friends use.

You should spend a substantial amount of time reflecting on yourself as a writer using the concepts and ideas that you learned in this chapter. Even if some or most of your brainstorming doesn’t end up in your paper, the act of reflecting should be useful to you as a writer.

### *Planning*

Look at all the notes and freewriting that you did during the brainstorming, and consider:

- What’s interesting here?

- What catches your interest the most?
- What is new or surprising to you?

Settle on a few of these surprises or “aha!” moments as the core of what you will write for this assignment. For each of these core elements of your essay, brainstorm examples, details, and explanations that would help you reader understand what you are trying to explain about yourself.

### *Drafting*

Write a three- to five-page essay in which you describe your view of yourself as a writer, using examples and explanations to strengthen your description. As appropriate, you might refer to the authors of texts in this chapter to help explain your experiences, processes, or feelings. Conclude the essay by considering how or whether the things you have learned in this chapter might change your conception of yourself as a writer or your writing behaviors. You and your teacher should discuss potential audiences for this essay:

- Are you writing to the teacher, to demonstrate what you’ve learned in this chapter?
- Are you writing for yourself, to help solidify what you’ve learned?
- Would you like to adapt your essay to write for someone else—maybe your parents, to demonstrate who you are as a writer and what influences you can identify? Maybe to a teacher who had an impact, positive or negative, on who you are as a writer?

Of course, this choice of audience and purpose will have a significant impact on your essay—its form, content, tone, language, level of formality, and so on.

As an alternative, you might talk with your teacher about more creative ways to paint your self-portrait:

- Try writing a play outlining your writing process.
- Transform a metaphor about writing into a visual description—for example, a collage—of who you are as a writer or what you think “good writing” is.
- Create a hypertext essay where readers can look at pictures, watch video, listen to songs, even listen to your own voice, as you describe yourself and your conceptions of writers, the writing process, and good writing.

### *What Makes it Good?*

The purpose of this assignment was for you to step back and consider yourself as a writer, applying what you learned in this chapter to better understand why and how you write—and how you might write differently, or perhaps even understand yourself differently as a writer. When you’ve finished it, ask yourself:

- Were you able to apply what you learned in this chapter to understand yourself better as a writer? (If not, that will likely show up in the depth of your writing.)
- Did you successfully identify an audience of your piece and write appropriately for that audience?

*Assignment Option 3. Combination Assignment*

Write a Short essay in response to the “Portrait of a Writer” prompt, and study yourself writing that essay in order to conduct the autoethnography.

## Appendix G: Revised Reflection

The purpose of this unit was to help you learn about your digital literacy activities (DLAs) as part of your writing processes as a whole. Through your development of your research questions, methods, your analytical coding of your recordings, and writing of the autoethnography, you were to learn about doing digital writing research while learning more about what you *do* when you write.

Take a moment to reread your Portrait of a Writer and your autoethnography. Then, consider how the two documents demonstrate your learning over the course of the Unit. What did you think about yourself as a writer when you wrote your Portrait of a Writer? How has that conception changed over the course of watching and analyzing yourself writing?

Write a 2–3-page essay in which you reflect upon what you have learned about your writing processes, your DLAs, and the ways the tools you use, your audience, and your purpose for writing shape your writing processes. Will you change the tools you use for the various parts of your writing processes based on what you've learned? Use examples from both your Portrait and autoethnography that demonstrate your learning and that provide context for how you will engage in writing processes in the future.